norstar

Norstar-PLUS
Compact ICS 2.0
Installer Guide

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Regulations

Radio-frequency interference

> ### Equipment generates RF energy.
>
> This equipment generates, uses, and can radiate radio-frequency energy. If not installed and used in accordance with the installation manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Part 15 of the FCC Rules and with Canadian Radio Interference Regulation SOR/88-475, which are designed to provide reasonable protection against such interference when used in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference.

Telecommunication registration

Norstar equipment meets all applicable requirements of both Industry Canada CS-03 and US Federal Commission FCC Part 68 and has been registered under files Industry Canada 332-5980 A and FCC AB6CAN-20705-KF-E (key system), AB6CAN-20706-MF-E (hybrid system), and AB6CAN-23740-PF-E (PBX system). Connection of the Norstar key telephone system to the nationwide telecommunications network is made through a standard network interface jack that you can order from your local telecommunications company. This type of customer-provided equipment cannot be used on party lines or coin lines.

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment. Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Ringer Equivalence Number and Load Number

The FCC and Industry Canada Registration information, on the front of the integrated communication system (ICS), includes the ringer equivalence number (REN) and load number (LN). These numbers show the electrical load that the Norstar ICS requires from a telephone line. If the ICS requires more electrical current than the telephone company's central office equipment can provide, telephones may not ring and you may have difficulty dialing telephone numbers.

In most areas, the total load on a line is allowed to be 5.0 REN or 100 LN. Call the local telecommunications company to find out the total REN or LN allowed for your telephone line.

Hearing-aid compatibility

Norstar telephones are hearing-aid compatible, as defined in Section 68.316 of Part 68 FCC Rules.

Electromagnetic compatibility

Norstar Compact ICS equipment meets all FCC Part 15, Class A radiated and conducted emissions requirements.

Norstar Compact ICS does not exceed the Class A limits for radiated and conducted emissions from digital apparatus as set out in the Radio Interference Regulations of Industry Canada.

Safety

Norstar Compact ICS equipment meets all applicable requirements of both the Canadian Standards Association C22.2 No. 225-M90 and US Underwriter's Laboratory UL-1459 Second Edition, and has been registered under file CSA LR58855.

Telephone company registration

It is usually not necessary to call the telecommunications company with information on the equipment before connecting the Norstar ICS to the telephone network. If the telecommunications company requires this information, provide the following:

- telephone number(s) to which the ICS will be connected

- FCC registration number (on label affixed to ICS)

- ringer equivalence number (REN)

- universal service order code (USOC)

- service order code (SOC)

- facility interface code (FIC)

Trunk Cartridge	REN	LN	USOC	SOC	FIC
Loop Start/Disconnect Supervision (LS/DS) NT7B75GA-93	AC 1.5B DC 0.3	8	RJ21X	9.0F	02LS2
Call Information (CI) NT5B41GA-93	AC 1.5B DC 0.3	8	RJ21X	9.0F	02LS2
BRI-U2 and BRI-U4 Cards NT7B86GB-93 and NT7B87GB-93	– –	– –	RJ49C	6.0Y	02IS5
BRI-ST Card - NT7B76GY-93 (when connected to an NT1 which has a U interface to the telephone network)	– –	– –	RJ49C	6.0Y	02IS5

Use of a music source

In accordance with U.S. Copyright Law, a license may be required from the American Society of Composers, Authors and Publishers, or similar organization if Radio or TV broadcasts are transmitted through the Music On Hold or Background Music features of this telecommunication system.

Northern Telecom Inc. hereby disclaims any liability arising out of the failure to obtain such a license.

Rights of the telecommunications company

If the Norstar Compact ICS system is causing harm to the telephone network, the telecommunications company may discontinue service temporarily. If possible, the telecommunications company will notify you in advance. If advance notice is not practical, the user will be notified as soon as possible. The user will be given the opportunity to correct the situation and informed of the right to file a complaint to the FCC.

The telecommunications company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of the system. If this happens, the

telecommunications company will give you advance notice in order for you to make any necessary modifications to maintain uninterrupted service.

Repairs

In the event of equipment malfunction, all repairs to certified equipment will be performed by Northern Telecom Inc. or by one of its authorized dealers.

To return equipment for repair in the U.S., call 1-800-321-2649. You will receive a return advice number (RA#) to include with your returned equipment.

Address of repair facilities

USA

Northern Telecom Inc.
Nashville Repair Distribution Center
640 Massman Drive
Nashville, TN
37210
RA#_____

Canada

Northern Telecom Canada Ltd.
30 Norelco Drive
Weston, Ontario M9L 2X6
Attn: Repair Department

ISDN

Integrated Services Digital Network (ISDN) is a fast, accurate and reliable means of sending and receiving data, images, text, and voice information through the telecom network.

Compact ICS uses two types of Basic Rate Interface (BRI) Cards to support ISDN interfaces:

- a BRI-ST Card which supports up to four loops (four 2B+D channels) for network (S/T) or terminal (S) connections using an S/T interface

- a BRI-U2 or BRI-U4 Card which supplies either two or four loops (two or four 2B+D channels) for network (NT) or terminal (LT) connections using a U interface

The ISDN chapter in this guide gives an overview of configuration, hardware, and programming for the Compact ICS using ISDN.

New equipment

The Compact ICS has new equipment with improved performance to meet changing telecommunication needs.

A Compact ICS using a restricted software feature cartridge supports:

- 4 analog trunks, or 2 BRI loops

- up to 8 Norstar telephones, and 7 directory numbers (DNs) for ISDN terminal equipment

A Compact ICS using a standard software feature cartridge supports:

- 8 analog trunks, or 8 BRI loops

- up to 16 Norstar telephones, and 7 directory numbers (DNs) for ISDN terminal equipment

A Compact ICS using a standard software feature cartridge (or a restricted software cartridge that has been upgraded using Software Keys) and an expansion cartridge supports:

- 8 analog trunks, or 8 BRI loops

- up to 24 Norstar telephones, and 7 directory numbers (DNs) for ISDN terminal equipment

In addition, both the restricted and the standard feature cartridge are available with or without the remote administration feature (I-RAD, an internal remote access device). If the software cartridge comes without remote administration enabled, the feature can be turned on using Software Keys from Nortel (Northern Telecom).

Trunk Cartridge slots

The Compact ICS has two slots that can accept any configuration of:

- Loop Start/Disconnect Supervision (LS/DS) Analog Trunk Cartridges (ATC)

- Call Information (CI) Trunk Cartridges

- BRI (Basic Rate Interface) Cards

This arrangement allows the system to be expanded as needed.

Analog trunk cartridges for the Compact ICS can also be used with the 0x32 ICS. BRI Cards will also work with 0x32 systems equipped with a Feature Cartridge which supports ISDN.

BRI Cards (ISDN)

Compact ICS uses two types of Basic Rate Interface (BRI) Cards: BRI-ST, and BRI-U2 or BRI-U4.

A system equipped with a restricted feature cartridge supports only the BRI-U2 Card. It cannot support BRI-U4 or BRI-ST Cards.

Feature Cartridge

The Feature Cartridge and slot now have a slim, compact design. The release number of the software can be easily read without removing the cartridge.

The cartridge is available in two formats:

- a restricted feature cartridge which supports up to 4 trunks (or 4 BRI loops) and 8 telephone ports. By using software keys, it can be upgraded to support 8 trunks (or 8 BRI loops), 16 built-in telephone ports, and 24 telephone ports using the Expansion Cartridge

- a standard feature cartridge which supports up to 8 trunks (or 8 BRI loops) and 16 telephone ports, and 24 telephone ports using the Expansion Cartridge

The restricted feature cartridge is upgraded using a set of software keys supplied by Nortel – you do not need to install a new cartridge.

Expansion cartridges

A third slot on the Compact ICS houses one of three optional expansion cartridges:

- the Expansion Cartridge provides ports for eight additional Norstar telephones and is used for analog-only systems

- the Expansion Cartridge with Clocking provides both ports for 8 additional Norstar telephones and clocking support for BRI Cards

- the Clocking Cartridge provides only clocking support for BRI Cards

The Compact ICS must be equipped with the Expansion Cartridge with Clocking or the Clocking Cartridge to use BRI Cards.

Internal Analog Terminal Adapter (I-ATA)

The Compact ICS now has a built-in analog terminal adapter (I-ATA).

The I-ATA is designed to be compatible with commercial fax and modem equipment. The Compact ICS has been shown to support data transmission rates of up to and including 28.8 kbps.

Maximum data transmission rate is subject to the quality of the end-to-end channel and cannot be guaranteed.

The I-ATA is designed for in-building use only and not as an an off-premises station or extension (OPS or OPX).

If you are currently using an ATA to connect a modem to the Compact ICS, and your system has access to a BRI network, you can now use a digital trunk supplied by a BRI Card for modem calls to improve the transmission quality.

CTA 500 digital modem

Connections to computer-based services such as the Internet or a local area network (LAN) can now be made through the ICS using its peripheral CTA 500*dm* and a BRI network connection. Complete, on-line instructions for hook-up and applications are included with the CTA 500*dm*.

New programming features

Operations, administration and maintenance programming for Compact ICS has been redesigned to make both installation and adds, moves, and changes on the system easier. The reorganization reflects the priorities of installers, customer service representatives and system coordinators.

Because programming requires a two-line display, a telephone with a single-line display cannot be used for programming.

New levels of access

The password determines the level of access that the user sees when programming the Norstar system. A password for installers shows all the programming. There are separate passwords for two types of system coordinator: the coordinator who needs to perform day-to-day tasks to keep up with changes in the workplace, and the system coordinator "plus" who needs access to advanced settings. There is also a basic password for the user who performs only the most common programming tasks.

Programming is no longer divided into "Configuration" and "Administration".

More "one-stop" programming

With the addition of new programming headings and sub-headings, settings for features have been grouped together in one place.

There are also parts of programming which have been repeated under one or more headings to help make programming easier. For example, you can program all the restriction filters that are available under both Lines and Terminals&Sets because those settings are used in both places.

Telephone-to-telephone programming of personalized features

User preferences such as autodialers, user speed dial codes, display contrast, and other programming that is particular to one telephone or user can now be seen or changed in a regular programming session or by using a feature code. Instead of walking over to where the telephone is located, all the programming usually done by the user can be done under the heading User preferences.

Copying programming to a range of telephones

The user can now copy programming from a single telephone to a range of telephones or all the telephones on a system. Copying can be done for a particular sub-heading of programming or to duplicate all or a portion of programming for a set. See the Programming chapter for more information.

Built-in remote administration

The Compact ICS has a built-in device that can be used for remote administration. The Compact ICS 2.0 feature cartridge is available with or without the remote administration feature activated. If remote administration is not activated for the feature cartridge, the feature can be turned on by entering a set of software keys supplied by Nortel.

Remote administration for Compact ICS 2.0 supports automatic alarm reporting to a remote location and can support modem speeds of up to 14.4 kbps. In addition, the internal remote access device (I-RAD) can be programmed to automatically answer a line after a set number of rings.

New features

Auto Attendant

The Compact ICS comes with a built-in auto attendant feature that can answer calls and put them on hold. It can also give callers the ability to reach a particular telephone by dialing an internal number,

or select a destination from a pre-recorded menu (CCR). The Auto Attendant features "business open" and "business closed" options. For more information about the Auto Attendant, see the *System Coordinator Guide*.

Automatic Daylight Saving Time

When this feature is turned on, your system will automatically switch between standard time and daylight savings time. Daylight time appears under System Programming in Feature Settings.

Station set test

Physical problems with a Norstar telephone can now be verified with a test activated by a feature code (Feature 8 0 5). For more information, see the *System Coordinator Guide*.

Bit error rate test (BERT)

Test the transmission quality of the link between the ICS and a telephone. BERT appears as a new option under Maintenance in Loopback tests.

Enhanced features

Ringing service

Ring Groups have been added to simplify programming for ringing service. You can add extended ringing sets to a ring group, which is then used by one of six Schedules. Up to 20 Ring Groups are available for each Schedule.

Expanded Routing Service

Norstar's Automatic Route Selection allows you to program 500 destination codes for Routing Service and 999 routes.

To make programming routes easier, a digit absorption feature has been added. By choosing which digits of the destination code are dialed out by the system, many routes will no longer need to have DialOut digits.

Page Tone

The tone preceding a page announcement up to now was always on. Now it is possible to turn the Page tone off for all users. This may be convenient if the office environment is often busy with page announcements.

Page Timeout

You can now specify the amount of time required before a page announcement is automatically shut down. This gives users the ability to allow longer page announcements. It also minimizes the length of time the feature is tied up at one telephone or left on by accident. This feature enhancement appears under System Programming in Feature Settings.

Automatic Call Information (Caller ID or Call Display)

Information about incoming external calls can now appear on any telephone with a ringing line appearance. The call information does not automatically appear when the telephone is ringing because it has an Answer DN, or belongs to a Ring group activated by Ringing Service. Call Information is still available for these calls by pressing
[Feature] [8] [1] [1] .

North American numbering plan

To reflect the new North American numbering scheme, the default restriction filters have been updated:

- filter 01 has combined exceptions 003 and 004 into a single exception 003 (now referred to as an override) to allow long distance directory assistance calls.

- the default filters take into account that area codes can have any digit as a second digit.

- an override for 888 and 877 (dialing sequences used for toll-free numbers) is included in filter 01.

Call Park

The Norstar system can now assign Call Park codes in sequence, from the lowest to the highest, until all the codes have been used. This round-robin approach means that a greater variety of codes will be used, which will make it easier for a call to reach the right person when more than one incoming call is parked.

The system can still be programmed to re-use Call Park codes starting with the lowest numbered code.

Set programming confirmation

When you have completed a programming session, some of the changes may have not taken effect yet. When this happens, you will see an UPDATE display button when you leave programming. Pressing the button will show you how many telephones have not been updated yet because the system is busy with other programming or the telephone is in use.

Last Number Redial, Saved Number Redial, and Link

You can now prevent individual sets from using Last Number Redial ([Feature] [5]), Saved Number Redial ([Feature] [6] [7]), or Link ([Feature] [7] [1]) in Restrictions programming.

Hide message and call notification

The Static Time feature ([Feature] [8] [0] [6]) replaces the information about messages and calls shown on your display with the time and date. See the *System Coordinator Guide* for more information.

Norstar in a network

In addition to public network connections, Norstar Compact ICS can be integrated into an existing private network.

The big picture

Norstar uses enhanced routing to join other Norstar or customer equipment in a private network. Authorized users can also access central office lines and Norstar features from outside the Norstar system.

Callers using the Norstar Compact ICS system can

- call directly to a specific Norstar telephone

- select an outgoing central office line to access the public network

- use all of the Norstar features

Callers in the public network can

- call into the Norstar Compact ICS system and select an outgoing central office line to access the public network

- call into the Norstar Compact ICS system and use remote features

Norstar behind a PBX

Norstar Compact ICS can be used behind a PBX. In order to support this application, the trunk lines must be set up not to exceed 8 dB total loop loss from the serving central office to the connection point at the Norstar ICS.

Trunks and target lines

Trunks are external lines that provide the physical connection between a Norstar system and other systems in a private or public network. Norstar Compact ICS supports two different types of trunks:

- Loop start trunks handle incoming and outgoing calls between Norstar and the public network. They are numbered 001-004 and 025-028.

- BRI trunks handle incoming and outgoing calls between Norstar and an ISDN network. They are numbered from 001-008 and 025-032.

Target lines are virtual communication paths between trunks and telephones on the Norstar system. They are incoming lines only, and cannot be selected for outgoing calls. You can use target lines to simulate direct inward dialing (DID) service by routing calls to telephones according to the digits received from the central office on a BRI trunk.

Target lines are numbered 049 to 074.

Telephones can be configured to have an appearance of any type of trunk and line (including target lines).

Loop start trunks

Loop start trunks provide incoming and outgoing access to the public network. Loop start trunks can be configured as manual-answer or auto-answer. The answer mode determines how the system handles incoming calls.

When a call comes in on a manual-answer loop start trunk, it alerts at all telephones with that line appearance.

When a call comes in on an auto-answer loop start trunk that is configured to answer with direct inward system access (DISA), the caller hears a stuttered dial tone. They must enter a six-digit Class of Service (COS) password from a dual tone multifrequency (DTMF) telephone to access system dial tone. Once the caller has system

dial tone, they can then enter a target line number, a line pool access code or a remote feature code.

By default, auto answer loop start trunks are configured to answer with DISA, and are used to provide controlled access to Norstar system resources.

When a call comes in on an auto-answer loop start trunk that is not configured to answer with DISA, the caller hears system dial tone. They can then enter a target line number, a DISA DN (the number that will call for a COS password), a line pool access code, or a remote feature code from a DTMF telephone.

To place an outgoing call, a loop start line can be selected by pressing a line button on the telephone, dialing a line pool access code, or pressing a memory button that has been programmed with a line pool access code.

Tip - *Loop start signaling is supported by Loop Start /Disconnect Supervision (LS/DS) Analog Trunk Cartridges and Call Information (CI) Trunk Cartridges. Each LS/DS Analog Trunk Cartridge or CI Trunk Cartridge can provide four loop start trunks. To configure the loop start trunks as auto-answer, the trunks must have disconnect supervision enabled. The central office must provide far end disconnect supervision.*

The default programming for trunks is now uses disconnect supervision. If the central office does not provide far end disconnect supervision, the Trunk Mode setting in Lines programming should be changed to unsupervised.

*You may configure a loop start trunk as the prime
line for a Norstar telephone.*

*The capabilities available to a remote caller are
determined by the remote restrictions and remote
package assigned to a line, or by the set
restrictions, line restrictions and remote package
assigned to the COS password.*

*Callers can also access the system by using the
Auto Attendant features. See the System
Coordinator Guide for more information.*

BRI trunks

BRI trunks give you incoming and outgoing access to an ISDN
network. Like loop start trunks, they can be configured as manual-
answer or auto-answer. See the Loop start trunks information that
starts on page 16 for information on setting the answer mode.

BRI trunks provide a fast, accurate and reliable means of sending
and receiving data, images, text and voice information. Using BRI
lines allows for faster transmission speeds and the addition of a
variety of powerful business applications, including remote LAN
access, videoconferencing, file transfer and Internet access.

See the ISDN chapter for more information.

Target lines

A target line is a specific communication path that is reached by means of digits received from an incoming BRI trunk. Target lines are used to answer incoming calls but cannot be used to make outgoing calls.

You can program auto-answer BRI trunks to map to target lines to provide for attendant bypass (calling directly to a department or individual) and line concentration (one trunk can map onto several target lines).

No target lines are assigned to sets by default.

Target lines are referred to by line numbers (049-074) in the same way as physical lines.

Remote system access

The remote access allows callers elsewhere on the public network to access a Norstar system directly without going through an attendant. Once in the system, the remote user can use some of the system's resources. The remote access must be enabled in programming before callers can use it.

Norstar Compact ICS systems support remote system access on auto-answer loop start trunks and can require the remote caller to enter a password for direct inward system access (DISA).

The system resources (dialing capabilities, line pool access and feature access) that a remote user may access depends on the Class of Service (COS) assigned to them. See the description of COS on page 21 for more details.

To use features on a Norstar system remotely, press ⁕ followed by the feature code. Even if you are calling from another Norstar system, press ⁕ instead of [Feature   ].

Remote access on loop start trunks

Loop start trunks provide remote access to the Norstar system from the public network and must be configured as auto-answer (in Lines programming) to provide remote system access.

A loop start trunk must have disconnect supervision enabled if it is to operate in auto-answer mode.

When a caller dials into the system on a line that has auto-answer, the system answers with system dial tone and no COS password is required. In this case, control over the system capabilities available to the caller is provided only by the restriction filters assigned to the line.

When a caller dials in on a line that has auto-answer with DISA, the system answers with stuttered dial tone. This is the prompt to enter a COS password which determines which system capabilities are available to the caller.

Networking features

Security

Programming provides several ways of protecting your Norstar system from unauthorized access or use.

Class of Service

Class of Service (COS) refers to the capabilities that Norstar provides to users who access the system from the public or a private network. The COS includes:

- filters that restrict dialing on the line

- an access package, which defines the set of line pools that may be accessed and whether or not the user has access to the paging feature.

The COS that is applied to an incoming remote access call is determined by:

- the filters that you apply to the incoming trunk

- the COS password that the caller used to gain access to the Norstar system.

In cases where DISA is not automatically applied to incoming calls, the remote caller can change the COS by dialing the DISA DN and entering a COS password.

To program COS passwords, see COS pswds under Passwords (page 190) in this guide.

Restriction filters

Restriction filters can be used to restrict the numbers that may be dialed on any external line within the Norstar system. Up to 100 restriction filters can be created for the system. A restriction filter consists of up to 48 restrictions and their associated overrides.

To restrict dialing within the system, you can apply restriction filters to:

* outgoing external lines (as line restrictions)

* telephones (as set restrictions)

* external lines on specific telephones (as line/set restrictions)

Restriction filters can also be specified in Restrictions service for times when the system is operating according to a schedule. Refer to the description of Services in this guide (page 170) for more details.

Line restriction

Set restriction

line 1

line 3

| no long distance except area codes 212, 718 |

| no long distance except area codes 212 718, 214, 713 | line 1 |

| no long distance | line 3 |

| no long distance | line 5 |

Line per Set restriction

line 5

| no long distance except area codes 212, 718, 415 |
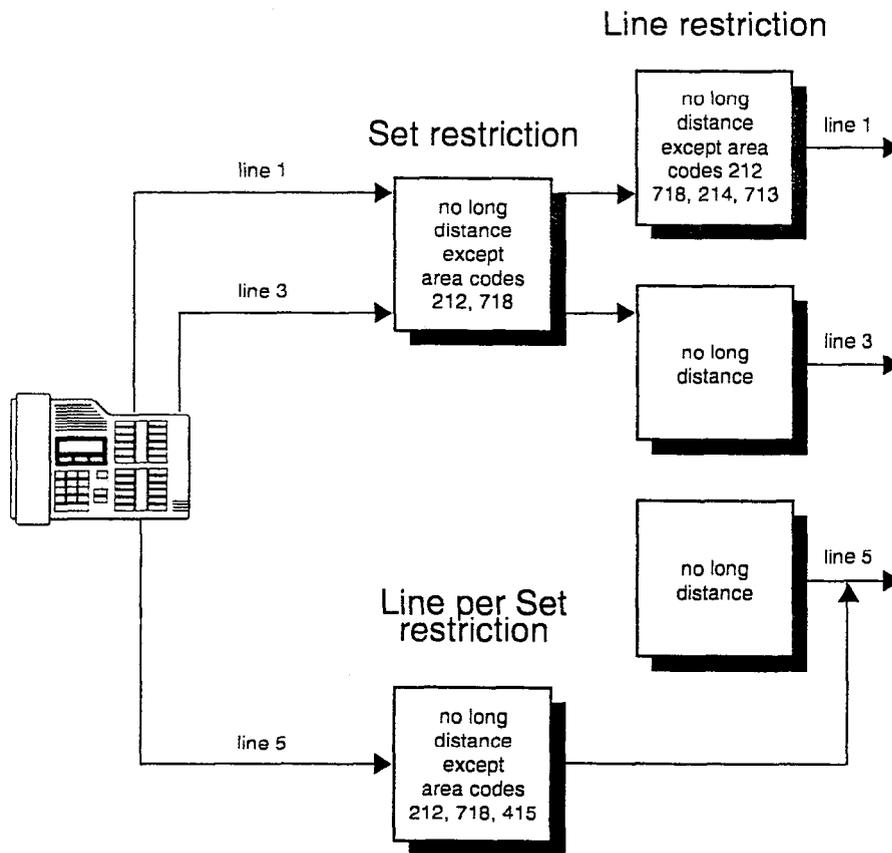
Dialed digits must pass both the line restrictions and the set restrictions. The line per set (line/set) restriction overrides the line restriction and set restriction.

In this diagram, a caller using line 001 could only dial long-distance numbers to area codes 212 and 718. A caller using line 003 could not dial any long-distance numbers. A caller using line 005 could dial long-distance numbers to area codes 212, 718, and 415.

Tip - *To restrict dialing from outside the system (once a caller gains remote access), apply restriction filters to incoming external lines (as remote restrictions).*
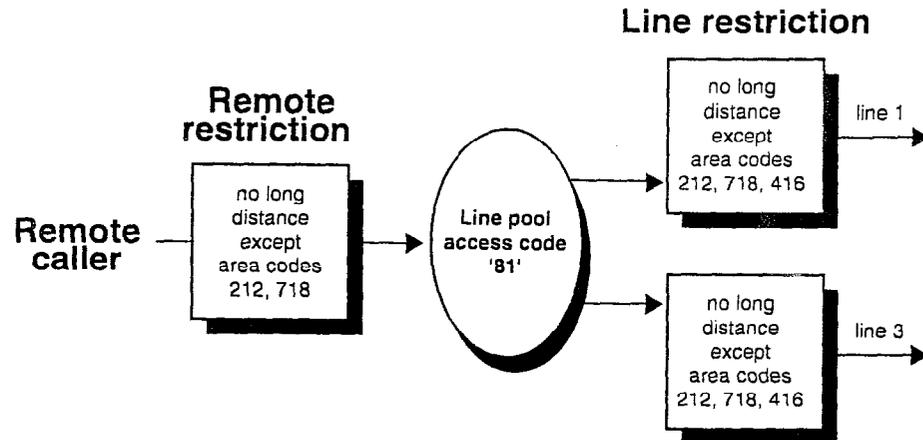
In this case, dialed digits must pass both the remote restriction and the line restriction. A remote caller can override these filters by dialing the DISA DN and entering a COS password.

For restriction filter programming instructions, see Restriction filters (page 147) in this guide.

Direct inward system access (DISA)

To control access from the public network, configure auto-answer trunks to answer with DISA. Remote callers hear a stuttered dial tone and must then enter a COS password that determines what they are allowed to do in the system.

Auto-answer loop start trunks are configured to answer with DISA by default. For DISA programming instructions, see Trunk/Line data under Lines (page 156) in this guide.

Transparent dialing plan

The Norstar system has a routing feature that allows you to set up a transparent or coordinated dialing plan with other systems in the public network. The goal is to have a network-wide dialing plan where all telephone numbers are unique and of a uniform length.

Dialing plans are typically used with a network of systems with a three to seven digit dialing access between them.

Any programming for routing should be carefully planned using the tables supplied with the *Programming Record*. The settings for routing and destination codes are fully explained under Routing service (page 174) in the Programming section of this guide. This section deals with applying the programming in network situations.

Dialing plan using public lines

The examples in the illustrations show the *Programming Record* for the Toronto system in a network of three offices: Toronto, Halifax and Vancouver. Without routing, a Norstar user in Toronto would have to select a line pool and dial 1-902-585-3027 to reach extension 27 in Halifax (902). By creating a destination code of 30 and creating a route that uses the proper line pool and DialOut, the user simply dials 3027. The same feature is available for Vancouver (604).

In the DialOut, P stands for pause, a host system signaling option. Press [Feature] [7] [8] to insert a 1.5 second pause in the dialing string. See the table of host signalling codes page 184, or the *System Coordinator Guide* for information about other signals.

Routing Service (Services: Routing Service)

Route # (000-999)	DialOut (if required) (max. 24 digits or characters)	Use Pool
100	1-P-902-585	Ⓐ B C
101	1-P-902-585	Ⓐ B C
102	1-P-604-645	Ⓐ B C
103	1-P-604-645	Ⓐ B C
		A B C

Routing service (continued)

Dest code (Services: Routing service: Dest codes)

Service Sched-	Normal		Sched 1		Sched 2		Sched 3	
Sched name (max. 7 char.)	Normal - - - - - - -		Night - - - - - - -		Evening - - - - - - -		Lunch - - - - - - -	
DestCode (max. 7 digits)	Use route (001-999)	Absorb Length	Use route (001-999)	Absorb Length	Use route (001-999)	Absorb Length	Use route (001-999)	Absorb Length
30	~~000~~100	~~All~~ 0	000	All	000	All	000	All
31	~~000~~ 101	~~All~~ 0	000	All	000	All	000	All
32	~~000~~102	~~All~~ 0	000	All	000	All	000	All
33	~~000~~ 103	~~All~~ 0	000	All	000	All	000	All

Destination code numbering in a network

Because the system checks the initial digits of a call against the routing tables, each type of internal or external call must begin with a distinct digit. The following table gives a sample plan for how initial digits are assigned in a network of systems with three-digit intercom numbers.

Digit	Use
0	Direct-Dial
1	Long distance calls
2	Intercom calls
3	Coordinated dialing plan
4	Unused
5	Unused
6	Unused
7	External access code
8	Call Park prefix
9	Local calls

In the example, 3 is used as the initial digit for the coordinated dialing plan, but 4, 5, or 6 could also be used for this purpose.

Tip - *When programming a button to dial a Network number automatically (autodial), network calls must be treated as external numbers, even though they resemble internal extension numbers.*

Routes generally define the path between the Norstar system and another switch in the network, not other individual telephones on that switch.
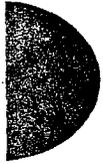
ISDN

Integrated Services Digital Network (ISDN) technology provides a fast, accurate and reliable means of sending and receiving voice, data, images, text, and other information through the telecom network. As part of an ISDN digital network, your Compact ICS supports enhanced capabilities and features, including:

- faster call set up and tear down

- high quality voice transmission

- data transmission at speeds up to 128 kbps per loop (depending on the bandwidth supported by your service provider)

- dial-up Internet and local area network (LAN) access

- video transmission

- shared digital lines for ISDN voice and data terminal equipment.

Norstar Basic Rate Interface (BRI) Cards also support D-channel packet service between a network and terminal connection. This allows you to add devices such as point-of-sale terminal adapters without additional network connections.

Any analog or digital network trunks can be shared by all Norstar telephones, peripherals and applications, and ISDN terminal equipment (TE).

ISDN services and features

Compact ICS supports the following ISDN services and features offered by ISDN service providers:

- D-channel packet service to support devices such as transaction terminals. Transaction terminals are used to "swipe" credit or debit cards and transmit the information to a financial institution in data packets.

- calling number identification (appears on both Norstar sets and ISDN terminal equipment with the capability to show the information)

- Multi-Line Hunt or DN Hunting, which switches a call to another ISDN line if the line usually used by the Network DN is busy

- sub-addressing of terminal equipment (TE) on the same BRI loop. However, terminal equipment which supports sub-addressing is not commonly available in North America.

Transmission of B-channel packet data is not supported by Compact ICS.

Contact your ISDN service provider for more information about these services and features. Some of the standard packages for ISDN service in North America are described on page 29.

The terminal equipment (TE) connected to the Norstar system can use some feature codes supported by the ISDN service provider. See the ISDN services and features chapter of the System Coordinator Guide for more information.

Planning your ISDN service order

Consult the hardware and programming information in this chapter to determine a configuration of ISDN trunks and terminal equipment (TE) for the Compact ICS, then order the appropriate ISDN capability package from your ISDN service provider. Your service provider supplies service profile identifiers (SPIDs), network directory numbers (Network DNs), terminal endpoint identifiers (TEIs), and other information as required to program your Compact ICS, TE and other ISDN equipment. (ISDN terms are included in the glossary at the end of this guide).

Compact ICS does not support any package with EKTS (Electronic Key Telephone System), CACH (Call Appearance Call Handling), or Calling Name Display. EKTS is a package of features provided by the service provider and may include features such as Call Forwarding, Link, Three-Way Calling, and Calling Party Identification.

Ordering ISDN service in Canada

In Canada, order Microlink™ service, the trade name for standard BRI service. You can order either regular Microlink™ service, which includes the CLID (Calling Line Identification) feature, or Centrex Microlink™, which includes access to additional ISDN network features (including Call Forwarding). Ask for D-packet service to be

enabled if you will be using a point-of-sale terminal adapter (POSTA).

Ordering ISDN service in the U.S.

In the U.S., order ISDN services using the following packages as a guideline. Contact your service provider for more information about the capability packages it offers.

Bellcore/National ISDN Users Forum (NIUF) packages supported by Compact ICS (for ordering in U.S.)

	Capability	Feature set	Optional features	Point -of- sale	Voice	Data
D	Voice on one B-channel D-channel packet	Basic D-Channel Packet	--	√	√	--
G	Voice on one B-channel Circuit-switched data on one B-channel	--	--	--	√	√
K	Alternate voice/circuit-switched data on one B-channel Circuit-switched data only on the other B-channel	--	calling line identification	--	√	√

	Capability	Feature set	Optional features	Point -of- sale	Voice	Data
M	Alternate voice/circuit-switched data on both B-channels	--	calling line identification	--	√	√
P	Alternate voice/circuit-switched data on both B-channels D-channel packet	flexible calling for voice (not supported by Compact ICS) Basic D-Channel Packet	additional call offering (not supported by Compact ICS) calling line identification	√	√	√

- Compact ICS does not support EKTS (Electronic Key Telephone System), CACH (Call Appearance Call Handling), or Calling Name Display.

- If you want to transmit both voice and data, and support D-channel packet service, order package P. However, Compact ICS does not support the flexible calling for voice and additional call offering features included in package P.

Multi-Line Hunt may be ordered with your package. When a telephone number (the Network DN) in the group of numbers assigned by your service provider is busy, the Multi-Line Hunt feature connects the call to another telephone number in the group. Norstar supports the feature only on point-to-point, network connections (T loop or U-NT loop). Check with your service provider for more information about Multi-Line Hunt.

Any of the Bellcore/National ISDN Users Forum (NIUF) packages will allow you to use sub-addressing, but your ISDN TE must be equipped to use sub-addressing for the feature to work.

Central Office switch requirements

To support BRI, the switch used by your service provider must be running the appropriate software release.

BRI software requirements at the switch

Switch	Minimum software version
AT&T (Lucent) 1AESS	Not available
AT&T (Lucent) 5ESS	5E4.2
Nortel DMS-100	BCS 27
Siemens EWSD	Rel 3.7

AT&T (Lucent) 5ESS

ISDN service from the AT&T 5ESS uses either Custom Multipoint (MP) or Custom Point-to-point (PPP) protocol. Use the following table to verify the settings that support each service on an AT&T 5ESS. The settings must be programmed by your service provider.

Settings for ISDN service on an AT&T 5ESS

| Feature | Setting | |
	Multipoint	Point-to-point
Term type	A	A
Call Appearance (CA)	1	1
CA Quantity	1	1
Circuit Switched Voice (CSV)	1 per DN	1
CSV Additional call offering (ACO)	n/a	n/a
CSV limit	2	2
CSV Notification Busy (NB) limit	n/a	n/a
Circuit switched data (CSD)	2 per DN	1
CSD Additional Call Offering (ACO)	n/a	n/a

CSD limit	2	2
CSD Notification Busy (NB) limit	n/a	n/a
Electronic Key Telephone system (EKTS)	n/a	n/a
Additional Call Offering (ACO)	n/a	n/a

Nortel (Northern Telecom) DMS-100

ISDN service from the Nortel DMS-100 uses Custom protocol. Use the following table to verify the settings that support ISDN service on a Nortel DMS-100. The settings must be programmed by your service provider.

Settings for ISDN service on a Nortel DMS-100 switch

	Setting
Feature	Custom
Signaling	Functional
Protocol Version Control (PVC)	1
TEI assignment	Dynamic
Maximum number of keys	3*
Release key	No
Ringing indicator	No
Electronic Key Telephone system (EKTS)	No
Additional Call Offering (ACO)	Yes
Number of call appearances	2
Notification Busy (NB) limit	n/a

* any number from 1 to 64 is acceptable

Siemens EWSD

The settings for the Siemens EWSD are the same as those used for the Nortel DMS-100. Use the DMS-100 table as a guide when checking the settings with an ISDN service provider that uses the Siemens EWSD switch.

ISDN layers

For ISDN, layers refer to the standards established to guide manufacturers of ISDN equipment. When equipment is designed to

standard for one layer, it works with standard equipment for the layers above and below it. The layers include both physical connections, such as wiring, and logical connections, which are programmed in computer software.

There are three layers at work in ISDN for Norstar. To support ISDN service, all three layers must be working properly.

- Layer 1: A physical connection that supports fundamental signaling passed between the ISDN network (your service provider) and the Norstar-PLUS ICS. When the LED for a loop on a BRI card used for a network connection is lit, your layer 1 is functioning.

- Layer 2: A logical connection between the ISDN network (your service provider) and the Norstar-PLUS ICS. Norstar has two of these connections for each BRI loop, one for each of the logical lines. Without Layer 2, call processing is not possible and there is no dial tone.

- Layer 3: Also a logical connection between the ISDN network (your service provider) and the Norstar-PLUS ICS. Layer 3 is where call processing and service profile identifier (SPID) information is exchanged. This controls which central office services are available to the connection. For example, a network connection can be programmed to carry data calls.

The system of layers is important when you are installing, maintaining, and troubleshooting an ISDN system. See the troubleshooting chapter for more information about working with the layers.

ISDN hardware

To support connections to an ISDN network and ISDN terminal equipment, your Compact ICS must be equipped with one or more BRI Cards (BRI-U or BRI-ST), and an Expansion Cartridge with Clocking, or a Clocking Cartridge.

The loops on BRI-U and BRI-ST Cards can be programmed to support either network or terminal connections. This allows you to customize your arrangement of lines, voice terminals, data terminals and other ISDN equipment. This section describes some basic hardware configurations for network and terminal connections for each loop type.

Detailed wiring information for BRI network and terminal connections is included in the Installation chapter of this guide.

BRI-U2 and BRI-U4

A BRI-U2 Card supports two loops and the BRI-U4 supports four loops. Each loop can be individually programmed to provide:

- a U-LT reference point connection for terminal equipment (TE) with built-in NT1 functionality (U interface), or

- a U-NT reference point connection for direct connection to an ISDN network

U-LT reference point

The U-LT reference point connection provides a point-to-point digital connection between Norstar and TE equipped with a U interface.

A U-LT loop supports up to seven ISDN DNs, which identify TE to the ICS.

point-to-point

U-LT

U interface TE

ICS
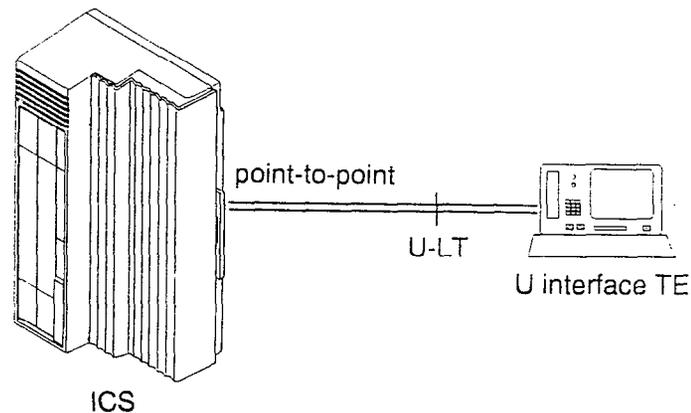
U-NT reference point

The U-NT reference point connection provides a point-to-point digital connection between the ISDN network and the ICS.

A U-NT loop provides lines that can be used by all Norstar telephones, peripherals and applications, and ISDN TE.

network connection

ISDN

U-NT

ICS
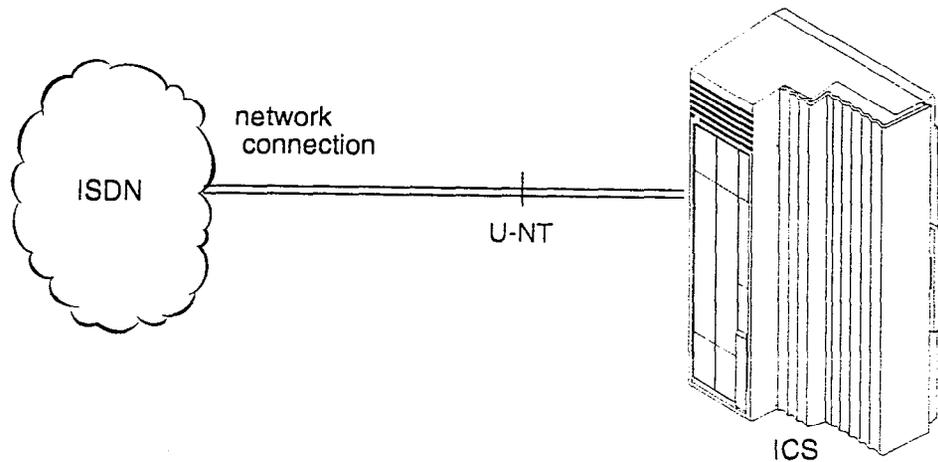
U-NT and U-LT loops can be used in combination to provide D-packet service for a point-of-sale terminal adapter (POSTA) or other D-packet device. D-packet service is a 16 kbps data transmission service that uses the D-channel of an ISDN line.

To deliver D-packet service, a network connection (U-NT) is programmed to work with a terminal connection (U-LT). The loops must be on the same physical card. For example, if the network connection is a loop found on the BRI Card in Slot 1, the terminal connection must be a loop found on the same card.

BRI-ST Card

A BRI-ST Card provides four loops. Each loop can be individually programmed as:

- an S reference point connection (S loop) to terminal equipment (TE), or

- a T or S/T reference point connection (T loop or S/T loop) to an ISDN network using an external NT1

S reference point

The S reference point connection provides either a point-to-point or point-to-multipoint digital connection between Norstar and ISDN terminal equipment (TE) that uses an S interface.

S loops and S/T loops support up to seven ISDN DNs, which identify TE to the ICS.
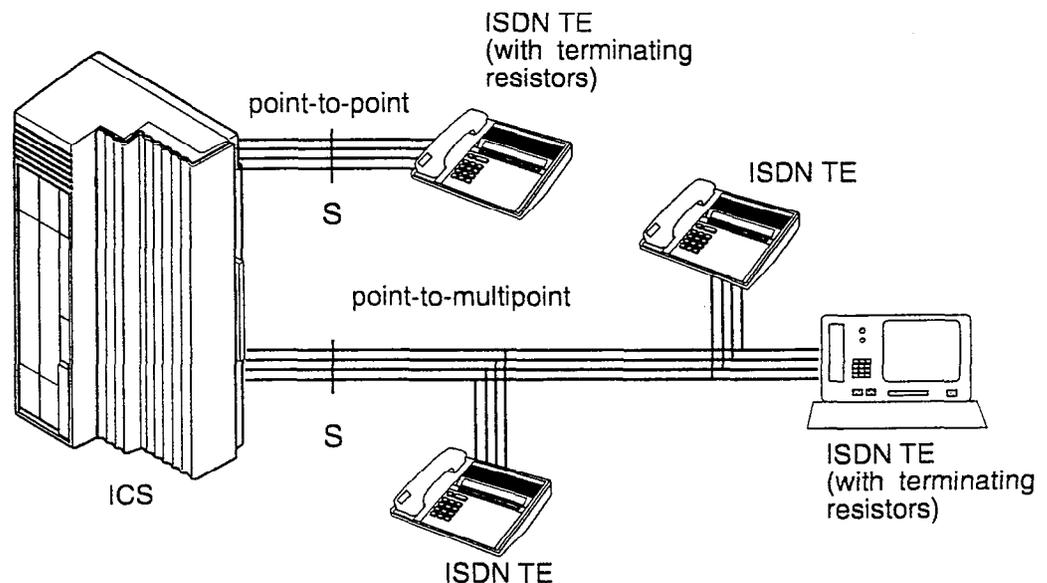
S/T and T reference points

The S/T reference point connections provide a point-to-multipoint digital connection between the ISDN network and Norstar, for up to eight TE connections. The ICS counts as one of the eight connections.

The T reference point connections provide a point-to-point digital connection between the ISDN network and Norstar.

A T loop provides lines that can be shared by all Norstar telephones, peripherals and applications, and ISDN TE. An S/T loop provides service to TE in addition to providing shared lines through the ICS.
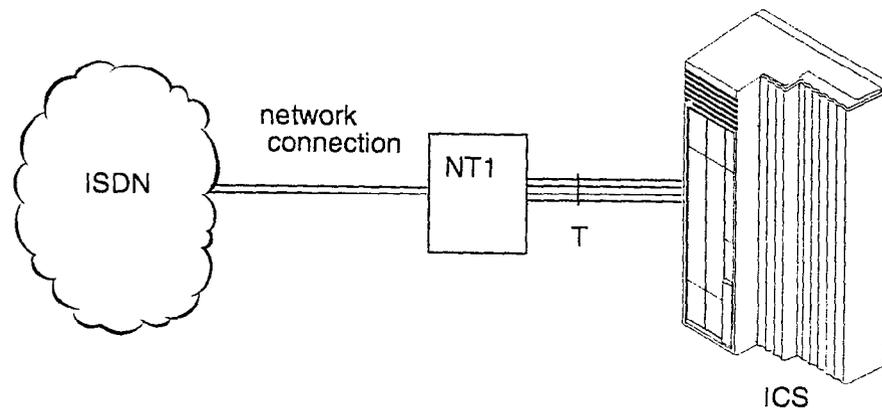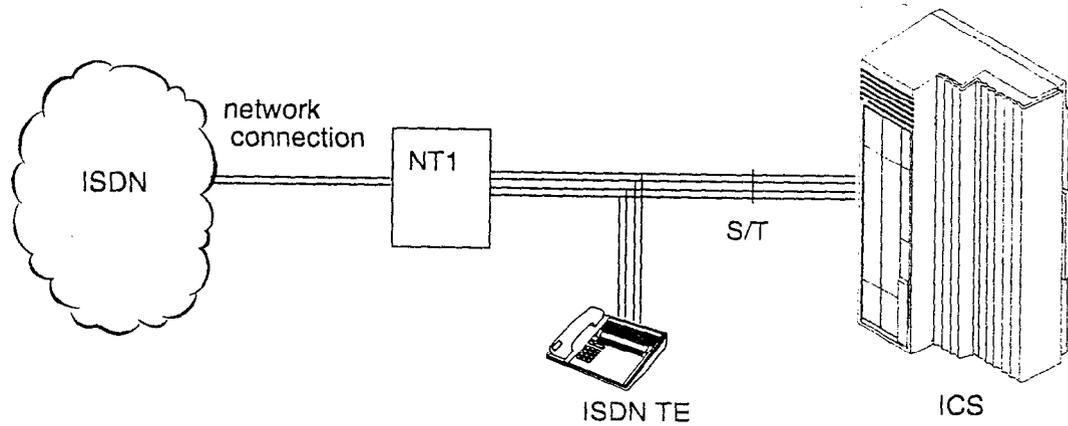
An S/T or T loop can be used in combination with an S loop to provide D-packet service for a point-of-sale terminal adapter (POSTA) or other D-packet device. D-packet service is a 16 kbps data transmission service that uses the D-channel of an ISDN line.

To deliver D-packet service, a network connection (S/T or T loop) is programmed to work with a terminal connection (S loop). The loops must be on the same physical card. For example, if the network connection is a loop found on the BRI Card in Slot 1, the terminal connection must be a loop found on the same card.

Clock Source for BRI Cards

Systems with ISDN interfaces need to synchronize clocking with the ISDN network and any connected ISDN terminal equipment. Clocking synchronization is supported by either an Expansion Cartridge with Clocking or a Clocking Cartridge. For more information about the different expansion cartridges, see the Installation chapter.

The Compact ICS derives timing from the network using U-NT, T, and S/T reference points (loops). Terminal equipment on U-LT and S reference points (loops) derive timing from the ICS.

Systems synchronize clocking to the first available, functional, network connection. If there are excessive errors on the reference network connection, or the loop fails, the next available, functional, network connection is used for clock synchronization.

The clock synchronization process generates alarm and event codes. See the Maintenance chapter for more information.

When you configure the network connections to the Compact ICS, you should take into account the system preferences for selecting loops for synchronization:

- lower numbered loops have preference over higher numbered loops

- the loop preference order is: 201, 202, 203, 204, 225, 226, 227, 228

- the system skips U-LT, S, and analog loops when selecting a network connection for synchronization

Systems with only U-LT and S loops act as timing masters for the attached terminal equipment (TE), and are not synchronized to the network. ISDN TE without access to a network connection (BRI lines) has limited or no functionality.

NT1

The NT1 (network termination type 1) connects an S interface (four-wire) to a U interface (two-wire). In most cases, it connects loops from a BRI S/T card to the network connection, which uses the

U interface. It can also connect S interface terminal equipment (TE) to the U loop from a BRI-U2 or BRI-U4 Card.

An NT1 is not required to connect from the network to BRI-U Cards, or to connect U interface TE to an ICS equipped with BRI-U Cards.

The NT1 converts and reformats data so it can be transmitted to and from the S/T connection. In addition, it manges the maintenance messages travelling between the network and the NT1, and between the NT1 and the ICS.

The NT1 from Nortel is packaged two ways:

- a stand alone package which contains one NT1 card (NTBX80XX) and a power supply (NTBX81XX)

- a modular package which contains up to 12 NT1 cards (NTBX83XX) and a power supply (NTBX86AA)

Stand alone NT1

The stand alone NTI has three connections:

- a U interface connector for the U loop network connection and the power. Both of these are supplied by the cable from the power supply.

- an S/T interface connection for connecting the ICS or other S interface device

- an auxiliary S/T interface, usually used for TE which shares the network connection with the ICS (an S/T loop)

Stand alone NT1 and power supply
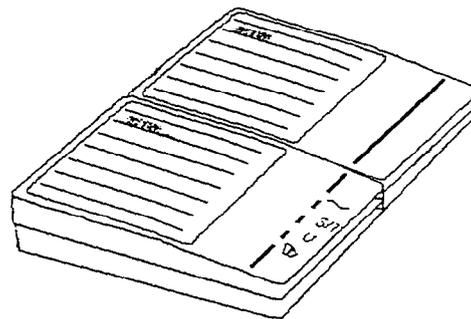
The power supply used with the stand alone NT1 has a power cord, which plugs into a 110 v AC outlet, and two connections:

- a U interface connector for connecting to the network, or a U loop from a BRI-U Card

- the NT1 interface connector which provides the NT1 with power and the U interface connection

Modular NT1

The modular NT1 can hold any combination of the two types of NT1 cards:

- Basic NT1 (NTBX84AA), which has one S/T connector

- NT1 Star (NTBX84BA), which has two S/T connectors

Modular NT1
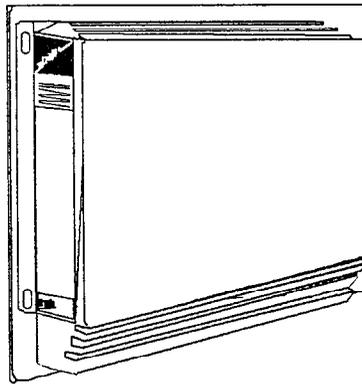
A modular NT1 is wired to the ISDN network and the ICS using 25-pair connectors on the side of the unit.

For more information about using your NT1, see the documentation that comes with the unit.

For charts for wiring the NT1 to the ICS, see the Installation chapter.

For information about the indicators on an NT1, see the Troubleshooting chapter.

Configuring ISDN terminal equipment for an S/T loop

The following illustrations show the basic types of wiring arrangements for point-to-point and point-to-multipoint configurations for ISDN TE. These diagrams are based on the basic configurations used to determine the standard ISDN electrical requirements and do not represent specific wiring requirements.

Other wiring arrangements may also meet the required electrical characteristics of the ISDN standard (ANSI T1.605) and operate with the Norstar S/T loop interface without degrading performance.

The maximum length of spur (extension from the main wiring or bus) and ISDN connection cord is 10 m (30 ft).

Wiring configurations for ISDN extensions on an S/T loop

No terminating resistors ☐   With terminating resistors ■
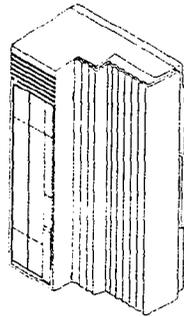
Point-to-Point

1000 m (3,200 ft)

**Point-to-Multipoint
Extended Passive Bus**

450 m (1,475 ft)

25 m (80 ft)
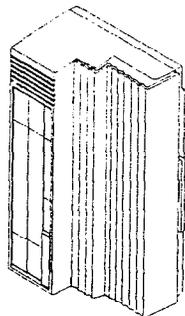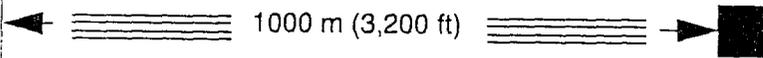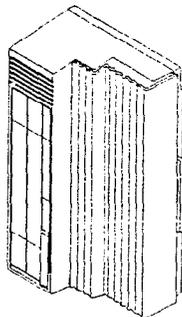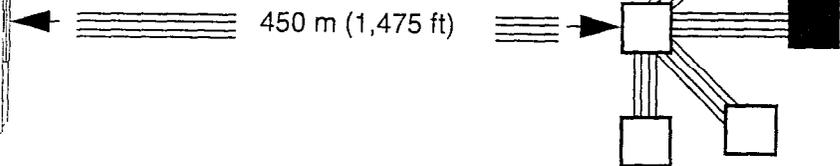
**Point-to-Multipoint
Short Passive Bus (Bus and Spur)**
100 m (328 ft) for 75 ohm cable or
200 m (656 ft) for 150 ohm cable

10 m (30 ft) spur
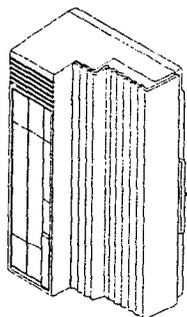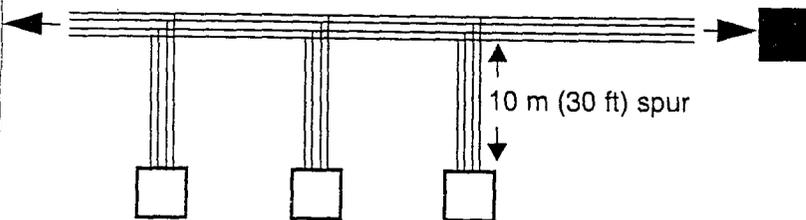
**Point-to-Multipoint
Short Passive Bus (Daisychain Bus)**
100 m (328 ft) for 75 ohm cable or
200 m (656 ft) for 150 ohm cable
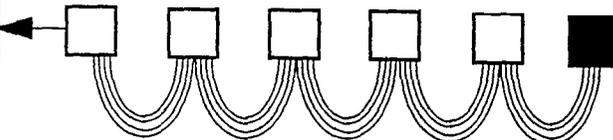
Configuring ISDN terminal equipment for a U-LT loop

A U-LT loop connects the ICS to the TE using a two-wire interface. Wiring charts for a U-LT loop are included in the Installation chapter.

Bearer capability

Bearer capability describes the transmission standard used by the BRI line so it can work within a larger ISDN hardware and software network. The bearer capability for BRI loops is voice/speech, 3.1 kHz audio, and data (unrestricted 64 kbps, restricted 64 kbps, 56 kbps).

ISDN standards compatibility

Norstar ISDN equipment supports National ISDN standards for basic call and calling line identification services.

network	NI-1, NI-2, NI-95, NI-96
customer premise equipment (CPE)	NI-1, NI-2
physical	ANSI T1.605, T1.601 (Maintenance functions are not supported for U-LT reference point. The dying gasp indication on the NT power status bits is not supported for U-NT or U-LT.)

Compact ICS does not support EKTS (Electronic Key Telephone System), CACH (Call Appearance Call Handling), or Calling Name Display.

ISDN programming

Most of the configuration programming for BRI lines and ISDN terminals and devices is done under Hardware. This section gives you an overview of programming for BRI lines, ISDN terminals and devices, and D-packet service.

BRI programming activity	Programming heading
View or change the card configuration for each slot in the ICS	Hardware
Provision or pre-provision loops and lines	Provisioning
Enable or disable BRI card	Module Status
View status of line, loop or port	Port/DN Status

Recommended sequence for programming ISDN resources

Some steps will not be necessary depending on the service you are providing.

More detailed information is included under the individual headings and settings in the Programming and Maintenance sections. You may find it helpful to consult the Programming overview at the front of the *Programming Record*.

For complete card and cartridge installation instructions and safety precautions, see the Installation chapter.

1. Collect the information supplied by your service provider to support your ISDN package. This includes network service profile identifiers (SPIDs) and Network DNs. If you are supporting a point-of-sale terminal adapter, you also need one or more terminal endpoint identifiers (TEIs).

2. Make sure an Expansion Cartridge with Clocking, or Clocking Cartridge is installed in the ICS.

3. Install the BRI Cards in the ICS, or determine which type of card you will preprogram the ICS to use in each slot.

4. Disable each card under Module Status in Maintenance.

5. Select a card type of BRI-ST, BRI-U2, or BRI-U4 in Hardware.

6. Select the type for each loop: S/T, T, or S (if card type is BRI-ST); LT or NT (if card type is BRI-U2 or BRI-U4).

7. For each S/T, T, or NT loop, enter the following configuration information as supplied by your service provider: the SPID assigned to the loop, the number of B-channels associated with each SPID, the Network DNs used with the network SPID, and the call type of the Network DN. Repeat the programming for the second network SPID, if any.

8. If the S/T, T, or NT loop is used for D-packet service: turn on the service, assign the appropriate S-loop mapping (for BRI-S/T cards) or LT-loop mapping (for BRI-U2 or U4 cards), and assign the TEIs (provided by the telco to support a point-of-sale terminal adapter or other D-packet service device) to the loop.

9. If the loop type is S, select the sampling used on the loop.

10. If the loop type is S or LT, assign ISDN DNs to the loop and designate one of the assigned ISDN DNs to be the DN for the loop (Loop DN).

11. Re-enable the card in Maintenance. If required, the card goes through a firmware download process, which takes five to six minutes. During a firmware download, the bottom LED on the BRI Card flashes.

12. Provision the loops and lines as appropriate in Maintenance programming. See "Provisioning" on page 289.

13. If you are configuring auto-answer BRI trunks to map to target lines, program the received number for the target line (a setting found under Lines) to be the same as the Network DN supplied by your service provider.

14. Assign the ISDN lines and target lines to the appropriate ISDN DNs (the set of DNs reserved for use by ISDN devices) under Line access, a subheading of Terminals&Sets. ISDN lines can also be assigned to the DNs used by Norstar telephones or any other devices connected to the Compact ICS.

15. Program the ISDN terminals and devices with the appropriate ISDN DNs and terminal SPIDs by following the instructions that

come with the devices. See "Programming for an ISDN terminal" on page 46 for more information.

16. If you are setting up a D-packet service, program the point-of-sale terminal adapter or other D-packet service device with the appropriate TEI (supplied by your service provider), terminal SPID, and ISDN DN by following the instructions that come with the device.

Programming for ISDN lines

When the configuration programming under Hardware is complete, your BRI lines are ready to be programmed in the same way as analog lines. You can, for example, place them in pools and assign them to Norstar sets and ISDN terminal equipment. However, there are some differences in the way BRI lines work that will influence how you configure them to handle incoming and outgoing calls.

In most cases, your service provider supplies two SPIDs – one for each B channel. Each SPID and one or more Network DNs are associated with a single line. Calls to a Network DN come in on a specific line, and pressing a line button selects the same line every time.

If your service provider supplies you with a single SPID for both B channels, incoming and outgoing calls are handled according to the loop. The two lines provided by the BRI loop are "pooled" for both incoming and outgoing calls.

For example, if Loop 201is programmed with a single SPID, which supports lines 001 and 002, incoming calls made to a Network DN associated with the SPID appear on either line 001 or line 002. If you press the line button for line 001, either line 001 or line 002 is selected.

For loops which use a single SPID, assign both lines on a loop to a set to guarantee that all calls appear at the set.

Programming for an ISDN terminal

Unlike Norstar sets, ISDN devices and terminals connected to the ICS must be configured under the Hardware heading in system programming. You choose directory numbers for ISDN terminal equipment (TE) from a pre-determined range of DNs (73-79). Any of

the ISDN DNs can be assigned to any U-LT or S loop, but each DN can only be assigned to one loop and a single device.

Devices on an S or U-LT loop

Terminal equipment using a U-LT loop or S loop must be assigned an ISDN directory number (ISDN DN). This allows the TE to be assigned lines and to communicate with other devices connected to the ICS. Each DN can be assigned to only one TE and one loop.

You assign ISDN DNs to S loops and LT loops under Assign DNs in Hardware programming. Each S or LT loop can be programmed with seven ISDN DNs, but you cannot exceed a total of seven ISDN DNs for the Compact ICS.

Once you have assigned ISDN DNs to a loop, designate one of the DNs as a Loop DN. The Loop DN acts as a main ISDN DN and completes the configuration of the loop.

The ISDN terminal equipment (TE) on the loop is also programmed with its ISDN DN. See the instructions that come with the ISDN device for information on how to program it to recognize its assigned DN. Most devices will require both a terminal service profile identifier (terminal SPID) and a DN, and some will require two terminal SPIDs and two ISDN DNs. The SPID used with the device should not be confused with a SPID used for network connections using an S/T loop, T loop or NT loop.

To create a terminal SPID for a device, add at least two zeros to the end of the of the ISDN DN. Add more zeros to the beginning or end of the ISDN DN until you have the length of SPID required by the TE. For example, if an ISDN telephone requires a six-digit SPID and has a DN of 74, its SPID is 007400. If the same TE requires a minimum of ten digits, the SPID is 0000007400.

Most ISDN terminals require a five-digit SPID. An ISDN PC card usually requires a ten-digit SPID. Follow the directions that come with the ISDN device to program it with a SPID and ISDN DN.

DN 75 (incoming)
SPID 0000007500
DN 76 (outgoing)
SPID 0000007600

DN 73
SPID 007300

DN 74
SPID 007400

S
Loop DN 73

DN 275
SPID 0000007500

U-LT
Loop DN 75
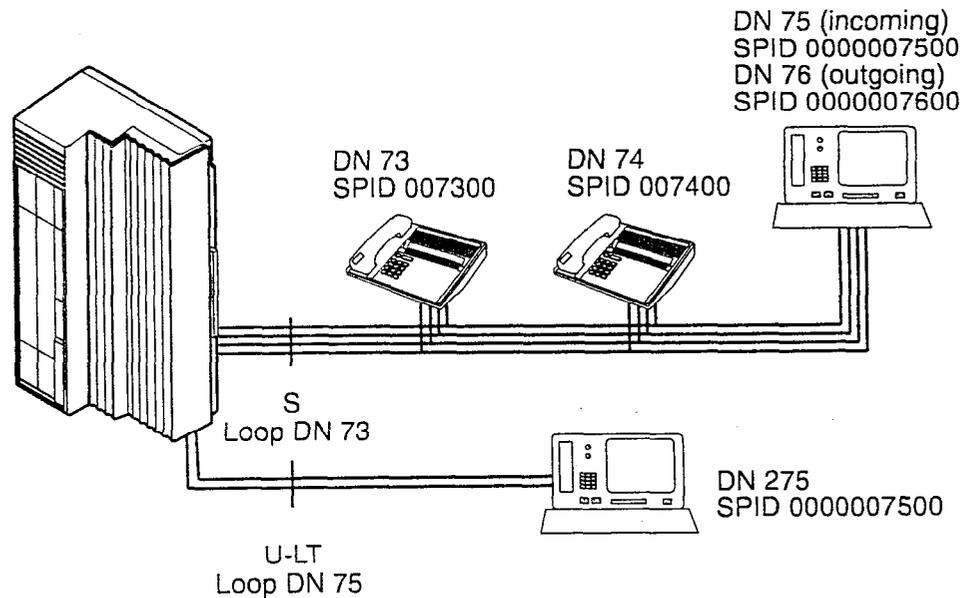
The following table uses the example in the illustration to show the Hardware programming for the S loop.

Setting	Option
Loop	201
Type	S
Sampling	Fixed
DNs on Loop 201: Assign DNs	73: Assigned 74: Assigned 75: Assigned 76: Assigned
Loop DN	73

Devices on an S/T loop

If you have installed terminal equipment (TE) on an S/T loop (a connection to the ISDN network), the information you need to configure it is supplied by your service provider. This information includes a SPID, a Network DN, and the Call type of each DN, and is used when you program the TE. For the Compact ICS, which is considered to be a TE on the loop, the programming is done under Hardware.

See the instructions that come with the ISDN device for information on how it is programmed.

Supporting Internet access

By combining your ISDN service with the CTA 500*dm,* a Motorola Bitsurfer Pro™, or a router, you can access an Internet service at significantly faster speeds (up to 115.2 or 120 Kbps).

CTA 500*dm*

The CTA 500 digital modem (CTA 500*dm*) is an optional device for use with the Compact ICS. The CTA 500*dm* provides an integrated desktop solution for digital networking applications. With the CTA 500*dm* you can access remote computers on networks including the Internet. You can also telecommute over a digital telephone network and access a CTA 500*dm* in your office.

Like a Norstar telephone, the CTA 500*dm* connects with the ICS using a TCM port, has a DN, and is assigned ISDN or digital lines.
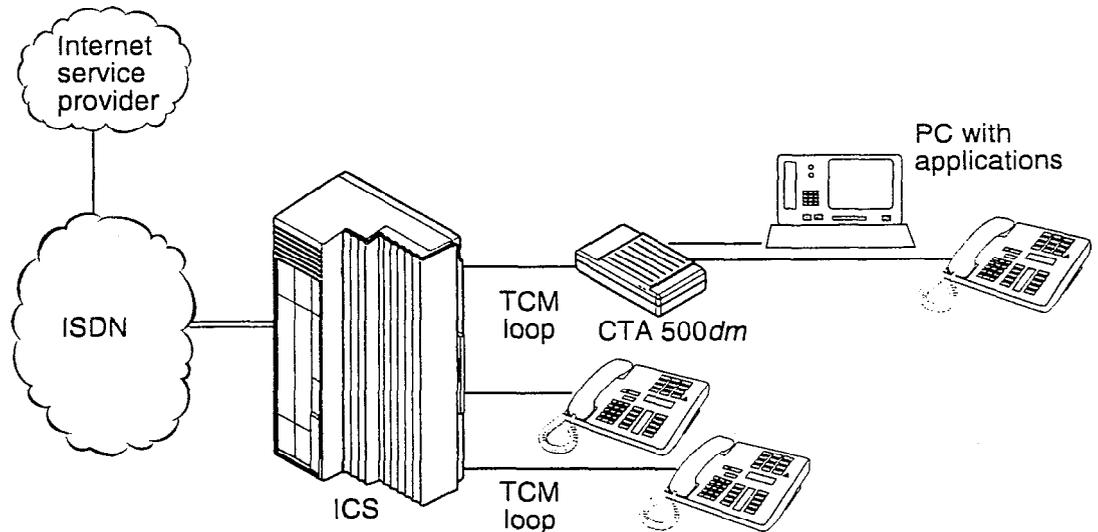
This configuration supports a number of applications, including:

- computer telephony integration (CTI) applications, such as call accounting, call answer, and remote data base applications

- remote access to personal computers (PCs)

To support Internet access, you must order BRI service from your service provider, and subscribe to Internet service from an Internet

service provider (ISP). Your PC must have an Internet access application and the applications supplied by your ISP.

Users also have full access to Norstar features using the Norstar telephone connected at the CTA 500*dm*. For more information, see the information that comes with the CTA 500*dm*.

ISDN router

By connecting an ISDN router to your Compact ICS, a group of PCs can share Internet access. This arrangement is best for a workplace where each PC occasionally uses an Internet connection. Currently, the Norstar system works with the Gandalf LANline 5242i™ and Gandalf Xpress™. The Gandalf router can also be used for dial-up (remote) access to your LAN.

Internet service provider

ISDN

ICS

U-LT loop

ISDN router

LAN

PCs with applications
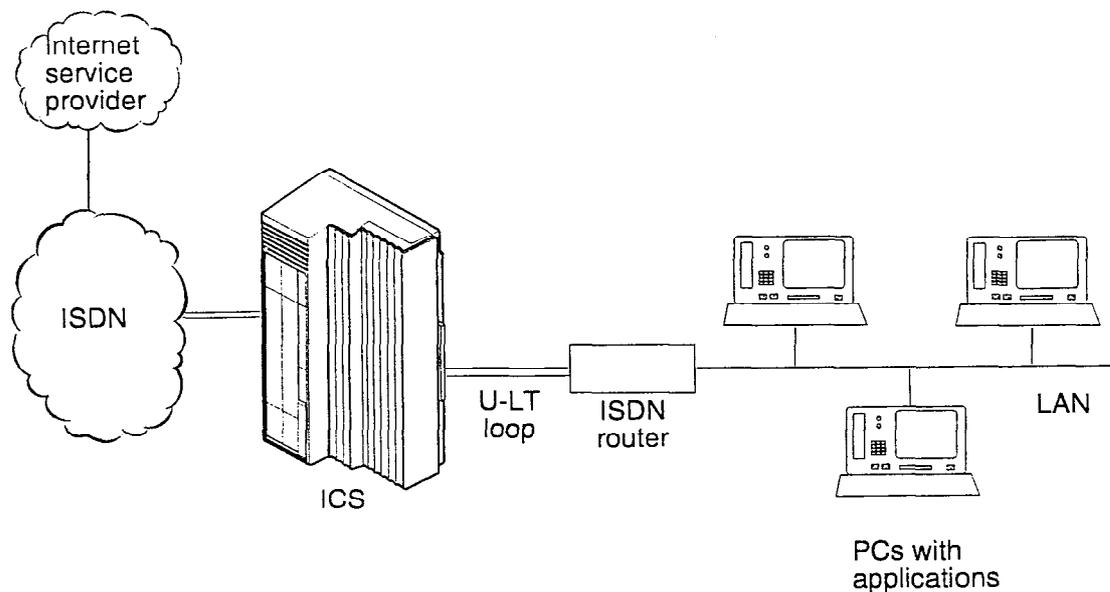
To support Internet access, you must order BRI lines from your service provider, and subscribe to Internet service from an Internet service provider (ISP). Your PCs must have an Internet access application and any applications supplied by your ISP.

Programming D-packet service

The D-packet service supplied by the Compact ICS supports a point-of-sale terminal adapter (POSTA). Connecting a POSTA allows transaction terminals (devices where you "swipe" credit or debit cards) to transmit information using the D channel of the BRI

line, while the B channels of the BRI line remain available for voice or data calls. A special adapter links transaction equipment (such as cash registers, credit card verification rigs, and point-of-sale terminals) to the X.25 network, a data communications network designed to transmit information in the form of small data packets.

To support the D-packet service, your ISDN network and financial institution must be equipped with a D-packet handler. To convert the protocol used by the transaction equipment to the X.25 protocol, your ISDN network must also be equipped with an integrated X.25 PAD which works with the following versions of X.25: Datapac 32011, CCITT, T3POS, ITT and API. The ISDN service package you order must include D-packet service (for example, Package P in the U.S.; Microlink™ with D-channel in Canada).

Your service provider supplies a Terminal Endpoint Identifier (TEI) and DN to support D-packet service. The TEI is a number between 00 and 63 (in Canada, the default range is 21-63). Your service provider may also supply you with a DN to program your D-packet device. The DN for D-packet service becomes part of the dialing string used by the D-packet device to call the packet handler.

Programming the ICS to support the POSTA

When you configure D-packet service, you are specifying the transmission path between an ISDN loop on the network side of the ICS and the ISDN loop on the set side (the loop used by the point-of-sale terminal adapter). The service is turned on and configured using the network loop programming under Hardware (NT loop for BRI-U2 and BRI-U4 Cards; S/T or T loop for BRI-ST Cards).

To set up D-packet service:

- go to the programming settings for the network loop (S/T, T or NT loop) under Hardware

- turn on D-packet service

- select the S loop or LT loop used by the POSTA

- enter the terminal endpoint identifiers (TEIs) supplied by your service provider

Point-of-sale terminal adapter

The point-of-sale terminal adapter is an analog device that connects to point-of-sale devices using an RS-232 interface and a U-LT loop. It handles the routing of packet information from the devices to the ICS and into the ISDN network.

The Compact ICS is designed to support the Microlink Transaction TA (MTTA), a POSTA manufactured by CVDS, which supports up to eight point-of-sale devices when used with a controller. Your service provider (usually a financial institution) supplies you with information about the compatible controller, which handles the routing of packet information from the devices to the ICS and into the ISDN network.

There are five ports on the MTTA:

- two analog ports for analog equipment such as telephones or a fax machine

- an RS-232 port for connecting between one and eight point-of-sale devices, and a controller when more than one transaction terminal is used

- an S/T port for connecting ISDN terminal equipment using the S interface

- a U-LT port to connect the MTTA to the ICS

point-of-sale
devices
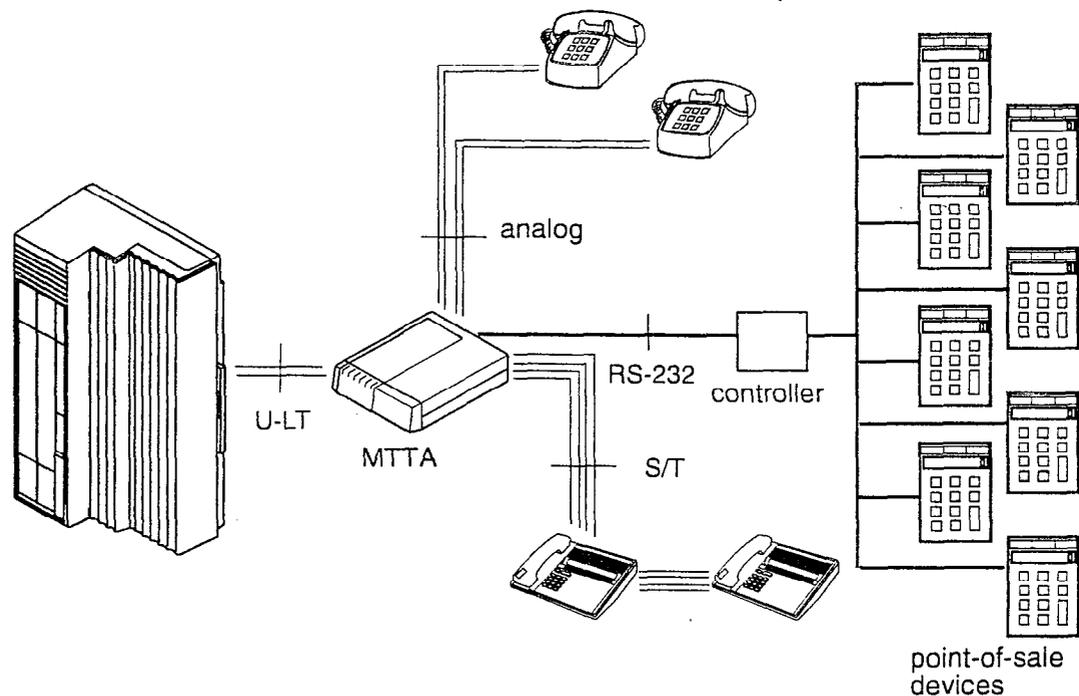
Programming the POSTA

The RS-232 port connects to a PC to configure the MTTA before it
is connected to the point-of-sale devices. The MTTA is programmed
using Hyperterminal or an equivalent application. Complete
information about the configuration is included in the MTTA
documentation. In some cases, your service provider will be able to
configure the MTTA remotely.

You can query the device for information about its version and
parameters using the following commands.

To see	Type	Response
MTTA version number (and initialize MTTA)	... (three periods)	PAD type, current baud rate, current data size, parity, number of stop bits, software version
Voice parameters	CPAR?VOICE	voice interface configuration
Packet parameters	CPAR?PACKET	X.25/D-packet configuration

To see	Type	Response
SPID1 or SPID2	CPAR?SPIDx (x=1 or 2)	SPIDx=nnnnnnnnnnnn
DN1 or DN2	CPAR?DNx (x=1 or 2)	DNx:nnnnnnn
D-packet directory number	CPAR?X.25DN	X.25DN:nnnnnnn
TEI	CPAR?LAPDTEI	LAPDTEI:21 (21 is the default TEI; the correct TEI is supplied by your D- packet service provider)

The "CSET?" command configures the MTTA with new values for its
PAD (packet assembly and disassembly) parameters. The device
confirms the value you've chosen once it is entered. When you use
these commands, the changes do not take effect until you restart the
MTTA (use RESET ALL command or turn device off and on).

To set	Type
SPID	CSET?SPIDx=nnnnnnnnnnnn (x=1 or 2)
DN	CSET?DNx=nnnnnnn (x=1 or 2)
TEI	CSET?LAPDTEI:nn
DN for outgoing data call	CSET?X.25DN=(max 7 digits)
maximum packet size (supplied by service provider)	CSET?X.25PKT=(the default is 256 or 128)

As an example, the following entries show the configuration of
MTTA parameters. Responses from the device are in italics:

CSET?SPID1=51469492000
SPID1:51469492000
CSET?SPID2=51469492001

SPID2:51469492001
CSET?DN1=6949200
DN1:6949200
CSET?DN2=6949201
DN2:6949201
CSET?LAPDTEI:21
LAPDTEI:21
CSET? X.25DN=6949320
X.25DN:6949320
CSET? X.25PKT=256
X.25PKT:256

To operate, the MTTA must be configured to work with the point-of-sale device. Use the following commands to put the device in the proper mode (MSP–MTTA API–(DP 3201) PAD):

IDCVDS-LOCAL
*login:*CON TACPOS
*PWD:*CON TACPOS
S PADDEF DP3201
S DNA 1
S POLL_CODE 33
S SPID TEL 1
S DNA TEL 1
S PICT Null
S outgoing host DNA 11
S DNA 1 <D-packet DN>

Commands to query for additional information:

Command	Shows
R Ver	version of MTTA software
R PADDCS	PAD (packet assembly and disassembly) number
R X.25 MLCN 1	Channel used
R X.25 WIN3	default or maximum window size for transmit/receive
R X.25PKT 256	max. transmit/receive packet size

To set the clock, use the command:
CSET CLOCK=<<yy><mm><dd><<hh>><mm><ss>

You can use Hyperterminal and the "Call" command to try the connection through the D-packet network. The command uses the format: <R- > [address] <user data>.

Command element	Description
<R- >	reverse charging facility request (optional); your D-packet connection must be provisioned for reverse charging capability
[address]	address block (up to 15 digits)
<user data>	call user data field (optional; up to 12 characters)

Tell your service provider (usually a financial institution using a packet handler) your POSTA supports DATAPac 3201 Protocol 3201 multidrop (in Canada), or T3POS and DATAPac 3201 (in U.S.).

See the documentation that comes with your POSTA for complete configuration information.

Adding a universal terminal adapter (UTA)

Connecting a universal terminal adapter (UTA) to the ICS allows you to use a wide variety of non-ISDN data and voice equipment with your BRI service. Any equipment used with an analog system can be connected to the ISDN network using the UTA.

The UTA supports desktop networking and other specialized applications which require a high-speed data communications link, such as local area network (LAN) bridging or a centralized fax server.

The M5000 TD-1 is the recommended UTA for use with the Compact ICS. It connects to the ICS using an NT1 (see illustration). The M5000 TD-1 is compatible with popular communication software packages (such as Telix and Hyperterminal) and uses the Hayes standard AT command set. Voice calls, circuit-switched data,

and packet-switched data can share a single ISDN line when they are routed through the M5000 TD-1.
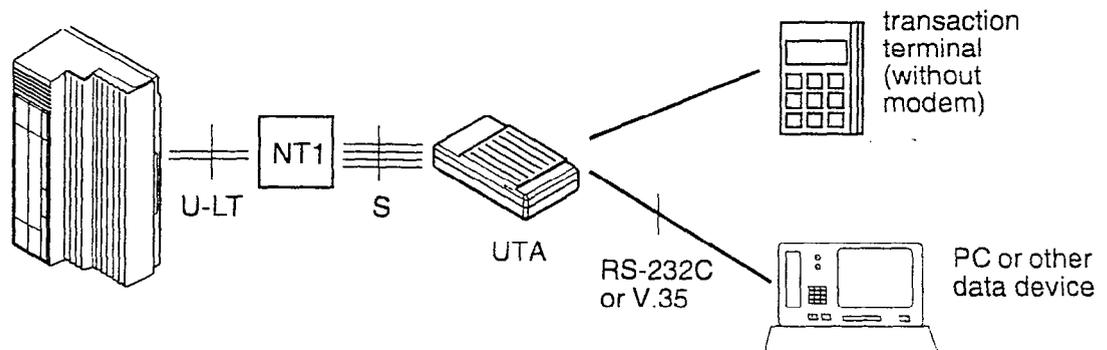
Connecting data terminal equipment using a UTA

The UTA connects to computers and terminals using an RS-232C or V. 35 interface, including personal computers (PCs), mainframe or mini-computers, and Group 4 fax machines (fax machines built to use an ISDN interface). With ISDN access provided by a UTA, the data terminal can take advantage of many advanced features, including circuit and packet data services and the increased speed and accuracy of an end-to-end digital connection.

Connecting an analog telephone

A basic analog telephone (for example, the 2500 type manufactured by Nortel) or any other analog device such as an analog fax or answering machine can also be connected using a UTA. A telephone connected to the UTA can be used to dial calls for Group 4 fax machines or any other device which cannot dial out numbers itself.

Planning the installation

⚠️ ***Only qualified persons should service the system.***

The installation and service of this unit is to be performed only by service personnel having appropriate training and experience necessary to be aware of hazards to which they are exposed in performing a task and of measures to minimize the danger to themselves or others.

Planning checklist

☐ Verify that you have all the equipment and supplies you need to install the system.

☐ Determine the location for the Integrated Communication System (ICS), telephones, and other equipment.

☐ Select the template to be used in System Startup programming. See the Programming chapter.

☐ Plan and record system programming details in the *Programming Record*.

Equipment and supplies

☐ Integrated Communication System (ICS)

☐ Feature Cartridge

☐ Trunk Cartridge(s) for the ICS (as required)

☐ BRI Card(s) for the ICS (as required)

☐ Norstar telephones

☐ ISDN devices (for example, terminal equipment, data devices), as required

☐ Expansion Cartridge (8 port, for analog only systems)

☐ Expansion Cartridge with Clocking (8 port, for systems using BRI)

☐ Clocking Cartridge (for systems using BRI, no additional set ports)

☐ distribution panel(s)

The ICS supports up to 24 Norstar telephones with the Expansion Cartridge or Expansion Cartridge with Clocking. You must install an Expansion Cartridge with Clocking or a Clocking Cartridge to use BRI Cards.

Optional equipment

☐ station auxiliary power supply (SAPS)

☐ Busy Lamp Field (BLF)

☐ central answering position (CAP) module

☐ analog terminal adapter (ATA)

☐ uninterruptible power supply (UPS)

☐ analog emergency telephone

☐ Digital Network Adapter

☐ other

Equipment for installing the ICS

☐ screwdriver

☐ pliers

☐ connecting tool

☐ two 19 mm (3/4 in.) wood screws for the mounting bracket

☐ one 32 mm (1-1/4 in.) wood screw for the bottom mounting tab

☐ 19 mm (3/4 in.) wood backboard (if necessary)

Location requirements

☐ clean, dry, and well-ventilated to allow free airflow

☐ minimum clearance of 150 mm (5 in.) above and 100 mm (4 in.) below the ICS

☐ the gap between the ICS and the wall should be left completely clear to allow proper heat dissipation

☐ temperature between 0°C and 50°C (32°F and 122°F)

☐ humidity between 5% and 95%, non-condensing

☐ minimum distance of 4 m (13 ft) from equipment such as photocopiers, electrical motors and other equipment that can produce electromagnetic, radio-frequency, and electrostatic interference

Electrical requirements

☐ non-switched, unobstructed outlet within 1.5 m (5 ft) of the ICS

☐ dedicated 110 V - 120 V ac nominal, 50/60 Hz, 15 A minimum service with a third wire safety ground to provide shock protection and avoid electromagnetic interference

> ⚠ **Risk of electric shock.**
>
> The safety of this product requires connection to an outlet with a third-wire ground. Use only with three-prong power cord and outlet.

☐ The ICS power cord is 1.5 m (5 ft) long. You may connect the ICS to a power bar with a maximum length of 2 meters (6.5 ft), including power bar. The power bar must be approved by an appropriate National Test Body, with a third-wire ground. Do not use an extension cord between the ICS and the power bar, or between the power bar and the electrical outlet.

Internal wiring requirements
Norstar loop

☐ one, two or three twisted-pair cable(s) per telephone

☐ dc loop resistance of less than 64 Ω

☐ cable length (0.5 mm or 24 AWG) less than 300 m (975 ft)

☐ use of a station auxiliary power supply (SAPS) for loops 300 m (975 ft) to 1200 m (3900 ft). The SAPS must be a Class 2 power source that is approved by an appropriate National Test Body.

☐ no bridge taps

ISDN S reference point (S Loop)

☐ no longer than 1000 m (3,200 ft) for point to point

☐ no longer than 450 m (1,475 ft) on a point-to-multipoint extended passive bus

☐ no longer than 100 m (300 ft) for 75 ohm cable or 200 m (600 ft) for 150 ohm cable on a point-to-multipoint short passive bus

Wiring for the S reference point (S loop) should conform to ANSI T1.605. Wiring for the ISDN U reference point (U loop) should conform to ANSI T1.601.

> **Verify lightning protectors.**
>
> Check the lightning protectors at the cable entry point to the building with special attention to the grounding. Report any problems to the telephone company in writing.
>
> Equipment that is designed to be connected using internal wiring is typically not lightning protected. Norstar telephone equipment and ISDN S loops and T loops should not leave the building where the ICS is installed.

Spacing requirements

19 mm thick (3/4 in)

min.
150 mm (5 in)

238 mm
(9-3/8 in)

435 mm
(17-1/4 in)

min. 150 mm
(6 in.) between ICS
and cables

min. 100 mm (4 in)
between bottom and
floor or other object that
might block air flow
Mount well above the floor
to prevent water damage

Power cord length 1.5 m (5 ft)

Installation

> ⚠ **Only qualified persons should service the system.**
>
> The installation and service of this unit is to be performed only by service personnel having appropriate training and experience necessary to be aware of hazards to which they are exposed in performing a task and of measures to minimize the danger to themselves or other persons.
>
> Electrical shock hazards from the telecommunication network and AC mains are possible with this equipment. To minimize risk to service personnel and users, the ICS must be connected to an outlet with a third-wire ground. In addition, all unused slots must have filler faceplates installed and the system cover must be locked in place at the completion of any servicing.
>
> Service personnel must be alert to the possibility of high leakage currents becoming available on metal system surfaces during power line fault events near network lines. Risk points on the ICS are the Feature Cartridge, heatsink and power cord earth ground pin. These leakage currents normally safely flow to Protective Earth ground via the power cord. Therefore, it is mandatory that connection to an earthed outlet is performed first and removed last when cabling to the unit. Specifically, operations requiring the unit to be powered down must have the network connections (central office lines) removed first.

Installation checklist

☐ test all ISDN network connections, if any

- [ ] mount the Integrated Communications System (ICS)
- [ ] install the Feature Cartridge
- [ ] install the Trunk Cartridge and BRI Cards (as required)
- [ ] install the appropriate expansion or clocking cartridge (you must use the Expansion Cartridge with Clocking or Clocking Cartridge to support BRI Cards)
- [ ] complete the wiring, but do not connect the central office and station line connectors
- [ ] install filler faceplates (slot covers)
- [ ] install the emergency telephone(s), if required
- [ ] install the Norstar telephones
- [ ] install ISDN terminal equipment (TE)
- [ ] install the other optional equipment
- [ ] install the analog telephone(s)
- [ ] power up the system
- [ ] connect the central office and station line connectors
- [ ] install the cover

Avoid electrical shock.

To avoid electrical shock hazard to personnel, or equipment damage, observe the following precautions when installing telephone equipment:

Always disconnect telecommunication network connections before disconnecting the AC power plug.

Never connect the central office and station line connectors until you have connected the power plug.

Never install telephone wiring during a lightning storm.

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when modifying or installing telephone lines.

Do not fasten power supply cords.

To comply with UL1459, do not fasten the ICS power supply cord to any building surface, including the backboard.

Testing the ISDN network connection

Before you install a Norstar system which uses BRI Cards, you should test your connection to the ISDN network.

If you are installing a system which connects to the network using BRI-ST Cards, the network connection must be equipped with an NT1. See the ISDN chapter and the wiring information in this chapter for more information about installing an NT1.

To test the ISDN connection:

1. Connect ISDN terminal equipment (TE) that conforms to Bellcore standards to your central office ISDN jack or NT1. U interface TE can connect directly to the central office jack; S interface TE connect to the central office through an NT1.

2. Program the TE with the appropriate switch type, service profile identifier (SPID), and Network directory number (DN) using the instructions that come with the TE.

3. Check for dial tone, then place a call and verify the quality and clarity of the connection. If there is a problem, contact your service provider.

4. Repeat steps one through three for each network connection.

Mounting the ICS
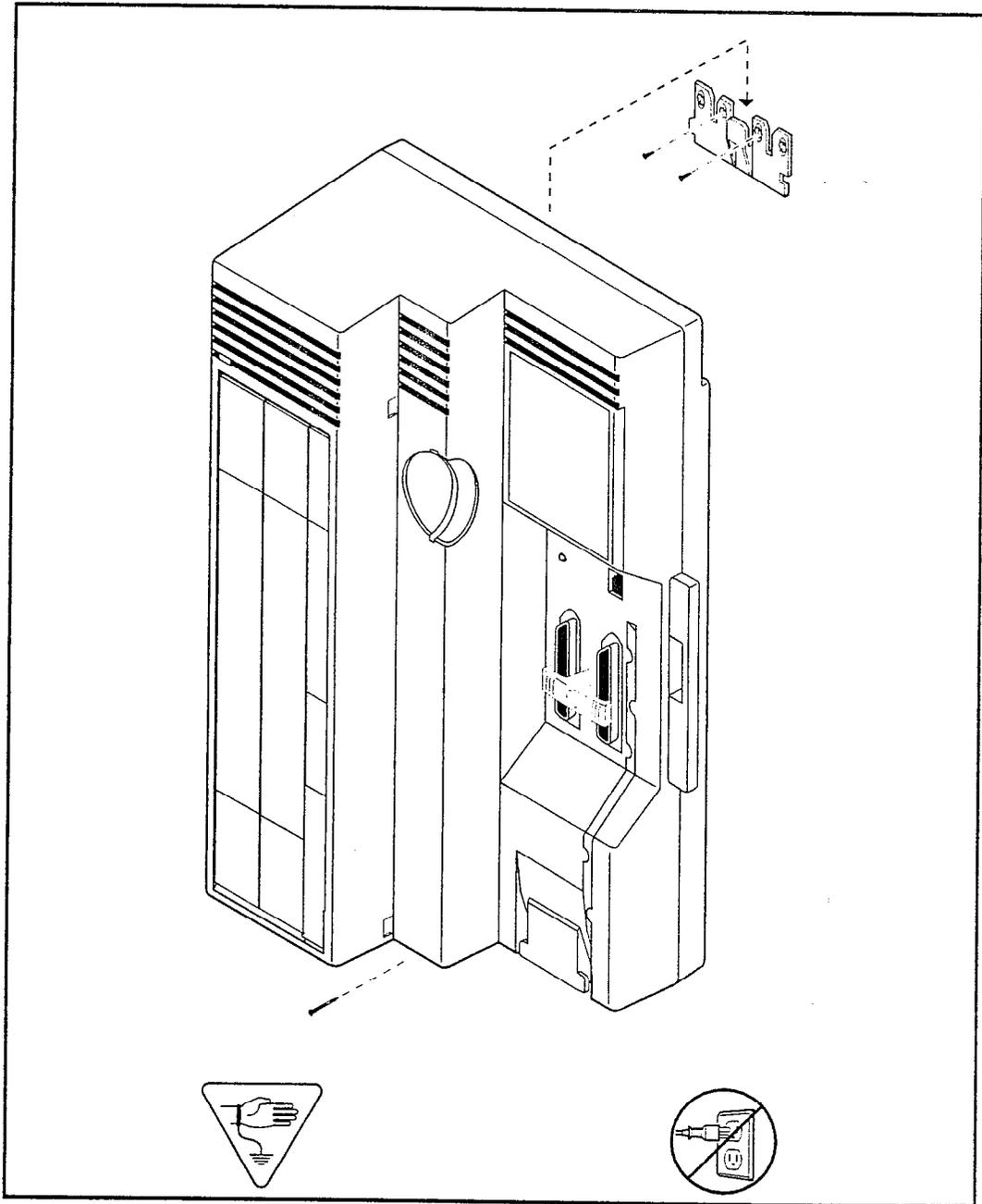
⚠️ ***Attach bracket to secure surface.***

Screw the ICS mounting bracket and ICS to a 19 mm
wood backboard secured to a wall and capable of
supporting a 20 kg (44 lbs) mass. Do not screw bracket
directly to drywall. Use the two inner screw holes on
the bracket.

Installing the cartridges

The following table shows which cartridges can be installed in the ICS slots.

Cartridge type	Part number	ICS slot
Standard Feature Cartridge (NA-CICS DR 2.0)	A0655679 NT7B64AC	Feature Cartridge Slot
Restricted Feature Cartridge (NA-CICS (4X8) DR 2.0)	A0655693 NT7B64AD	Feature Cartridge Slot
Standard Feature Cartridge with I-RAD (NA CICS DR 2.0 Std Software with I-RAD ON)	A0674764 NT7B64AH	Feature Cartridge Slot
Restricted Feature Cartridge with I-RAD (NA CICS DR 2.0 Restricted S/W with I-RAD ON)	A0674765 NT7B64AJ	Feature Cartridge Slot
Expansion Cartridge (8 ports)	A0629599 NTBB04GA-93	3
Expansion Cartridge (8 ports) with Clocking	A0652072 NTBB04GC-93	3
Clocking Cartridge	A0652074 NTBB04GD-93	3
Loop Start/Disconnect Supervision (LS/DS) Analog Trunk Cartridge	A0652671 NT7B75GB-93	1 or 2
Caller Identification (CI) Trunk Cartridge	A0393277 NT5B41GA-93	1 or 2
BRI-ST Card	A0649029 NT7B76GY-93	1 or 2

BRI-U2 Card	A0655688	1 or 2
	NT7B86GB-93	
BRI-U4 Card	A0655690	1 or 2
	NT7B87GB-93	

LS/DS Analog Trunk Cartridges and Caller Identification (CI) Trunk Cartridges both support loop start external lines.

A system equipped with a restricted feature cartridge supports only the BRI-U2 Card. It cannot support BRI-U4 or BRI-ST Cards.

PCB is electrostatic-sensitive.

Do not touch the printed circuit board on a cartridge. This is an electrostatic-sensitive device.

Close clips simultaneously.

It is important to center and close the two clips on the cartridge simultaneously, or the cartridge may become misaligned in its slot, or with its connector.

ICS slots and connectors

Power light

Feature Cartridge

Slot 1

Slot 2

Slot 3

Serial port
(for use with
 future capabilties)

50-pin
connector 2

50-pin
connector 1
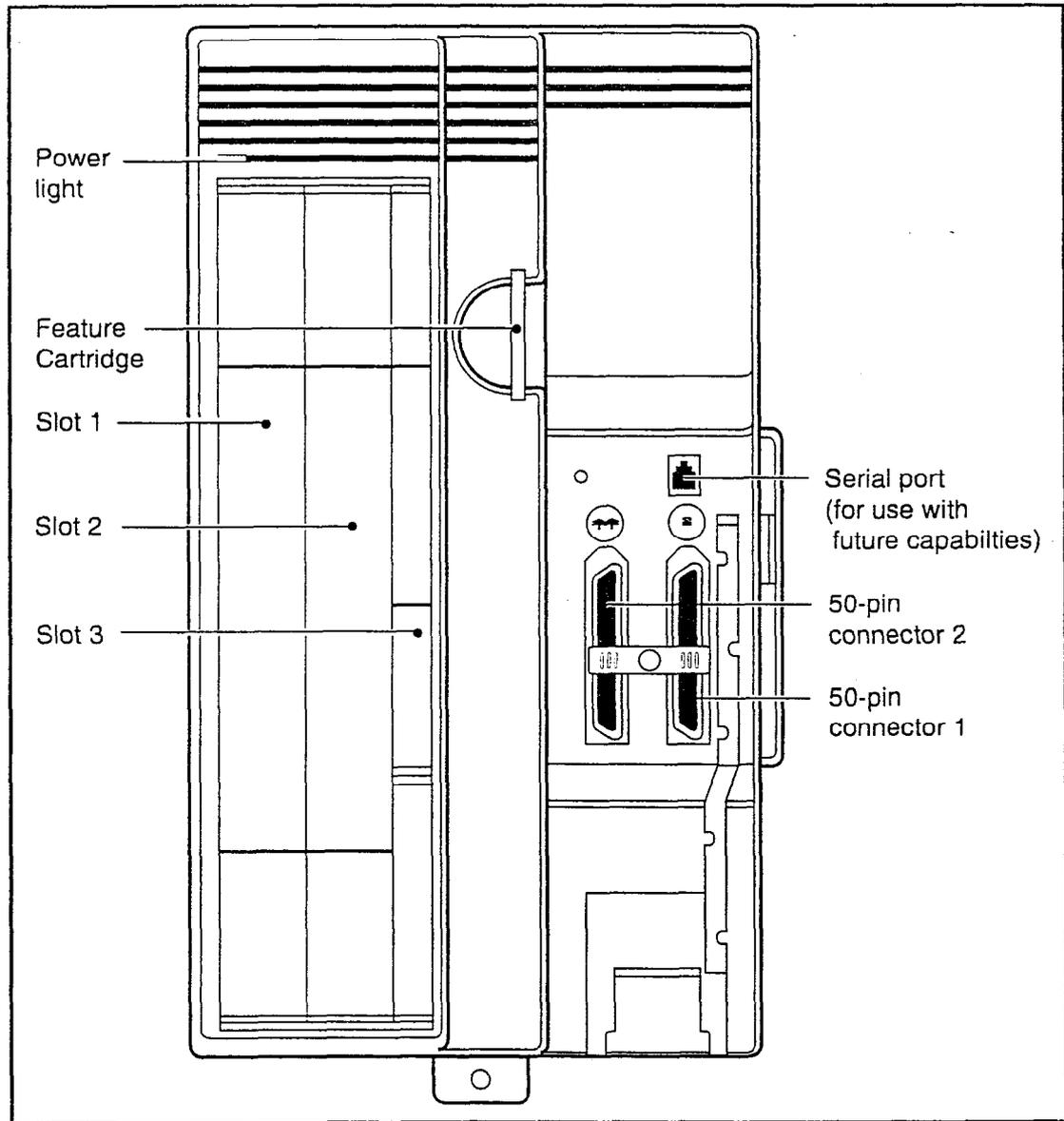
Removing the cover

To remove the cover, insert a screwdriver at the tab on the right side of the ICS. Pry the latch open.

Installing the Feature Cartridge
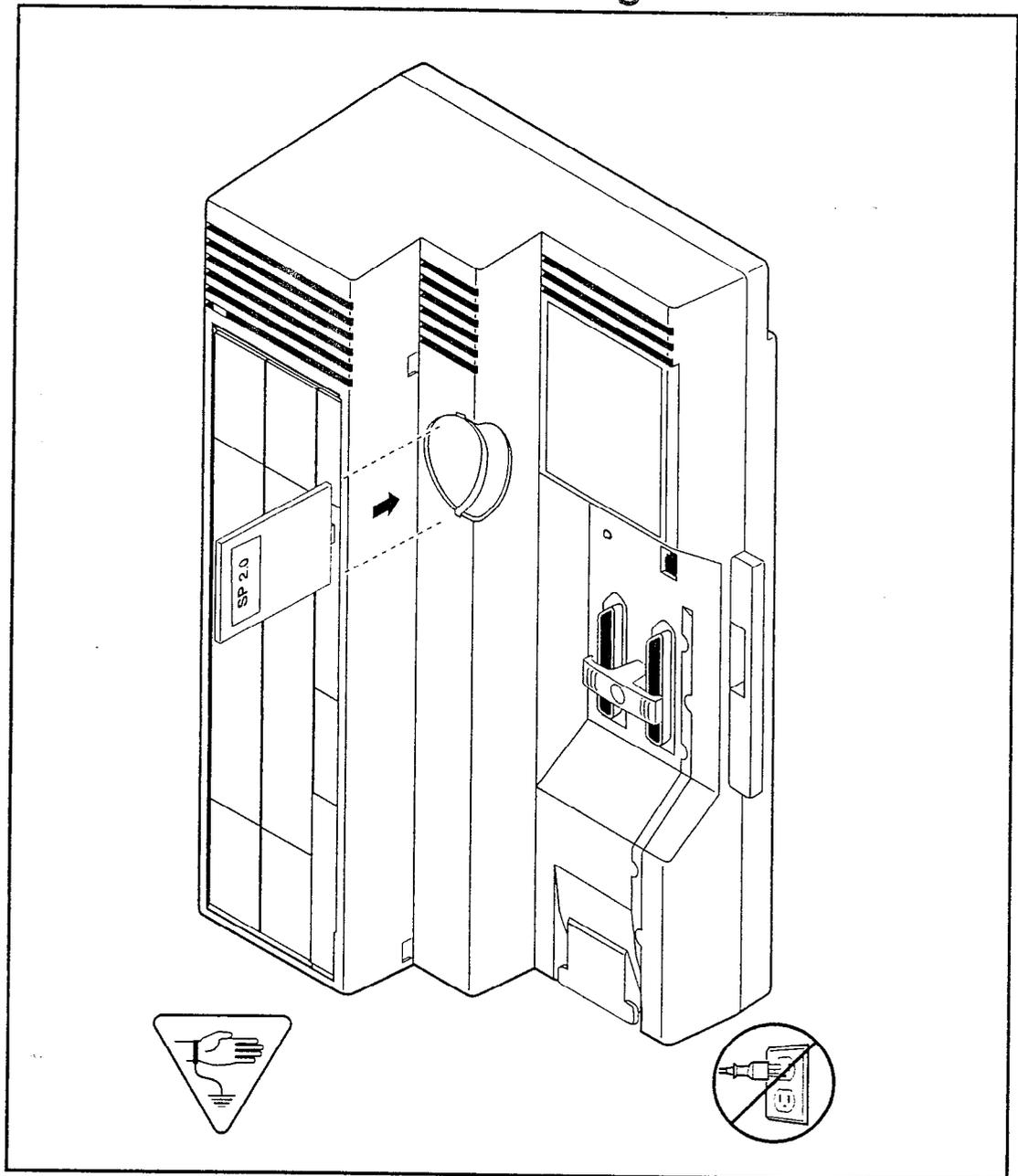
Insert Feature Cartridge one way.

To ensure the connector is properly installed, insert the Feature Cartridge so that the connector is properly aligned in the interior slot and the version label is visible after installation.

Terminating resistors on BRI-S/T Cards

The standard ISDN user-network interface wiring requires terminating resistors at each end of the loop for both point-to-point and point-to-multipoint operation. This ensures correct timing of the signaling circuits.

Loop termination can be provided at either the point where the ISDN terminal is attached, or by the device attached to the loop (with built-in termination).

Because the Compact ICS is usually at the one end of the loop, the BRI-ST Card is shipped with built-in termination for each ISDN loop. It is ready to be used where the ICS is located at one end of the loop, as shown in the following illustration:

ICS

built-in termination
installed

TE with
termination

TE connections without termination
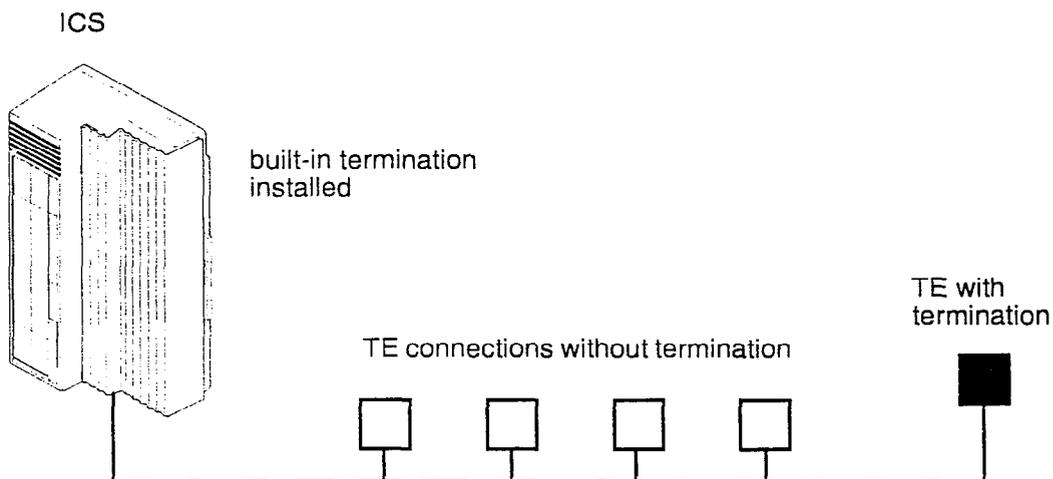
Shorting straps on a BRI-ST Card
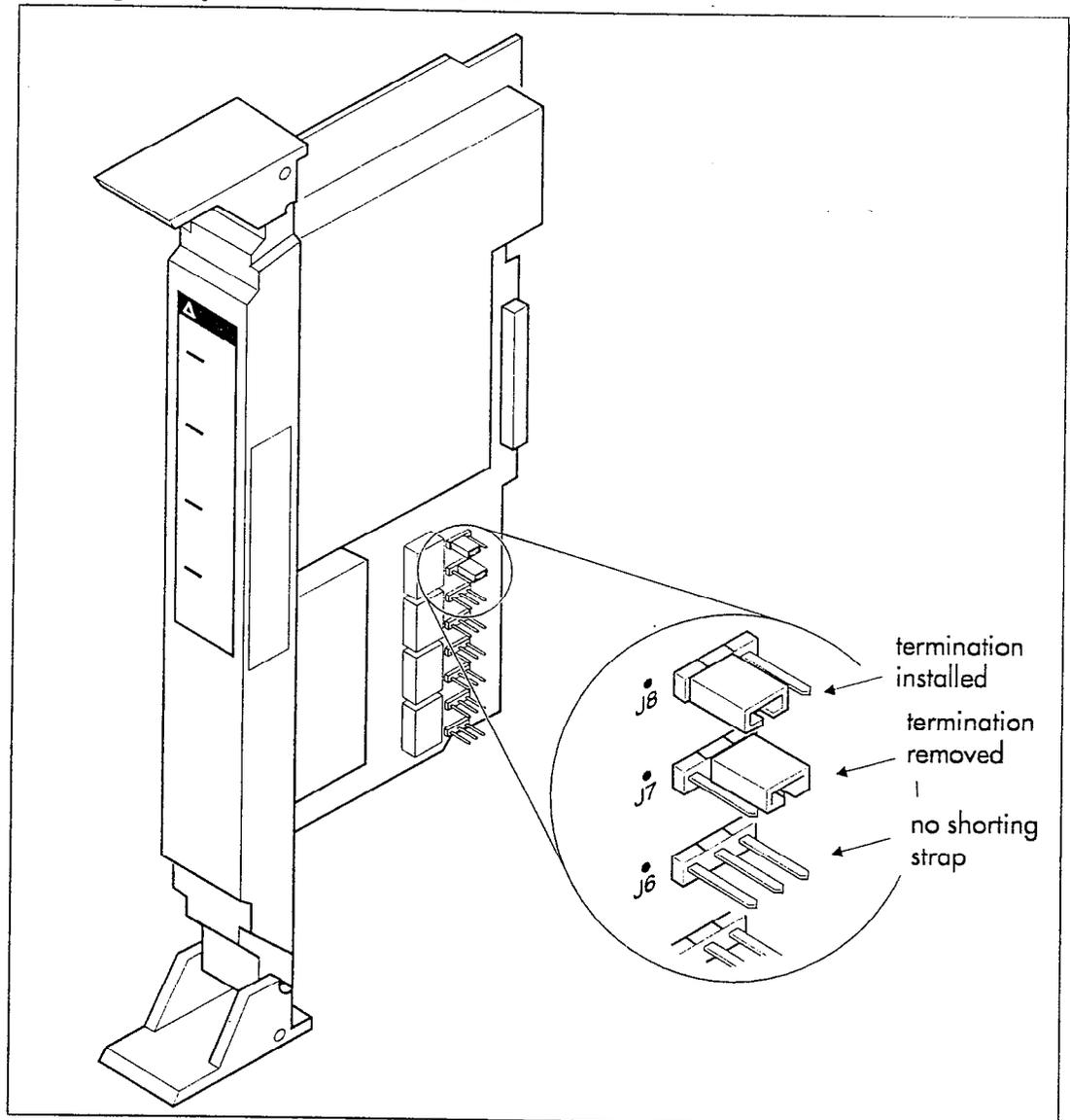
Make sure the shorting straps are installed on both the receive and transmit jumpers for the loop (see illustration). The jumpers are numbered top to bottom, but the loops associated with each pair of jumpers does not follow the same top-to-bottom sequence (see table).

Loop	RX and TX shorting straps
1	J3 and J4
2	J7 and J8
3	J1 and J2
4	J5 and J6

As a rare exception, you may remove the termination if the loop is configured as S/T and is shared by terminal equipment (TE) which is located further away from the NT1 than the ICS. See the ISDN chapter for more information about the S/T loop type.

Installing Trunk Cartridges

1. Slide the Trunk Cartridge into slot 1, applying equal pressure at the top and bottom. (See illustration on the next page.)

2. Close the cartridge clips at the same time, to keep the cartridge aligned with the connector.

3. If you are installing a second trunk cartridge, remove the filler faceplate from slot 2 and slot 3 (it is one piece), using a screwdriver at the bottom of each slot and prying the bottom edge out.

4. Snap the two parts of the faceplate apart and put back the filler faceplate in slot 3.

5. Insert the second Trunk Cartridge, as described in steps 2 and 3.
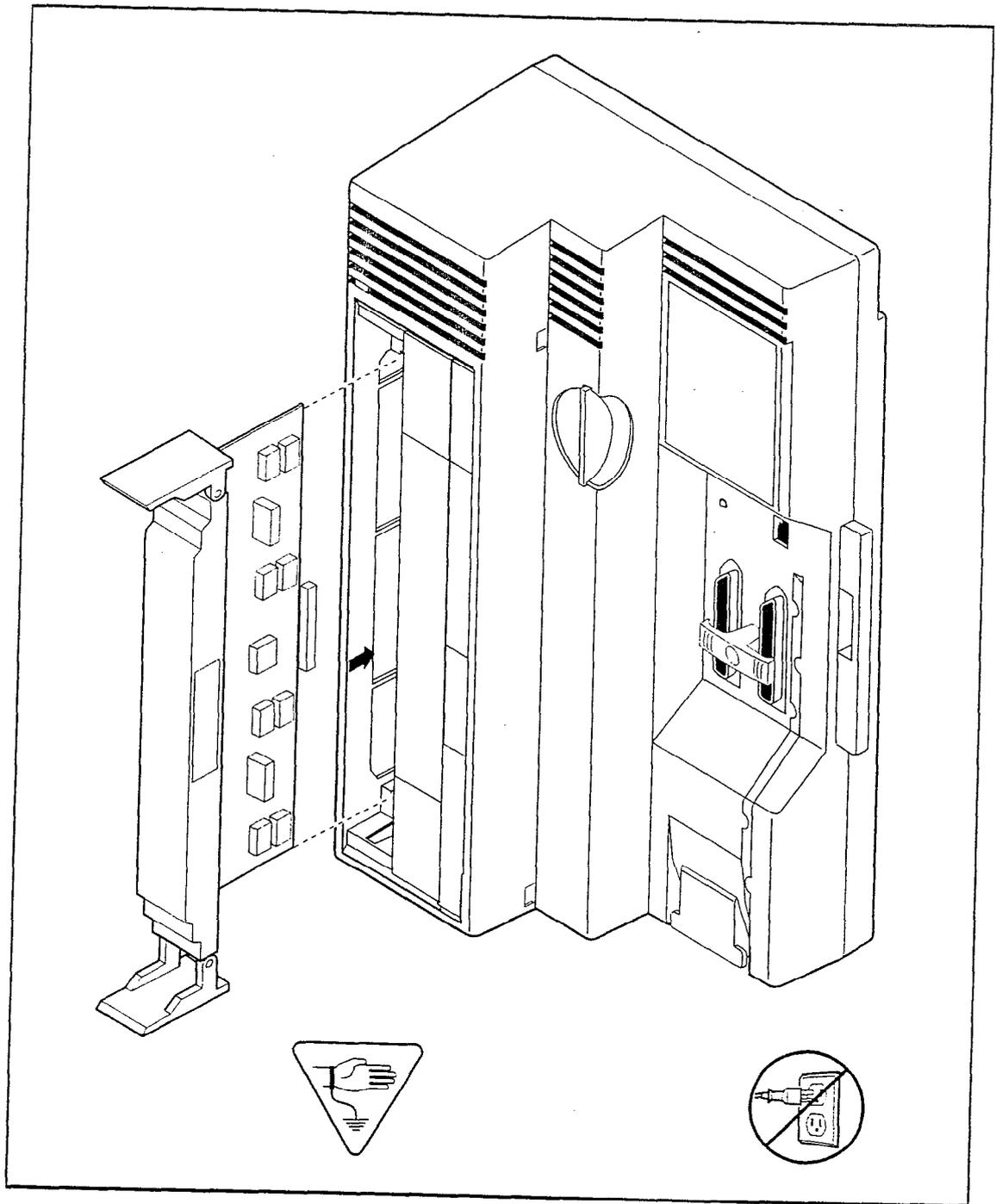
Installing the Expansion Cartridge

The Expansion Cartridge must be equipped with clock control if you are installing BRI Cards.

1. Remove the filler faceplate from slot 3 (and slot 2 if there is no Trunk Cartridge), using a screwdriver to pry the bottom edge(s) out.

2. If required, snap the two parts of the faceplate apart and put back the filler faceplate in slot 2.

3. Slide the Expansion Cartridge into slot 3, applying equal pressure at the top and bottom. (See illustration on page 80.)

4. Close the cartridge clips at the same time, to keep the cartridge aligned with the connector.
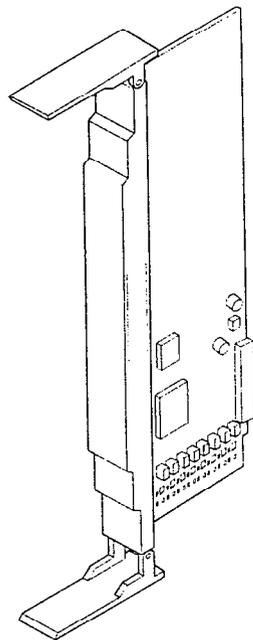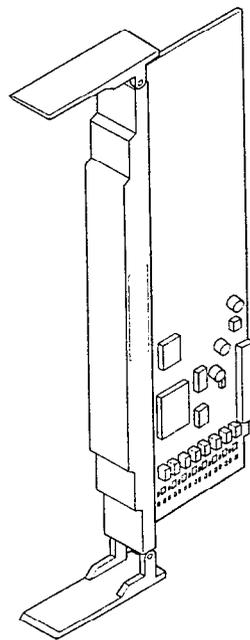
| Expansion Cartridge | Expansion Cartridge with Clocking | Clocking Cartridge |
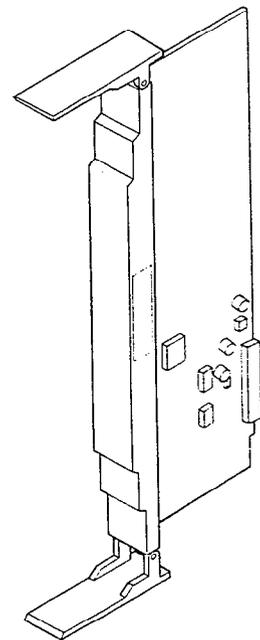
> **Removing the expansion cartridge will cause a cold restart.**
>
> If you downsize the system by removing the expansion cartridge, all the system programming will be lost.

> **Alarm Telephone will indicate a cold reset.**
>
> An alarm and a prompt indicating warm or cold reset will occur on the alarm telephone when the system size has been decreased.

Installing the Expansion Cartridge
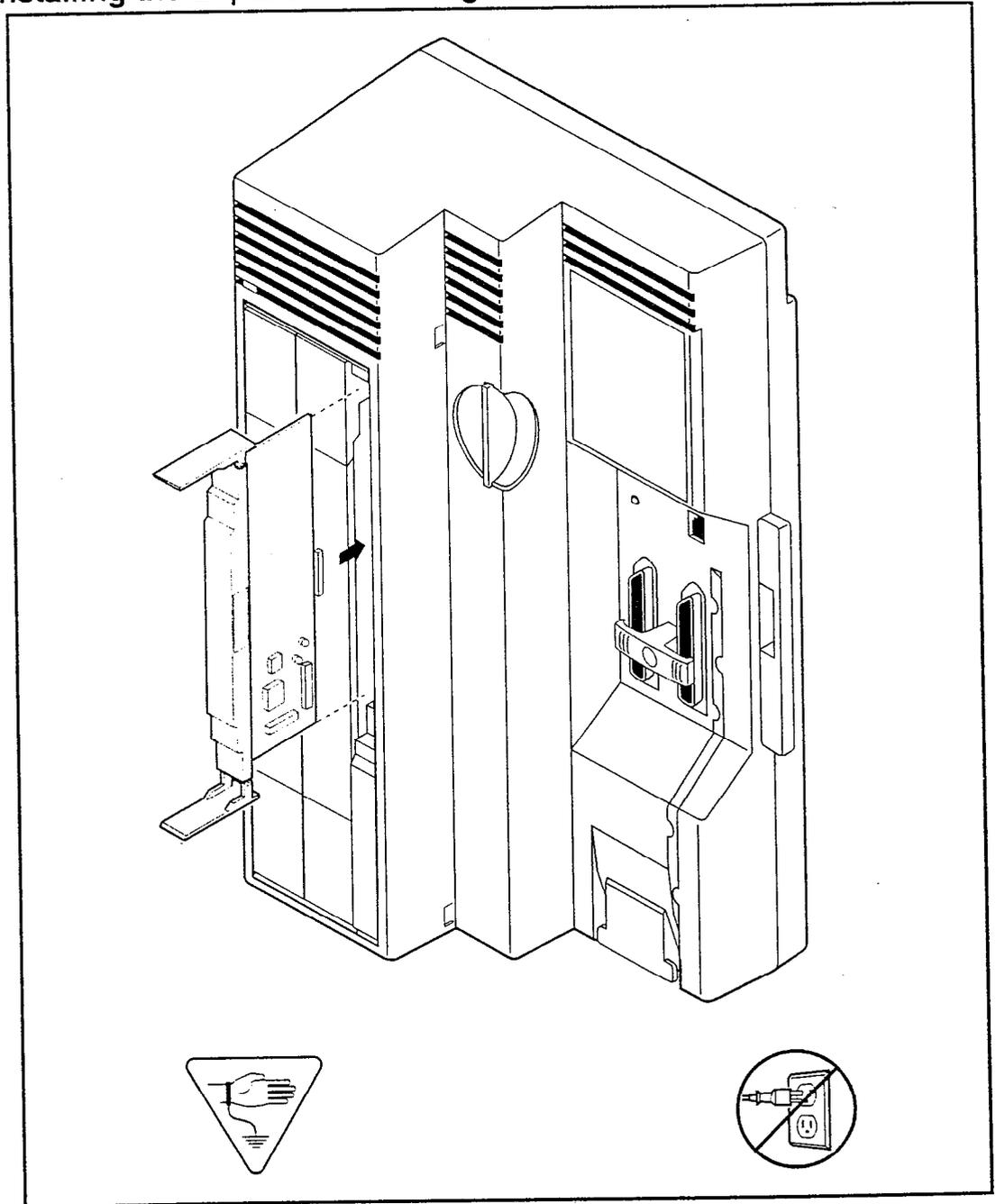
Connecting the wiring

Connecting the wiring for a Compact ICS

Extend 150 mm (6 in.)
and clamp before bringing
cables together.

Do not attach central office
or station line connections until
power is connected to the ICS.
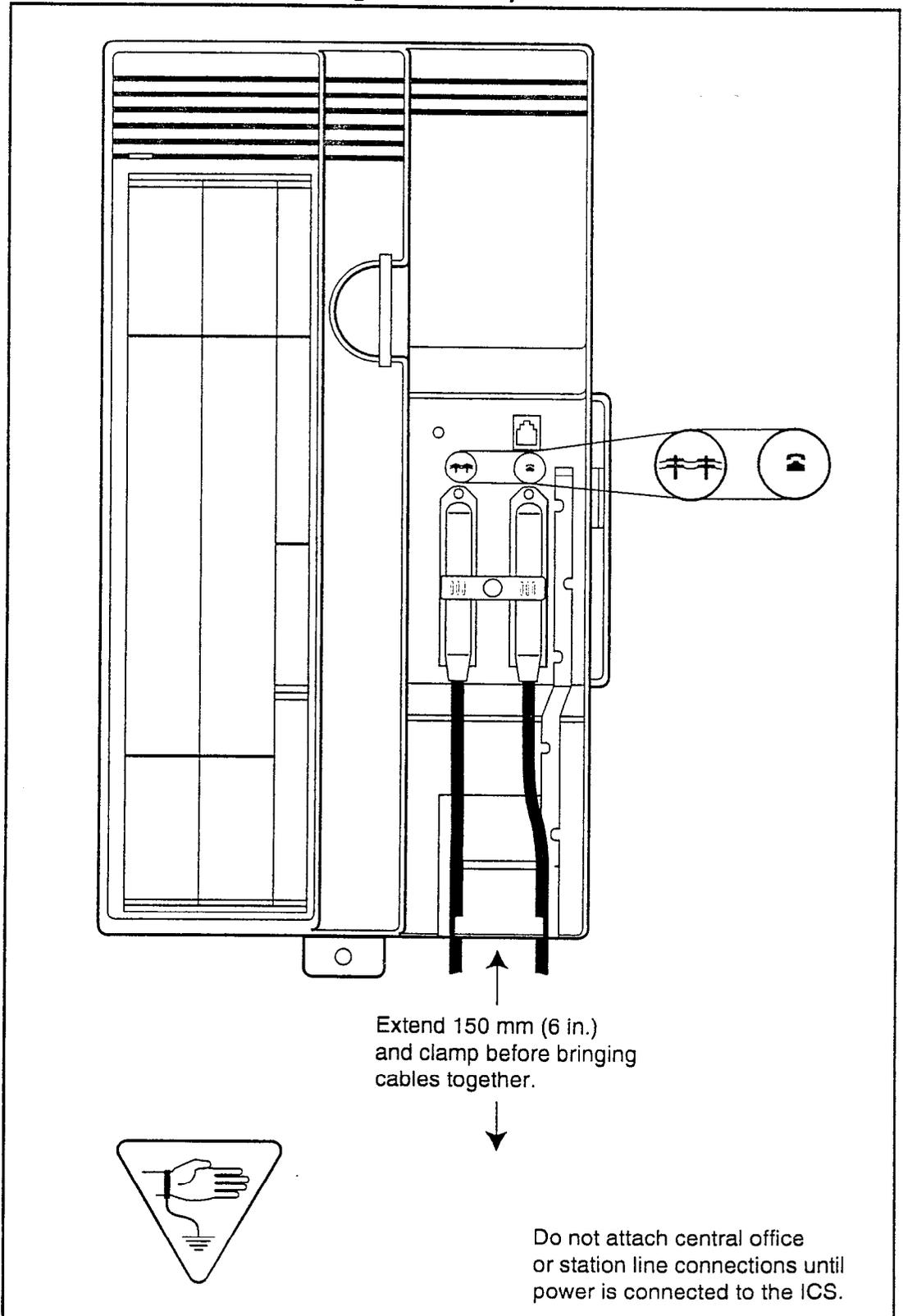
Connecting the wiring to the distribution panel

1. Route the cables from the ICS to the distribution panel.

2. Bundle the cables with cable ties and secure them to the wall to support their weight.

3. Connect the telephone and auxiliary equipment wires to the appropriate pins on the distribution block (refer to the wiring charts).

4. Cross-connect the ICS telephone and auxiliary equipment wiring to the corresponding station pins on the distribution block.

5. Using a single pair of wires for each telephone, connect each of the telephones according to the wiring charts.

6. Cross-connect the external lines to the distribution block (refer to the wiring charts).

Wiring charts

Port numbering on the wiring charts

The port number listed on the wiring charts is useful in tracking down faults during a Maintenance session where error codes appear on a Norstar telephone display. See the Maintenance chapter for more information.

For example, the code "112" appearing as part of an error message indicates that the problem is with the telephone connected to the system at port 112. The corresponding pins on the distribution block are pin 37 (black-orange) and pin 12 (orange-black).

Integrated Communications System (ICS)

In the charts on the following pages, notice that the ICS has two 25-pair connectors. One handles telephones and auxiliary ringer. The other handles lines, I-ATA, music, and page.

B1 and B2 directory numbers (DNs)

Norstar has a B1 and B2 channel for transmitting voice and data. Each telephone port on the ICS has a B1 DN and a B2 DN. Devices such as the Norstar M7100, M7208, M7310, and M7324 telephones use only the B1 DN. Other devices may need both B1 and B2 channels, therefore requiring B1 and B2 DNs.

Norstar Compact ICS uses different numbering schemes for the B1 and B2 DNs, depending on how you upgrade your system and when an Expansion Cartridge is added. See the tables below for details.

CTA 500*dm*

If you are attaching a Computer Telephony Adapter (CTA) 500*dm* to the ICS, use one of the first ten set ports (101-110), eight set ports (101-107) for a system using the restricted feature cartridge that has not been upgraded. You can connect a maximum of 10 to the system.

Each CTA 500*dm* is assigned a DN from a pre-set range of B2 DNs. The default range is 80 to 89.

See the instructions that come with the adapter for more information.

ICS numbering (restricted feature cartridge)

Connector #	Device	Ports	B1 DN	B2 DN
ICS (#1)	Telephones 1-8 I-ATA I-RAD	101-108 117 118	21-28 29 (I-ATA) 30 (I-RAD)	31-38 39 40
ICS (#2)	Lines 001-004	201-204	— —	— —

ICS numbering (restricted feature cartridge, expanded)

Connector #	Device	Ports	B1 DN	B2 DN
ICS (#1)	Telephones 1-8 I-ATA I-RAD Telephones 9-16	101-108 117 118 109-116	21-28 29 (I-ATA) 30 (I-RAD) 41-48	31-38 39 40 49-56
ICS (#2)	Analog: Lines 001-004 Lines 025-028 BRI: Lines 001-008 Lines 025-032	 201-204 225-228 201-204 225-232	 — — — — — — — —	 — — — — — — — —

ICS numbering (restricted feature cartridge, expanded): Expansion Cartridge added

Connector #	Device	Ports	B1 DN	B2 DN
ICS (#1)	Telephones 1-8 I-ATA I-RAD Telephones 9-16 Telephones 17-24	101-108 117 118 109-116 119-126	21-28 29 (I-ATA) 30 (I-RAD) 41-48 57-64	31-38 39 40 49-56 65-72
ICS (#2)	Analog: Lines 001-004 Lines 025-028 BRI: Lines 001-008 Lines 025-032	 201-204 225-228 201-204 225-232	 —— —— —— ——	 —— —— —— ——

ICS numbering (standard feature cartridge)

Connector #	Device	Ports	B1 DN	B2 DN
ICS (#1)	Telephones 1-16 I-ATA I-RAD	101-116 117 118	21-36 37 (I-ATA) 38 (I-RAD)	39-54 55 56
ICS (#2)	Analog: Lines 001-004 Lines 025-028 BRI: Lines 001-008 Lines 025-032	 201-204 225-228 201-204 225-232	 —— —— —— ——	 —— —— —— ——

ICS numbering (standard feature cartridge): Expansion Cartridge added at installation

Connector #	Device	Ports	B1 DN	B2 DN
ICS (#1)	Telephones 1-16 I-ATA I-RAD Telephones 17-24	101-116 117 118 119-126	21-36 37 (I-ATA) 38 (I-RAD) 39-46	47-62 63 64 65-72
ICS (#2)	Analog: Lines 001-004 Lines 025-028 BRI: Lines 001-008 Lines 025-032	 201-204 225-228 201-204 225-232	 —— —— —— ——	 —— —— —— ——

ICS numbering (standard feature cartridge): Expansion Cartridge added later

Connector #	Device	Ports	B1 DN	B2 DN
ICS (#1)	Telephones 1-16 I-ATA I-RAD Telephones 17-24	101-116 117 118 119-126	21-36 37 (I-ATA) 38 (I-RAD) 57-64	39-54 55 56 65-72
ICS (#2)	Analog: Lines 001-004 Lines 025-028 BRI: Lines 001-008 Lines 025-032	 201-204 225-228 201-204 225-232	 — — — — — — — —	 — — — — — — — —

Tip - *B1 and B2 directory numbers reflect the default numbering scheme.*

I-ATA and I-RAD are not physically connected to the ICS #1 25-pair connector.

The internal analog terminal adaptor (I-ATA) is wired on the ICS #2 connector along with the external lines and equipment for music and paging. The internal remote access device (I-RAD) appears on port 118 but has no wired connection.

ICS telephone and auxiliary ringer wiring chart

Pin	Wire color	Port	Service	Telephones (ICS)
26	White-Blue	101	T	1
1	Blue-White	101	R	1
27	White-Orange	102	T	2
2	Orange-White	102	R	2
28	White-Green	103	T	3
3	Green-White	103	R	3
29	White-Brown	104	T	4
4	Brown-White	104	R	4
30	White-Slate	105	T	5
5	Slate-White	105	R	5
31	Red-Blue	106	T	6
6	Blue-Red	106	R	6
32	Red-Orange	107	T	7
7	Orange-Red	107	R	7
33	Red-Green	108	T	8
8	Green-Red	108	R	8
34	Red-Brown	109	T	9
9	Brown-Red	109	R	9
35	Red-Slate	110	T	10
10	Slate-Red	110	R	10
36	Black-Blue	111	T	11
11	Blue-Black	111	R	11
37	Black-Orange	112	T	12
12	Orange-Black	112	R	12
38	Black-Green	113	T	13
13	Green-Black	113	R	13
39	Black-Brown	114	T	14
14	Brown-Black	114	R	14
40	Black-Slate	115	T	15
15	Slate-Black	115	R	15
41	Yellow-Blue	116	T	16
16	Blue-Yellow	116	R	16
no physical connection at port 117 (reserved for I-ATA)				
no physical connection at port 118 (reserved for I-RAD)				
42	Yellow-Orange	119	T	17
17	Orange-Yellow	119	R	17
43	Yellow-Green	120	T	18

18	Green-Yellow	120	R	18
44	Yellow-Brown	121	T	19
19	Brown-Yellow	121	R	19
45	Yellow-Slate	122	T	20
20	Slate-Yellow	122	R	20
46	Violet-Blue	123	T	21
21	Blue-Violet	123	R	21
47	Violet-Orange	124	T	22
22	Orange-Violet	124	R	22
48	Violet-Green	125	T	23
23	Green-Violet	125	R	23
49	Violet-Brown	126	T	24
24	Brown-Violet	126	R	24
50	Violet-Slate	----	Make	Aux. ringer
25	Slate-Violet	----	Common	Aux. ringer

T and R represent station connections and should not be confused with Tip and Ring on external lines.
Station connections are non-polarized.
Stations 18 through 25 are available only when an Expansion Cartridge is installed.
For default DNs, see the ICS numbering charts starting on page 83.

Wiring arrangement for Norstar ICS
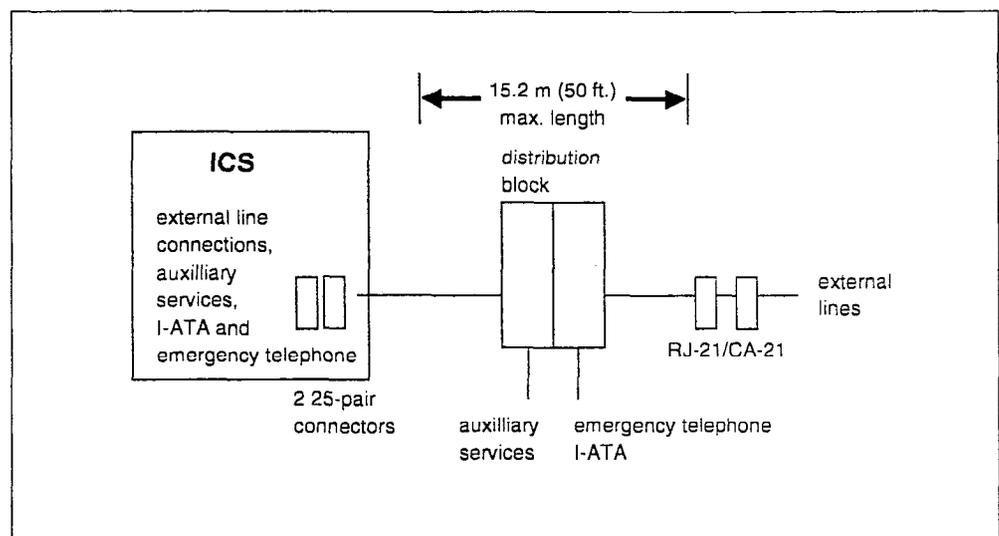
ICS external lines, I-ATA, music, and page wiring

ICS external lines connector

Pin	Wire color	Port	Service	Equipment
26	White-Blue	201	T	Line 1
1	Blue-White	201	R	Line 1
27	White-Orange	202	T	Line 2
2	Orange-White	202	R	Line 2
28	White-Green	----	----	----
3	Green-White	----	----	----
29	White-Brown	----	----	----
4	Brown-White	----	----	----
30	White-Slate	203	T	Line 3
5	Slate-White	203	R	Line 3
31	Red-Blue	204	T	Line 4
6	Blue-Red	204	R	Line 4
32	Red-Orange	----	----	----
7	Orange-Red	----	----	----
33	Red-Green	----	----	----
8	Green-Red	----	----	----
34	Red-Brown	225	T	Line 25
9	Brown-Red	225	R	Line 25
35	Red-Slate	226	T	Line 26
10	Slate-Red	226	R	Line 26
36	Black-Blue	----	----	----
11	Blue-Black	----	----	----
37	Black-Orange	----	----	----
12	Orange-Black	----	----	----
38	Black-Green	227	T	Line 27
13	Green-Black	227	R	Line 27
39	Black-Brown	228	T	Line 28
14	Brown-Black	228	R	Line 28
40	Black-Slate	----	----	----
15	Slate-Black	----	----	----
41	Yellow-Blue	----	----	----
16	Blue-Yellow	----	----	----
42	Yellow-Orange	----	T	emergency telephone
17	Orange-Yellow	----	R	emergency telephone

43	Yellow-Green	----	----	----
18	Green-Yellow	----	----	----
44	Yellow-Brown	----	----	----
19	Brown-Yellow	----	----	----
45	Yellow-Slate	117	T	I-ATA
20	Slate-Yellow	117	R	I-ATA
46	Violet-Blue	----	----	----
21	Blue-Violet	----	----	----
47	Violet-Orange	----	----	----
22	Orange-Violet	----	----	----
48	Violet-Green	----	Ground	Music
23	Green-Violet	----	Music	Music
49	Violet-Brown	----	Make	External Page
24	Brown-Violet	----	Common	External Page
50	Violet-Slate	----	T	Page
25	Slate-Violet	----	R	Page

Lines 5 through 8 are not available to a system using a restricted feature cartridge that has not been upgraded.
For an explanation of port numbering, see Port numbering on the wiring charts on page 82.
The emergency telephone uses line 002 (on Trunk Cartridge in slot 1).

Music source must be grounded.

To avoid possible damage to your Compact ICS system or music source, the music source ground must be connected according to the wiring charts.

BRI Wiring charts

A BRI Card in Slot 1 uses loops 201 through 204. A BRI Card in Slot 2 uses loops 225 through 228. Because a BRI-U2 Card has only two loops, it only uses the first two loop numbers (201-202 and 225-226) when it occupies an ICS slot.

The loops appearing on a BRI Card may be automatically assigned lines, or assigned one or more ISDN DNs in Hardware programming. If the loop is configured as S/T, T or NT, lines are automatically assigned. If the loop is configured as S or LT, you can assign one or more ISDN DNs to the loop.

The emergency telephone connection (pins 42 and 17 on ICS #2 connector) cannot be used if a BRI Card is installed in Slot 1. All other pins which are not shown in the BRI wiring charts are assigned as shown in the non-BRI wiring charts beginning on page 86.

Detailed information about configuring BRI Cards is included in the ISDN chapter and in the Hardware section of the Programming chapter.

S/T Interface Cards wiring chart

Pin	Wire color	Loop	Service	Lines (T, S/T-loop)	Terminal equipment (S-loop)
26	White-Blue	201	+Tx	Lines 001-002	Assigned DN
1	Blue-White	201	-Tx	Lines 001-002	Assigned DN
27	White-Orange	201	+Rx	Lines 001-002	Assigned DN
2	Orange-White	201	-Rx	Lines 001-002	Assigned DN
28	White-Green	202	+Tx	Lines 003-004	Assigned DN
3	Green-White	202	-Tx	Lines 003-004	Assigned DN
29	White-Brown	202	+Rx	Lines 003-004	Assigned DN
4	Brown-White	202	-Rx	Lines 003-004	Assigned DN
30	White-Slate	203	+Tx	Lines 005-006	Assigned DN
5	Slate-White	203	-Tx	Lines 005-006	Assigned DN
31	Red-Blue	203	+Rx	Lines 005-006	Assigned DN
6	Blue-Red	203	-Rx	Lines 005-006	Assigned DN
32	Red-Orange	204	+Tx	Lines 007-008	Assigned DN
7	Orange-Red	204	-Tx	Lines 007-008	Assigned DN
33	Red-Green	204	+Rx	Lines 007-008	Assigned DN
8	Green-Red	204	-Rx	Lines 007-008	Assigned DN
34	Red-Brown	225	+Tx	Lines 025-026	Assigned DN
9	Brown-Red	225	-Tx	Lines 025-026	Assigned DN
35	Red-Slate	225	+Rx	Lines 025-026	Assigned DN
10	Slate-Red	225	-Rx	Lines 025-026	Assigned DN
36	Black-Blue	226	+Tx	Lines 027-028	Assigned DN
11	Blue-Black	226	-Tx	Lines 027-028	Assigned DN

37	Black-Orange	226	+Rx	Lines 027-028	Assigned DN
12	Orange-Black	226	-Rx	Lines 027-028	Assigned DN
38	Black-Green	227	+Tx	Lines 029-030	Assigned DN
13	Green-Black	227	-Tx	Lines 029-030	Assigned DN
39	Black-Brown	227	+Rx	Lines 029-030	Assigned DN
14	Brown-Black	227	-Rx	Lines 029-030	Assigned DN
40	Black-Slate	228	+Tx	Lines 031-032	Assigned DN
15	Slate-Black	228	-Tx	Lines 031-032	Assigned DN
41	Yellow-Blue	228	+Rx	Lines 031-032	Assigned DN
16	Blue-Yellow	228	-Rx	Lines 031-032	Assigned DN

BRI S/T wiring is polarity sensitive.
Tx and Rx are Transmit and Receive for Norstar.

U Interface Cards wiring chart

Pin	Wire color	Loop	Service	Lines (U-NT)	Terminal equipment (U-LT)
26	White-Blue	201	T	Lines 001-002	Assigned DN
1	Blue-White	201	R	Lines 001-002	Assigned DN
27	White-Orange	202	T	Lines 003-004	Assigned DN
2	Orange-White	202	R	Lines 003-004	Assigned DN
28	White-Green	----	----	----	----
3	Green-White	----	----	----	----
29	White-Brown	----	----	----	----
4	Brown-White	----	----	----	----
30	White-Slate	203	T	Lines 005-006	Assigned DN
5	Slate-White	203	R	Lines 005-006	Assigned DN
31	Red-Blue	204	T	Lines 007-008	Assigned DN
6	Blue-Red	204	R	Lines 007-008	Assigned DN
32	Red-Orange	----	----	----	----
7	Orange-Red	----	----	----	----
33	Red-Green	----	----	----	----
8	Green-Red	----	----	----	----
34	Red-Brown	225	T	Lines 025-026	Assigned DN
9	Brown-Red	225	R	Lines 025-026	Assigned DN
35	Red-Slate	226	T	Lines 027-028	Assigned DN
10	Slate-Red	226	R	Lines 027-028	Assigned DN
36	Black-Blue	----	----	----	----
11	Blue-Black	----	----	----	----

37	Black-Orange	----	----	----	----
12	Orange-Black	----	----	----	----
38	Black-Green	227	T	Lines 029-030	Assigned DN
13	Green-Black	227	R	Lines 029-030	Assigned DN
39	Black-Brown	228	T	Lines 031-032	Assigned DN
14	Brown-Black	228	R	Lines 031-032	Assigned DN
40	Black-Slate	----	----	----	----
15	Slate-Black	----	----	----	----
41	Yellow-Blue	----	----	----	----
16	Blue-Yellow	----	----	----	----

BRI U wiring is not polarity sensitive.

Wiring the BRI network interface

A network interface provides the connection between the ISDN network and the Compact ICS.

If the card in the ICS is configured as a T loop, the ICS is wired to the network connection using an NT1. For an S/T loop, the ICS and terminal equipment share the loop wired to the NT1, which is in turn wired to the network. See the ISDN chapter for more information about the NT1.

Wiring for T or S/T network connection

Pin (jack or plug)	NT1 connection (for jack)	ICS and optional TE connection (plug)
1	not used	optional power source 3 (+)
2	not used	optional power source 3 (-)
3	+Rx	+Tx
4	+Tx	+Rx
5	-Tx	-Rx
6	-Rx	-Tx
7	not used	optional power sink 2 (-)
8	not used	optional power sink 2 (+)

The Compact ICS supplies the NT1 functionality to a U-NT loop, allowing a direct connection to the network. The connection may use a plug and jack, or may be directly wired.

Wiring for U-NT network interface

Pin	Norstar connection	Network interface connection (plug/jack)
1	not used	optional battery status indicator (+)
2	not used	optional battery status indicator (-)
3	not used	no connection
4	R	R
5	T	T
6	not used	no connection
7	not used	optional power supply (-)
8	not used	optional power supply (+)

The BRI-U Card does not use or provide optional power.
Some installations may not use a plug and jack for connections between the ICS and the network.

The following illustration shows the pin arrangement for a Bellcore standard ISDN plug and jack. Other pin arrangements are possible.

Pin numbering for network interface jack and plug
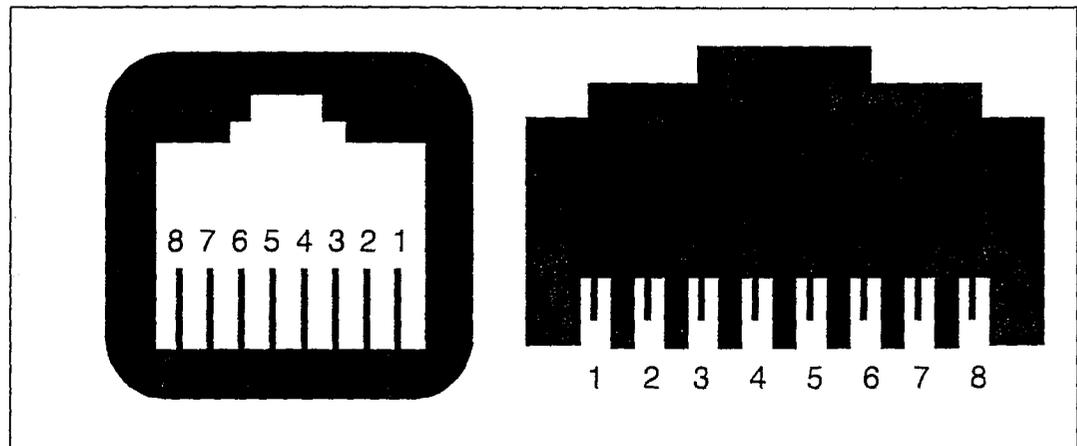
Wiring arrangement for serial port

1 = TxEN (input)

2 = signal GND

3 = TxD (output)

4 = RxD (input)

5 = ----

6 = RxRDY (output)
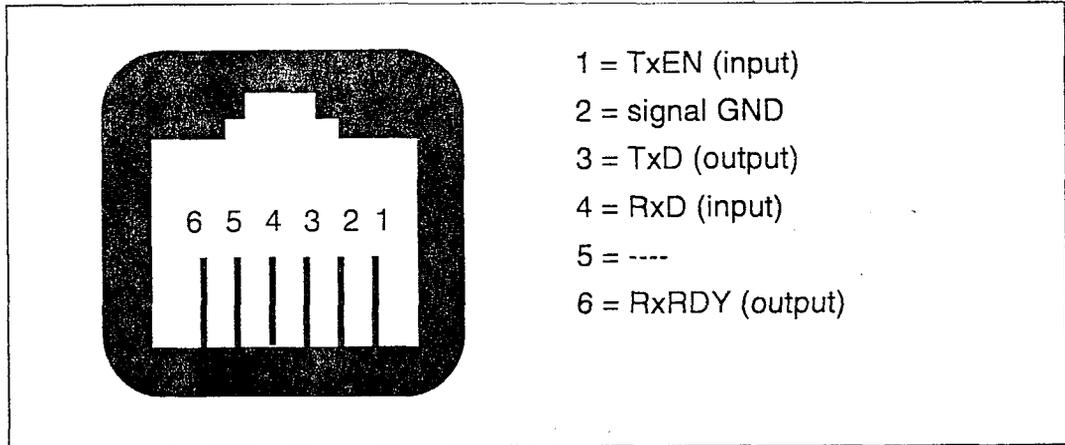
Installing Norstar telephones

Installing the emergency telephone

You can connect an analog emergency telephone to an ICS with a Loop Start Trunk Cartridge to provide emergency service when there is no power to the ICS. Install and test the telephone before powering up your system.

1. Wire a modular jack or equivalent to the emergency telephone pins on the 25-pair distribution block for the ICS external lines. (See the wiring charts for the pin numbers.)

2. Connect an analog telephone (500/2500) to the modular jack.

3. Prepare to test the emergency telephone by removing the Trunk Cartridge from the left slot.

4. Connect the power, then connect the central office lines to the ICS.

5. Pick up the emergency telephone receiver and listen for dial tone.

6. Disconnect the central office lines, then remove power from the system.

7. Replace the Trunk Cartridge in the left slot.

8. Continue with procedures for powering up the system.

9. The emergency telephone uses line 002.

Tip - *When a BRI-ST or BRI-U Card is installed in the left-most Trunk Cartridge slot (Slot 1), you cannot use an analog emergency telephone.*

During a power outage, an ISDN terminal sharing an S/T multi-point bus with the Compact ICS may provide telephone service.

Installing the device that uses the I-ATA

You can connect an analog telecommunications device such as a fax machine, answering machine, modem, or single-line telephone to the internal analog terminal adapter (I-ATA).

1. Wire a modular jack or equivalent to the I-ATA pins on the 25-pair distribution block for the ICS external lines and I-ATA. (See the wiring charts for the pin numbers).

2. Connect the analog device to the modular jack.

3. After the system has been powered up, verify proper operation. (See testing instructions on page 237).

The I-ATA cannot be used as an off-premise extension (OPX). Maximum loop length is 900 m (3000 ft.).

The I-ATA provides a reduced power analog interface for on-premises devices. See the specifications on page 311 for detailed electrical specifications.

Tip - *If you are currently using an ATA to connect a modem to the Compact ICS, and your system has access to a BRI network, you can now use a digital trunk supplied by a BRI Card for modem calls to improve the transmission quality.*

Installing Norstar telephones

Connect to jack wired from distribution block

Connect to receiver
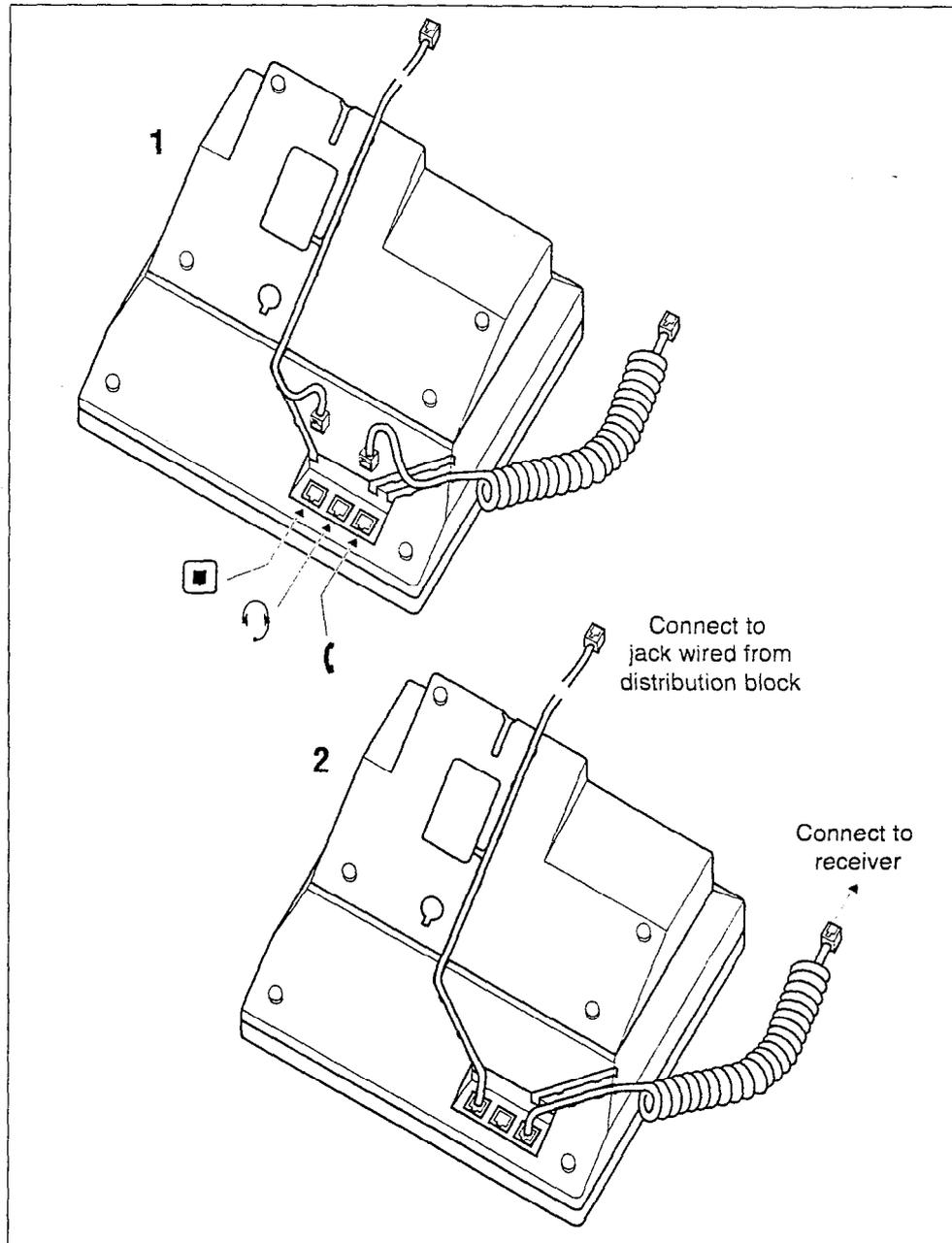
Tip - *Norstar telephones and telephones connected using the internal analog terminal adapter (I-ATA) cannot be used as off-premise extensions (OPX or OPS). For OPX applications, use the Norstar Analog Terminal Adapter (ATA) and a single-line telephone. See the ATA Installation Card for details.*

Mounting Norstar telephones on the wall

1

2

3

4

Mount to a suitable mounting surface.

5

6
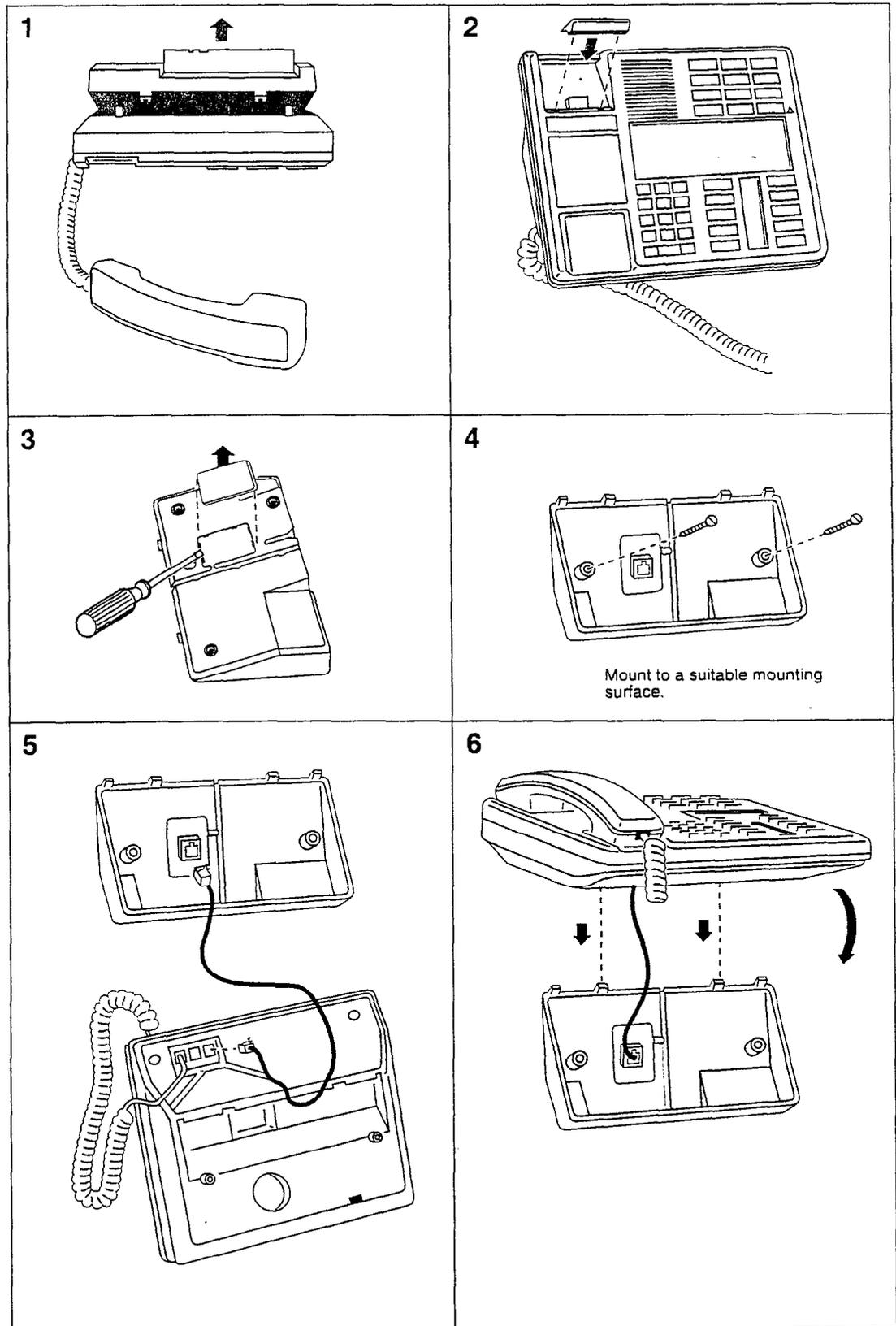
See the ISDN chapter for information about wiring arrangements for ISDN terminal equipment (TE) on an S or S/T loop.

Additional power

A Norstar S loop does not provide power on Power Source 1 (PS1), Power Source (PS2), or Power Source or Sink 3 (PS3). If you are installing ISDN terminal equipment at the S-reference point, and the equipment requires additional power on PS1, PS2, or PS3, then you can install a suitably approved power supply unit. See ANSI T1.605 or the documentation that comes with your TE for details.

The Compact ICS does not require power on PS3.

If a phantom circuit (a wiring arrangement using side circuits) is used to provide power to the TE (PS1), it may affect loop performance. You must account for any effects. For example, you may need to reduce the number of TEs on a passive bus.

U-LT wiring for terminal equipment

Pin (jack or plug)	Norstar connection (for jack)	Equipment connection (plug)
1	not used	optional battery status indication (+)
2	not used	optional battery status indication (-)
3	not used	no connection
4	R	R
5	T	T
6	not used	no connection
7	not used	optional power (-)
8	not used	optional power (+)

No power supply is provided for the U-LT wiring. If equipment attached to the U-LT loop requires optional power, install an approved power supply unit. See ANSI T1.601-1992 Annex H or the documentation that comes with your TE for more information.

Jack and plug pin numbering
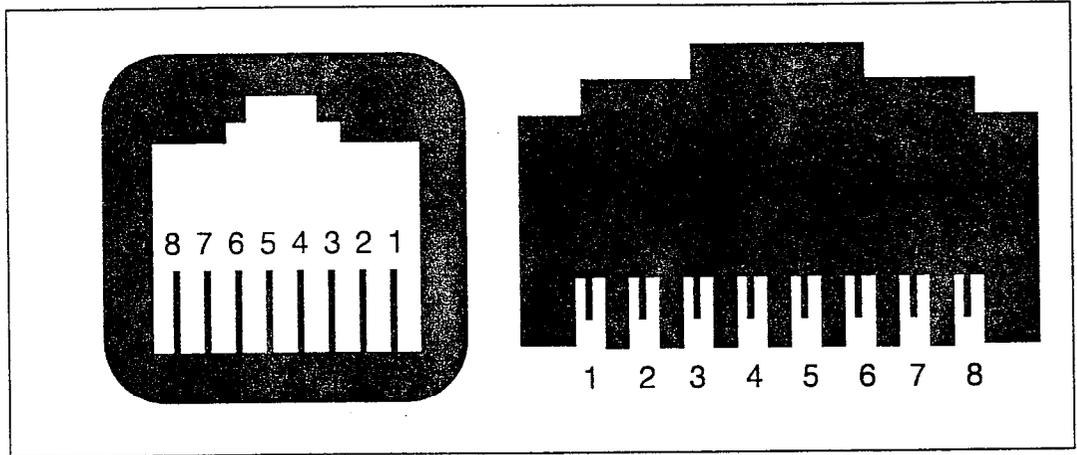
Moving Norstar telephones

You can move a Norstar telephone to a new location within the Norstar system without losing its programmed settings. When Set relocation (automatic telephone relocation) is turned on in System programming, the internal numbers, autodial settings, and user speed dial codes remain with the telephone when it is unplugged. To move a telephone, simply unplug it and plug it in again at another location. It may take up to 45 seconds for the ICS to recognize the telephone. Automatic telephone relocation is turned off by default.

Relocate old telephones before adding new telephones.

Plug Norstar telephones in at their new locations so that they will retain their programmed settings. If a new telephone is plugged into the Norstar system before the old telephone is reconnected at a new location, Norstar will give the old telephone's information to the new telephone, and the old telephone will no longer be recognized by the system.

Do not move a relocated telephone for three minutes.

The telephone must remain installed and connected in the new location for at least 3 minutes for the programming relocation to be complete. If you move the telephone again before the 3 minute period, the telephone's programming may be lost.

Wait one minute before changing the DN of a relocated telephone.

Once a telephone has been moved to a new location, it must be connected for a minute before you change its DN in System programming.

Installing ISDN terminal equipment

For each S/T or U-LT reference point, an 8-position miniature unkeyed plug from the terminal equipment (TE) is plugged into a jack connected to Norstar wiring. The pin connections for the jack and plug are shown in the following charts.

For point-to-multipoint operation on S/T loops, ensure the wiring polarity integrity is maintained.

S/T wiring for terminal equipment

Pin (jack or plug)	Norstar (S-loop; for jack)	Equipment connection (plug)
1	not used	optional power source 3 (+)
2	not used	optional power source 3 (-)
3	+Rx	+Rx
4	+Tx	+Tx
5	-Tx	-Tx
6	-Rx	-Rx
7	not used	optional power sink 2 (-)
8	not used	optional power sink 2 (+)

S/T extension wiring configurations

The last connection on any ISDN S/T extension wiring must have terminating resistors to ensure correct timing of the signaling circuits. Failure to install terminating resistors will degrade performance. Terminating resistors should not be connected on a TE which is not the last connection on the loop.

Terminating resistors are provided on terminal equipment. See the instructions that come with your TE for information on how to enable or disable the termination, as required.

The maximum length of spur and ISDN connection cord (the extension from the main line or bus) is 10 m (30 ft).

Installing optional equipment

Auxiliary ringer (customer supplied)

The Norstar ICS provides a control contact to operate an auxiliary ringer.

1. Follow the manufacturer's installation instructions.

2. Connect the auxiliary ring generator to the 25-pair distribution block as shown in the wiring charts. The pins in the chart provide a control contact. They do not provide ring current or dc voltage. The contact is capable of switching a maximum of 50 mA and a maximum voltage of 40 V dc.

Auxiliary ringer programming

The auxiliary ringer can be activated by setting auxiliary ring for specific external lines, and auxiliary ring for specific telephones. Refer to the Programming chapter for details.

Heading	Programmed in:
Trunk/Line Data	Lines
Capabilities	Terminals&Sets
Ringing service	Services

External music source (customer supplied)

The music source can be any approved low-power device such as a radio with a high-impedance earphone jack. The recommended ICS input level is 0.25 V rms across an input impedance of 3300 Ω.

1. Connect the music source output to the 25-pair distribution block ensuring the input ground is connected to the music source ground, as shown in the wiring chart beginning on page 88.

2. Adjust the volume of the music source to a comfortable level by activating Background Music (Feature $\boxed{8}$ $\boxed{6}$) and adjusting the volume at the music source.

Tip - *Background Music volume can also be adjusted at each telephone.*

External music source programming

Music for callers on Hold and for Background Music must be enabled through programming. Refer to the Programming chapter for more details. Refer specifically to the following Programming headings and confirm that the following settings are implemented:

Heading	Setting
Featr settings	Backgrnd music: **Y**
	On hold: **Music**

External paging system (customer supplied)

You can connect an external paging system to provide paging over external loudspeakers. The paging output from the Norstar ICS is 100 mV rms across an input impedance of 600 Ω.

1. Follow the manufacturer's installation instructions.

2. Connect the paging system audio input to the 25-pair distribution block as shown in the wiring charts.

3. Connect the paging system relay to the 25-pair distribution block as shown in the wiring charts.

External paging contacts
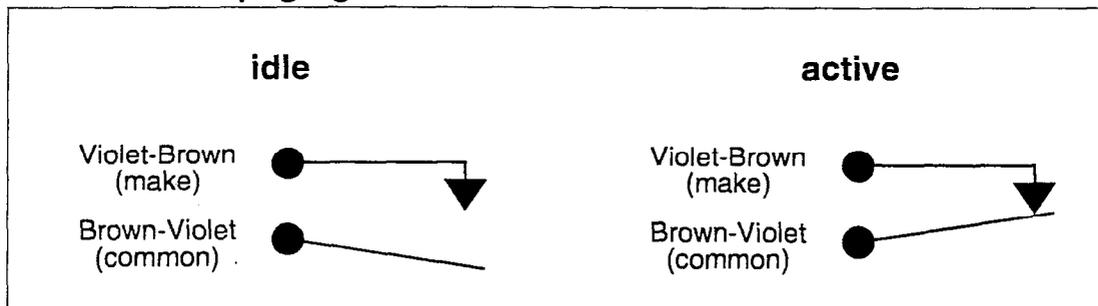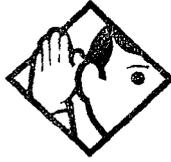
Tip - *Norstar external paging does not support talk-back paging equipment unless an external line port is used.*

The Norstar system provides paging over the Norstar telephone speakers, even when no external paging equipment is connected.

Install all optional equipment before powering up the system.

Powering up the system

> ⚠ **Risk of fire and electrical shock.**
>
> For continued protection against risk of fire and electrical shock, ensure all unpopulated cartridge slots are covered by filler faceplates prior to powering up. Immediately after powering up, connect the central office and station line connectors and replace the cover.

1. Ensure the filler faceplates (slot covers) are in place.

2. Make sure the air flows freely around the unit and that nothing is sitting on or blocking the area around it. The gap between the ICS and the backboard must be left completely clear.

3. Double-check all wiring. Do not connect the central office and station lines prior to connecting power.

4. Connect the power cord to an electrical outlet (non-switchable, third-wire ground AC outlet).

> ⚠ **Do not fasten power supply cords.**
>
> To comply with UL1459, do not fasten the ICS power supply cord to any building surface, including the backboard.

5. Check that the power LED on the ICS is on.

6. Connect central office and station line connectors.

7. Replace the cover. Insert the tabs on the left side of the cover into the slots on the ICS, as shown in the illustration. Then press the cover until the tab on the right catches.
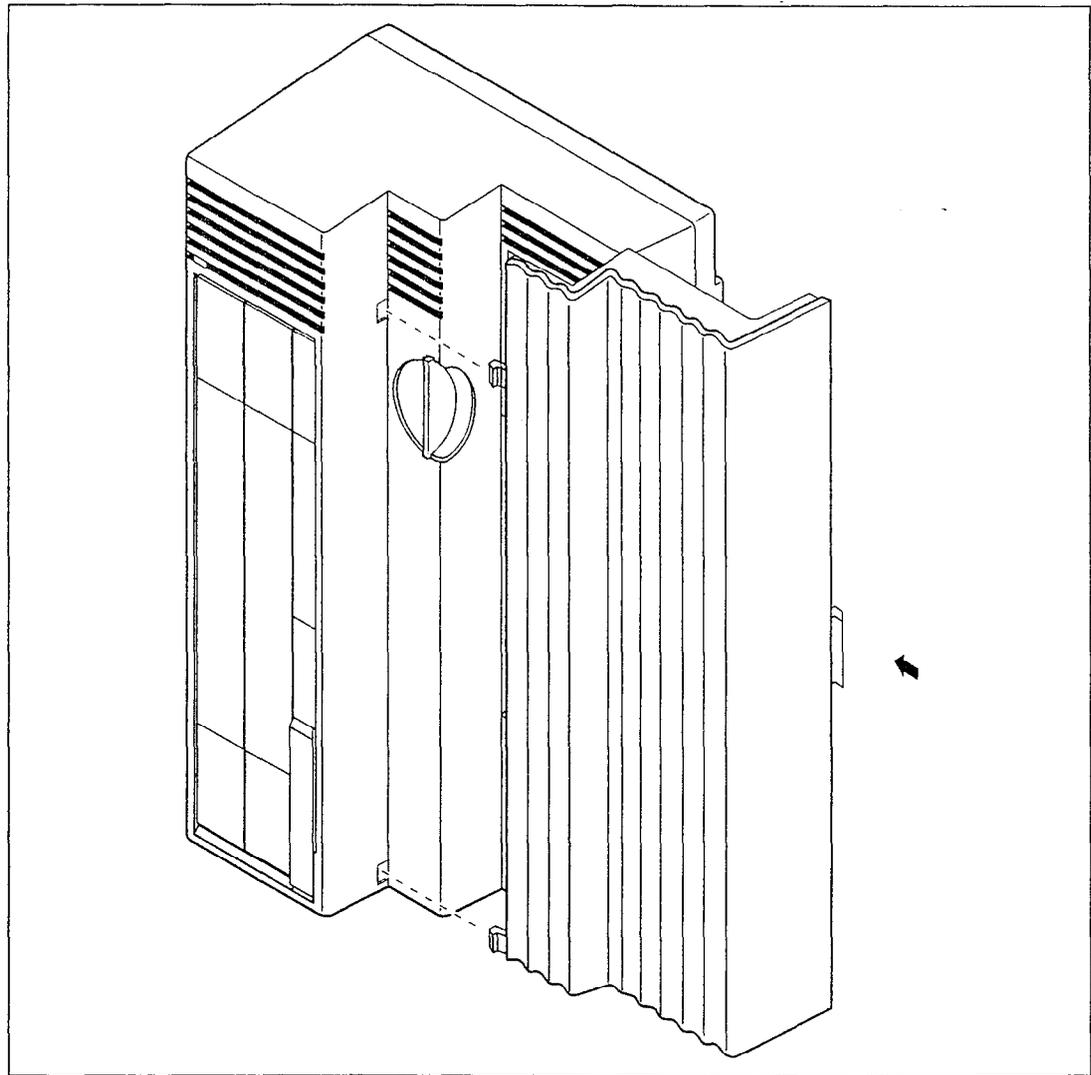
Once the system is initialized and the telephone displays reads
Jan 1 1:00 am, you have fifteen minutes in which to perform Startup
programming (see page 132). After 15 minutes, access to Startup
programming is denied. You can turn the system power off and back
on if you need to access Startup programming after this point.

Call Log information may be lost.

If the Norstar system suffers a power failure or
the system is manually restarted, Call Log
information is not saved. Notify users if a system
restart is planned so any log information can be
written down first.

Programming

The installer or the customer service representative programs settings for the entire Norstar system, plus settings for individual telephones and external lines. Most of the settings can also be programmed by a system coordinator who has a "plus" (SysCoord+) password.

Programming affects system operation.

Only a qualified installer or customer service representative should perform startup, installation and maintenance programming. Some of the settings affect the correct operation of the system.

Programming overview

Programming access is controlled by four passwords.

- Installer password – allows you to see and change any item in programming.

- System Coordinator Plus password – provides knowledgeable users with access to all but a few sensitive areas of programming.

- System Coordinator password – used to view and change the settings that are part of day-to-day administration of the Norstar system.

- Basic password – used with a limited number of feature codes to change programming and control system services.

The tables give an overview of what programming is seen by each type of user. For more information on programming the passwords, see page 192.

For more information about programming using the System Coordinator and Basic passwords, see the *System Coordinator Guide.*

Programming using the Installer and System Coordinator Plus password

Startup		Passwords		Software Keys
Template		COS pswds		SysID
Start DN		Call log pswds		Password Keys

Terminals&Sets

	Progrming pswds		**Hardware**
Line access	IRAD pswd		Cd1 on KSU
Capabilities	**Time&Date**		Cd2 on KSU

Name	**System prgrming**		**Maintenance**
User prefernces	Change DNs		System version
Restrictions	Featr settings		Port/DN status
Telco features	Direct-dial		Module status

Lines

	CAP assign- ment		Sys test log
Trunk/Line data	Access codes		Sys admin log
Name	Auto Attendant		Provisioning
Restrictions	Remote access		Tests
Telco features	Rec'd # length		Remote monitr

Services

	DN length
Ringing service	Intrl modem
Restrn service	Alarm reporting

Routing service	**Telco features**
Common settings	VMsg ctr tel#s

Sys speed dial

Shaded items are seen only if you are using the Installer password. Settings that require an Installer password are identified with a special icon in the programming instructions.

The Auto Reporting subheading will not appear unless your Feature Cartridge comes with remote administration enabled, or you have enabled the feature using software keys.

Programming using the System Coordinator password

Terminals&Sets	Services	Time&Date
Capabilities	Ringing service	**System prgrming**
Name	Restrn service	Auto Attendant
User prefernces	Routing service	**Telco features**
Restrictions	**Sys speed dial**	VMsg ctr tel#s
Telco features	**Passwords**	

Lines	
Name	Call log pswds
	Progrming pswds
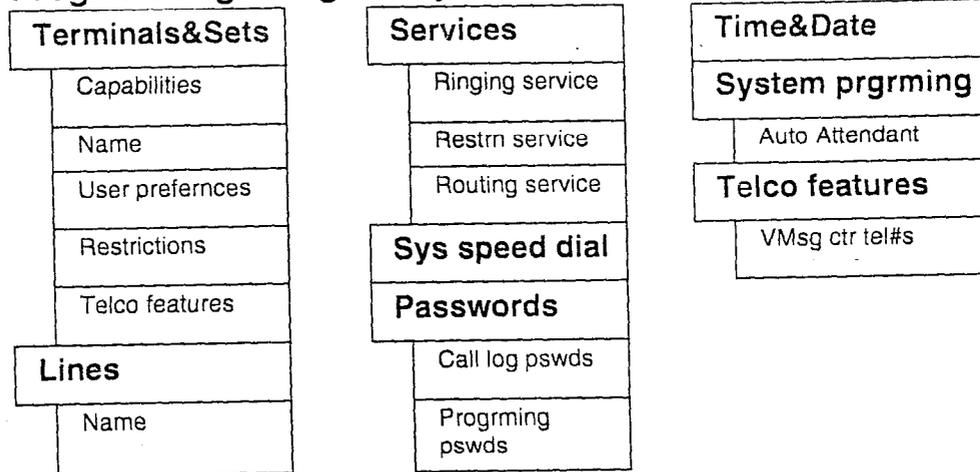
If you are new to programming, you may want to practice using the step-by-step programming instructions in the "Getting Started" section of the *System Coordinator Guide* before attempting other programming.

Programming tools
A Norstar telephone
Programming is done at an M7310 or M7324 telephone. Use the buttons on the telephone to program a setting or to request a specific programming action. Norstar guides you step-by-step with instructions on the telephone display while it is being programmed.

The programming overlay
The programming overlay is a paper cutout that labels four telephone buttons used during programming. The programming overlay is provided at the front of this book.

Norstar Programming Overlay

Heading   Show

Back   Next

PO608666 Issue 02 Printed in Canada
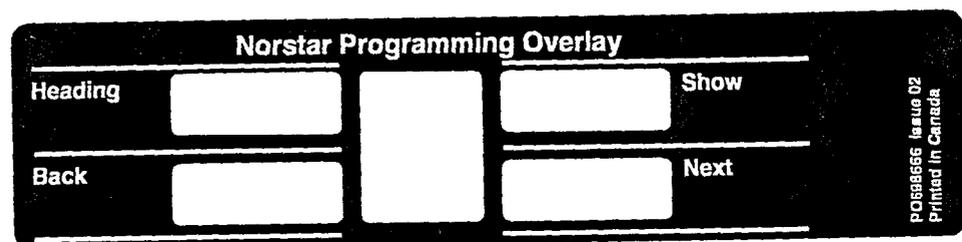
M7310 telephone with a programming overlay
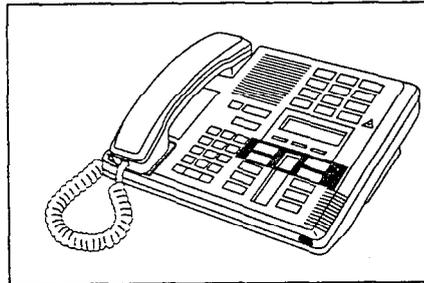
M7324 telephone with a programming overlay
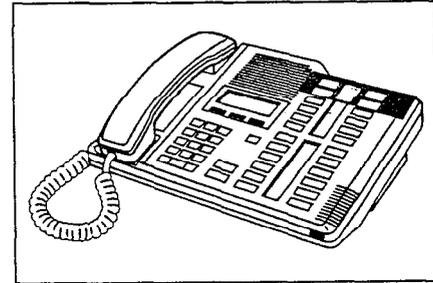
The indicators (▶) on the M7310 or M7324 telephone show which buttons can be used at that programming step. The functions on these buttons allow you to move through the headings and subheadings of Norstar programming.

| Heading | moves to a higher level in the hierarchy of headings and subheadings. |

| Show | moves to a lower level in the hierarchy of headings and subheadings, or begins programming for a heading or subheading. |

| Next | moves forward at the same level in the hierarchy of headings and subheadings. |

| Back | moves backward at the same level in the hierarchy of headings and subheadings. |

The Norstar display buttons

Display buttons on the M7310 and M7324 telephones perform many functions. Depending on where you are in programming, one, two, or three display buttons may be available at any one time. Press one of the display buttons to select the desired function.

```
Show line:_          ———— Display message
COPY                 ———— Display button message


                     ———— Display button
```
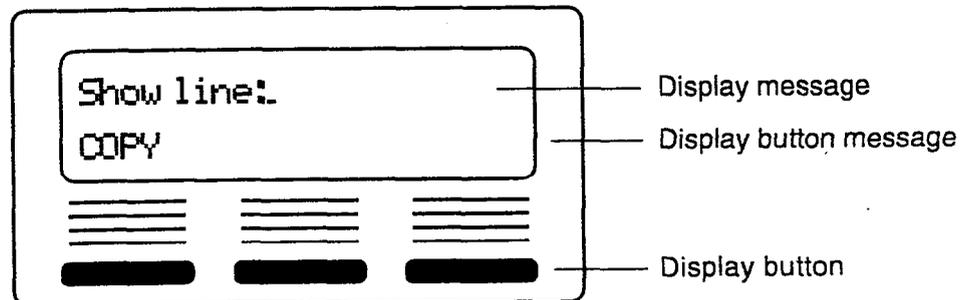
The most common display button labels are:

CHANGE	changes a programmable setting
BKSP	moves the cursor one space to the left (backspace) and deletes a character, allowing you to re-enter a number or letter
COPY	copies the settings of items like lines, telephones and filters to an item of the same type
LIST	displays the lowest value in a list of DNs, lines or other items
VIEW→	views the last part of a displayed message longer than 16 characters
←VIEW	views the first part of a displayed message longer than 16 characters
-->	moves the cursor one position to the right when programming a name
<--	moves the cursor one position to the left when programming a name

Special characters on the display

When a triangle (▶) is at the end of a programming heading or subheading, it means you can press ⌷Show⌷ to see settings.

When an ellipsis (...) is at the end of a heading or subheading, it means you can press ⌷Show⌷ to see the setting for that heading.

The Norstar Programming Record

The *Programming Record* provides a convenient way to record what has been programmed. It also helps to plan the programming.

Pages from the record may be photocopied as necessary for programming many telephones or lines.

Exiting programming

Norstar stores changes automatically as soon as you alter any settings; you do not need to save changes.

1. Press ⌷Ris⌷. The display briefly reads End of session.

Viewing your programming updates

If any changes you have made to programming have not taken effect yet, you will see an UPDATE display button when you leave programming. The display will show you how many telephones have not been updated yet because the system is busy with other programming or the telephone is in use.

Press DNs to see the specific extensions where programming changes have not been updated. Items will disappear from the list as they are updated, and UPDATE will disappear once all changes are complete.

Entering numbers

A line number must always be entered as a three-digit number. Line numbers from 1 to 8 must be entered with leading zeroes (for example, line 003).

Internal telephone numbers, also referred to as directory numbers (DNs), can be two to seven digits long. The default DN length is two digits. The DN length can be changed in programming.

Copying telephone programming

Copying is done by using COPY under Terminals&Sets. You can copy programming from one telephone to another telephone, a range of telephones or all telephones.

1. At Terminals&Sets ▶, press [Show] and enter the internal number of the telephone from which you wish to copy programming.

Select what programming will be copied:

*   SYSTEM – the system administration programming (system data) of a set

    OR

*   SYSTEM+USER – the system administration programming PLUS the programming for a particular set (user data)

See the tables starting on page 117 to see which settings will and will not be copied with system and user data.

2. Press [Next   ], then <u>CHANGE</u> to select the telephone or telephones which will be programmed with the copied data: SINGLE, RANGE, ALL.

You can copy programming to telephones which are not yet hooked up to the system (unequipped).

3. Press [Next   ], then <u>CHANGE</u> to select which telephones will be programmed: Only equipped DNs, All set DNs. This is not necessary when copying to a single telephone.

4. Press [Next   ] and enter the internal number of the telephone that will be programmed or the internal numbers of the first and last telephone in a range.

5. Press <u>OK</u> to proceed with the copy. This step is not necessary when you are copying to a single telephone.

You can also use <u>COPY</u> to duplicate the settings found in the individual subheadings. The button is available in Line access, Capabilities, User prefernces, Restrictions and Telco features and will copy only the settings included in the subheading.

If you press <u>COPY</u> in one of these subheadings, you will not be asked to decide if user data will be copied. Otherwise, the procedure is the same.

Tip - *To copy to a group of telephones which are not part of a range, follow the steps for making a single copy and keep entering new numbers at the* Copy to: *display.*

Depending on the activities going on in the system, a copy may not take effect for a while. The brief display you see once you have finished a copying session does not indicate the process is complete.

You can leave the programming session even if the copy has not been completed. If you exit programming, copying will continue uninterrupted until it is complete.

Event codes capture both the start and completion of the copying process. See the section on Event Codes in this guide for more information.

Some programming settings allow you to choose a delay according to the number of rings. The ring counts used are based on a North American standard of six seconds per ring cycle. The actual delay time may be different for a device other than a Norstar telephone.

System Data which will be copied:	System data which will NOT be copied:
Line access • Line assignment • ILG assignment • Answer DNs (unless Answer button DN is same as set being copied to) • Line pool access • Prime line designation • Number of intercom keys • Outgoing line identification number Restrictions • Set restrictions • Set lock • Allow Last Number Redial • Allow Saved Number Redial • Allow Link • Line/set restrictions Capabilities • Allow redirect • Call Forward No Answer (DN + delay + setting) • Call Forward Busy (DN + setting) • Priority calling • Paging • Redirect ring • Auxiliary ringer • DND on busy • Hotline • Handsfree answerback • Handsfree setting • Direct-dial (which set is reached by the D-Dial digit) • Pickup group • Paging zone • ATA settings (except Use ringback setting) Telco Features • 1stDisplay • Caller ID set *(Auto call info)* • Call Log set *(Logging set)*	Line access • Private line appearances Capabilities • Set name • Use ringback setting under ATA settings (for I-ATA only) Telco features • Log password • Log space CAP assignment Direct-dial set designation (which set is the D-Dial set) ExtraDial set designation Service mode ringing set designation Prime set designation for a line

Capabilities

Setting	Square	Hybrid	PBX
Fwd no answer	Forward to: None	Defaults same as Square	
Forward delay	4 rings		
Fwd on busy	Forward to: None		
DND on Busy	N		
Handsfree	None		
HF Answerback	Y		
Pickup grp	None		
Page zone	1		
Paging	Y		
D-Dial	Set 1		
Priority call	N		
Hotline	None		
Aux. ringer	N		
Allow redirect	N		
Redirect ring	Y		
ATA settings (if port is an analog terminal adapter)	I-ATA: Use ringback Other ATA: ATA ans timer:7 ATA use:Off Site		

Name

Setting	Square	Hybrid	PBX
Name	21	Defaults same as Square	

User preferences

Setting	Square	Hybrid	PBX
Model	M7208		
Button prgrming	see page 232		
User speed dial	No default		
Call log opt'ns	No one answered	Defaults same as Square	
Dialing opt'ns	Standard dial		
Language	English		
Display cntrst	1		
Ring type	1		

Restrictions

Setting	Square	Hybrid	PBX
Filter 00	No restrictions (cannot be changed)		
Filter 01 Restr'n 01	Deny: 0		
Restr'n 02 Overrides	Deny: 1 1800 1877 1888 1555 1•••555		
Restr'n 03 Overrides	911 911	Defaults same as Square	
Restr'n 04	411		
Restr'n 05	976		
Filter 02 to 99	No restrictions		
Set restrns	Filters: Normal 02 Night 11 Evening 12 Lunch 13 Sched 4 00 Sched 5 00 Sched 6 00		

	Set lock: None Allow last no: Y Allow saved no: Y Allow link: Y	Defaults same as Square
Line/set restrns	All schedules: None	

Telco features

Setting	Square	Hybrid	PBX
CLASS assignment	Caller ID set: N Call log set: N Extl VMsg set: N	Defaults same as Square	
1stDisplay	Name		
Log space	Log: 0 Pool: 250		

Lines defaults

Trunk/Line data (physical lines)

Setting	Square	Hybrid	PBX
Trunk type	Loop	Defaults same as Square	
Line type	Public	Pool A	Pool A
Dial mode	Tone	Defaults same as Square	
PrimeSet	21 (for each line)		
Auto privacy	Y (for each line)		
Trunk mode	Super		
Ans mode	Manual		
Ans with DISA (presented if Ans Mode is set to Auto)	Y		
Line grp	None		
Aux. ringer	N (for each line)		
Full AutoHold	N		
LossPkg	MediumCO		

Trunk/Line data (target lines)

Setting	Square	Hybrid	PBX
Line type	Public		
Rec'd #	None		
PrimeSet	21 (for each line)	Defaults same as Square.	
Auto privacy	Y (for each line)		
Line grp	None		
Aux. ringer	N (for each line)		

Name

Setting	Square	Hybrid	PBX
Name	Line number (Line 001, for example)	Defaults same as Square	

Restrictions

Setting	Square	Hybrid	PBX
Filter 00	No restrictions (cannot be changed)		
Filter 01 Restr'n 01	0		
Restr'n 02 Overrides	1 1800 1877 1888 1555 1•••555	Defaults same as Square	
Restr'n 03 Overrides	911 911		
Restr'n 04	411		
Restr'n 05	976		
Filter 02 to 99	No restrictions		

Line restrns	Normal	03	Defaults same as Square
	Night	21	
	Evening	22	
	Lunch	23	
	Sched 4	00	
	Sched 5	00	
	Sched 6	00	
Remote restrns	Normal	04	
	Night	31	
	Evening	32	
	Lunch	33	
	Sched 4	00	
	Sched 5	00	
	Sched 6	00	

Telco features

Setting	Square	Hybrid	PBX
VMsg center	1 (for all lines)	Defaults same as Square	

Services defaults

Ringing service

Setting	Square	Hybrid	PBX
Ringing groups	Ring groups (all groups) Set 21 Assigned All other sets: Unassigned All modes: Off Trunk answer: Y ExtraDial: Set 21 For all lines Ring group: 01 Aux. ringer: N	Defaults same as Square	
All schedules	Service: Off Trunk answer: Y ExtraDial: 21 For all lines Ring group: 01 Aux. ringer: N		

Restrn service

Setting	Square	Hybrid	PBX
All schedules	Off	Defaults same as Square	

Routing service

Setting	Square	Hybrid	PBX
Route number	DialOut: No number Use: Pool A		
Dest codes	All codes Normal route: 000 AbsorbLength: All All other routes: None	Defaults same as Square	
All schedules	Service: Off Overflow: N		

Common settings

Setting	Square			Hybrid	PBX
Control sets	All lines	Set 21			
	All sets	Set 21			
Schedule names	Schedule 1	Night			
	Schedule 2	Evening			
	Schedule 3	Lunch			
	Schedule 4	Sched 4			
	Schedule 5	Sched 5			
	Schedule 6	Sched 6		Defaults same as Square	
Schedule times	All days				
	Schedule	Start	Stop		
	Night	23:00	7:00		
	Evening	17:00	23:00		
	Lunch	12:00	13:00		
	Schedule 4	00:00	00:00		
	Schedule 5	00:00	00:00		
	Schedule 6	00:00	00:00		

System speed dial defaults

Setting	Square	Hybrid	PBX
Speed dial #	All speed dial codes: No number		
Use	Use prime line	Defaults same as Square	
Display digits	Y		
Name (presented if Display digits is changed to No)	Sys spd dial <#nn> <#nn> is a two-digit system speed dial code (#12, for example).		
Bypass restr'n	N		

Passwords

Setting	Square	Hybrid	PBX
COS pswds	None		
Call log pswds	None		
Progrming pswds	Installer: CONFIG SysCoord+: SCPLUS SysCoord: ADMIN Basic: BASIC	Defaults same as Square	
IRAD pswd	Sys ID		

Time & Date

The default time and date is: 1:00 a.m., January 1, 1997.

System prgming defaults

Change DNs

Setting	Square	Hybrid	PBX
Change DNs	Individual DNs may be changed	Defaults same as Square	

Featr settings

Setting	Square	Hybrid	PBX
Backgrnd music	N		
On hold	Tones		
Receiver volume	Use sys volume		
Camp timeout	45 (seconds)		
Park timeout	45 (seconds)	Defaults same as Square	
Park mode	Lowest		
Trnsfr callbk	4 rings		
DRT to prime	Y		
DRT delay	4 rings		
Held reminder	N		
Remind delay (presented if Held reminder is changed to Yes)	60 (seconds)		
Directd pickup	Y		
Page tone	Y		
Page Timeout	180 (seconds)		
Daylight time	Y	Defaults same as Square	
Call log space	No default		
Host delay	1000 (milliseconds)		
Link time	600 (milliseconds)		
AlarmSet	21		
Set relocation	N		

Direct-dial

Setting	Square	Hybrid	PBX
D-Dial 1	Intrnl: 21	Defaults same as Square	

CAP assignment

Setting	Square	Hybrid	PBX
CAP assignment	CAP1: None	Defaults same as Square	

Access codes

Setting	Square	Hybrid	PBX
Line pool codes	None	Defaults same as Square	
Park prefix	1		
Extrnl code	9		
Direct-dial	0		
Auto DN	None		
DISA DN	None		

Auto Attendant

Setting	Square	Hybrid	PBX
Auto Attend	OFF	Defaults same as Square	
Attd Set	21		
Language	First: English Second: None		
System Answer	After: 3 rings		
CCR	After: 3 rings CCR lines Line answer: NO (all lines) CCR groups All CCR groups: Unassgnd		

Remote access

Setting	Square	Hybrid	PBX
Remote access pkgs	Package 00 Prohibits access to line pools, remote Page and remote administration and monitoring. Cannot be changed Package 01 Line pool access: Yes for Pool A, No for Pools B and C Remote page: No Remote administration: No Remote monitoring: No Packages 02-15 Line pool access: No for Pools A to C Remote page: No Remote administration: No Remote monitoring: No	Defaults same as Square	
Rem line access	All lines: Remote package 00		
IRAD	Answer line: None After: 5 rings		

Rec'd # length

Setting	Square	Hybrid	PBX
Rec'd # length	2	Defaults same as Square	

DN length

Setting	Square	Hybrid	PBX
DN length	2	Defaults same as Square	

Intrl modem

Setting	Square	Hybrid	PBX
Intrl modem	Fast	Defaults same as Square	

Alarm reporting (appears when Feature Cartridge has remote administration enabled)

Setting	Square	Hybrid	PBX
Auto-report	OFF		
Phone #1	None		
Phone #2	None	Defaults same as Square	
Use line	None		
Retry time	15		
Num. retries	5		

Telco features defaults

Setting	Square	Hybrid	PBX
VMsg ctr tel#s	All voice message centers: No number	Defaults same as Square	

Software Keys

Setting	Square	Hybrid	PBX
SysID	8-digit number that is unique to the system	Defaults same as Square	
Passwords Keys	Three keys of eight digits each		

Hardware defaults

Trunk Cartridges (Analog trunks)

Setting	Square	Hybrid	PBX
Cd1-KSU	Card type: Loop Lines: 001-004 Disconnect timer: 460 (milliseconds)	Defaults same as Square	
Cd2-KSU	Card type: Loop Lines: 025-028 Disconnect timer: 460 (milliseconds)		

Trunk Cartridges (ISDN trunks)

Setting	Square	Hybrid	PBX
Cd1-KSU	Card type: <card type> Loops: 201-204 Lines: 001-008	Defaults same as Square	
Cd2-KSU	Card type:<card type> Loops: 225-228 Lines: 025-032		

Startup programming

After the hardware has been installed and powered up, use Startup to initialize the system and select the Startup template.

> **Startup erases programming.**
>
> Startup erases any existing programmed data, and resets the system to factory defaults.

Performing Startup

1. Enter the Startup access code from a Norstar M7310 or M7324 telephone dial pad by pressing
    `Feature` `*` `*` `S` `T` `A` `R` `T` `U` `P` which is the same as
    `Feature` `*` `*` `7` `8` `2` `7` `8` `8` `7`.

    To be accepted, the Startup code must be entered no later than 15 minutes after the Norstar system has been powered up. (If 15 minutes have elapsed since you powered up the system, turn system power off and on to prepare for the Startup process.)

2. Enter the Installer password. The default is `C` `O` `N` `F` `I` `G` which is the same as `2` `6` `6` `3` `4` `4`.

> **Tip** - *The Installer password shown is the default normally used for Startup. For a system which has already been programmed, the Installer password might have been changed in programming and recorded in the Programming Record.*

Changing the default template

After entering the Startup access code and Installer password the display reads Reset memory?.

1. Press YES to select a default template. The display shows the current template.

2. Press CHANGE to choose one of three templates (**Square**, PBX, or Hybrid). With the display showing the current template.

3.   Press ⌈Next⃞⃞⃞⌉ . The display shows the current start DN.

4.   Press CHANGE.

5.   Enter the new directory number you want as the starting DN and press OK. The display shows the new range of DN numbers.

6.   Press ⌈Next⃞⃞⃞⌉ to store the programming. The display reads Applying template. The indicators begin to flash after a few moments, then the display returns to the date and time.

> ### *Changing template resets system programming.*
>
> If you change your system template, your system programming will be reset.

Changing the starting DN number

You can change the starting number for your internal numbers, also known as directory numbers (DNs). This is helpful when your system is part of a network and you want to use a uniform series of internal numbers for all telephones in your network.

> ### *DN numbering cannot conflict with direct-dial digit, park prefix or line pool and destination codes.*
>
> If the new DNs clash with the direct-dial digit, park prefix, or line pool or destination codes, those numbers are overridden and set to None.

> ### *Programming may be lost after three or more days without power.*
>
> All programming is retained for three days if the power fails or if the Norstar system is powered off. After three days without power, it may be necessary to perform Startup.

Tip - *The length of the new DN (internal number) can be from two to seven digits.*

The length of the internal number that you enter sets the length for all internal numbers and target line received numbers in the system.

A DN length change, if required, should be the first programming change on a newly-installed Norstar system after you select a template.

If you reduce the length of the DN under System prgrming, the starting DN number is reset to the default value. For example, if you reset the DN length to 2 from a longer length, the start DN becomes 21.

If you increase the length of directory numbers under System prgrming, each increase in length places the digit 2 in front of any existing DN. For example, if DN 32 was increased to a length of 5, the new DN would be 22232.

Do not disable or enable ports in Maintenance during the first two minutes after Startup programming.

Programming

After performing Startup, use programming to change default settings as required. Default settings for the Square template are shown in bold.

Headings and subheadings in programming help you to keep track of where you are.

Programming has the following headings:

Terminals&Sets	lets you assign settings to each telephone.
Lines	lets you assign settings to each trunk, external and target line.
Services	lets you create services such as night ringing, routing and restrictions for making external calls.
Sys speed dial	lets you create speed dial codes that can be used by any telephone in the system.
Passwords	lets you view and change passwords for programming and features.
Time&Date	lets you set the time and date on the system clock.
System prgming	lets you change system-wide settings, Auto Attendant and custom call routing programming.
Telco features	lets you assign settings for external voice message services.
Software keys	lets you upgrade a restricted feature cartridge or activate the remote administration feature using key codes supplied by Nortel.
Hardware	lets you configure Trunk Cartridges and BRI Cards
Maintenance	lets you see diagnostic information about the system and provision BRI Cards.

Entering programming for installers

1. Press `Feature` `*` `*` `C` `O` `N` `F` `I` `G` which is the same as `Feature` `*` `*` `2` `6` `6` `3` `4` `4`. The display reads Password:.

2. Enter the Installer password. The default password is **CONFIG** (266344). The display reads Terminals&Sets ▶. Three triangular indicators ▶ appear on the vertical display between the rows of buttons.

3. Place the programming overlay over the buttons pointed to by the indicators ▶.

Entering programming for system coordinators

The person on staff who is in charge of making changes on the Norstar system is called the system coordinator. The everyday programming done by system coordinators is described in the *System Coordinator Guide*.

Some system coordinators need to be able to program more advanced settings and functions in order to carry out the day-to-day requests and upkeep of the Norstar. These coordinators are usually dedicated communications specialists who work with large Norstar systems or other telephone systems like PBX or Centrex.

By using a special password, a system coordinator can see and change many, but not all, of the programming settings used by an installer. In this guide, programming that can only be changed by an installer is marked by a special icon. If you are programming using the System Coordinator Plus password, you will not see these items when you move through programming.

1. Press `Feature` `*` `*` `C` `O` `N` `F` `I` `G` which is the same as `Feature` `*` `*` `2` `6` `6` `3` `4` `4`.
The display reads Password:.

2. Enter the System Coordinator Plus password. The default password is **SCPLUS** (727587). The display reads Terminals&Sets ▶. Three triangular indicators ▶ appear on the vertical display between the rows of buttons.

3. Place the programming overlay over the buttons pointed to by the indicators ▶.

Entering programming using other passwords

A set of the most often used headings and subheadings is available by using a System Coordinator password (see page 111). This level of access is designed for the average user who takes care of the day-to-day changes to the Norstar system, but who is not interested in more advanced programming. The default password is ADMIN (23646).

There is also a Basic password that can be used to perform a few programming tasks. By using this password, a system coordinator can delegate some responsibilities while keeping more sensitive programming secure. See the *System Coordinator Guide* for more information.

Programming sequence

The programming information in this guide is presented in the order that is useful for everyday changes and upkeep of the system. The following order is more suitable for an installation.

Suggested order for programming a new installation:

- Startup
- Hardware
- Lines
- Terminals & Sets
- System prgrming
- Services
- Sys speed dial
- Telco features
- Passwords
- Time&Date
- Software Keys

Terminals&Sets

Terminals&Sets lets you assign settings to each telephone.

Press ⌈Show   ⌉ and enter the extension number of the telephone you would like to program.

Press COPY to duplicate the programming for the telephone and apply it to another telephone, a range of telephones or all the telephones on the system. For more information about copying set programming, see Copying telephone programming on page 114.

Line access

Line access allows you to assign lines to individual telephones.

When you are finished programming Line access settings for one telephone, you can copy those settings to other telephones by using COPY at the Line Access ▶ display. For more information about copying set programming, see Copying telephone programming on page 114.

> **Tip -** *When you assign line access for BRI loops which have only one SPID, make sure that the programming for the two lines on a BRI loop is identical. For example, if line 001 on BRI loop 201 appears at a DN, line 002 on the same loop should appear at the DN as well. See the ISDN chapter for more information about programming BRI lines.*
>
> *In general, auto-answer loop start trunks and auto-answer BRI trunks are not assigned to telephones. If assigned, they are used for monitoring incoming call usage, or for making outgoing calls.*

Line assignment

This setting allows you to assign physical trunks and target lines to each telephone. Target lines are assigned and removed in the same manner as other lines. Press ⌈Show   ⌉ and enter the line number.

Press CHANGE to change the setting for each line: **Appear&Ring**, Appear only, Unassigned, or Ring only.

Tip - *Press SCAN to view the lines assigned to this telephone.*

In general, auto-answer loop start trunks and auto-answer BRI trunks are not assigned to telephones. If assigned, they are used for monitoring incoming call usage, or for making outgoing calls.

You cannot assign a line that is private to another telephone.

Each line assigned to appear at a telephone must appear at a button with an indicator on that telephone.

If you set a line to Ring only, incoming calls appear on an intercom button.

A central answering position (CAP) with a CAP module can provide extra line buttons. The remaining lines appear on buttons on the CAP module.

Make sure that lines assigned to an M7100 telephone are assigned to ring; otherwise, you cannot detect incoming calls on the lines.

Line pool access

This setting allows a telephone to access one or more of the three line pools available (A to C). When you change the setting to yes for a given line pool, the telephone being programmed can access any lines in that line pool.

Press [Show⎯⎯⎯⎯] and [Next⎯⎯⎯⎯] to display the line pool to which you want to program access. Press CHANGE to select the setting: **N** (No) and Y (Yes).

Prime line

This setting assigns a prime line to the telephone. A prime line is the first line that is automatically selected when a call is made from a Norstar telephone. Press CHANGE to select the setting: **None**, a line number, Pool (A to C), and I/C (intercom). (Only assigned lines and line pools appear.)

Tip - *An assigned prime line is not associated with the assignment of a prime telephone.*

An external line must be assigned to the telephone in Line assignment before it can be assigned as the prime line to the telephone.

A line pool must be assigned to the telephone in line pool access before a line pool can be assigned as the prime line to the telephone.

By assigning a line pool as a prime line, a telephone can be made to search automatically for an idle line in a pool. See Line type on page 157 for more information.

If you set Prime line to I/C (intercom), you can still access any line pools which you have assigned to the telephone. When you enter the line pool access code, the system searches for an idle line in that pool. When all the lines in the pool are busy, the display will show No free lines. *The system will not search from one pool to another.*

Intercom keys

This setting assigns the number of intercom buttons to a telephone. Intercom buttons can provide a telephone with access to internal lines and line pools. Press CHANGE to select the setting: 0, 1, **2**, 3, 4, 5, 6, 7, or 8.

Tip - *Each intercom button assigned during programming automatically appears on the telephone. The buttons start with the lower right-hand button, or one button above if the Handsfree/ Mute feature is assigned to the telephone.*

A telephone needs two intercom buttons to be able to establish a conference call with two other Norstar telephones.

Only one intercom button may be required if the button will only be used to access line pools and to make and receive internal calls.

If a telephone has several lines assigned only to ring and not to appear, the arrangement will work better if there are two intercom buttons.

The M7100 telephone is assigned two intercom buttons which do not appear on the telephone. These are the default settings and cannot be changed.

A target line cannot be a prime line for a telephone because it is incoming-only.

Answer DNs

Calls for other Norstar telephones can appear and be answered at the telephone being programmed. The DNs of the other telephones are referred to as Answer DNs. You can assign up to four Answer DNs to the telephone being programmed. Press [Show] and enter the Answer DN. Press **CHANGE** to change the setting for the Answer DN: Appear&Ring, Appear only, or Unassigned.

To assign additional Answer DNs, press [Heading], then enter the next Answer DN.

Setting	Description	Options
DND on Busy	Select whether an incoming call rings if the user is already on another call.	Y, **N**
Handsfree	Select whether Handsfree will be available to a telephone.	Auto, Std (Standard), **None**
HF answerback	Select whether a user can automatically answer a voice call without lifting the receiver or pressing the Handsfree/Mute button.	**Y**, N
Pickup grp	Assign this telephone to a pickup group.	**None**, 1, 2, 3, 4
Page zone	Assign this telephone to page zone.	None, **1**, 2, 3
Paging	Select whether paging announcements can be made from this telephone.	**Y**, N
D-Dial	Select whether you can call the Direct-dial telephone from this telephone using the Direct-dial digit.	**Set 1,** None
Priority call	Select whether to allow this telephone to interrupt calls or to override Do Not Disturb at another telephone.	Y, **N**
Hotline	Select whether a telephone number will be dialed automatically when a user lifts the receiver or presses [Handsfree Mute].	Intrnl, Extrnl (enter DN), **None**
Aux. ringer	Select whether an auxiliary ringer (if installed) will ring for incoming calls at this telephone.	Y, **N**
Allow redirect	Select whether to allow this telephone to redirect its lines.	Y, **N**
Redirect ring	Select whether a telephone rings briefly when a call on one of its lines is redirected by the Line Redirection feature ([Feature] [8] [4]).	**Y**, N

For more programming information, see the *System Coordinator Guide*.

ATA settings

ATA ans timer

A timer can be used to administer a delay between the last digit you dial on a device connected to an analog terminal adapter (ATA) and when the system begins to send out tones (DTMF or modem) on the outgoing line without capturing and interpreting them. To change the delay time, press CHANGE to select the setting (in seconds): ATA ans timer: 3, 5, **7**, or 10.

If the DN you are programming is the internal analog terminal adapter (I-ATA), you may also select **Use ringback**. When this setting is used, the system will send out tones without capturing and interpreting them when it detects ringback, or after 10 seconds, whichever comes first.

Tip - *To accommodate the device attached to the ATA, you may want to lengthen or shorten the delay. If a modem or fax machine is attached to the ATA you will want to keep the delay short. If a call to a fax machine or modem cannot be connected, try shortening the delay. If an individual is dialing the number for a fax machine or modem, you may want to make the delay a little longer.*

ATA use

An analog terminal adapter (ATA) can connect to devices that are either on your premises or at some other location. Press CHANGE to select On site or **Off Site**.

This setting does not appear when you are programming the DN for the I-ATA.

Name

The default name for a telephone is its DN, but it can be changed to any combination of letters and numbers to a maximum length of 7 characters.

For more information, see the *System Coordinator Guide*.

User prefernces

Any programming that can be done by users at their telephones can also be done in programming. The default settings are given in bold.

Setting	Description
Model	Allows you to pre-program the model of Norstar set which will use this DN (**M7208**). If you want to program the set with a CAP module, change the model to M7324.
Button prgrming	Lets you program the buttons with internal and external autodialers and/or programmed feature keys. Default button programming information begins on page 232.
User speed dial	Programs user speed dialers (No defaults).
Call log opt'ns	Select whether the set will log all calls, no calls, calls which were not answered by this telephone, or calls which **no one answered**.
Dialing opt'ns	Select **standard dial**, pre-dial or automatic dial.
Language	Choose the display language: **English**, French or Spanish.
Display cntrst	Adjust the contrast of the display (**1**).
Ring type	Select a ring type (**1**).

For more information, see the *System Coordinator Guide.*

Restrictions

Restrictions prevent a user from making certain kinds of calls from a telephone or from lines that are available at the telephone, and stops some features from being used.

When you are finished programming Restrictions settings for one telephone, you can copy those settings to other telephones by using COPY at the Restrictions ▶ display. For more information about copying set programming, see Copying telephone programming on page 114.

Restrn filters

A restriction filter is a set or group of restrictions and overrides that specify the external numbers or feature codes that cannot be dialed from a telephone or on a line. Rather than define individual restrictions and apply them repeatedly to telephones and to lines, restriction filters let you assign them in one step as a single package of dialing sequences that are not permitted.

In addition to restricting telephone numbers, you can prevent people from entering dialing sequences used by the central office (the public network) to deliver special services and features. Because some of these features provide the caller with dial tone after they have entered the special code (which often uses [#] or [*]), users may have an opportunity to bypass restrictions. To prevent this from happening, you should create filters that block these special codes.

You create a filter by defining the dialing sequences that are denied. There will also be variations of each sequence that you will want users to be able to dial. Sequences that can be dialed are called overrides.

Once you create the filters, you can assign the restrictions to a telephone (under Terminals&Sets), to a line (under Lines), to a particular line on a telephone (under Terminals&Sets), and to remote callers (under Remote access).

Press [Show   ] and enter the number of the restriction filter you want to program or press [Next   ] to move through all the available filters.

Press [Show   ] to see the first restriction in the filter. The first four digits of the number that will be denied are included in the display. The full number can be seen by pressing [Show   ] again.

Use ADD, the dial pad, and OK to program a restriction for each filter.

Press [Next   ] when the full restricted number is on the display (it shows Deny: and the number) to see any overrides to the restriction.

Use ADD, the dial pad, and OK to program one or more overrides for each restriction filter.

Press ANY to enter a • wild card character that represents any digit in a sequence of numbers when denying numbers or creating overrides.

You can press REMOVE to delete a restriction.The overrides will be deleted as well and the restrictions will renumber to fill the gap.

Default filters

Filter 00 permits unrestricted dialing and cannot be changed.

Filter 01 is preprogrammed with five restrictions and some associated overrides.

In Filter 01, restriction 02 and override 005 allow long distance directory assistance calls. Filter 01 reflects the fact that area codes can now have any digit as a second digit. This is also consistent with the new North American dialing plan.

The dialing string 911 (the number for emergency assistance in North America) is included as both a restriction and an override in filter 01. This arrangement prevents anyone from blocking calls for emergency assistance on lines or sets using the default filter.

Restriction filter defaults

Filter	Restrictions (denied)	Overrides
00	Unrestricted dialing	
01	01: 0	
	02: 1	001: 1800 002: 1888 003: 1877 004: 1555 005: 1•••555
	03: 911	001: 911
	04: 411	
	05: 976	
02 - 99	No restrictions or exceptions programmed	

Filters 02, 03, and 04, although not preset with restrictions and overrides, are used as default filters in these programming headings.

Filter	Heading	Sub-heading
02	Terminals&Sets	Set restrns:
03	Lines	Line restrn:
04	Lines	Remote restrn:

Tip - *Filter 00 cannot be changed.*

Norstar can have up to 100 restriction filters (00 to 99).

Each programmable filter can have up to 48 restrictions. There is no limit on the number of overrides that can be allocated to a restriction.

There is a maximum of 400 restrictions and overrides allocated to the 100 programmable filters.

The maximum length of a restriction is 15 digits. The maximum length of an override is 16 digits.

A solid dot (•) in a dialing sequence is a wild card (stands for any digit). It is inserted by pressing ANY.

You can use ⁎ and # in a sequence of numbers in either a restriction or an override. These characters are often used as part of feature codes for other systems or for features provided by the central office (the public network).

When restricting the dialing of a central office feature code, don't forget to create separate restrictions for the codes used for DTMF and pulse lines. Examples of dialing strings that may be restricted for this reason are *67 and 1167.

Do not string together a central office feature code and a dialing sequence that you want to restrict. Create a separate restriction for each.

You can use COPY and the dialpad to copy restrictions and overrides from one filter to another.

Any restriction or override can be used in any number of filters. Each time it is used, it counts as one entry. For example, if restriction 411 exists in filters 01, 02 and 03, it uses up three entries of the 400 entries available.

Removing a restriction from a filter has no effect on the contents of other filters, even if the restriction was copied to them.

You cannot delete a filter. Removing the restrictions programmed on a filter makes it an unrestricted filter, but the filter itself is not removed.

Removing a restriction changes the identifying number of the restriction.

Removing a restriction also removes the overrides associated with it, and changes the identifying number of the restriction. For example, removal of restriction 01 renumbers restrictions 01 to 08 as 01 to 07.

Set restrns

Set restrictions lets you assign a restriction filter to a telephone to prevent certain numbers from being dialed from that telephone. You can assign a different restriction filter for normal service and for each of six schedules. See the section on Services for more information about the schedules.

Use Show , CHANGE and the dial pad to enter the number of the restriction filter to be assigned to the set for each schedule. The default restrictions are as follows:

Default filters for sets

Schedule	Restriction filter	
Normal	02	
Sched 1 (Night)	11	
Sched 2 (Evening)	12	
Sched 3 (Lunch)	13	
Sched 4	00	
Sched 5	00	
Sched 6	00	

This means, for example, that if you enter a set of restrictions for filter 11, they will be automatically applied when the Night schedule is in use.

Set lock

Set lock controls the level of personal programming and customizing that can be performed at a telephone.

Press CHANGE to select the type of set lock: Full, Partial, or **None**.

A full description of the levels of set lock is included in the *System Coordinator Guide*.

Allow last no

A telephone can be prevented from using Last Number Redial ([Feature] [5]). Press CHANGE to select the setting: **Y** (Yes) or N (No).

Allow saved no

A telephone can be prevented from using Saved Number Redial ([Feature] [6] [7]). Press CHANGE to select the setting: **Y** (Yes) or N (No).

Allow link

A telephone can be prevented from using Link ([Feature] [7] [1]), a host signaling option. Press CHANGE to select the setting: **Y** (Yes) or N (No).

Line/set restrns

Line/set restrns lets you assign a restriction filter to a specific line that can be used for outgoing calls at a specific telephone. This type of filter replaces any line or set restriction filters which might otherwise apply. It restricts the numbers you can dial on a line, but only from that telephone. The same line on another telephone can have different restrictions.

As with set restrictions, you can apply a different line/set restriction for normal service and for each of six schedules.

Use [Show   ], CHANGE and the dial pad to enter the number of the filter to be assigned as the line/set restriction for each schedule. There are no default line/set restrictions.

Tip - *A maximum of 255 line/set restrictions may be applied to lines at telephones.*

If a line/set restriction is assigned to a line at a particular telephone, it overrides any line restrictions or set restrictions which might otherwise apply.

If no line/set restrictions have been defined, the numbers are checked against the set restrictions and the line restrictions, if either of these have been defined. The numbers may be rejected by either restriction.

Telco features

Telco features can program the way the Norstar works with features and services that are based in the public network or other outside source. Norstar is designed to work with two of these kinds of services: Call Display and an external voice message service.

When you are finished programming Telco features settings for one telephone, you can copy those settings to other telephones by using COPY at the Telco features ▶ display. For more information about

copying set programming, see Copying telephone programming on page 114.

CLASS assignment (CMS)

If you subscribe to Call Display services (often called Caller ID) and the Compact ICS is equipped with a Call Information (CI) Trunk Cartridge, external calls are identified on the display. You may also have a message indicator from an external voice mail service show on the display. CLASS assignment programming allows you to customize how this information is used.

Press ⌊Show⌉ and enter the number of the line you want to program with CLASS settings for the telephone.

Caller ID set

Caller ID set allows you to specify if a telephone displays the Call Display information when a call is ringing on an external line. (After the call is answered, Call Display information is always shown at the telephone that answered the call.) Press CHANGE to select the setting: N (No) or Y (Yes).

Sets which are part of a CCR group (used with Auto Attendant features) receive Call Information automatically for all CCR calls. When a call is routed to the CCR group by the CCR, information about the call appears at all the sets in the group. This capability is part of the CCR group assignment. No other programming is needed. See the *System Coordinator Guide* for more information.

Tip - *In order for a telephone to display the Call Display information for calls on an external line, it must also be programmed to appear and ring or ring for that line.*

For systems that subscribe to Call Display services, Caller ID can be viewed on any telephone by entering the Call Information feature code (Feature | 8 | 1 | 1). See the Telephone Feature Card or System Coordinator Guide for more information.

Call information does not automatically appear when the telephone has an Answer DN, or belongs to a Ring group activated by Ringing Service. Call information is still available for these calls by pressing Feature | 8 | 1 | 1 .

Call log set

Call log set allows you to specify whether the telephone automatically logs Call Display information for calls on an external line. The line must appear on that telephone but it does not have to be a ringing line. Press CHANGE to select the setting: **N** (No) or Y (Yes).

Extl VMsg set

If you subscribe to a voice message service, you can access that service through your Norstar system. The external voice message setting controls where the indicator shows up when there is a voice message waiting on a particular line. The line must appear on that telephone. Press CHANGE to select the setting: **N** (No) or Y (Yes).

Tip - *To find out if your voice message service will work with Norstar, or if you have any problems with your service, contact your voice message service provider.*

1stDisplay

Depending on the services you subscribe to, Call Display information may contain up to three parts: the name of the caller, the number of the caller, and the name of the line in your Norstar system that the call is on. For each telephone, you can determine which information is displayed first. Press CHANGE to select the setting: **Name**, Number or Line.

See the *System Coordinator Guide* for more information.

Log space

Log space determines the number of items that can be stored in the Call log for each telephone. Use [Show   ], ADD and REMOVE to redistribute the log space. There is no log space assigned by default.

> **Tip** - *There must be space available in the log pool in order for you to add space to a Call log. The maximum number of spaces available is 250.*
>
> *System-wide log space allocation is performed in Call log space under System prgrming. If you want to allocate the same log space to all telephones, use the Call log space setting instead.*

Lines

Trunk/Line data

Installer password required

Trunk/Line data lets you program settings for lines that affect how the Norstar communicates with the public network and other switches. Line data lets you determine how lines (including target lines) will be used in the Norstar system.

Some Trunk/Line data settings may not appear on the display during programming depending on the type of trunk. Those that appear for a given Trunk type are indicated in the following table.

Trunk/Line data settings that appear for a given trunk type

Setting	Loop start	BRI-ST, BRI-U2,BRI-U4	Target lines
Trunk type	√	√	—
Line type	√	√	√
Dial mode	√	—	—
PrimeSet	√	√	√
Auto privacy	√	√	√
Trunk mode	√	—	—
Ans mode	√	√	—
Ans with DISA	√	√	—
Line grp	√	√	√
Aux. ringer	√	√	√
Full AutoHold	√	√	—
LossPkg	√	—	—
Rec'd #	—	—	√

Copying Trunk and Line data

At the Trunk/Line data ▶ display COPY appears. This allows you to copy programming from one line to other lines.

Tip - *In copying data from a physical trunk to a target line (or the other way around), only the data in common is copied. For example, copying a target line to a loop start trunk will not copy the Rec'd # setting because that setting is unique to target lines.*

If you try to copy line programming between lines on different types of Trunk Cartridges, the display reads Incompatible TC, then returns to Show line:. You cannot copy programming between lines on different types of Trunk Cartridges.

The Received number of a target line is a unique number and cannot be copied.

Trunk type

Installer password required

Trunk type shows the type of Trunk Cartridge or BRI Card on which the line is found. It can be Loop, BRI-ST, BRI-U2, or BRI-U4.

Tip - *This display is determined by the Trunk Cartridge or BRI Card. The system simply displays the trunk type; you cannot change the setting.*

Line type

Installer password required

This setting specifies how the line is to be used in the system. Press CHANGE to select the setting: **Public**, Private to:, or Pool (A to C, representing 3 line pools).

- A public line can be accessed by more than one telephone.

- A private line can be assigned only to one telephone and the prime telephone for that line. Use CHANGE and the dial pad to enter the internal number of the telephone.

  If you try to make private a line that is answered by CCR (an Auto Attendant feature) or used for transmitting alarm codes, you will be asked if you wish to reconfigure the line before it is made private. Private lines are not available for use with CCR and alarm code reporting.

- Pool assigns the line to one of the three line pools. If a line is assigned to a line pool, but is not assigned to any telephone, that line is available only for outgoing calls.

Tip - *Try to avoid putting unsupervised loop start lines in a line pool. These lines can become hung, especially when a remote user uses the line pool to make an external call.*

Before a line pool can be used you must assign line pool access to telephones in Line Access under Terminals&Sets, and create system-wide line pool codes in Access Codes under System prgrming.

A telephone can be administered to search automatically for an idle line from several lines appearing on the telephone. Assign a line pool as the prime line (in Line Access) and all the lines in the line pool to appear on that telephone. When the user lifts the receiver or presses [Handsfree Mute] *, any one of the lines, if idle, can be selected by automatic outgoing line selection.*

When you set prime line to I/C (intercom), the system chooses the first available line after searching the line pools, starting with line pool A.

You cannot assign target lines (049-074) to a line pool.

Dial mode

Installer password required

Dial mode lets you specify whether dual tone multifrequency (DTMF) or pulse signalling is used on the trunk. Press CHANGE to select the setting: Pulse or **Tone**.

Prime set

Installer password required

This feature allows you to assign a telephone to provide backup answering for calls on the line. Unanswered calls are redirected to the prime telephone if DRT to prime is set to Yes. Use CHANGE and the dial pad to enter the internal number of the prime telephone.

The default prime telephone for each line is **21**.

Tip - *Each line can be assigned only one prime telephone.*

Auto privacy

Installer password required

This feature controls whether one Norstar user can select a line in use at another telephone to join an existing call. The default setting is Privacy on, so that nobody with a Norstar telephone can press a line appearance on their telephone to join a call in progress at another telephone. Press CHANGE to select the setting: **Y** (on) and N (off).

Tip - *Users can change a line's privacy setting for an individual call using the privacy feature (*Feature 8 3 *).*

Trunk mode

Installer password required

Trunk mode lets you specify one of two modes of operation for each line: disconnect supervision or unsupervised. Disconnect supervision, also referred to as loop supervision, releases an external line when an open switch interval (OSI) is detected during a call on that line. This prevents the line from remaining unavailable for other Norstar users.

Press CHANGE to select the setting: Unspr or **Super**.

* Unspr turns disconnect supervision off for the line.

* Super (the default) assigns supervised mode, if supported by the line; otherwise, the line functions as unsupervised.

Tip - *The duration of an open switch interval (OSI) before Norstar disconnects a call is programmed by the Discon timer setting under Hardware programming.*

Disconnect supervision is required for loop start trunks to operate in auto-answer mode or with DISA. It is also required to conference with two external callers.

The line must be equipped with disconnect supervision from the central office for the Super option to work.

Ans mode

Installer password required

The Answer mode setting appears on the display during programming for loop start and BRI trunks if the Trunk mode setting is Super. Press CHANGE to select the setting: **Manual** or Auto.

Tip - *Remember that disconnect supervision is required if loop start or BRI trunks are to operate in auto-answer mode.*

Ans with DISA

Installer password required

When activated, the Answer with DISA setting specifies that a trunk is answered with stuttered dial tone. Press CHANGE to select the setting: **Y** (Yes) or **N** (No).
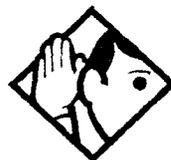
Tip - *This setting only appears if Answer mode is Auto.*

Line grp

Installer password required

Select whether this line will be part of an incoming line group. An incoming line group is a group of lines used only for receiving incoming calls. This allows a group of incoming lines to appear and/or ring at only one button on a telephone. Press CHANGE to select the setting: **None** or ILG (1 to 3, representing 3 incoming line groups)

Tip - *Do not assign auto-answer loop start or BRI lines to an incoming line group.*

Since the incoming line group button tracks up to two calls at once, only program two lines to each incoming line group button. If you require more than two lines to appear under an incoming line group button, use additional line groups programmed to that set.

For example, if you have 5 lines to program to an incoming line group, program the first two to ILG 1, and the next two to ILG 2 and the last one to ILG 3. Program ILG 1, 2, and 3 to the sets where these lines will ring.

There is a delay of one ring for lines with an ILG appearance. For example, if line 02 in ILG 1 is programmed on set 22 with line 2 programmed to ring only, and set 23 to appear and ring, when a call comes in on line 2, set 23 will ring before set 22.

There is a delay of two rings between the ringing the caller hears and the ringing of the ILG sets, however the indicator associated with the sets will flash immediately. You must consider this when setting up voice messaging. For example, if you program your voice messaging service to answer after 4 rings, it may answer after 4 rings even though the user will hear only 2 rings.

An incoming line group must be assigned to appear at a telephone.

Whether a line in an incoming line group rings at a telephone depends on the ringing setting for the line the call is on. If an incoming line group contains a mix of ringing and non-ringing lines, it will ring for some calls and not for others.

If you answer a call on an incoming line group, and a second call comes in on the same group, your telephone rings softly. However, you cannot answer the second call without ending the first.

You cannot make a call using an incoming line group.

Note the difference between incoming line groups and line pools. An incoming line group is a collection of lines used only for incoming calls. A line pool is a collection of lines used only for making outgoing calls. These groupings are for convenience in making and answering calls; they do not limit how the lines themselves can be used. A line may appear in a line pool, an incoming line group, and individually on telephones at the same time. However, you cannot place a line in more than one incoming line group or line pool.

You can place a call in an incoming line group on hold and retrieve it in the normal way. However, a held ILG call cannot be picked up at any other telephone unless the line is assigned to appear at that telephone.

Aux. ringer

Installer password required

This setting allows you to turn the auxiliary ringer on or off. When turned on, the auxiliary ringer rings for any incoming calls that ring on the line. The auxiliary ringer is an optional device that must be connected by the installer. Press CHANGE to select the setting: Y (Yes) and **N** (No).

Tip - *An auxiliary ringer can be programmed, under Services in Ringing Service, to ring for a line placed into a scheduled ringing service. An auxiliary ringer can also be programmed to ring for calls to a telephone. See the System Coordinator Guide for more information.*

*If you have an auxiliary ringer programmed to ring
for calls on an external line, and you transfer a call
on that line without announcing the transfer, the
auxiliary ringer will ring for the call transfer.*

Full AutoHold

Installer password required

Full AutoHold on idle line is a variation of the Automatic Hold feature.
If you select an idle line, but do not dial any digits, that line is
automatically placed on hold if you then select another line. Press
CHANGE to select the setting: **N** (No) or Y (Yes).

The line you first selected is held until you press its button. The line
is not available for use by anyone else.

Tip - *The default setting should be changed only
if Full AutoHold is required for a specific
application.*

LossPkg

Installer password required

Loss Package lets you select the appropriate loss/gain and
impedance settings for each line. The setting is based on the
distance between the ICS and the terminating switch, and the
terminating switch type.

The following table shows the available settings.

LossPkg	Receive Loss	Transmit Loss	Impedance	Distance to switch/cable loss/terminating switch
ShortCO	0 dB	3 dB	Short	Short/<2 dB/ICS to CO
Medium-CO	0 dB	0 dB	TIA/EIA 464	Medium/>2 dB and <6 dB/ICS to CO
LongCO	-3 dB	0 dB	TIA/EIA 464	Long/>6 dB/ICS to CO
ShortPBX	0 dB	0 dB	Short	Short/<2 dB/ICS to PBX
LongPBX	-3 dB	0 dB	TIA/EIA 464	Long/>2 dB/ICS to PBX

A loss of 4 dB corresponds to a cable length of approx. 2700 m (9000 ft.).

Press CHANGE to select the setting: ShortCO, **MediumCO**, LongCO, ShortPBX or LongPBX.

Tip - *This setting applies only to lines connected to an LS/DS Analog Trunk Cartridge. It does not apply to a CI Trunk Cartridge.*

When measuring the distance from ICS to CO and from ICS to PBX, use 600 ohms as the termination resistance setting.

Rec'd

Installer password required

The Received number setting applies only to target lines (line numbers 049 to 074). It allows you to specify the digits which make a specific target line ring. The default value is **None.**

Use CHANGE, and the dial pad to program the digit string for each target line.

Tip - *A Received number can be two to seven digits long (programmed in* System prgming*). The default length is 2.*

A received number cannot be the same as, or be the start digits of a line pool access code, a destination code, the DISA DN or the Auto DN.

If you are configuring auto-answer BRI trunks to map to target lines, the received number should be the same as the Network DN supplied by your service provider. The call will be directed to the prime telephone for the incoming line if the Network DN is not used.
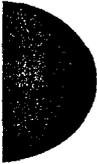
Name

The default name for a line is "Line" and its three-digit number (for example, Line001), but it can be changed to any combination of letters and numbers to a maximum length of 7 characters.

For more information, see the *System Coordinator Guide.*

Restrictions

Preventing a user from using a line for making certain kinds of calls is done in Restrictions. For example, users should not be able to make long-distance calls on lines used exclusively for local calling.

Restrn filters

A restriction filter is a set or group of restrictions and overrides that specify the external numbers or feature codes that cannot be dialed from a telephone or on a line. Rather than define individual restrictions and apply them repeatedly to telephones and to lines, restriction filters let you assign them in one step as a single package of dialing sequences that are not permitted.

You can make changes to restriction filters under both Terminals&Sets, and Lines. Any changes will take effect for any

telephone, line or line on a telephone regardless of where the programming was changed.

See the description and procedures for restriction filters under Terminals&Sets in this guide (page 146) for more information.

Line restrns

Installer password required

Specify the filter to be applied to this line to restrict the numbers that can be dialed on it. You can assign a different restriction filter for normal service and for each of six schedules. See the section on Services for more information about the schedules.

Use [Show], CHANGE and the dialpad to enter the number of the restriction filter to be assigned as the line restriction for each schedule. The default restrictions are as follows:

Default filters for lines

Schedule	Restriction filter
Normal	03
Schedule 1 (Night)	21
Schedule 2 (Evening)	22
Schedule 3 (Lunch)	23
Schedule 4	00
Schedule 5	00
Schedule 6	00

Tip - *When a remote user places an external call on a line, any filters used with the line still apply.*

Remote restrns

Specify the restriction filter to be applied to remote callers calling in to the Norstar system on this line. A restriction filter is a set or group of restrictions and overrides.

As with line restrictions, you can apply a different remote restriction for normal service and for each of six schedules.

Use CHANGE and the dial pad to program the remote restrictions for each schedule. The default restrictions are as follows:

Default filters for remote access

Schedule	Restriction filter
Normal	04
Schedule 1 (Night)	31
Schedule 2 (Evening)	32
Schedule 3 (Lunch)	33
Schedule 4	00
Schedule 5	00
Schedule 6	00

Tip - *The remote restriction restricts the numbers that can be dialed on an incoming auto-answer line. If a remote user then selects a line to place an external call, any filter used with the line still applies.*

Telco features

VMsg center 1

Installer password required

If you subscribe to a voice message service, you can specify which voice message center is used for each external line that can receive message waiting indication. For each line, press CHANGE to select the setting: **1**, 2, 3, 4, 5, or N (None).

You enter the telephone numbers for each of the five voice message centers under the general Telco features heading.

Services

Using Services, you can control three types of service by the time of day and day of week:

- alternate call ringing for certain times and days

- alternate dialing restrictions for certain times and days

- alternate call routing for certain times and days.

Each of the three services has six schedules that you can customize.

For example, you may want to combine alternate call ringing with alternate dialing restrictions for lunchtime, evenings, and weekends (Schedules 1, 2, and 3). Then you may want to run alternate call routing using three separate schedules.

Tip - *Once you have programmed the different services and schedules, you can turn each of the services on separately. For example, the Night schedule might control both Ringing service and Restriction service. But you can turn on just the Ringing service part of the Night schedule if you wish.*

You can activate the services from the designated control telephone for each Norstar telephone and line in your system. You can have one control telephone for the whole system, or different control telephones for different Norstar telephones and lines.

If you want to have several services active at the same time, simply program them on for the same schedule.

Ringing service

At certain times or in certain situations, you may want additional telephones to begin ringing for incoming lines. The most common use of this feature is when a security desk telephone begins to ring for incoming lines after 5:00 p.m., a practice often called "night service".

These features are programmed under Ringing service.

Ring Groups

Ring groups allows you to define groups of extended ringing sets. A group can be assigned to any line for any of the schedules. You can create up to 20 ring groups.

To define a ring group, use [Show____] and enter the number of the group you want to program (01-20).

Once you define a ring group, the display will prompt you to enter the number of the set you want to assign to this ring group. You can use SCAN to display the sets that are assigned to the ring group.
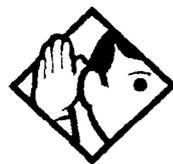
Tip - *You can assign any set on the Norstar system (up to 24 sets) to a ring group. The assigned control set for each schedule is added to each ring group.*

A set can belong to more than one ring group.

Night sched

Indicate how Ringing service should be activated for each of the schedules.

Service

Use [Show____], [Next____], and CHANGE to change the setting for each schedule: **Off**, Automatic, or Manual.

Manual allows you to turn the service on and off at any time from a control telephone using the Ringing service feature code.

Automatic allows you to program a stop and start time for a service. You are still able to start and stop the service by entering the appropriate Services feature code at a control telephone. If you select this setting, you will have to set start and stop times. See Schedule times on page 187 for information on programming times.

Off prevents the service from being activated.

Trunk answer

Trunk answer allows you to answer, from any telephone, an external call that is ringing at another telephone in your office. This is useful if the other telephones have not been assigned the same lines as the telephone you are using to answer the call.

Press CHANGE to select the setting: **Y** (Yes) or N (No).

Tip - *You can change the Trunk Answer setting only if Ringing service is set to Manual or Automatic.*

ExtraDial telephone

ExtraDial telephone allows you to assign an additional direct-dial telephone in the Norstar system for each schedule you use.

Use CHANGE and the dialpad to enter the internal number of the extra-dial telephone.

Tip - *The extra-dial telephone is activated during a schedule by entering the Ringing service feature code from a direct-dial telephone. This does not activate the Ringing service unless the direct-dial telephone is also a control telephone.*

Line settings

The ring groups and auxiliary ringer use for Ringing service is programmed for each line individually.

Ring group

You can assign a pre-defined ring group to a line for each schedule. See Ring groups in this section to create groups of extra ringing telephones.

Using the dialpad, enter the line number to see which ring group is assigned to the line. Press CHANGE and the ring group number (01- 20) to choose a different ring group assignment.

Tip - *Only one ring group can be assigned to a line for each schedule. To combine groups of ringing sets, you must create a new ring group which contains all the sets you want to ring and assign it to the line.*

Aux. ringer

Indicate whether the auxiliary ringer (if installed) also rings when Ringing service is on. Press CHANGE to select the setting: **Y** (Yes) or N (No).

Tip - *The default ringing telephone is **21**. This means that all lines ring at telephone 21 when Ringing service is on.*

You can use COPY and the dialpad to copy Ringing set and Auxiliary ringer programming from one line to another.

If you have an auxiliary ringer programmed to ring for calls on an external line, and you transfer a call on that line without announcing the transfer, the auxiliary ringer will ring for the call transfer.

Restrn service

Installer password required

Indicate how the alternate dialing restrictions should be activated for each of the schedules.

Use Show , Next , and CHANGE to change the setting for each schedule: **Off**, Automatic, or Manual.

See Ringing service in this section for descriptions of the three settings.

See Restrictions under both Terminals&Sets and Lines to assign dialing restrictions for telephones, lines and remote users to the schedules.

Routing service

Installer password required

The programming for routing service decides what path an outgoing call takes using the digits that are dialed. It is sometimes called

When you select an internal line and dial, the numbers you enter are checked against the routing tables. If the number you dialed starts with a destination code, the system uses the line pool and dials out digits specified by the route assigned to that destination code, and then dials the number that you dialed.

Routing service replaces a number of tasks that otherwise have to be done manually, including:

• entering a line pool code

• dialing an access code for a long distance carrier

• deciding which line pool to use according to the time and day

The installer can set up routing to take advantage of any leased or discounted routes using information supplied by the customer. The system itself cannot tell which lines are cheaper to use.

Using routing to create a transparent dialing plan or coordinated dialing plan is explained in the "Norstar in a network" chapter beginning on page 15.

Tip - *The numbers used for destination codes must not conflict with:*
Call Park prefix
External access code
direct-dial number
Line pool code
internal extension numbers (DNs)
DISA extension numbers
Auto DN

For example, the system will confuse an internal number of 221 and a destination code of 22 because even if the caller dialed the complete internal number, the call would be routed using the first two digits. But an internal number of 221 and a destination code of 23 would work.

A table of the initial digits used by default for all
these features is included in the section on Access
codes programming.

> **Plan your routing service before doing any**
> **programming.**
>
> Routing affects every call placed in the system
> and must be carefully planned to avoid conflicts
> and gaps in the programming. Use the tables in
> the *Programming Record* to design routes and
> destination codes, then check for potential
> problems before you start programming. It will
> also save you time to have all the settings written
> out in front of you.

Routes

Installer password required

Press ⌈Show⌉ and enter a 3-digit route number (000-999).

DialOut

Press ⌈Show⌉ and enter the DialOut digits (up to 24), or press CLR
to choose No numbr.

You can press ⌈Feature⌉ ⌈7⌉ ⌈8⌉ to insert a 1.5 second pause in the
dialing string, if necessary.

Route 000 has no DialOut by default and cannot be changed.

Use Pool

Press ⌈Next⌉ and CHANGE to select a line pool to be used with the
route: **Pool A**, Pool B, Pool C.

Route 000 uses Pool A by default and cannot be changed.

Dest codes

Installer password required

Enter a destination code that will be recognized when used as part of a telephone number for an outgoing call. It can be up to seven digits long.

Tip - *Press CLR and ADD to change the digits for an existing destination code.*

Normal rte

Select which route a call using the destination code takes during normal service and for each of the schedules. The automatic schedule times are programmed under Services. The default Normal route is **000**, which has no DialOut digits and uses Pool A.

AbsorbLength

Select the portion of the destination code that is always absorbed by the system and not used in the dialing sequence. Press CHANGE to select the number of digits to be deleted: 0, 1, 2, 3, 4, 5, 6, or **All**.

Tip - *To dial a telephone number which does not match any of the programmed destination codes, the user will have to choose a line and dial the number. For long distance dialing to be consistent, all area codes in the North American numbering plan should be programmed as destination codes.*

> ### Routing table modifications.
>
> Changes to the routing tables should only be
> made during least busy call times or on an idle
> system. Plan to program the routing tables when
> user activity is at a minimum.

Setting up a route for local calling

An office may have different line pools for local and long distance
telephone service. By programming a destination code, any call that
begins with 9 (the most common digit for dialing out) will
automatically use lines dedicated to local service. This example
assumes the lines used for local service are in Pool A.

Destination codes cannot conflict with any other digits users may
dial as part of a internal or external call. Because 9 is the default digit
for external line access, it may have to be changed under
Access codes before 9 will be available for use as a destination
code. Because a system using two-digit DNs uses up all the leading
digits as access codes, the examples in this section assume that the
internal directory numbers are at least three digits long.

The first step is to build a route (under Routing service in
Services).

*   enter 000 (a default route that gives you no DialOut and uses
    Pool A) at Show Route:.

Press SCAN to view defined routes.

*   enter the DialOut digits (if any) which are needed to direct the
    call once it is connected to an external line. In this case, no digits
    are needed.

*   assuming that the lines for local calling have been placed in Line
    pool A, choose it as the line pool. This is already done because
    you are using Route 000, which always uses Pool A.

The second step of programming is setting up how the route will work with a destination code. Because users will dial 9 to make an external call, 9 should be the destination code.

- press ADD at Show DstCode:.

To view existing destination codes press [Next   ].

- enter 9 as a new destination code

- press [Show   ].

- press CHANGE and enter the number of the route that should be used for a call starting with 9. In this example, it is route 000 (the default route).

- press [Show   ] and choose how many digits should be removed from the dialing sequence before it reaches an external line. In this example, set it to 1.

The initial digit 9 is only significant to the Norstar system and should be absorbed in order for the call to proceed successfully in the external telephone network.

The destination code can use a different route depending on the schedule (see the beginning of the Services section and sections on schedules for more information). In the current example, Route 000 is used when someone dials 9 during normal service, but you may want to create another route to be used with the Night schedule.

- press [Next   ] at Normal rte: to see and change the routes used with this destination code when different schedules are in use.

The following illustrations show the tables used for planning and recording routing service found in the *Programming Record*. They are filled out to match the examples of routes for local and long distance calling.

Routing Service (Services: Routing Service)

Route # (001-999)	DialOut (max. 24 digits or characters)	Use Pool
000	Route 000 has no DialOut and uses Pool A; it cannot be changed.	**A** B C
002	*none*	A Ⓑ C
		A B C
		A B C
		A B C

Routing service (continued)

Dest code (Services: Routing service:Dest codes)

Service Schedule name (max. 7 char.)	Normal Rte		Night Rte		Evening Rte		Lunch Rte	
DestCode (max. 7 digits)	Use route (000-999)	Absorb Length	Use route (000-999)	Absorb Length	Use route (000-999)	Absorb Length	Use route (000-999)	Absorb Length
9	~~000~~ *000*	~~All~~ *1*		All		All		All
1	~~000~~ *002*	~~All~~ *0*		All		All		All
	000	All		All		All		All
	000	All		All		All		All

Setting up a route for long distance calling

An office may have leased lines which make it cheaper to call long distance. The routing should take place automatically when the number of the outgoing call begins with 1.

Destination codes cannot conflict with any other digits users may dial as part of a internal or external call. Because 9 is the default digit for external line access and 1 is the default digit for the Call Park prefix, they may have to be changed under Access codes before 9 and 1 will be available for use as destination codes.

Again, the first step is to define a route (under Services in Routing service).

- enter 002 (or any other available route number) at Show Route:

- enter the DialOut digits (if any) which are needed to direct the call once it is connected to an external line. For this example, no digits are needed.

- assuming that the lines for calling long distance have been placed in Line pool B, choose it as the line pool

- press <u>ADD</u> at Show DstCode:

- enter 1 as the new destination code

- press [Show   ]. The route for normal service appears after Normal rte:. Press <u>CHANGE</u> and enter the defined route number 002.

In this example, the system uses Route 002 (which uses Line pool B) to take advantage of the lower cost when the system is in normal service.

In the example, the 1 in the destination code is also needed to direct the call in the public network. It should not be absorbed in the routing process.

- press [Show   ] at AbsorbLength:. Press <u>CHANGE</u> until 0 appears.

Tip - *If rates change depending on the time of the day or week, a different route can be used for the same destination code 1 when a particular schedule is in use. See "Programming for least cost routing."*

Adding a long distance carrier access code

In many cases, long distance service uses the same lines as local service but is switched to a specific carrier using an access number (sometimes called an equal access code). Programming for routing can include the access number so users don't have to dial it every time they make a long distance call.

- create a route that uses the access number as the DialOut digits

- program the route to use a line pool containing the lines used to access the long distance carrier

- create a destination code 91: 9 (for outside access) and 1 (for long distance)

- set the AbsorbLength to 1: the 9 is used internally and should be dropped; the 1 is needed to direct the call.

> **Tip** - *The destination codes 9 and 91 used in the examples cannot be used together. If the destination code 91 is needed to direct long distance calls, you must create a separate set of codes that use local calling routes. These codes would be, for example, 90, 92, 93, 94, 95, 96, 97, 98 and 99.*

```
+-----------------------+                    +-----------------------+
| User dials            |                    | Call is directed in the|
| 9-1-601-555-2222      |                    | public system         |
+-----------------------+                    +-----------------------+
            |                                            ^
   9-1-601-555-2222                              1-601-555-2222
            v                                            |
+-----------------------+                    +-----------------------+
| 91 is a destination   |                    | External lines recognize|
| code – system uses    |                    | the long distance access|
| Route 001 and Line    |                    | code and switch to the  |
| Pool A                |                    | appropriate carrier    |
+-----------------------+                    +-----------------------+
            |                                            ^
            |                                   10222-1-601-555-2222
            v                                            |
+-----------------------+    1-601-555-2222   +-----------------------+
| Routing tables        |  ---------------->  | Dialout programming   |
| "absorb" 9            |                     | tells the system to add|
|                       |                     | the access code for long|
|                       |                     | distance (e.g. 10222)  |
+-----------------------+                     +-----------------------+
```

Programming for "least cost routing"

It may be cheaper to use another long distance carrier at another time of day. Continuing with the example used in the flowchart, long distance calls will go out on the same lines without an access code at Night because that is when rates become competitive. For the system to do this automatically, another route has to be built.

- choose Route 007 (or any other available route) at Show Route:

- press CLR to choose No numbr for the DialOut

- choose Line pool A (local service carrier lines)

In this case, the change in route uses the start and stop times for the Night schedule (the schedules are set up under Services programming).

- enter 91 at Show DstCode:

- make sure AbsorbLength is set to 1

- the route programmed with the access code as its DialOut (Route 001) remains as the route used by Normal rte:

- under Night rte:, select Route 007

Calls that begin with the digits 91 will now travel out without using the access code when the Night schedule comes into use automatically, or when it is turned on at a control telephone.

Night sched   Installer password required

Indicate how the alternate routing should be activated for each of the schedules.

Service

Use [Show   ], [Next   ], and CHANGE to change the setting for each schedule: **Off**, Automatic, or Manual.

See Ringing service in this section for descriptions of the three settings.

Overflow routing

If all the lines used by a route are busy when a call is made, each schedule may be programmed to overflow to the route used for normal service. If this happens, the set will sound a warning tone and display the message Expensive route. The caller can then release the call to avoid using the normal route, or continue with the call.

Overflow routing is turned on or off for each schedule in programming. Press CHANGE to select the setting: Y (Yes) or **N** (No).

Tip - *A schedule must be in use for overflow routing to be active. Overflow routing is not available in normal service.*

You must create an overflow route to be used with each destination code. This means every route used with a schedule that has overflow service must have an alternate in normal service.

Using dialing restrictions with routing

Routing service can be further customized by adding dialing restrictions to lines in line pools. Filters can restrict the use of the line to specific area codes. See the Networking features section of the Norstar in a network chapter, and Restrictions under both the Terminals&Sets and Lines programming sections for more information.

Tip - *Host system signaling codes shown in the table can be part of the DialOut for a route*

You can also use routing as an alternate method for a direct-dial number. For example, create a destination code 0 and program the number of the internal or external destination as the DialOut. Digit absorption should be set to 1.

Because overflow routing directs calls using alternate line pools, a call may be affected by different line restrictions when it is handled by overflow routing.

Host system signaling codes

Feature 7 1	Link – if your Norstar system is connected to a private branch exchange (PBX), you can use a Link signal to access special features.
Feature 7 8	Pause – Enters a 1.5 second delay in a dialing sequence on an external line.
Feature * 8 9	Programmed Release – performs same function as Rls in a programmed dialing sequence. When the system encounters Programmed Release in a dialing sequence, it stops dialing and hangs up the call
Feature * 9	Run/Stop – inserts a break point into a sequence of dialed numbers or characters used for automatic dialing.
Feature 8 0 4	Wait for Dial Tone – causes a sequence of numbers to pause until dial tone is present on the line before continuing to dial.

See the *System Coordinator Guide* for more information.

Common settings

Services share the settings for control telephones, schedule names and schedule times.

Control sets

A control telephone turns Services on and off for the lines and/or telephones assigned to it. You can assign several control telephones for your system. A control telephone for lines controls Ringing service, Restriction service and Routing service for its assigned lines; a control telephone for telephones controls Restriction service and Routing service for its assigned telephones. Assign a control telephone for each external line and telephone.

Use Show , CHANGE, Next , and the dialpad to program the internal number of the control telephone for each line and each telephone.

Tip - *External lines and telephones must be programmed with a control telephone to use the three kinds of Services.*

You can assign a control telephone to more than one external line or telephone, but a line or telephone cannot be assigned to more than one control telephone.

One recommendation is to have one control telephone for all lines and a different control telephone for all telephones.

A service can be turned on manually or automatically for all external lines and telephones controlled by a given control telephone, but you cannot combine schedules. In other words, a service can only be active as normal service or one of the six schedules at any one time. You can have several schedules active, as long as they are using different services.

*The default control telephone for all lines and telephones is **21**.*

Schedules names

The schedule name is shown on the display of the control telephone when the schedule is turned on. It identifies the active schedule.

Use [Show], CHANGE, [Next], and the dialpad to program the name.

Tip - *The default names of the six possible schedules are only suggestions and may be changed to any other name.*

A schedule name can be one to seven characters long.

It is recommended that you reserve certain schedules (4, 5, and 6) exclusively for alternate call routing (Routing service).

Schedule times

Schedule start and stop times are set at times you are most likely to want each service to be active.

Use `Show`, CHANGE, `Next`, and the dialpad to program the start and stop times for each schedule, on each day.

Default schedule times

Schedule	Start time	Stop time
Schedule 1: Night	23:00	07:00
Schedule 2: Evening	17:00	23:00
Schedule 3: Lunch	12:00	13:00
Schedule 4: Sched 4	00:00	00:00
Schedule 5: Sched 5	00:00	00:00
Schedule 6: Sched 6	00:00	00:00

You can copy schedule times using COPY to make the programming easier. The following example shows how to program Night Schedule to start at 5:00 p.m. on Monday through Friday, and end at 8:00 a.m. the following weekday morning. Night Schedule stays on all day Saturday and Sunday.

1. Enter 5:00 p.m. as the start time and 8:00 a.m. as the stop time for Monday under the Night Schedule.

2. Use COPY to program the same settings to Tuesday, Wednesday, Thursday, and Friday.

3. Enter 8:00 a.m. as the start time and 8:00 a.m. as the stop time for Sunday under the Night Schedule.

4. Enter 8:00 a.m. as the start time and 8:00 a.m. as the stop time for Saturday under the Night Schedule.

Tip - *It is only necessary to program start and stop times for schedules that are activated automatically. See the instructions with Ringing service for information on activating schedules.*

The time may be entered in either 12 or 24-hour format. If the display is in English, and the hour entered is less than 13, the display prompts you to specify AM or PM.

Sys speed dial

System speed dial lets you create speed dial codes that can be used by any telephone in the system.

For more information on using and programming System speed dial, see the *System Coordinator Guide*.

Passwords

COS pswds

Class of Service (COS) passwords permit controlled access to a system's resources by both internal and remote users. When you enter a Class of Service password at a telephone, the restriction filters associated with your Class of Service password apply instead of the normal restriction filters. Similarly, when a remote user enters a Class of Service password on an incoming auto-answer line, the restriction filters and remote package associated with their Class of Service password apply instead of the normal restriction filters and remote package.

COS passwords lets you define individual passwords and determine the restriction filters and remote package associated with each.

Tip - *Class of Service passwords for a system should be determined randomly and should be changed on a regular basis.*

Users should memorize their COS passwords instead of writing them down.

Employees' COS passwords should be deleted when they leave the company.

Typically, each user has a separate password. Alternately, several users can share a password or one user can have several passwords.

A system can have a maximum of 100 six-digit COS passwords (00 to 99).

You can use COPY and the dialpad to copy the restriction filters and remote package from one COS password to another. COS passwords must be unique.

Pswd

Pswd defines the six-digit Class of Service password. There is no default password.

Use [Show⎯⎯], CHANGE, and the dialpad to program the six-digit password. Use BKSP to edit numbers you have entered.

User flt

User filter lets you assign a restriction filter to a Class of Service password. The user filter associated with the Class of Service password replaces any normally applicable set restriction, line/set restriction, and remote restriction.

Use [Show⎯⎯], CHANGE, and the dialpad to program the two-digit user filter. The default setting (**None**), means that any normally applicable filters (set restriction, line/set restriction, or remote restriction) still apply.

Line flt

Line filter lets you assign a specific line restriction to a Class of Service password. The line filter associated with the Class of Service password replaces any normally applicable line restriction.

Use CHANGE and the dialpad to program the two-digit line filter. The default setting (**None**), means that any normally applicable line filter still applies.

Remote pkg

Remote pkg lets you assign a specific remote access package to a Class of Service password. The remote access package associated with the Class of Service password replaces any normally applicable remote access package.

Use CHANGE and the dialpad to program the two-digit remote package. The default setting (**None**), means that any normally applicable remote access package still applies.

Call log pswds

This setting allows you to override any Call log password programmed with the Call log feature, and resets it to **None**. It is used when someone forgets a password.

Press [Show⎯⎯] and enter the DN of the telephone.

Press [Show___] to clear the programmed password.

Tip - *You program a Call log password using the Call log Password feature. See the Telephone Feature Card or the System Coordinator Guide for more information.*

Programming pswds

You can choose any combination of six digits for Passwords. It is easier to remember the password if the digits spell a word.

Provide passwords only to selected personnel to prevent unauthorized access to programming. Some passwords allow line assignments to be rearranged, which could disrupt your telephone service.

Installer

Installer password required

The default Installer password is **266344 (CONFIG)**.

Use CHANGE, the dialpad, and OK to program the Installer password.

Record the password in the *Programming Record.*

SysCoord+

The default System Coordinator Plus password is **727587 (SCPLUS)**.

Use CHANGE, the dialpad, and OK to program the System Coordinator Plus password.

Tip - *An overview of what programming is available by using the System Coordinator Plus password is on page 111.*

SysCoord

The default System Coordinator password is **23646 (ADMIN)**.

Basic

The default Basic password is **22742 (BASIC)**.

Tip - *For more information about the System Coordinator and Basic passwords, see the System Coordinator Guide.*

IRAD pswd

The ability to do remote programming using the internal remote access device (I-RAD) is protected by a password. If your Feature Cartridge does come with the I-RAD enabled, the feature is not available until you enter Software Keys provided by Nortel.

Use CHANGE, the dialpad, and OK to change the I-RAD password. Currently, the remote administration software used with the I-RAD allows you to use a password up to ten digits long. A longer password will not work with the software. The default password is the eight-digit Sys ID number.

Your I-RAD password should always match the password used with your remote administration software.

The I-RAD password returns to the default value when you upgrade the system software from CICS 1.0 to CICS 2.0.

Time&Date

The time and date shown on the telephone display is used by the system for scheduled features. It can be changed in programming or by using a feature code ([Feature] [*] [*] [T] [I] [M] [E] or [Feature] [*] [*] [8] [4] [6] [3]).

For more information, see the *System Coordinator Guide*.

System prgming

System prgming allows you to set up features and settings which are not associated with any specific line or telephone.

Change DNs

Installer password required

Change DNs allows you to change the directory number (DN) or internal number of a telephone.

Changing DN locks programming session

Changing an individual DN locks the programming session into the Change DNs programming mode. After you have finished and have pressed ⌐Ris⌐, re-enter the programming access code and the Installer password to continue with other programming.

Do not perform Startup again or all previous programming will be erased.

Use ⌐Show   ⌐ and the dialpad to identify the DN you want to change ("old DN"). Then, use the dialpad to enter the new DN.

Tip - *No DN changes occur until the programming session ends.*

If the "new DN" already exists for another telephone, that other telephone is given the "old DN".

All DNs must be the same length.

*The first digit of a new DN cannot be the same as the first digit of: an external line access code; a line pool access code; the Park prefix; the direct-dial digit. To avoid a conflict, refer to the table of default settings provided under Access codes. The lowest default DN is **21**.*

Featr settings

Backgrnd music

Background music allows you to listen to music through your telephone speaker. A music source must be connected to the ICS. Press CHANGE to select the setting: **N (No)** or Y (Yes).

On hold

On hold allows you to choose what a caller hears on an external line when the line has been put on hold. Press CHANGE to select the setting: **Tones**, Music, or Silence.

- Tones provides a periodic tone.

- Music provides any signal from a source such as a radio connected to the ICS.

- Silence provides no audio feedback.

Receiver volume

Receiver volume allows you to specify whether the volume level of a receiver or headset will return to the system default level when a call is ended or put on hold, or whether it will remain at the level set at the individual telephone.

Use [Show⎯⎯⎯] and CHANGE to select the setting: **Use sys volume** or Use set volume.

Tip - *This feature is not available on some older telephones.*

Camp timeout

Camp timeout delay allows you to assign the number of seconds before an unanswered camped call is returned to the telephone which camped the call. Press CHANGE to select the setting: 30, **45**, 60, 90, 120, 150, or 180 seconds.

Park timeout

Park timeout delay allows you to assign the number of seconds before a parked call on an external line returns to the originating telephone. Press CHANGE to select the setting: 30, **45**, 60, 90, 120, 150, 180, 300, or 600 seconds.

Park mode

Press CHANGE to select the way that the system will choose a Call Park code: **Lowest** or Cycle.

When set to Lowest, the system will choose the lowest code that is available when the call is parked. When set to Cycle, the system will choose the codes in a sequence, from lowest to highest, until all the codes have been used.

Trnsfr Callbck

Transfer Callback delay allows you to specify the number of rings before a Callback occurs on a transferred call. Press CHANGE to select the setting: 3, **4**, 5, 6, or 12 rings.

Tip - *You can estimate the delay in seconds if you multiply the number of rings by six.*

DRT to prime

Installer password required

Delayed Ring Transfer (DRT) automatically forwards unanswered external calls to a prime telephone, after a certain period of time. This helps ensure that no external call goes unanswered. Press CHANGE to select the setting: **Y (Yes)** or N (No).

Tip - *An operational prime telephone must be assigned before this feature can operate. A prime telephone is assigned to one or more external lines under Lines in Trunk/Line data.*

DRT delay

DRT delay allows you to specify the number of rings before DRT transfers a call to a prime telephone. Press CHANGE to select the setting: 1, 2, 3, 4, 6, or 10 rings.

Tip - *The DRT delay can be programmed only if DRT to prime is set to Yes.*

You can estimate the delay in seconds if you multiply the number of rings by six.

Held reminder

When active, Held Line Reminder reminds you that a call at your telephone is still on hold. You periodically hear two tones from your telephone until you return to the call on hold. Press CHANGE to select the setting: **N (No)** or Y (Yes).

Remind delay

Held Line Reminder delay allows you to choose the number of seconds before the Held Line Reminder feature begins at a telephone that has an external call on hold. Press CHANGE to select the setting: 30, **60**, 90, 120, 150, or 180 seconds.

> **Tip -** *The Held Line Reminder delay can be programmed only if Held Line Reminder is activated.*

Directd pickup

Directed pickup allows you to answer any calls by specifying the ringing telephone's internal number. Press CHANGE to select the setting: **Y (Yes)** or N (No).
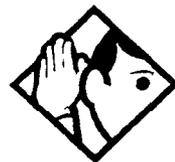
> **Tip -** *Directed pickup is not to be confused with the Call Pickup Group feature, which allows you to answer a call at any telephone within a specific group without specifying the internal number of the ringing telephone.*
>
> *Like Call Pickup Group, Directed pickup is useful when not all the telephones have been assigned the same lines, but you still want to allow your co-workers to answer a call on any external line from their telephones.*

Page Tone

You can choose whether a tone sounds before a page begins. Press CHANGE to select the setting: **Y (Yes)** or N (No).

Page Timeout

The paging feature is automatically disconnected after a set length of time. Press CHANGE to select the maximum number of seconds needed for a page: 15, 30, 60, 120, **180**, 300, 600, 2700.

Daylight time

When this feature is turned on, the system will automatically switch between standard time and daylight saving time. Press CHANGE, to select the setting: **Y (Yes)** or N (No).

Tip - *The time falls back one hour on the last Sunday of October at 2:00 a.m., and advances one hour on the first Sunday of April at 2:00 a.m. This function should only be programmed by your installer.*

In areas where daylight saving time does not apply, (for example, Saskatchewan), make sure this setting is changed to N (No).

Call log space

Call log space programming customizes how log space is allocated to telephones in the system

Reset all logs?

Reset all logs allows you to re-allocate the Call log space equally to all telephones in your system.

Press YES and use the dialpad to enter the space allocation for the Call log at each telephone. You must use a three-digit number (for example, 020 to give each set 20 spaces).

Press YES to accept the settings and end programming. The system automatically re-allocates Log space.

Tip - *Use this heading only if you want to allocate an equal amount of log space to all the telephones in your system. If you want to assign specific amounts of log space to individual telephones, see the information under Terminals&Sets in the System Coordinator Guide.*

Re-allocating Call log space may destroy Call log data at telephones that lose space.

There are 250 Call log spaces available in the system. No spaces are allocated by default. Changing the space allocation using Log Defaults defines the log space available to all telephones in the system. Any remaining unassigned log space is available in a log pool and can be re-allocated under Terminals&Sets in Telco features.

Host delay

Installer password required

Host delay lets you assign the delay between the moment an outgoing line is selected to make an external call (for example, by lifting the receiver off the telephone) and the moment that Norstar sends dialed digits or codes on the line. Press CHANGE to select the setting: 200, 400, 600, 800, **1000**, 1200, 1400, 1600, 1800, or 2000 milliseconds.

Tip - *Host delay is provided to ensure that a dial tone is present before the dialing sequence is sent. Minimizing this delay provides faster access to the requested features.*

To calculate the precise delay between initiating the call and when the first digit is dialed, add 500 milliseconds to the setting. This will account for time used to set up the call.

Link time

Installer password required

Link time allows you to specify the duration of a signal required to access a feature through a remote system. Press CHANGE to select

the setting: 100, 200, 300, 400, 500, **600**, 700, 800, 900, or 1000 milliseconds.

For example, to program external dialing through a Centrex system, which requires a Link time of 400 ms, select a Link time of 400.
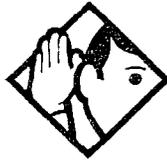
Tip - *The correct Link time setting depends on the requirements of the host switching system you wish to access.*

Link is another name for recall or flash.

Alarm set

Alarm set allows you to assign a telephone on which alarm messages appear when a problem has been detected in the system. Use CHANGE and the dialpad to enter the internal number of the Alarm telephone. Press CLR to set the Alarm telephone to None. The default setting is **21**.

Set relocation

Telephone relocation allows you to move any telephone to a new location within the Norstar system without losing the directory number, autodial settings, user speed dial codes, and any system programming for that telephone. Press CHANGE to select the setting: **N (No)** and Y (Yes).

Tip - *It is a good idea to activate Telephone relocation after the telephone installation and programming has been done. This will give you more flexibility when you are testing equipment.*

If this feature is deactivated while a telephone is moved, that telephone's internal number and programming data remain with the physical port on the ICS, and the telephone does not receive the original programming when it is reconnected elsewhere.

Direct-Dial

Direct-dial lets you dial a designated telephone with a single digit. The direct-dial telephone can be inside the Norstar system or it can be outside the system in the public network. The direct-dial telephone is usually assigned to a receptionist for an entire office or for a particular department.

D-Dial1

For the direct-dial telephone, indicate whether it is an internal or external number.

Use [Show   ] and CHANGE to select the setting: Intrnl, Extrnl, or None.

Number

Enter the internal or external number that the system will automatically dial when someone enters the direct-dial digit.

Use [Show   ], CHANGE, and the dialpad to enter the telephone number. The default number for the direct-dial telephone is 21.

Line selection

If you assign an external number as a direct-dial telephone, you must indicate which line to use for the call.

Use [Next   ], CHANGE, and the dialpad to select the line for the external number.

Tip - *There is just one direct-dial digit for the entire system.*

The Norstar system cannot verify that the number you assign as an external direct-dial telephone is valid. Check the number before assigning it as a direct-dial telephone, and call the direct-dial telephone after you've assigned it in order to test it.

You cannot forward calls to any direct-dial telephone that is outside your Norstar system. See Call Forward in the System Coordinator Guide.

CAP assignment

This setting designates a telephone as a central answering position (CAP). The CAP must be an M7324 telephone, and have a CAP module attached. The default CAP assignment is **None**.

The CAP may be used to:

- monitor the busy/not busy and Do Not Disturb status of Norstar telephones

- answer external calls and extend calls to other Norstar telephones

- send up to 30 messages to other Norstar telephones

- provide up to 48 extra memory buttons for the M7324 telephone.

Use [Show⬜], CHANGE, and the dialpad to enter the internal number of the M7324 telephone to be designated as a CAP. The set must be installed before you make it the CAP.

Tip - *If a CAP module is attached to a M7324 telephone that has not been programmed as a CAP, you will not be able to move line buttons onto the CAP module. The CAP will still be associated with the M7324 and have some default programming.*

If a CAP module is relocated with the M7324 telephone, the settings are retained.

You can reset a CAP module by simultaneously pressing the two buttons on the bottom left-hand side and the two buttons on the bottom right-hand side. This must be done immediately after the module has been plugged in. Performing Startup will not erase CAP programming.

Access codes

Access codes are used by the system to direct calls to the correct lines and destinations. If the codes conflict, some of the features on the system will not work.

The table of default settings can help you plan your access codes so there are no conflicts. It assumes you are using a fully expanded Compact ICS. See the wiring information in the Installation chapter for DN numbering for smaller configurations.

Digits assigned by default to programming settings

Digit	Use	Heading
0	direct-dial digit	Access codes
1	Park prefix	Access codes
2, 3, and 4	the first digit of B1 DNs	Startup
4 and 5	the first digit of B2 DNs	Startup
7	the first digit of ISDN DNs	Startup
8	the first digit of DNs used with the CTA 500*dm*	Startup
9	external line access code	Access codes
— —	line pool access code (Not assigned by default, but takes precedence over the External Line access code if there is a conflict.)	Access codes
— —	destination code	Services

Line pool codes

This setting allows you to assign a line pool access code for each of the three line pools (A to C). These codes are used to specify the line pool you wish to use for making an outgoing external call. Use ⌈Show⌉, CHANGE, the dialpad, and OK to program the access code. The default access code is **None.**

Tip - *The code can be one to four digits in length. Line pool access codes starting with the same digit must be the same length.*

A line pool access code can be the same as an external line access code. In this case, the line pool access code takes priority over the external line access code, and a line from the line pool is selected.

A line pool access code cannot conflict with: the Park prefix, the direct-dial digit; the first digit of any Received number; the first digit of any DN (including the Auto DN or the DISA DN).

Park prefix

The Park prefix is the first digit of the call park retrieval code that must be entered to retrieve a parked call. If the Park prefix is set to None, calls cannot be parked. Press CHANGE to select the setting: **1** to 9, None, or 0.

Tip - *The Park prefix cannot be the same as the direct-dial digit, the external line access code, the first digit of a DN, the first digit of a line pool access code, or the first digit of a destination code.*

Other programmable settings may affect which numbers appear on the display during programming. Although the numbers 0 to 9 are valid Park prefix settings, some may have been already assigned elsewhere by default or by programming changes.

If DN length is changed, and the changed DNs conflict with the Park prefix, the setting changes to None.

External code

Installer password required

External code allows you to assign the external line access code. This code is used to allow M7100 telephones and Analog Terminal Adapters (ATA) to access external lines.

Use CHANGE to select the setting: 1 to **9**, None, or 0.

Tip - *The external line access code cannot conflict with the Park prefix, the direct-dial digit, the first digit of a line pool access code, the first digit of a DN, or the first digit of a destination code.*

If DN length is changed, and the changed DNs conflict with the external line access code, the setting changes to None.

Direct-dial

Installer password required

Direct-dial digit allows you to dial a single, system-wide digit that can be used to call a specific telephone, called a direct-dial telephone. Press CHANGE to select the setting: 1 to 9, None, or **0**.

> **Tip** - *Another direct-dial telephone, an extra-dial telephone, can be assigned for each schedule in Services programming.*
>
> *The direct-dial digit cannot be the same as the first digit of a DN, of a line pool access code, the external line access code or the Call Park prefix. It cannot be the first digit of a destination code.*
>
> *If DN length is changed, and the changed DNs conflict with the direct-dial digit, the setting changes to None.*

Auto DN

Installer password required

For calls answered without DISA, no password is required to access the Norstar system. The Class of Service (COS) that applies to the call is determined by the COS for the trunk on which the user is calling. Use CHANGE and the dialpad to enter the digits to be received from the auto-answer trunk.

Press CLR to set the Auto DN back to **None**.
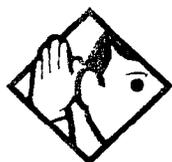
Tip - *The length of the Auto DN is the same as the Rec'd # length specified in System prgming. The Auto DN is cleared if the Received number length is changed.*

The Auto DN cannot be the same as a line pool access code or a destination code.

The Auto DN can give remote access to callers using the Auto Attendant. To make features available to callers who enter the Auto DN, lines answered by Auto Attendant must be configured with a remote access package.

DISA DN

Installer password required

For calls answered with DISA, the system presents a stuttered dial tone to prompt a caller to enter a valid password. The Class of Service (COS) that applies to the call is determined by this COS password.

Once a remote user is on the Norstar system, the DISA DN can be used to change the existing Class of Service. This gives you greater flexibility when you create access privileges. For example, you may want to have a shared DN for remote access and separate COS passwords with different dialing out privileges for individuals.

Use CHANGE and the dialpad to enter the digits to be received from the auto-answer trunk. Press CLR to set the DISA DN to **None**.

Tip - *The length of the DISA DN is the same as the Rec'd # length specified in System prgming. The DISA DN is cleared if the Received number length is changed.*

The DISA DN cannot be the same as a line pool access code or a destination code.

Auto Attendant

Two of the settings for Auto Attendant, Auto Attend and CCR lines, are programmed using an Installer or System Coordinator Plus password.

Auto Attend

This setting makes the Auto Attendant features (System Answer and Custom Call Routing) available to the system. System Answer automatically responds to unanswered calls at the attendant set and puts them on hold until they can be retrieved. Custom Call Routing allows callers to direct their call using an audio menu.

Use CHANGE to toggle the setting: ON or **OFF**.

Tip - *If a peripheral auto attendant or Custom Call Routing device is used with the system, turn the setting to OFF.*

CCR

Custom Call Routing (CCR) allows calls on certain lines to be directed to a telephone or group of telephones according to a numbered menu heard by the caller.

CCR lines

Press [Show   ] and CHANGE to choose which lines will be answered by the CCR feature. The options are YES and **NO**. There is no limit to the number of lines that can be monitored by CCR.

Additional programming can be done using the System Coordinator password (defaults are given in bold):

Setting	Description	Options
Attd Set	Select the set which will have its lines answered by System Answer.	Enter DN **21**
Language	Select the language or languages used for the pre-recorded announcements.	
•First	Select the first language.	**English,** French or Spanish
•Second	Select the second language, if applicable.	(one of the remaining options) **None**
System Answer	This feature answers external calls and places them on hold at the attendant set until the attendant/receptionist can answer them.	
•After	Select the number of rings that the caller will hear before the system answers.	between 1 and 12 rings **(3)**
CCR	Custom Call Routing (CCR) allows calls on certain lines to be directed to groups of telephones according to the instructions from the caller.	
•After	Select the number of rings that the caller will hear before the system answers.	between 2 and 12 rings **(3)**
•CCR groups	Create groups of DNs to be used with the CCR.	
••CCR group *n*	Enter the number of the group, then enter the DN of the set that you want to assign to the group.	CCR groups 1-9 (no DNs assigned by default)

See the *System Coordinator Guide* for complete information on programming Auto Attendant features.

Remote access

Remote access packages allow you to control the remote use of Norstar line pools and the paging feature. Packages are also used to control remote administration and monitoring of the system.

You create a remote access package by defining which of your system's line pools it will be able to access and whether it can use Page, line pools and remote administration. You then assign the package to individual lines (using Rem line access), and to a particular Class of Service password (Remote pkg in COS passwords).

Remote access pkgs

Use [Show] and the dialpad to select the remote access package you want to program.

LinePool access

Press CHANGE to select the line pool access setting for each pool: N (No) or Y (Yes).

Remote page

Press CHANGE to select the Remote page setting: N (No) or Y (Yes).

Remote admin

Press CHANGE to select the Remote administration setting: N (No) or Y (Yes).

Remote monitor

Press CHANGE to select the Remote monitor setting: N (No) or Y (Yes).

Rem line access

Enter the number of the line which will be accessible by remote users.

L001

Press CHANGE and enter the number of the remote access package that will apply to remote use of the line.

Remote access packages defaults

Parameter	Square PBX Hybrid
Package 00	Prohibits remote access to line pools, Page, remote monitoring and administration. Cannot be changed.
Package 01	
Line pool access	Y for Pool A N for Pools B and C
Remote Page, administration and monitoring	No
Packages 02 - 15	
Line pool access	N for Pools A to C
Remote Page, administration and monitoring	No

Tip - *You can use COPY and the dialpad to copy settings from one remote package to another.*

The line pool access display shows an alphabetic line pool identifier, followed by a numeric line pool access code in brackets (for example, PoolA (9):N). If no access code has been identified, there is nothing between the brackets (for example PoolA ( ):N). The line pool access code are programmed under Access codes.

Remote package 00 is the default setting for the Remote package setting. It permits no access to line pools or to remote paging. Unlike packages 01 to 15, package 00 cannot be changed.

You can define up to 15 remote access packages (01 to 15).

*For remote users who call into the Norstar system
to use Norstar lines for calling out, the remote
restrictions and line restrictions still apply.*

*To use features on a Norstar system remotely,
press ✳ followed by the feature code. Even if you
are calling from another Norstar system, press ✳
instead of* [Feature] *.*

IRAD

The internal remote access device (I-RAD) can be programmed to
answer an incoming call automatically. This allows you to set up
remote administration without the help of someone on site.

The I-RAD is an optional feature for some versions of the Compact
ICS Feature Cartridge. If the I-RAD is not available, it can be
enabled using software keys supplied by Nortel. See Software Keys
on page 222 for more information.

Answer line

Press CHANGE until you have selected the line you wish to use, or
None.

Choose an incoming line that is configured as manual answer, or a
target line. You cannot choose a line which is automatically
answered by CCR.

Tip - *If the answer line you choose is part of a
Multi-Line Hunt feature, the call may be directed to
another line and the I-RAD will miss the call. For
reliable access to the I-RAD, use a line that is not
part of a hunt group.*

After

Press CHANGE to select the number of rings (between one and 12)
before the I-RAD will answer an incoming call on the line. The
default is **5 rings**.

Rec'd # length

Installer password required

The received number is used to identify the mapping of incoming calls to target lines, Auto DNs, and DISA DNs. The length of the number may be the same as the system DN length, or may be set to some other value because of network or central office constraints.

Changing the Received number length clears all received digits programming for target lines.

To change the number of digits received on auto-answer trunks:

1. Press CHANGE to select the setting: **2**, 3, 4, 5, 6, or 7.

2. Press [Next____] to save the new received number length. The display reads Clear rec'd #s?

3. Press YES to go ahead with the change. All received digits programming for target lines is cleared.

Tip - *The target line number (for example, line 052) and the Received number for the target line (for example,* Rec'd #: 123 *for line 052) are two different numbers.*

DN length

Installer password required

This feature allows you to change the number of digits for all DNs. The maximum length is seven. The default and minimum length is **2**.

1. Press CHANGE to select the setting: **2**, 3, 4, 5, 6, or 7.

2. Press [Next____] to save the new DN length. The display reads Drop data calls?

3. Press YES to save the new DN length. NO restores the original value.

Do not change DN length immediately after a system startup.

You must wait for at least two minutes after a system startup before you change the DN length.

Data devices will drop calls.

Norstar data devices (not ISDN terminal equipment) drop calls when the DN length is changed. (These data devices use the B2 channel. The M7100, M7208, M7310, and M7324 telephones use the B1 channel. Calls are **not** dropped for these telephones.) Norstar data devices which use the B2 channel include the PCI-B used for PC applications and Norstar voice mail.

The DN length change is completed within two minutes, depending on the size of the installed Norstar system. System response may briefly slow down during this time. You cannot re-enter programming during this time. If you enter the programming access code, the message In use: SYSTEM appears on the display.

Tip - *A DN length change, if required, should be the first programming change on a newly installed Norstar system.*

Each increase in length places the digit 2 in front of any existing DN. For example, if DN 34 was increased to a length of 4, the new DN would be 2234.

If the DN length is changed so that a conflict is created with the Park prefix, external line access code, direct-dial digit, or any line pool access code, the setting for the prefix or code is changed to None, and the corresponding feature is disabled.

Intrl modem

Installer password required

The internal modem used for remote programming or monitoring can operate at two different speeds. The fast speed setting uses the V.32 bis modem standard, which supports baud rates of 4.8 kbps to 14.4 kbps. In some cases, network limitations may prevent the modem from connecting at the fast speed. If you consistently have problems making calls to or from particular destinations, select the slow setting for the modem. The slow speed setting is designed for the V.22 bis standard (2400 baud) and is much less likely to suffer from problems originating on the network.

Press CHANGE to select the setting: **Fast** or Slow.

> ***Changing the speed of the modem will force the system to restart.***

Fixed modem settings

No parity
8 data bits
1 stop bit

Tip - *Disable the following high-level protocols at your modem when attempting a connection with the Compact ICS modem: V. 42, V. 42bis, MNP5, MNP10, enhanced throughput cellular (ETC). Possible command strings that would be used to disable these protocols are at&m0, at\n0, or at&q0. Check the documentation that comes with your modem for the proper command(s).*

If you are sending out automatic alarm reports using the I-RAD, you should set the modem speed to support the baud rate of the device that receives the alarm report.

If your system has access to a Basic Rate Interface (BRI) network, use a digital trunk supplied by a BRI Card for modem calls to get the best transmission quality.

Alarm reporting
Installer password required

The Alarm Reporting subheading will not appear unless your Feature Cartridge comes with remote administration enabled, or you have enabled the feature using software keys. See the I-RAD chapter and Software Keys on page 222 for more information.

The Norstar system can use the internal remote access device (I-RAD) to automatically send an alarm code to a remote location when it detects a significant event. Detailed information about the alarm codes is included in the Maintenance chapter.

When an alarm code is generated, the system can call up to two pre-programmed numbers and transmit the code as a string of ASCII text. To activate the feature, you must set Auto-report to ON, and program at least one telephone number and outgoing line.

If the call to the remote telephone number is not successful, the system will retry the call after a pre-programmed length of time. If the alarm code has not been transmitted after a pre-programmed number of retries, it will be cleared from the system. The alarm code which appears at the Alarm telephone and is recorded in the System test log is not affected by the Alarm reporting settings.

If there are multiple alarms and a backlog of codes is created, the system stores a maximum of five codes in a queue. If a sixth alarm is generated, the first code in the queue is dropped.

The baud rate you select for the device which will receive the alarm report should support the baud rate of the Compact ICS internal modem. See page 217 for more information.

Auto-report

Press CHANGE to select the setting: **OFF** or ON.

Phone #1

Press CHANGE and enter the telephone number the system will dial to transmit an alarm code. Press OK when you have finished entering the number. It can be up to 24 digits long.

Press CLR to choose **None**.

Phone #2

The system calls the second number after the alarm is transmitted to the first number, or after trying to transmit the first number for the programmed number of retries.

Press CHANGE and enter an additional telephone number the system will dial to transmit an alarm code. Press OK when you have finished entering the number. It can be up to 24 digits long.

Press CLR to choose **None**.

Tip - *You can use host signaling codes in your alarm reporting telephone numbers.*

Use line

Press CHANGE and enter the number of the line the I-RAD will use to send an alarm code. The line cannot be a target line, a line that is private to a DN, and you cannot use a line pool code.

Press CLR to choose **None**.

Retry time

Press CHANGE and enter the length of time in minutes the I-RAD will wait before trying the pre-programmed telephone number again. Enter a number between 1 and 50.

Press CLR to reset Retry time to the default (**15** minutes).

Num. retries

Press CHANGE to select the number of times the system will retry the transmission of the alarm code: 0, 1, 2, 3, 4, **5**, 6, 7, 8, 9.

Press CLR to reset the number of retries to the default (**5** retries).

Tip - *Unlike an external RAD, the I-RAD alarm reporting feature does not require you to set the baud rate or parity. Alarm reporting can use any lines which are not private to a DN or target lines.*

Because alarm reporting is an internal system feature, alarms indicating major events such as a system failure may not be transmitted.

It is recommended that you program the system to make at least one retry of the alarm reporting telephone number.

Telco features

VMsg centr tel#s

If you subscribe to a voice message service outside your office, you can access it through your Norstar system. This setting specifies the external telephone numbers that are dialed by the Message feature to retrieve voice messages. Use [Show   ], [Next   ], CHANGE, and the dialpad to enter the external number.

The default for each voice message center is **No number**.

Tip - *A telephone does not show that external voice messages are waiting unless Extl VMsg set is set to Yes. The setting is in CLASS assignment under Terminals&Sets.*

You can program up to five voice message center numbers, but most systems require only one.

Software Keys

In order to upgrade a restricted feature cartridge or enable the remote administration feature (I-RAD), you must first purchase an upgrade kit from Nortel.

The kit has detailed instructions on how to use Nortel's interactive voice response system to get your unique software keys. The system will ask you to provide your System ID, the authorization code that comes with your kit, and some general information about your system. The kit also contains detailed instructions on how to use the keys to enable a configuration upgrade or enable the remote administration feature.

Entering the keys is done using the following programming settings under Software Keys.

SysID

Press [Show] at Software Keys. The display reads SysID: followed by the eight-digit System ID Number.

Password Keys

Press [Show] and enter the eight-digit password number for Key 1. Use BKSP to make corrections.

Enter the next two keys in the same way.

If you are upgrading a restricted feature cartridge, you will have to tell the system to go ahead with a restart. Entering the software keys will have no effect unless you perform the system restart.

Tip - *You will not know if the software keys are being entered successfully until all of the eight-digit numbers have been entered. You will see the numbers on the screen as you enter them and be able to make corrections.*

You must assign a remote access package which allows remote administration to an incoming line before you can use the I-RAD.

Record the codes in the *Programming Record.* You will need the codes to restore the upgrade after a cold start.

Hardware

Hardware is where you view and change the settings for the Trunk Cartridges and BRI Cards installed in the ICS.

The ISDN section provides an overview of configuration and programming for ISDN resources, including step-by-step instructions for programming. This section provides more detailed information about individual headings and settings.

Hardware settings that appear for each cartridge or card type

Setting	Loop start	BRI-ST		BRI-U2 or BRI-U4	
		S loop	T or S/T loop	LT loop	NT loop
Card type	√	—	—	—	—
Lines	√	—	—	—	—
Discon timer	√	—	—	—	—
Loops	—	√	√	√	√
Loop	—	√	√	√	√
Type	—	√	√	√	√
SPID1	—	—	√	√	—
# of B-channls	—	—	√	√	—
Network DNs	—	—	√	√	—
Call type	—	—	√	√	—
D-packet servce	—	—	√	√	—
Lp<xxx>	—	—	√	√	—
TEIs	—	—	√	√	—
Sampling	—	√	—	—	—
DNs on Loop <xxx>	—	√	—	—	√
Assign DNs	—	√	—	—	√
Loop DN	—	√	—	—	√

Cd1-KSU

Installer password required

Press [Show] to display the Trunk Cartridge or BRI Card in the ICS.

Press CHANGE to select a card type: **Loop**, BRI-U2, BRI-U4, or BRI-ST.

If your system is using a restricted feature cartridge that has not been upgraded, you cannot select the BRI-ST and BRI-U4 card types, or configure the second cartridge or card in the ICS (Cd2-KSU).

Tip - *The Trunk Cartridge slots in the ICS are numbered from left to right.*

Card type
The display shows the current card type.

Lines
The display shows the range for the lines on a Trunk Cartridge.

If your system is using a restricted feature cartridge that has not been upgraded, you will see only settings for Cd1-KSU.

If your system is using BRI-U2 Cards, only the first two loops appear for the card.

	Line numbers for Loop start
Cd1-KSU	001-004
Cd2-KSU	025-028

Discon timer

Installer password required

Disconnect timer allows you to specify the duration of an open switch interval (OSI) before a call on a supervised external line is considered disconnected.

Press CHANGE to select the setting: 60, 100, 260, **460**, or 600 milliseconds.

Tip - *Disconnect Supervision is assigned to each line with the Trunk mode setting in Trunk/Line data under Lines (see page 156).*

This setting must match the setting for the line at the central office.

Loops

Installer password required

The display shows the loops found on the BRI Card.

If your system is using a restricted feature cartridge that has not been upgraded, you will see only settings for Cd1-KSU

	Loop numbers for BRI cards
Cd1-KSU	201-204
Cd2-KSU	225-228

Loop

Installer password required

Press [Show   ] to display the settings for individual loops on a BRI Card.

Type

Installer password required

Press CHANGE to select the loop type. If the card type is BRI-ST, the loop type can be S, **T**, or S/T. If the card type is BRI-U2 or BRI-U4, the loop type can be LT or **NT**.

The BRI Card must be disabled under Module Status in Maintenance before this setting can be changed. You can change the setting if the card has not yet been installed in the ICS slot.

Lines

Installer password required

There are two lines for each T, S/T, or NT loop.

Loop	Default lines
201	001-002
202	003-004
203	005-006
204	007-008
225	025-026
226	027-028
227	029-030
228	031-032

No SPIDs assignd

Installer password required

T, S/T, and NT loops can be assigned a service profile identifier (SPID) as supplied by your service provider. No SPIDs are assigned by default.

When the loop type is T or NT, calls on the loop are handled for a network connection only. If any other ISDN equipment is connected

to the loop, it must be configured as an S/T loop to ensure proper call handling.

Press ADD and enter the first or second SPID assigned to the loop.

If there are two SPIDs already assigned to the loop, ADD will not appear until one is removed.

Press REMOVE to clear a SPID.

of B-channls

Installer password required

Press CHANGE to select the number of B-channels that are associated with the SPID: **1** or 2.

> **Tip -** *When you order an ISDN service package that supplies two B-channels, you may receive one or two SPIDs from your service provider. If you receive one, it usually means you will configure the SPID to use two B-channels. If you receive two, it usually means you will configure each SPID with one B-channel. Check with your service provider if you are not sure about the proper configuration.*

Network DNs

Installer password required

Press [Show] to display the DNs which are used with the SPID.

Press ADD and enter the appropriate number to assign additional Network DNs to the SPID.

The Compact ICS can have a maximum of 32 Network DNs for the system. There is no limit to the number of Network DNs for each SPID, but you cannot exceed the limit of 32 Network DNs for the system.

If the Network DN you try to enter is already assigned to a SPID and its call type is Both, you will not be able to assign the DN again.

If the Network DN you enter is already assigned to a SPID and its call type is Voice or Data, it will be automatically programmed with the unused call type. For example, if the DN has Call type set to Voice in the previous SPID assignment, it will be automatically set to handle Data calls when the same DN is added to the other SPID.

Call type

Installer password required

Press CHANGE to select the call type of the Network DN: Voice, Data, or **Both**.

CHANGE will not appear if the Network DN is already in use by the system and the call type will be automatically programmed with the unused call type. For example, if the DN has Call type set to Voice in a previous SPID assignment, it will be automatically set to handle Data calls when the DN is entered the second time.

Tip - *If your service provider does not specify the call type for each Network DN, it is probably available for both voice and data. Check with your service provider if you are not certain about the proper configuration.*

D-packet servce

Installer password required

Press ⌈Show⌉ to view and program D-packet service for S/T, T, or NT loops. You can have two D-packet service configurations for each BRI Card.

D-packet servc

Installer password required

Press CHANGE to turn D-packet service for this loop on (Y) or off (**N**).

Lp201

Select the S loop (for BRI-S/T cards) or LT loop (for BRI-U2 or BRI U4 cards) that supports the D-packet service.

Press CHANGE to move through a list of the loops which are available on this card. If only one loop is available, you will not see CHANGE.

TEIs

Press [Show   ] to view and program the Terminal Endpoint Identifiers (TEIs). Each TEI is supplied by your service provider and is associated with an ISDN D-channel packet device.

No TEIs on loop

Press ADD to program up to eight TEIs to this loop.

Sampling

Press CHANGE to select the sampling used by an S loop:

- **Fixed**: if two or more S-interface devices use the loop and the length of the loop is less than 200 m (650 ft), select Fixed.

- Adaptve: if two or more S-interface devices use the loop and the length of the loop is greater than 200 m (650 ft), select Adaptve

If one S-interface device is using the loop, the length of the loop car be up to 1000 m (3,250 ft) and the rate should be set to Adaptve.

The BRI Card must be disabled under Module Status in Maintenance before you can change this setting. You can change the setting if the card has not yet been installed in the ICS slot.

DNs on Loop 201

Press [Show] to view and program the ISDN DNs assigned to the loop.

Assign DNs

Press [Show] and enter the ISDN DN you wish to assign to this loop, or press SCAN to move through a list of DNs already assigned to the loop.

The display shows Availabl, Assigned (assigned to this loop), *LPnnn* (assigned as the default DN of another loop) or LPnnn (assigned to another loop).

Press LIST to move through the all the ISDN DNs on the system one by one. The default range of ISDN DNs is 73-79.

Press CHANGE to assign the DN to the loop or to remove it.

Loop DN

Press CHANGE to move through the ISDN DNs you have assigned to the loop. This will assign the main ISDN DN to the loop. You can also set Loop DN to **None**.

Applying button cap labels

Before you apply button labels, activate the Button Inquiry feature (Feature * 0) to verify the button functions and to avoid activating features as you put the labels onto the buttons.

Keep the extra labels and button caps with each Norstar telephone or leave them with the system coordinator.

Types of button caps

*   **Unlabeled, clear button caps**
    with appropriate green or gray paper for typing in line numbers, telephone numbers, and features

*   **Pre-printed, colored button caps**
    in green or gray

Some examples of pre-printed button caps

Green caps	Grey caps
Line 1	Last No.
Handsfree Mute	Speed Dial

Tip - *To make identification of line types easier, use preprinted green button caps for lines that support incoming and outgoing calls. Use clear button caps for target lines that are incoming only.*

Identifying the telephones

1. Write the individual telephone numbers on the labels and attach them to the appropriate Norstar telephones.

2. Write the telephone number and the internal number on the appropriate receiver card for each type and color of telephone that is to be installed.

3. Cover the receiver card underneath the receiver of each telephone with the plastic lens.

Norstar default button assignments

Default features are assigned automatically to the programmable buttons on Norstar telephones and vary depending on the telephone. The default features are listed in the tables in this chapter.

Rules of default button assignment

Line and intercom buttons are assigned by default templates and can be changed in programming. Handsfree/Mute and Answer buttons are not assigned by default. If these features are defined, however, they are automatically assigned to specific buttons, as described on this and the following page. None of these buttons can be assigned to M7100 telephones.

The Handsfree/Mute feature appears on the bottom right-hand button (the bottom button on the M7208 telephone), moving the Intercom button(s) up one position.

Each telephone can have up to eight Intercom buttons. They appear above the Handsfree/Mute button at the bottom right-hand position on your telephone (the bottom button on the M7208 telephone).

Each telephone can have up to four Answer buttons. They appear above Intercom buttons in the right column and continue up from the bottom in the left column, replacing the features on those buttons. (On the M7208 telephone, Answer buttons appear above Intercom buttons and below external line buttons in a single column.)

External line buttons appear in ascending line order, starting at the top button in the left column (the top button on the M7208 telephone). If more than five external lines are assigned to an M7310 telephone assignment continues down the buttons on the right column, erasing the features on those buttons. Line buttons have priority over feature access buttons but not Handsfree/Mute, Intercom, or Answer buttons.

M7100 telephone button defaults

For for the default template, the one programmable button on the M7100 telephone is [Last No.] .

M7208 telephone button defaults

| Pick-Up |
| Transfer |
| Last No. |
| Page |
| Conf/Trans |
| Speed Dial |
| Intercom |
| Intercom |

Tip - *The default Page button activates the General Page option (* Feature 6 0 *).*

M7310 telephone button defaults

Dual-memory buttons

Set 33	Set 37	Set 42
Set 21	Set 25	Set 29
Set 34	Set 39	Set 43
Set 22	Set 26	Set 30
Set 35	Set 40	Set 44
Set 23	Set 27	Set 31
Set 36	Set 41	Set 45
Set 24	Set 28	Set 32

This example shows defaults for a system with two-digit internal numbers.

DN 38 does not appear on any set or CAP module.

The defaults shown for the dual-memory buttons do not actually exist on any telephone, since no telephone has an autodial button for itself. The position that would be taken by the autodial button for itself is blank.

Template button assignments

DND	Conf/Trans
Transfer	Last No.
Call Fwd	Voice Call
Pick-Up	Intercom
Page	Intercom

M7324 telephone button defaults

Buttons without a label are blank by default and can be programmed as autodial or feature buttons.

	Call Fwd
	Speed Dial
	Last No.
	Saved No.
	Conf/Trans
	Transfer
	DND
	Pick-Up
	Voice Call
	Page
	Intercom
	Intercom

I-RAD

The internal remote access device (I-RAD) allows you to see and change programming for the ICS using a PC equipped with remote administration software and a modem. Once you have configured the ICS for remote administration, you can call the ICS on an incoming line, connect to the I-RAD, and then program or troubleshoot the ICS using the PC.

To set up remote administration:

1. If the Feature Cartridge does not have the I-RAD enabled, turn it on by entering software keys. (If you do not see the Auto reporting programming under the System Programming heading, the I-RAD is not enabled.)

    See "Software Keys" on page 222 for instructions for obtaining and entering the keys.

2. Create a remote package with the Remote admin setting set to Y(Yes). When the package is assigned to a line, it allows remote administration.

    See "Remote access" on page 212.

3. Assign the remote access package to the line used for calling the ICS from your PC. This permits the line to be used for remote administration.

    See "Remote access" on page 212.

4. Verify that the I-RAD password used by the ICS is the same one you use with your remote administration software. Change the password, if necessary.

    See "IRAD pswd" on page 193.

5. To test the I-RAD feature, call the line you configured for remote access from a telephone and transfer to the I-RAD using one of the methods described in "Connecting to the I-RAD" on page 236. If you hear a high-pitch modem tone, the I-RAD is working and accessible.

Connecting to the I-RAD

A personal computer (PC) equipped with remote administration software and a modem can connect with the I-RAD using one of the following methods:

- call someone on the Norstar system and have him or her enter the feature code that transfers your call to the I-RAD (Feature   8 1 7). You can also be transferred using Feature   8 1 7 when someone has called you from the Norstar system.

- using a touch-tone telephone or modem, call the system using an Auto Attendant feature, enter the DISA DN and appropriate COS password, or the Auto DN. You can then enter the Remote Administration feature code (Feature   * * 7 2 3).

- using a touch-tone telephone or modem, call the system on an auto-answer line and enter the Remote Administration feature code (Feature   * * 7 2 3).

- call the incoming line that has been programmed to answer with the I-RAD after a set number of rings (see Alarm reporting on page 218).

You can connect to a Compact ICS that does not have the I-RAD enabled using the transfer to IRAD feature code (Feature   8 1 7) only. This allows you to enter the software keys to enable the I-RAD remotely. A remote access package must be applied for the line and you must have the IRAD password. When you have been transferred, the only programming heading available to you is Software Keys, which will allow you to enable the feature remotely and set up other methods of access.

You will still need to enter the Installer password to begin a remote programming session (Feature   * * 2 6 6 3 4 4), and the remote administration software requires your system's I-RAD password.

The I-RAD is also used to automatically transmit alarm codes to a remote location. See Alarm reporting in the Programming chapter for more information.

Testing

After your system has been installed and programmed, test it to verify that the equipment is functioning properly.

☐ Verify all wiring and connections to make sure they are correct and secure.

☐ Use Module status in Maintenance to verify that all modules are enabled.

☐ Use Port/DN status in Maintenance to verify that all devices and lines are enabled and idle.

☐ Test each Norstar telephone by placing a call, verifying the quality and clarity of all connections, checking the indicators, and programming and using a memory button.

☐ Test the I-ATA by placing a call to the analog device connected to the I-ATA port. Verify that the device detects ringing. Verify the quality and clarity of the connection. Place a call from the device to verify dialing.

☐ Test each external line by placing a call and verifying the quality and clarity of the connection.

☐ Use the procedures in the user cards or installation documentation to test all optional equipment, which may include peripherals.

☐ If you have programmed any of these Norstar features, test them:
  • Routing
  • System Speed Dial
  • Restriction filters
  • Class of Service
  • Services

Troubleshooting

These troubleshooting procedures allow you to solve many problems in the Norstar system. Follow these procedures before replacing any components.

> ⚠️ **Only qualified persons should service system.**
>
> The installation and service of this unit is to be performed only by service personnel having appropriate training and experience necessary to be aware of hazards to which they are exposed in performing a task and of measures to minimize the danger to themselves or other persons.
>
> Electrical shock hazards from the telecommunication network and AC mains are possible with this equipment. To minimize risk to service personnel and users, the ICS must be connected to an outlet with a third-wire ground. In addition, all unused slots must have filler faceplates installed and the system door must be locked in place at the completion of any servicing.
>
> Service personnel must be alert to the possibility of high leakage currents becoming available on metal system surfaces during power line fault events near network lines. Risk points on the ICS are the Feature Cartridge, heatsink and power cord earth ground pin. These leakage currents normally safely flow to Protective Earth ground via the power cord. Therefore, it is mandatory that connection to an earthed outlet is performed first and removed last when cabling to the unit. Specifically, operations requiring the unit to be powered down must have the network connections (central office lines) removed first.

Where more than one procedure is given, you should select just one.

Getting ready

Before you begin troubleshooting, gather all the information that is relevant to your network configuration. These are:

- the *Programming Record*

- records from people who use the network

- information about other hardware and non-Norstar features within the public or private network

Tip - *Remember that you can check many of the system parameters without having to go into a programming session.*

- Use Button Inquiry ([Feature] [*] [0]) to check the buttons on a particular telephone.

Types of problems

The problems you encounter will likely fall into one of the following categories.

Misunderstanding of a feature

A problem may be reported because a Norstar user is unfamiliar with the operation of a given feature. You may be able to solve the problem simply by demonstrating how to use the feature correctly.

Programming errors

You may encounter problems caused by errors in programming. A feature may have been programmed incorrectly or may not have been programmed at all.

Wiring connections

Wiring problems are caused by loose, unconnected, or incorrect wiring. Use the procedures in the section on Checking the hardware as a guide.

Equipment defects

You may encounter problems caused by Norstar equipment defects. See the appropriate section for problems related to the system hardware.

General troubleshooting procedure

1. Diagnose the trouble by determining:

*   the types of problems users have experienced

*   the frequency of the problems

*   how many telephones are affected

2. Check how a feature is being used. A problem may have been reported because of a misunderstanding about how a feature works. Confirm that the person who reported a problem understands the intended use and operation of any feature in question.

3. Check for programming errors. Check that the programming recorded in the *Programming Record* is correct for the intended operation of the system, and verify that this programming has been correctly entered.

4. Run a Station set test (⌐Feature ⌐ 8 0 5). Instructions are included in the *System Coordinator Guide*.

5. Check the wiring and hardware connections.

6. If the problem persists, run a Maintenance session as described in the Maintenance chapter.

7. If hardware is defective, replace it. If the trouble requires expert advice, follow your company's procedure for obtaining assistance.

Problems with telephones

Norstar telephone has faulty buttons, display, handset or other hardware problems

1. Run a Station Set Test (Feature 8 0 5). Instructions are included in the *System Coordinator Guide*.

Norstar telephone display unreadable

If the trouble is with an M7310 or an M7324 telephone:

1. Press Feature * 7 .

2. Press UP or DOWN to adjust the display to the desired level.

3. Press OK.

Tip - *The number of contrast settings varies with the model of telephone.*

If the trouble is with an M7100 or M7208 telephone:

1. Press Feature * 7 .

2. Press a number on the dial pad to adjust the display to the desired level.

3. Press Hold .

If the display is still unreadable:

1. Go into Maintenance in programming and disable the problem telephone.

2. Replace the problem telephone with a known working one.

3. Enable the working telephone.

Norstar telephone dead

1. Run a Station Set Test (Feature 8 0 5). Instructions are included in the *System Coordinator Guide*.

2. If more than one telephone is affected, refer to the ICS down section on page 261.

3. Check for dial tone.

4. Check the display.

5. If the problem persists, replace the telephone with a known working Norstar telephone of the same type (so that the programming is retained).

6. Check the internal wiring at both the modular jack and the distribution cross-connect. A Norstar telephone port should have between 15 and 26 V DC across the Tip and Ring when the telephone is disconnected.

7. Run a bit error rate test (BERT). Instructions begin on page 300.

8. Check the line cord.

Running a Maintenance session to test a dead telephone

1. Run a Maintenance session to ensure that the telephone is not disabled. (See Port/DN status in the Maintenance chapter.)

2. Disable the port that the telephone is connected to using the heading Port/DN status.

3. Enable the port that the telephone is connected to using the heading Port/DN status.

Replacing a telephone

In a powered-up system, an existing Norstar telephone can be replaced by a new Norstar telephone. If you use a Norstar telephone that has already been used on the system, it may have to be reprogrammed.

Replacing Norstar telephones of the same type

If an existing Norstar telephone is unplugged, and a new Norstar telephone of the same type is then plugged into the same jack (for example, replacing an M7208 telephone with another M7208 telephone), the new telephone acquires the programming and the internal number of the old telephone. This is normally done to replace a defective telephone.

Replacing Norstar telephones of different types

If an existing Norstar telephone is unplugged, and a new Norstar telephone of a different type is plugged into the same jack (for example, replacing an M7208 telephone with an M7310 telephone), the new telephone keeps the old internal number. The new

telephone receives default programming for a telephone of its type. (Refer to "Applying button cap labels" on page 231).

If the telephone being replaced has more lines than the new telephone, automatic outgoing line selection may not work with the Handsfree/Mute feature. A line must be selected manually.

Status of a telephone that was replaced

The old Norstar telephone that was unplugged and replaced by a new Norstar telephone loses its programming and internal number. The old telephone's internal number has been given to the new telephone and the programming has either been removed or given to the new telephone when it was plugged into the old jack. The replaced telephone (if still functional) is now treated by the system as a telephone not previously in service.

Emergency telephone dead

1. Verify that the power indicator on the ICS is not lit.

2. Verify that there is no dial tone at the emergency telephone.

3. Check that the external line and emergency telephone connections have been made correctly.

4. Ensure that the emergency telephone is not faulty by connecting it directly to the external line 002 and listening for dial tone.

5. Verify that the ICS has a Loop Start Trunk Cartridge installed.

6. Verify that there is dial tone on line 002 of the ICS.

7. Replace the ICS.

Problems with lines

The troubleshooting problems listed here focus on trouble with making calls or using lines. For problems which are specific to BRI lines, see "Problems with BRI service" on page 257.

Calls cannot be made (but can be received)

1. Press [Feature ⬚] [⁕] [0].

2. Press a line button.

3. If an incorrect line number or name appears (or if neither appears) on the Norstar telephone display, check the programming settings.
   OR
   If the correct line number or name appears on the Norstar telephone display, make sure the external lines are properly cross-connected.

4. Check the restrictions that are applied to the set and to the lines at the set.

5. Check that the dialing mode is consistent with that used by the central office (CO).

6. Run a Maintenance session and verify that the module in which the Trunk Cartridge is installed in is not disabled or unequipped using the heading Module status.

7. Run a Maintenance session and disable the appropriate ports using the heading Port/DN status. For charts showing external line port number defaults, refer to Installing the hardware.

8. Enable the appropriate ports using the heading Port/DN status.

9. To check the line, contact the telephone company.

Dial tone absent on external lines

1. Use Button Inquiry ([Feature ⬚] [⁕] [0]) to display the number of the external line you are testing.

2. Check for dial tone using a test telephone at the connections for the external line on the distribution block.

3. Make sure that a Trunk Cartridge for the line is properly installed in the ICS.

4. Refer to the section on Trunk Cartridge trouble in this chapter.

5. Run a Maintenance session to ensure that the line is not disabled. (See Port/DN Status in the Maintenance chapter.)

Hung lines at a telephone

Line indicators that have been solid for a long time are the only visible indication that lines are hung.

Possible problem

A line that has been redirected using Line Redirection may, under some circumstances, remain busy after a call is over. If this happens, the outgoing line for the redirection also remains busy. You can clear this kind of hung line only at the telephone that was used to redirect the line.

Solution

1. Enter the Button Inquiry feature code (Feature * 0) at the telephone that was used to redirect the line.

2. Press the button of the redirected line.

3. Press SHOW or #.

4. Press DROP or *.

Both the redirected line and the outgoing line for the redirection should now be cleared.

Possible problem

The supervision or Discon timer programming for the line does not match the settings for the line at the central office.

Solution

Verify that your programming for the line matches the central office settings.

Possible problem

Lines are still hung after all the above solutions have been investigated or tried out.

Solution

For lines that are hung for any other reason, you will have to run a Maintenance session.

1. Run a Maintenance session and go to the heading Module status.

2. Disable and enable the affected Trunk Cartridge.

Follow the procedures in the Troubleshooting overview and the Installation check sections before proceeding.

Auto-answer line rings at a Norstar telephone

Possible problem

You configured a loop start trunk as auto-answer but the installed hardware does not support disconnect supervision. (In this case, the symptom would be accompanied by the Alarm 62 code symptom.)

Solution

Reconfigure the trunk as manual answer.
OR
Replace the Trunk Cartridge with one that provides disconnect supervision.

Possible problem

The line is configured as auto-answer and unsupervised.

Solution

Reconfigure the line as manual answer.
OR
Reconfigure the line as supervised.

Possible problem

The line is not equipped for disconnect supervision at the central office.

Solution

Reconfigure the trunk as manual answer.

Possible problem

The Discon timer setting for the Trunk Cartridge in Trunk/Line data does not match the setting for the line at the central office.

Solution

Reconfigure the Discon timer to match the setting at the central office.

Prime telephone gets misdialed calls

Possible problem

The digits sent by a switch at a central office or in the private network did not match any Received number, the Auto DN, or the DISA DN. The call has been routed to the prime telephone for the incoming trunk.

Solution

1. Verify that the switch is sending the correct number of digits for the Received number length defined in your system.

2. Verify all the digit strings that the switch should be sending.

3. Check that you have defined the corresponding Received number for every target line in your system.

4. Make sure that the published telephone numbers for your network are correct.

Selected line reads "Not in service" or "Not available"

Possible problem

The line has been disabled for maintenance purposes.

Solution

Enable the line.
OR
If the line will be out of service for some time, configure another line to replace it on the telephone.

Selected line pool shows "No free lines"
Possible problem
If this happens often, there are not enough lines in the line pool to serve the number of line pool users.

Solution
Enter programming and move less-used loop start trunks from other line pools into the deficient line pool.

Problems with the I-ATA

The problems listed here focus on trouble with the I-ATA and the analog device connected to it.

Calls do not ring (and caller does not receive busy tone)

1. Verify that the ringer of the attached analog device is turned on.

2. Check the ringer volume.

3. Verify that calls can be answered even when the device does not ring.

4. Replace the analog device with a single-line analog telephone and check for ringing.

5. Check for ringing at the wiring connection block using a single-line analog telephone.

6. Check wiring from the connection block to the attached analog device.

7. Check the requirements of the analog device to see if it is compatible with the I-ATA specifications (see specifications on page 311).

I-ATA is always busy

1. Remove the attached analog device from the I-ATA line and make a call to the I-ATA from a Norstar telephone. If the line is not busy, the analog device may be faulty. If the line is busy, check the wiring.

2. Ensure that the analog device is not faulty by connecting it directly to an external line and verifying that it functions correctly.

3. Check the internal wiring at the modular jack and the distribution cross-connect. The I-ATA port should have about 31 Vdc across the Tip and Ring when the telephone is disconnected.

4. Check the requirements of the analog device to see if it is compatible with the I-ATA specifications (see specifications on page 311).

5. Run a maintenance session to ensure the I-ATA is not disabled. (See Port/DN status in the Maintenance chapter.)

Calls cannot be answered (or dial tone is not present when making calls)

1. Check that the I-ATA connections have been made correctly.

2. Replace the analog device with a single-line analog telephone and check for dial tone.

3. Ensure that the analog device is not faulty by connecting it directly to an external line and checking for dial tone.

4. Check that the I-ATA is not busy by making a call to it from a Norstar telephone. If it is busy, remove the analog device and check for busy.

5. Check the internal wiring at the modular jack and the distribution cross-connect. The I-ATA port should have about 31 Vdc across the Tip and Ring when the telephone is disconnected. The voltage should drop when the analog telephone is connected and a call is attempted.

6. Check the requirements of the analog device to see if it is compatible with the I-ATA specifications (see specifications on page 311).

Calls cannot be made (but dial tone is present)

1. Ensure that the analog device is not faulty by connecting it directly to an external line and making a call.

2. Ensure the dialed number is not restricted by call restrictions.

3. Check if the ICS is detecting dialing by listening to the dial tone. Dial the first digit of an internal telephone DN and check that dial tone is removed. If you still hear dial tone, the ICS is not detecting the dialed digit.

4. Determine if the problem is associated with the wiring by connecting the analog device directly at the modular jack or the distribution cross-connect by the ICS. If calls can be made with this connection, the problem may be with the internal wiring.

5. Check the internal wiring at the modular jack and the distribution cross-connect. The I-ATA port should have about 31 Vdc across the Tip and Ring when the telephone is disconnected. The

voltage should drop when the analog telephone is connected and a call is attempted.

6. Check the requirements of the analog device to see if it is compatible with the I-ATA specifications (see specifications on page 311).

Problems with optional equipment

Auxiliary ringer

1. If the auxiliary ringer is used for Schedules (Night, Evening, or Lunch schedule), ensure that Schedules is activated from the control telephone.

2. Check the wiring between the auxiliary ringer generator and the ringing device. Refer to the auxiliary ringer wiring chart.

3. Check the wiring between the auxiliary ringer generator and the distribution block.

Auxiliary ringer wiring

Feature	Pin
Auxiliary ring (Make)	50 (Violet-Slate)
Auxiliary ring (Common)	25 (Slate-Violet)

4. Ensure that the auxiliary ringer contacts are operating properly by checking with an ohmmeter across the auxiliary ringer pin contacts. Refer to the auxiliary ringer wiring chart.

5. Check that the auxiliary ringer pin contacts are programmed to operate in conjunction with any or all of the features in the auxiliary ringer programming chart.

Auxiliary ringer programming

Feature	Programmed in	
Auxiliary ringer: Lines	Lines	Trunk/Line data
Auxiliary ringer: Sets	Terminals&Sets	Capabilities
Service Modes	Services	Ringing service

The maximum current carrying capability of the Norstar auxiliary relay contacts is 50 mA dc. They are designed to operate with the auxiliary ringer generator, or equivalent.

External paging

1. Use the Button Inquiry feature (Feature ✻ 0) to verify the feature of a programmable memory button.

2. Check the wiring between the 50-pin connector and the paging amplifier or between the connections shown in the external paging wiring chart.

External paging wiring

Feature	Pin
Page out (Tip)	50 (Violet-Slate)
Page out (Ring)	25 (Slate-Violet)
Page (Make)	49 (Violet-Brown)
Page (Common)	24 (Brown-Violet)

3. Test external paging [Feature] [6] [2] to ensure that it is working. The nominal output signal from the Norstar ICS is 100 mV rms across 600 Ω.

Music on Hold/Background Music trouble

Although Music on Hold and Background Music are separate features, they share the same wiring and customer-supplied music source.

1. Ensure that the proper feature access code ([Feature] [8] [6]) is turned on. Adjust the volume using the volume control bar.

2. Use the Button Inquiry feature ([Feature] [*] [0]) to verify the feature on a programmable memory button.

3. If there is trouble with Music on Hold, check the music settings in programming.

Music programming

Feature	Programmed in	
Backgrnd music: Y	System prgming	Featr settings
On hold: Music	System prgming	Featr settings

4. Check the wiring between the music source and the 50-pin connector. See the wiring charts in the Installation section.

5. Ensure that the music source is turned on, is operational, and the volume control is set properly.

6. Any music source with a low-output impedance (for example, less than 3,300 ohms) can be connected. The output level must be less than one volt.

Problems with Trunk Cartridges

Check first for user configuration problems, then wiring and programming errors before replacing Norstar equipment.

Trunk Cartridge trouble

1. Check that the cartridge is properly inserted in the ICS.

2. Run a Maintenance session to ensure that the cartridge is not disabled.

If the problem persists:

1. If AC power is present and the LED indicator on the ICS is off, see the section on ICS down on page 261.

Refer to the Installation chapter for information on replacing components.

Problems with BRI service

Each LED on front of a BRI-ST or BRI-U Card corresponds with a loop, or indicates an overall state of the BRI connections.

BRI Card indicators

LED status	T, S/T, or U-NT loop	S or U-LT loop
on	normal operation	
off	no synchronization with ISDN network	no synchronization with TE
all flashing	Card is not recognized by ICS (not configured in Hardware as a valid BRI loop). See "All the LEDs on a BRI Card are flashing" on page 258.	
bottom LED only flashing	ICS is downloading firmware to the card; card is new to the ICS, or Feature Cartridge has been upgraded	

The BRI card is connected to the ISDN network (U loop) but the LED for one of more loops is not lit

Possible problem

The physical connection or configuration for the network connection is not correct (no Layer 1).

Solution

1. Verify the wiring from the network to the distribution block.

2. Verify the wiring from the distribution block to the ICS.

3. Use a Meridian 2500 set to test for data on the BRI trunk.

4. Test the network connection by connecting Bellcore standard terminal equipment (TE) directly to the network.

5. Verify that the loop is provisioned.

6. Verify that the loop is properly configured, including the proper loop type, SPIDs, and Network DNs.

7. Disable and re-enable the BRI Card.

8. Disable and enable the module for the Card.

"Out of service" is displayed when a BRI line is selected (LED for loop is lit)

Possible problem

The loop is configured incorrectly. Layer 1 is present but Layers 2 and 3 are not working.

Solution

1. Verify that the SPIDs and Network DNs are programmed correctly in Hardware.

2. Verify that the loop and lines are provisioned.

All the LEDs on a BRI Card are flashing

Possible problem

The card is not configured properly.

Solution

1. Verify that the loop is properly configured, including the proper loop type, SPIDs, and Network DNs.

Possible problem

The card is not recognized by the ICS.

Solution

1. Verify that an Expansion Cartridge with Clocking, or Clocking Cartridge is installed in the ICS.

2. Replace the card with another card of the same type.

Caller hears one ring and then a fast busy signal when placing a call on a BRI line

Possible problem

CACH or EKTS, which are not supported by Compact ICS, is included in the ISDN services package.

Solution

1. Contact your service provider and ensure that CACH or EKTS are not part of the ISDN services package. These services must be turned off at the switch.

2. Verify that the Network DNs have been programmed correctly, and verify the numbers with your service provider.

Problems with the NT1

The table gives the meaning of the indicators found on the stand alone NT1 manufactured by Nortel. Other models or makes of NT1 may have different indicators. For more information about the NT1, see the ISDN chapter.

NT1 status indicators

Indicator	State	Meaning
▬ ▬ ▬	off	power is unavailable
	on	power is available
	flashing	system is on backup power
S/T	off	normal operation
	on	no synchronization with terminal equipment
	flashing	high error rate
U	off	normal operation
	on	no synchronization with the network
	flashing	high error rate
♪	off	normal operation
	on	test in progress
	flashing	self-test failed
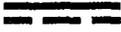
ICS down

1. If AC power is present and the indicator light on the ICS is off, replace the fuse in the ICS (see illustration on next page).

2. Disconnect all central office and station lines from the ICS. Power down the ICS by unplugging it.

> ⚠️ **Your Norstar system requires connection to a grounded outlet.**
>
> To prevent possible injury from voltage on the telephone network, disconnect all central office and station lines before removing plug from the electrical outlet.

3. After powering down the ICS, use fingernails or screwdrivers to pinch the tabs on the fuse drawer and remove it from the ICS. The cables can easily and safely be pushed aside to reach the fuse drawer.

4. Remove the fuse from the left-hand compartment (not the one labeled "spare fuse") and discard.

5. Insert the new fuse into the left-hand compartment.

6. A spare fuse is located in the right-hand compartment (labeled "spare fuse") of the fuse drawer.

7. If there is no spare fuse, you will have to obtain a replacement.

> ⚠️ **Replace with the same type of fuse.**
>
> For continued protection against risk of fire, replace only with the same type and rating of fuse (250 V, 3.15 A).

8. Replace the fuse drawer in the ICS and restore power to the system.

9. Connect the central office and station line connectors.

Fuse

Fuse drawer

Bottom view of ICS
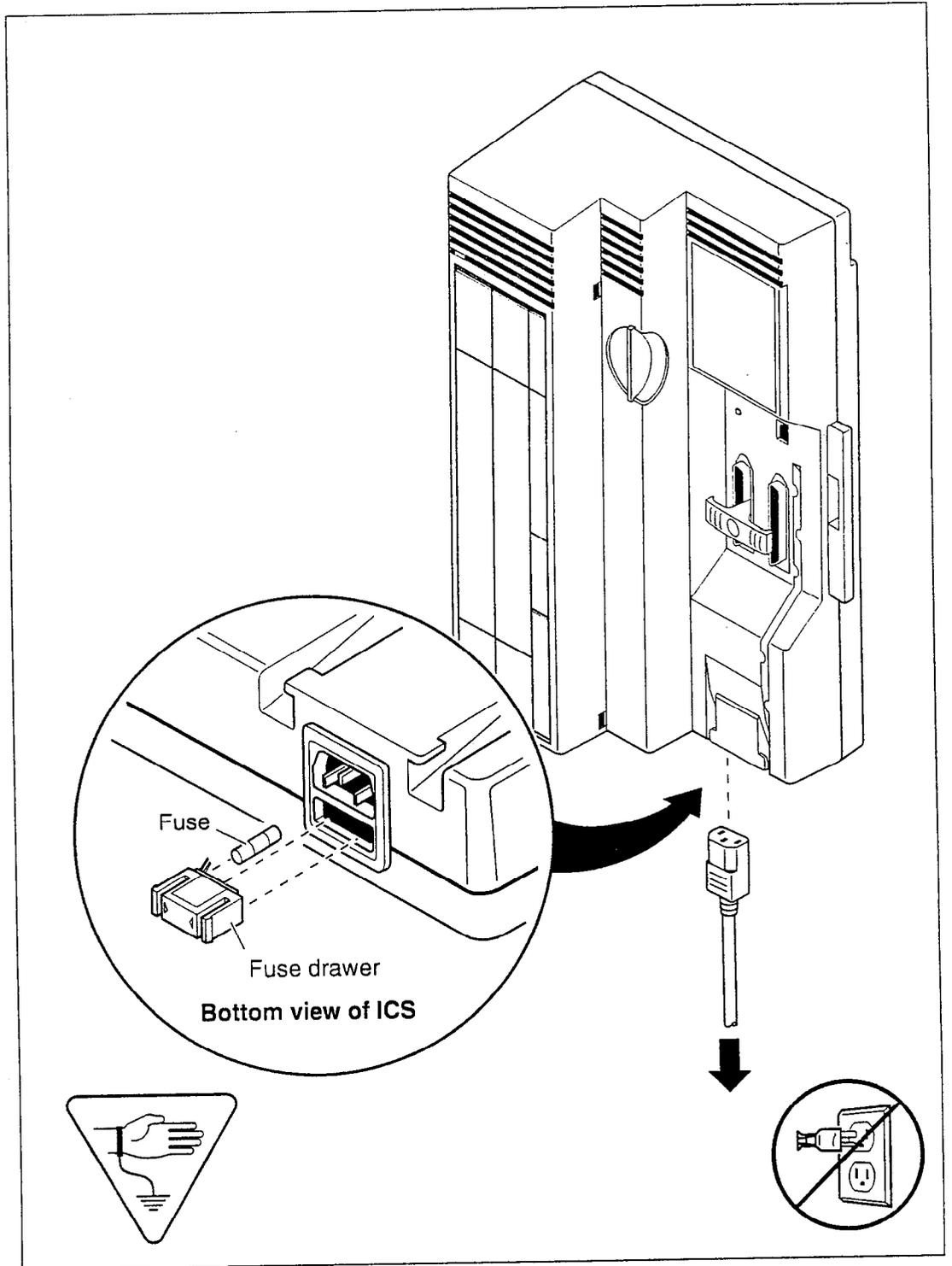
Problems for network or remote users

Remote feature code gets no response

Possible problem

A Norstar user has called into another Norstar system and is trying to activate a remote feature but gets no response after dialing the feature code.

Solution

1. If a COS password is needed for remote access, make sure the user has entered the appropriate password.

2. Make sure that the remote caller is dialing the feature code correctly. Use the asterisk (*) character, followed by the feature code, to activate a remote feature.
   Do not use ‾Feature‾ for accessing features on a remote Norstar system.

3. Ensure that the remote user is dialing tones, not pulses once the call is answered.

4. Make sure an appropriate remote package is in use for the incoming line.

5. Check the restrictions for the remote package used with the incoming line.

Dialed number gets ringback and the wrong person

Possible problem

The digits sent by a switch at a central office or in the private network did not match any Received number, the Auto DN, or the DISA DN. The call has been routed to the prime telephone for the incoming trunk.

Solution

1. Verify that the switch is sending the correct number of digits for the Received number length defined in your system.

2. Verify all the digit strings that the switch should be sending.

3. Check that you have defined the corresponding Received number for every target line in your system.

4. Make sure that the published telephone numbers for your network are correct.

Dialed number gets stuttered dial tone instead of ringback

Possible problem

The remote caller has tried to reach a Norstar target line, but has reached a trunk with DISA instead. Alternatively, the Norstar system has mapped incoming digits onto the DISA DN.

Solution

1. Verify all the digit strings that the switch should be sending.

2. Check that you have defined a corresponding Received number for every target line in your system.

3. Check that you have defined the correct DISA DN for your system.

4. Make sure that the published telephone numbers for your network are correct.

Dialed number gets dial tone instead of ringback

Possible problem

The remote caller has tried to reach a Norstar target line, but has reached the Norstar system instead. Norstar has mapped the incoming digits onto the Auto DN.

Solution

1. Verify all the digit strings that the switch should be sending.

2. Check that you have defined the corresponding Received number for every target line in your system.

3. Check that you have defined the correct Auto DN for your system.

4. Make sure that the published telephone numbers for your network are correct.

Dialed number gets busy tone

Possible problem

The target line that the incoming digits map onto is busy, and there is no prime telephone for the incoming trunk.

Solution

1. For maximum call coverage, make sure that you configure a prime telephone for every incoming trunk.

Dialed number does not get through

Possible problem

The digits sent by a switch at a central office or in the private network did not match any Received number, the Auto DN, or the DISA DN. There is also no prime telephone assigned for the incoming trunk. In this case, the caller may hear overflow tone from the Norstar system or a recorded message from the originating switch.

Solution

1. Configure a prime telephone for every incoming trunk.

2. Verify that the switch is sending the correct number of digits for the Received number length defined in your system.

3. Verify all the digit strings that the switch should be sending.

4. Check that you have defined a Received number for every target line in your system.

5. Make sure that the published telephone numbers for your network are correct.

Possible problem

The Norstar system did not receive some or all of the incoming digits.

Solution

1. Check that the system hardware is receiving signals properly.

2. Verify that the switch is sending the correct number of digits for the Received number length defined in your system.

3. If the switch at the far end is sending pulse signals, make sure they are being sent at the proper rate. (Pulse digits must be 300 ms or more apart for Norstar to receive them.)

Dialed DISA number gets ringback instead of stuttered dial tone

Possible problem

The remote caller has dialed a DISA number, but has instead reached a target line, or has been routed to the prime telephone for the auto-answer trunk. The Norstar system has mapped the incoming digits from a switch onto a target line, or has been unable to map the digits anywhere.

Solution

1. Verify that the switch is sending the correct number of digits for the Received number length defined in your system.

2. Verify all the digit strings that the switch should be sending.

3. Check that you have defined the correct DISA DN for your system.

4. Make sure that the published telephone numbers for your network are correct.

Dialed DISA number gets dial tone instead of stuttered dial tone

Possible problem

The remote caller has dialed a DISA number, but has reached the Norstar system instead. The Norstar system has mapped the incoming digits from a switch onto the Auto DN.

Solution

1. Verify that the switch is sending the correct number of digits for the Received number length defined in your system.

2. Verify all the digit strings that the switch should be sending.

3. Check that you have defined the correct DISA DN for your system.

4. Make sure that the DISA DN and Auto DN are different enough to prevent misdialing.

5. Make sure that the published telephone numbers for your network are correct.

DISA user gets overflow tone when entering COS password

Possible problem

The remote caller may have entered an invalid password.

Solution

Check the Administration programming under COS passwords and verify that the caller has a valid password.

Possible problem

The remote caller may have entered an asterisk (*) as one of the 6 digits.

Solution

Instruct remote callers to enter their COS password correctly: enter 6 digits.

Possible problem

The remote caller may have entered a number sign (#) as one of the 6 digits.

Solution

Instruct remote callers to enter their COS password correctly: enter 6 digits. The number sign (#) may be entered after the 6th digit, but is not required.

Possible problem

The remote caller may have waited more than 15 seconds between entering digits.

Solution

Instruct remote callers to enter their COS password correctly: enter 6 digits, and do not pause too long between digits.

Possible problem

The caller may be dialing from a rotary-dial telephone or from a push-button telephone that uses pulse signaling.

Solution

Inform remote callers that they must dial from a push-button telephone that uses DTMF, also known as touch-tone signaling.

Dialed feature code gets overflow tone

Possible problem

The remote caller does not have access to that feature.

Solution

1. If the call came in on a trunk with DISA, check the Class of Service that is associated with the remote caller's COS password. If it is too restrictive, modify the remote package assigned to the COS password, or assign another COS password that is more suitable.

2. If the call came in on a trunk without DISA, check the remote package that you assigned to the incoming trunk. Make sure that it gives the appropriate access to the remote caller.

Possible problem

The feature code is not valid.

Solution

1. Make sure that remote callers have a correct listing of the features that are programmed for remote access.

2. Ensure that remote callers are dialing the feature code correctly. Press ✱ followed by the feature code to activate a remote feature.

Possible problem

The caller may be dialing on a rotary-dial telephone or on a push-button telephone that uses pulse signaling.

Solution

Inform remote callers that they must dial from a push-button telephone that uses DTMF, also known as touch-tone signaling.

Dialed feature code gets busy tone

Possible problem

A resource that the remote feature uses may currently be in use. For example, a remote caller trying to use the paging feature would get a busy tone if the auxiliary speaker were being used at the time.

Solution

If repeated attempts to use the remote feature produce a busy tone, there may be a malfunction in a resource that the feature uses. Check that the remote feature hardware is functioning normally.

Line pool access code gets overflow tone

Possible problem

If the published line pool access code is valid, the remote caller does not have access to that line pool.

Solution

If the incoming trunk answers with DISA, give the remote caller a COS password that permits access to that line pool.
OR
Change the remote package for the incoming trunk so that it permits access to that line pool.
OR
Give the remote caller a line pool access code that is permitted within the Class of Service on the incoming trunk.

Possible problem

The published line pool access code is invalid and there is no prime telephone for the auto-answer trunk.

Solution

1. Make sure that the published line pool access codes are correct.

2. Check that the line pool access codes have been entered correctly under Access codes in System prgrming.

Possible problem

The caller may be dialing from the network on a rotary-dial telephone or on a push-button telephone that uses pulse signaling.

Solution

Inform remote callers that they must dial from a push-button telephone that uses DTMF, also known as touch-tone signaling.

Line pool access code gets ringback

Possible problem

The published line pool access code is invalid, and the system has routed the call to the prime telephone for the incoming trunk.

Solution

1. Make sure that the published line pool access codes are correct.

2. Check that the line pool codes have been entered correctly under Access codes in System prgrming.

Line pool access code gets busy tone

Possible problem

There are not enough lines in the line pool to serve the number of users.

Solution

If the line pool contains loop start trunks, enter Trunk/Line Data and move less-used loop start trunks from other line pools into the deficient line pool.

Dialed number gets no response

Possible problem

The remote caller, after accessing a line in a line pool, may have started dialing before the far end was ready to receive digits.

Solution

Instruct remote callers to wait until they hear feedback before entering any digits.

Possible problem

There may be a malfunction in the line that the remote caller accessed.

Solution

If the problem is persistent, check that all lines in the affected line pool are functioning normally.

Possible problem

There may be a malfunction in the system that the caller is trying to reach.

Solution

Inform the operators of the system at the far end that the dialed number is not getting through.
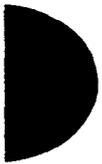
Maintenance

Maintenance overview

A Norstar Maintenance session helps you diagnose problems that may occasionally arise within the Norstar system.

The Maintenance section of programming has eight headings.

System version	displays the version number of the system processor.
Port/DN status	allows you to check and change the status of ports in your system.
Module status	allows you to check and change the status of modules in your system.
Sys test log	displays a list of test results, event messages, and alarm codes.
Sys admin log	displays a list of system initializations, configuration sessions, invalid password attempts and password changes.
Provisioning	allows you to place BRI loops and lines in and out of service.
Tests	allows you to test the connection between the ICS and telephones, and the connection between a BRI Card and the network.
Remote montr	allows a technical specialist from a remote location to monitor the Norstar system. It is not a regular part of system installation or maintenance.

You can run a Maintenance session from any working Norstar M7310 or M7324 telephone. Only one person at a time can access a Maintenance session. Photocopy the Maintenance records found at the end of this chapter, and keep a pencil handy to record important information.

Beginning a Maintenance session

1. Release all calls on your telephone.

2. Press `Feature` `*` `*` `C` `O` `N` `F` `I` `G` which is the same as `Feature` `*` `*` `2` `6` `6` `3` `4` `4`. The display reads Password:.

3. Enter the Installer password. The display reads Terminals&Sets. Three triangular indicators ▶ appear on the vertical display between the rows of buttons.

4. Place the programming overlay over the buttons pointed to by the indicators ▶.

5. Press `Next` until the display reads Maintenance.

System version

System version allows you to note the version number of the system processor (SP) software, which resides in the Feature Cartridge.

The SP version number can be used to determine whether you have the latest software release, and to trace a software fault if one occurs. For instance:

- SP version number can indicate a Feature Cartridge incompatibility with your system

- SP and telephone version numbers can indicate a telephone version incompatibility

- SP and functional terminal version numbers can indicate a functional terminal incompatibility.

Checking the version of the system

To check the version number, start with the display reading Maintenance:

1. Press ⌈Show⌉. The display reads System version.

2. Press ⌈Show⌉. The display shows the version number of the SP.

3. Write the SP version number on the appropriate Maintenance record.

Port/DN status

Port/DN status allows you to:

- identify any device or line connected to the system

- check the version number of a device (an analog terminal adapter, for example) for compatibility with the system

- check the state of a device or line (for example, idle or busy)

- disable or enable a device

- determine which port number corresponds to each DN

- determine the port number of a malfunctioning device

- determine if a malfunctioning device is incompatible with the Norstar system

- disable a device before replacing it

Tip - *You cannot disable the Norstar telephone from which you are accessing the Maintenance session. If you try to do this, a message appears on the display and you hear an error tone. If you want to disable that particular telephone, conduct the Maintenance session from another Norstar telephone.*

Pick a suitable time to disable devices.

Do not disable devices when many people are using the Norstar system. Wait until after regular office hours.

Do not enable or disable ports during the first two minutes after Startup programming.

If you do so, incorrect ports may be enabled or disabled. To recover from this, disable then enable the affected modules using Module status.

Port/DN status allows you to check lines and devices on the system. Although the following procedures describe how to check devices, you can use the same procedures to check lines.

Lines can only be disabled in Module status.

Identifying a device connected to the system

Start with the display reading System version:

1. Press [Next]. The display reads Port/DN status.

2. Press [Show]. The display reads Show port:.

3. Enter the port number of the device, or press DN, then enter the directory number of the device. The display shows port information, as illustrated in the sample displays. This identifies the DN (internal number) associated with the B1 channel.

4. Press DEVICE to see device information, as illustrated in the sample displays. If the device has version information, you will be able to see the information by pressing [Show].

5. If there is more than one device attached to a port (for example, a Norstar telephone and a central answering position (CAP) module or a Busy Lamp Field), press [Show] while the information is on the display to show the device and press [Next] to see the add-on devices.

6. Press >B2 to display the device connected to the B2 channel.

7. Press [Heading] until the display reads Port/DN status.

Displays

Sample device identification display

P104:24 DEVICE >B2 STATE	This sample display indicates that port 104 is associated with the DN 24. Press DEVICE to see the device attached to the port.
P225:Lp225 VERSN TEI STATE	This sample display indicates that port 225 is associated with loop 225. Press TEI to see any terminal endpoint identifiers associated with the loop. TEI will appear only for U-NT, T, or S/T loops.
P104:7324 VERSN	This sample display indicates that an M7324 telephone is attached to port 104.

The following table lists some of the device types that may appear on the Norstar device identification display.

Explanation of device type

Display	Explanation
7100	M7100 telephone
7208	M7208 telephone
7310	M7310 telephone
7324	M7324 telephone
1: MODULE1	First CAP module attached to an M7324 telephone
2: MODULE2	Second CAP module attached to an M7324 telephone
IATA	Internal analog terminal adapter
IRAD	Internal remote access device
BLF	Busy Lamp Field

Checking the version number of the device

From the Norstar device identification display:

1. Press VERSN (if it is available) when the device information for a port is displayed. The display shows the version number of the device.

2. Write this number on the appropriate Maintenance record.

3. Press OK to return to the Norstar device identification display from the display showing the version number.

Checking the state of the device

From the Norstar DN identification display:

1. Press STATE. The display shows one of the states listed in the following table.

If you want, you can disable or enable the device (see the procedures in this chapter).

2. Press OK to return to the device identification display.

How the device state is shown on the display

Display	State of device
Busy DISABLE OK	The device is in use.
Disabling... OK	The device is being disabled.
Enabling... OK	The device is being enabled.
Idle DISABLE OK	The device is not in use.
Unequipped DISABLE OK	There is no device connected to that port.
Disabled by user ENABLE OK	The device has been disabled by someone running a Maintenance session.
Disabled by sys. ENABLE OK	The device has been disabled by the system because it is faulty or because a test is running.
Not available DISABLE OK	There is no state available.

Disabling a device

Give notice that you are disabling equipment.

Make sure you inform people that you are going to disable their devices because all calls on the affected line or set will be dropped.

To disable immediately when the display indicates the device is busy:

1. Press DISABLE. The display reads Disable at once?

2. Press YES. The system prompts the device user and disables the device in one minute (or immediately, if the device is idle).

Displays

The following table show examples of the sequence of messages that might appear on a telephone when you disable a device.

Examples of display messages

Please hang up Maintenance test	Occurs on a busy telephone before disabling
48 seconds until disconnect	
Please hang up	
In Maintenance	Occurs after disabling

Enabling the device

When the display shows you that the device is disabled:

1. Press ENABLE. The display briefly shows Enabling.... The device is immediately enabled and the display reads Idle.

Tip - *The display may briefly show* Enabling...,
then either Disabled by sys. *or* Disabled by user.
*In this case, the system is waiting to enable the module. This may occur after someone has run a Maintenance session and used Module status.
You cannot enable the device until its module has been enabled.*

Individual lines cannot be disabled in Port/ DN status. To disable a Trunk Cartridge, see Module status.

Returning to the beginning

From the display showing the state of the device:

1. Press OK.

2. Press ⌞Heading⌟ until the display reads Port/DN status.

Module status

Module status allows you to:

- check the number of Trunk Cartridges in the ICS

- disable or enable a ICS cartridge

- clear a hung line by disabling and enabling the affected Trunk Cartridge.

Looking at the module inventory

Start with the display showing Port/DN status:

1. Press [Next]. The display reads Module status.

2. Press [Show]. The display reads Show module:.

3. Enter the module number. Modules 1 and 2 are located inside the ICS.
   If you choose module 1, the display shows how many telephones are connected to the ICS. If you choose module 2, the display shows the number of Trunk Cartridges connected to the ICS.

Tip - *Norstar devices may occupy both the B1 and B2 channels. This may increase the number of devices indicated on the module inventory display.*

Checking the number of Trunk Cartridges attached to a module

Start from the module inventory display, which shows the number of Trunk Cartridges connected to the module you chose (for example, KSU: 2 cards).

1. Press CARD. If there is a Trunk Cartridge in a slot, the display shows that four lines are connected (for example, Card 1: 4 lines).

2. Press [Next] or [Back] to check for a Trunk Cartridge in the other slot.

3. Press MODULE to return to the module inventory display.

Checking the state of a module

Start from the module inventory display, which shows the number of Trunk Cartridges connected to the module you chose (for example, KSU: 2 cards).

1. Press STATE. The state of the module is shown on the display. Some examples of this display are shown on the following page.

2. Press OK to return to the module inventory display.

How the module or cartridge state is shown on the display

Example	State of module or cartridge
3 sets busy DISABLE OK	There are three devices in use that are connected to the module or cartridge.
2 ports busy DISABLE OK	There are two ports in use that are connected to the module or cartridge.
4 lines busy DISABLE OK	There are four lines in use that are connected to the module or cartridge.
Disabling... OK	The module or cartridge is being disabled.
Enabling... OK	The module or cartridge is being enabled.
Unequipped DISABLE OK	There is no cartridge connected to that port.
Disabled by user ENABLE OK	The module or cartridge has been disabled from a Maintenance session.
Disabled by sys. ENABLE OK	The module or cartridge has been disabled by the system because it is faulty or because there is a test running.
Updating state... 	The system is verifying the state of the module or cartridge.

Checking the state of a cartridge

Start from the display that shows the number of lines connected to the Trunk Cartridge you chose (for example, Card 1: 4 lines).

1. Press STATE. The display shows the state of the cartridge. Some examples of this display are shown on the previous page.

2. Press Next or Back to check the other Trunk Cartridges.

3. If required, you can disable or enable the cartridge. (See the procedures in the following two sections.)

4. Press OK to return to the display showing how many lines are connected to the Trunk Cartridge.

Disabling a module or its cartridges

> **Use Page feature prior to disabling.**
>
> Use the Page feature to inform people that you are about to disable a module. Mention that they may experience delays in the performance of their devices.

From the display showing the state of the module or cartridge:

1. Press DISABLE. The display reads Disable at once?

2. Press YES. The system disables the module or cartridge in one minute (or immediately, if the status is idle).

Enabling a module or its cartridges

From the display showing the state of the module or cartridge:

1. Press ENABLE. The display briefly shows Enabling.... The module or cartridge is immediately enabled. The display then shows the state of the module or cartridge.

Returning to the beginning

From any display showing the state of the module or cartridge:

1. Press OK.

2. Press Heading until the display reads Module status.

System test log

The System test log shows you a list of diagnostic test results, audits, event messages, and alarm codes. By using this feature you can:

- check the items in the log

- check the current alarm (if there is one)

- check when each item in the log occurred

- check the number of consecutive occurrences of an event or an alarm

- erase the log

The System test log holds a maximum of 20 items. You should check and record these items at regular intervals. Erase the log after dealing with all the items.

Checking the items in the log

Start with the display reading Module status:

1. Press [Next]. The display shows Sys test log.

2. Press [Show]. The display reads Items in log:. (If there is no log entry, the display shows Items in log:0 and returns to Sys test log.)

3. Press [Next] or [Back]. The display shows a log item.

4. Write down the item on the System test log record on page 307.

5. If the log item is an event message or an alarm code, refer to the Event messages section or the Alarm codes section in this chapter.

6. Repeat steps 3, 4, and 5 until you have recorded all the items.

Checking the current alarm

If you want to check the highest severity alarm quickly before viewing all the log items, start with the display reading Items in log:.

1. Press ALARM. The display shows an alarm code.
   If there is no current alarm, ALARM does not appear on the display.

2. Press OK to return to the display Items in log:.

All alarms are recorded as items in the System test log.

Checking when each item in the log occurred

Start with any display showing a log item:

1. Press TIME. The display briefly shows the date and time.

2. Write the date and time on the System test log record.

Checking the number of consecutive repetitions of an event or alarm

If REPEAT appears under a display showing a log item:

1. Press REPEAT. The display shows the number of consecutive times the event or alarm occurred.

Erasing the log

Start with the display reading Items in log:.

1. Press ERASE. The display reads Erase log?

2. Press YES.
   If no new items have been added since the list was entered, the log is erased and the display reads Log erased.
   OR
   If new items have been added since the list was entered, the display briefly reads Cancld-new items and returns to the display Items in log:.

3. Press [Heading] to return to Sys test log.

System administration log

The System administration log keeps a record of administrative events such as system initialization, configuration sessions in which a change was made, invalid password attempts, and password changes. By using this feature you can:

- check the items in the log

- erase the log

- check when each item in the log occurred

The System administration log holds a maximum of ten items. Erase the log after dealing with all the items.

Checking the items in the log

Start with the display reading Sys test log.

1. Press Next . The display reads Sys admin log.

2. Press Show . The display reads Items in log:. (If there is no log entry, the display reads Items in log:0.)

3. Press Next or Back . The display shows a log item.

4. Write down the item on the System administration log record on page 308.

5. Repeat steps 3 and 4 until you have recorded all the items.

Checking the current alarm

Start with the display reading Items in log:.

1. Press ALARM. The display shows an alarm code.
    If there is no current alarm, ALARM does not appear on the display.

2. Press OK to return to the display showing Items in log:.

Checking when each item in the log occurred

Start with any display showing a log item:

1. Press TIME. The display briefly shows the date and time.

2. Write the date and time on the System administration log record.

Erasing the log

Start with the display reading Items in log:.

1. Press ERASE. The display reads Erase log?

2. Press YES. If no new items have been added since the list was entered, the display reads Log erased.
OR
If new items have been added since the list was entered, the display briefly reads Cancld-new items and returns to the display Items in log:.

3. Press [Heading] to return to Sys admin log.

Provisioning

Provisioning applies only to BRI loops and lines. It allows you to place loops and lines in or out of service, either before or after the BRI Cards have been installed in the ICS.

When you provision a loop, ISDN terminals on the loop can be used to make outgoing calls or receive incoming calls (S or U-LT loop), or lines are available for use by the devices attached to the system (T, S/T, or U-NT loop). When you are configuring a T, S/T, or NT loop, you must also provision each line on the loop to place the lines in service.

Cd1-KSU

The card type of an installed card appears with the setting. If no card has been installed, you can change the card type under Hardware.

- Press [Show ___] to display the loops found on the card.

- Press ADD to provision the loop, or press REMOVE to take the loop out of service.

- If lines on the loop are busy, the display will ask if you still want to remove the loop from service. Press YES to go ahead. Both lines on the loop are de-provisioned.

L001

If the loop is configured as a T, S/T, or U-NT loop, press [Show ___] and [Next ___] to display the individual lines. There are no lines associated with an S or U-LT loop.

- Press ADD to provision the line, or press REMOVE to take the line out of service.

- If line is busy, the display will ask if you still want to remove it from service. Press YES to go ahead.

Alarm codes

The Norstar ICS generates alarm codes after system disconnections or after certain anomalies in system operation. All alarm codes appear at the Alarm telephone and in the System test log of a Maintenance session. For a complete description of alarm and event codes, you may order an *Alarm and Event Code Manual* from your service provider. The following figure shows an alarm code appearing on a Norstar Alarm telephone display.

Alarm: 52-8-3 ——— Display message
TIME CLEAR ——— Display button labels

——— Display buttons
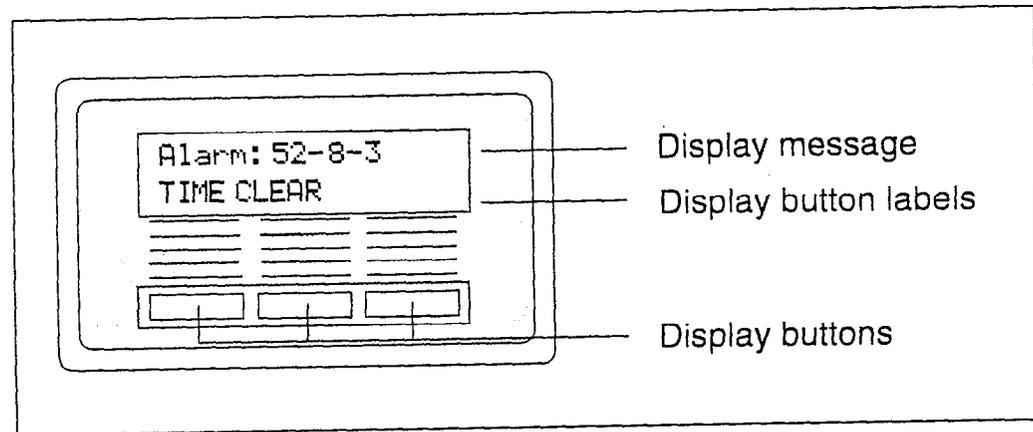
Tip - *The Alarm telephone is assigned in Featr settings of System programming.*

Alarms have a higher severity than events. Attend to alarm codes before event messages.

Alarm codes can be automatically transmitted to a remote location in addition to appearing on the Alarm telephone. See Alarm reporting in the Programming chapter for more information.

If you see an alarm code

1. Write the alarm code in the System test log record on page 307.

2. Determine the cause of the alarm from the following table.

3. Follow Alarm troubleshooting procedures in this chapter.

4. Press TIME to see when the alarm occurred.

5. Press CLEAR to clear the alarm.

An alarm code may not be displayed until two minutes after it has been triggered. If the ICS is without power when the alarm is triggered, the alarm code is not displayed until two minutes after the power is restored to the ICS.

For a complete list of Norstar alarms, consult the *Norstar Alarm & Event Code Manual.*

Displays

Example display	Meaning	Possible causes
Alarm: 10	All ICS devices disconnected.	The last device on Norstar bus 1 (port numbers 101-124) has been removed.
		A 25-pair cable was disconnected from the ICS.
		There is an internal ICS fault.
Alarm: 37-ABBCDD	An error has occurred in the download of a protocol to a BRI Card. A: the maintenance index of the BRI BB: a code describing the nature of the error C: the current download state DD (appears when the error is limited to one protocol): the two-character product identifier of the protocol	The BRI Card is not properly installed.
Alarm: 52-X-Y	A Trunk Cartridge has been disconnected.	The Trunk Cartridge is not properly installed.
Alarm: 61-X-Y	Incompatible Trunk Cartridge	Trunk Cartridge Y on port X cannot operate with the Trunk type assigned to it in configuration.
Alarm: 62-X-Y	Unsupported auto-answer setting (Loop Start TCs)	Trunk Cartridge X on port Y does not support the auto-answer setting.

Alarm: 63-Z	No available DTMF receivers	DTMF receivers are busy, not working properly, or have not been installed.
Alarm: 74	The ICS is unable to synchronize with the ISDN network.	No clocking cartridge is installed.
Alarm: 75	Clocking for BRI lines is no longer synchronized with the network connection.	The digital link has been disconnected.

"X" = DS-30 port number (1-8)
"Y" = Trunk Cartridge number (numbered from left to right)
"Z" = Trunk port number

Alarm troubleshooting

Refer to the previous table before following these procedures.

Alarm: 10

1. Check to see if there is a device connected to the ICS (that has a port number beginning with the number "1").

2. If there are no devices connected to the ICS, connect one and then press CLEAR.

3. If there are any devices connected to the ICS, check all the wiring associated with the devices.

4. Refer to the section in the Troubleshooting chapter entitled ICS down.

Alarm: 37

1. Check that the BRI Card is properly installed.

2. Remove and re-install the BRI Card.

3. If the alarm persists, replace the BRI Card with another BRI Card of the same type.

Alarm: 52-X-Y

1. Check all connections to the Trunk Cartridge.

2. Check that the proper Trunk Cartridge is inserted in the appropriate slot of the ICS.

3. Remove and re-install the Trunk Cartridge.

4. If the alarm persists, replace the Trunk Cartridge with another Trunk Cartridge of the same type.

Alarm: 61-X-Y

1. Check that the proper Trunk Cartridges are inserted in the proper slots of the ICS.

2. Enter programming and look under the Trunk/Line data heading. Check that the Trunk Cartridge type is correctly configured. Check that the Trunk mode and Answer mode settings do not conflict for every line connected to Trunk Cartridge Y. If Trunk mode is set to unsupervised, Answer mode must be set to Manual.
   OR
   Install a Trunk Cartridge in slot Y that matches the type of trunk you have configured.

Alarm: 62-X-Y

1. Check that the proper Trunk Cartridges are inserted in the proper slots of the ICS.

2. Enter programming and look under the Trunk/Line data heading. Check that the Trunk Cartridge type is correctly configured. Check that the Trunk mode and Answer mode settings do not conflict for every line connected to Trunk Cartridge Y. If Trunk mode is set to unsupervised, Answer mode must be set to Manual.

Alarm: 63-Z

1. Enter programming and look under Lines in the Trunk/Line data heading. Check that the Answer mode is correct for all the loop start lines.

Alarm: 74

1. Ensure an Expansion Cartridge with Clocking or Clocking Cartridge is installed in the ICS.

Alarm: 75

1. Check the connection to your ISDN service provider.

Event messages

Event messages appear as items in the System administration log or the System test log of the Maintenance session. Most of these event messages can only be caused by an unusual combination of events, and should rarely occur.

Each event is assigned a severity number. An "S" preceding this number, "S4" for example, may appear in the event message. "S9" is the most severe. If the Log is full, new event messages with a higher severity number replace existing event messages of a lower severity. For this reason, you should check event messages at regular intervals. You can then deal with all messages before they are replaced.

For a complete list of Norstar events, consult the *Norstar Alarm & Event Code Manual.*

Dealing with event messages

For every event message that you see:

1. Record the event on the appropriate Maintenance record.

2. Consult the next section entitled Significant event messages.

3. To see if the event caused the Norstar system to automatically restart, consult the subsequent section entitled Complete list of event numbers.

Significant event messages

The table on the next page lists event messages that are relevant to Maintenance activities. The time that the message is recorded is also provided.

Displays

Event message		The event message is recorded when...
EVT196	S4	there was a software error on the built-in modem
EVT197	S4	system operation is slow or there was a software error with the auto-attendant feature

Event message		The event message is recorded when...
EUT210-YYYZ	S4	Loopback test YYY on Trunk Cartridge Z has been started
EUT211-YYYZ	S4	Loopback test YYY on Trunk Cartridge Z has been stopped
EUT220-21	S4	the System administration log has been cleared by the DN (21 in this example)
EUT221-21	S4	the System test log has been cleared by the DN (21 in this example)
EUT222-21	S5	the DN (21 in this example) enters the debugging facility that is password protected
EUT255	S9	administered mode is not supported by the cartridge plugged into the slot
EUT268-07	S8	Restriction filter 07 has lost data due to a fault in the system memory
EUT269-21	S8	the Line/set restriction for the DN (21 in this example) has lost data due to a fault in the system memory
EUT299	S1	the system powers up after a power failure
EUT362	S4	a continuous bit error rate test (BERT) has been started, or someone has started a BERT from a remote location
EUT363	S4	a continuous bit error rate test (BERT) has ended, or someone has ended a BERT from a remote location
EUT400	S9	Startup programming is performed using [Feature] [*] [*] [S] [T] [A] [R] [T] [U] [P]
EUT407	S2	there are no more codes for Speed Dial numbers
EUT408	S2	there is no more memory for Speed Dial codes
EUT416-21	S3	an invalid password has been entered by the DN (21 in this example)
EUT418	S7	a DN change is successful

Event message		The event message is recorded when...
EVT419	S2	the time setting has been changed
EVT421	S8	a DN change failed
EVT422-21	S6	a length change by the DN (21 in this example) has been requested
EVT423-21	S6	an individual DN change has been requested by the DN (21 in this example)
EVT425	S6	an attempt has been made to add a DN or access code which is already in use by the system
EVT448	S8	the system has started to copy data to a range of telephones
EVT449	S4	the system has completed copying data to a range of telephones
EVT451	S5	a remote user made three unsuccessful attempts to enter the installer password to access the Remote monitoring feature
EVT452-21	S4	a programming password has been changed by the DN (21 in this example)
EVT453-21	S4	a programming session has been initiated by a DN (21 in this example)
EVT454-21	S5	an invalid password has been entered by the DN (21 in this example) while attempting to start a programming session
EVT799-00040B57		a call processing error on the fourth BRI loop; see "Event message 799" on page 296
EVT822	S8	Alarm code 63 is sent because there are no DTMF receivers for an incoming call

Event message 799

Event message 799 indicates a call processing error has occurred on an ISDN line. The event number is followed by a number

representing the line or loop number, and a code for the type of error.

| EVT799-XXXX | YYS7 | In this example, the error has occurred on line XXX and the error code is 0A. |

Error code	Meaning
01	Internal software error. Cannot acquire the B-channel from the B-channel arbitrator.
02	Internal software error. There is no free line available for the call.
03	A call that is not on the B-channel has been attempted. These kind of calls are part of EKTS service, which is not supported by this version of the software. Check with your service provider to make sure your your package does not include EKTS service.
04	Internal software error. Failed to instantiate on the chain.
05	Internal software error. Activation procedure failed.
06	Internal software error. Index conversion failed.
07	Unexpected digits on a Manual answer mode line. Configuration of the ICS and the network connection may not match.
08	Internal software error. Cannot seize central office (CO) line on a BRI connection.
09	Cannot get vterm (virtual terminal) from the Vterm Server.
0A	Central office did not respond to the SPID initialization request.
0B	Central office has rejected the SPID. Verify your SPID information programmed under Hardware and with your ISDN service provider.
0C	Internal software error. Already instantiated on the chain.

Displays

You should rarely see any event messages that are not described in the section entitled Significant event messages. If you do see one of these event messages, the Norstar system has followed its normal

recovery from an unusual combination of system events. Although the problem is not a serious one, repeated occurrences of the event number should be reported as soon as possible.

As a result of some events, the Norstar system automatically restarts itself. The table on the next two pages lists all the event numbers and tells you which of these events are associated with Norstar system restarts.

Most of these events are recorded in the System test log. The few exceptions to this are recorded in the System administration log, as indicated.

Event Message	System Restart	Event Message	System Restart
101–106	Yes	285–298	Yes
107	No	299	No
108–112	Yes	362–363	No
113	No	400 (Admin log)	Yes
114–116	Yes	401–411	No
117	No	412–423 (Admin log)	No
118–120	Yes	424–425	No
121–123	No	426–430	Yes
124–125	Yes	431	No
126–129	No	432	Yes
130	Yes	433	No
131–132	No	441–451	No
133–134	Yes	600–602	Yes
135–136	No	603–613	No
137	Yes	614	Yes
138–150	No	615–629	No
151	Yes	630	Yes
152	No	631–646	No
160–164	No	800–802	No
170–173	No	803	Yes
196–211	No	804–807	No

220 (Admin log)	No	808	Yes
221-222	No	809	No
223 (Admin log)	Yes	810	Yes
224	Yes	811-820	No
225-228	No	823	Yes
229 (Admin log)	Yes	824-825	No
230-235	No	883	No
245-248	No	900	No
250-256	No	940-943	No
260-271	No	950-989	No
280-283	No		

Tests

Norstar allows you to run a test which verifies the integrity of the installation wiring for Norstar sets. In addition, you can evaluate the transmission quality of a BRI loop through your service provider using a loopback test.

BERT set test

The bit error rate test (BERT) for Norstar sets may help to detect problems caused by wiring faults such as opens, shorts, bridge taps, split twist, crosstalk, ohmic connections, and imbalance.

You can run the bit error rate set test to check the quality of the path for voice or data. You can also run a test continuously until an error occurs or you stop the test, if you need more information about errors or the problem is sporadic.

The test can only be run on one telephone at a time. You cannot run a Bit Error Rate test on the telephone that you are using for the Maintenance session. Make sure there is a Norstar telephone connected for the DN you wish to test.

Tip - *Do not run a BERT on ISDN terminal equipment, the I-ATA, or on any other peripheral device.*

Starting a bit error rate test for voice or data

Start with the display reading Tests.

1. Press [Show]. The display reads BERT-set tests▶.

2. Press [Show] again. The display reads Show set:.

3. Enter the DN for the telephone you wish to test. The display briefly reads Checking state... and then reads Disable at once?

4. Press YES. The display briefly reads Disabled by user and then reads Test:Voice path.

5. Press [Next] if you want to run the test on the Data path.

6. Press START to begin the test. The display shows the test name followed by running. When the test is finished, the display shows the test name followed by PASS or FAIL.

7. Press TEST, then repeat step 7 if you wish to test the telephone again.
   OR
   Press DONE to return to Show set:. The telephone just tested is automatically re-enabled.

Stopping a bit error rate test for voice or data

8. Press CANCL. The display shows Test cancelled and returns to Show set:. The telephone just tested is automatically re-enabled.

Starting and stopping a continuous bit error rate test

Start with the display reading Tests.

1. Press [Show]. The display shows BERT-set tests▶.

2. Press [Show] again. The display reads Show set:.

3. Enter the DN for the telephone you wish to test. The display briefly reads Checking state… and then reads Disable at once?

4. Press YES. The display briefly reads Disabled by user and then reads Test:Voice path.

5. Press [Next] twice. The display reads Test:Continuous.

6. Press START to begin the test. The display shows the bit error rate, updating every two seconds.

7. Press STOP to end the test. The display shows the last bit error rate.

8. Press TEST, then repeat steps 7 and 8 if you wish to continue testing.
   OR
   Press DONE to return to Show set:. The telephone just tested is automatically re-enabled.

How the bit error rate test status is shown on the display

Display	State of device
BERT denied	You have entered the DN for the telephone you are using to run the Maintenance session, the I-RAD, or an internal or external ATA.
BERT:Out of sync TEST DONE	The data, voice, or continuous test has stopped due to being out of sync. Either the error rate is very high, or the telephone at that DN has been removed.
BERT-Set:23 STOP	A bit error rate test is already running on the telephone at DN 23.
BERT: Try later	The resource in the ICS is busy with another feature.
Connect set	There is no telephone connected for that DN.
Continuous:FAIL TEST DONE	The continuous test has stopped because the bit error rate is more than 1 in 10^3 for a 2-second interval during the test.
Data path:FAIL TEST DONE	The data path test is complete and there is more than 1 error in 10^7 transmitted bits.
Data path:PASS TEST DONE	The data path test is complete and there is no more than 1 error in 10^7 transmitted bits.
Voice path:FAIL TEST DONE	The voice path test is complete and there is more than 1 error in 10^5 transmitted bits.
Voice path:PASS TEST DONE	The voice path test is complete and there is no more than 1 error in 10^5 transmitted bits.
23:<1E-10 STOP	The bit error rate for the telephone at DN 23 is less than 1 in 10^{10}.
23:10E-05 STOP	The bit error rate for the telephone at DN 23 is 1 in 10^5.

Loopback test

The loopback test for BRI lines loops the incoming BRI payload back to the local exchange (service provider) for evaluation of the transmission quality. Loopback tests should be conducted only under the guidance of the service provider, and the results from these tests are returned to the service provider.

You can run loopback payload tests simultaneously on multiple loops or multiple cards. The loop must be provisioned to perform the test. All calls on the card you are testing will be dropped at the start of a loop payload test.

Starting and stopping a payload loopback test

> ***All calls on a BRI loop are dropped when you start loopback test.***
>
> While the loopback test is in progress, the BRI lines go out of service. There is no warning from the system. Pick an appropriate time to do a test and warn users that they will lose any calls in progress.

Start with the display reading Tests.

1. Press ⌈Show⌋. The display shows BERT-set tests▶.

2. Press ⌈Next⌋. The display reads Loopback tests:.

3. Press ⌈Show⌋. The display shows the first card installed on the ICS.

4. Press ⌈Next⌋ if you want to run a test on the second card, or go to the next step.

5. Press ⌈Show⌋. The display shows the first S/T and T loop (if you are looking at a BRI-ST Card) or first NT loop (if you are looking at a BRI-U Card).
   Payload loopback tests are not available for S loops.

6. Press ⌈Next⌋ until you see the loop you wish to test.

7. Press ⌈Show⌋. The display shows Payload loopback.

8. Press <u>START</u> to begin the test.
   You can exit programming or move on to other programming tasks while the test is running, or begin a test on another loop.

9. Press <u>STOP</u> to end the test.
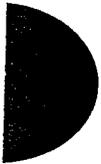
Maintenance records

Maintenance records are tables used to record information you have obtained while running a Maintenance session.

Before you begin, photocopy the tables in this section.

Recording information on the Maintenance records

To use the following records, do the following:

1. While running a Maintenance session, enter the information on a photocopy of the appropriate Maintenance record.

2. Return the completed records to your Norstar distributor.

Version number record

The Maintenance session tells you the software versions of the System Processor (SP), and devices connected to the Norstar system. Use the following table to record these version numbers when you run a Maintenance session. You can check the SP version number under the heading System version. Device version numbers are found under the heading Port/DN status.

Version numbers

System version	Port/DN status
SP:	Device:
	Device:
	Device:
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	Device:
	Device:

System test log record

You can check under the Sys test log heading to find a list of audits, event messages, and alarm codes. Use the following table to record these log items when you run a Maintenance session.

System test log

Sys test log

Log item	Time of log item	Number of repetitions
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
Time and date that log was checked	:	/ / .

System administration log record

You can check under the Sys admin log heading to find a list of administrative events performed on Norstar. Use this table to record these log items when you run a Maintenance session.

System administration log

Sys admin log

Log item	Time of log item	Number of repetitions
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
	:	
Time and date that log was checked	:	/ /

Norstar system

Service tone cadences

Tone	Cadence (seconds)
Busy	0.5 on / 0.5 off
Expensive route	0.3 on / 0.3 off (3 bursts)
Overflow	0.25 on / 0.25 off
Ringback	2.0 on / 4.0 off
Confirmation	1.0 on / 1.0 off (3 bursts followed by no tone)
Recall	1.0 on / 1.0 off (3 bursts followed by steady tone)
Ring splash	0.2 on (1 burst)

Power specifications

Characteristic	ICS
Voltage V AC (nominal)	110-120*
Current A rms (max)	1.9
Frequency Hz (nominal)	50-60
Crest factor	4.0
Fuse	250 V, 3.15A

*Connection to AC power rated greater than 120 V AC nominal requires an approved cord set for that voltage range.

Telephone loop specifications

Characteristic	Value
Loop resistance	64 Ω (300 m of 0.5 mm wire or 975 ft of 24 AWG wire)
Loop length	300 m (975 ft) without station auxiliary power supply 1200 m (3900 ft) with station auxiliary power supply
Minimum voltage at telephone	11 V dc
Current at telephone (idle)	45 mA nominal
Current at telephone (active)	80 mA maximum

Electrical requirements

Characteristic	Spec/Value
Electrostatic discharge	
ICS and telephones	IEC 801-2 2nd Edition, level 3 maximum of 8 kV with a 300 Ω/150 pF probe
Connectors	IEC 801-2 2nd Edition, level 2
Radiated immunity	Bell Canada TAD 8465 (operation in fields of up to 5V/m over the frequency range of 100kHz to 1GHz)
Conducted immunity	Bell Canada TAD 8465 (operation with common mode injected voltage of up to 3V RMS over the frequency range of150 kHz to 30 MHz

Environmental requirements

Characteristic	Spec/Value
Operating temperature range	0°C to 50°C (32°F to 122°F) IEC. 68-2-1 Tests Ad and IEC. 68-2-2, Method A
Storage temperature range	-50°C to 70°C (-58°F to 158°F) IEC. 68-2-1 Test Ab and IEC. 68-2-2 Test Bd

Humidity
    above 34°C (93°F)
    at 40°C (104°F)
	5% to 95% (non-condensing)
	 <52 mbar of water vapor pressure
	 IEC. 682-2-3 Test Ca

Internal analog terminal adapter (I-ATA)

Characteristic	Spec/Value
Battery voltage	-31 V DC ±10%
Maximum loop length	900 m (3000 ft)
Minimum loop current	25 mA
Current limit	39 mA
Ringing voltage at T/R	50 Vrms
Maximum ringing load	2 REN
Ringing frequency	20 Hz
Ring trip time limit	150 ms

ISDN network synchronization

Characteristic	Spec/Value
Free run clock accuracy	±32 ppm
Network synchronized clock accuracy	±5 ppm

A to Z KELLATRONICS, Inc.

Tel: 800.766.3425

email: info@kellatronics.com   Fax: 818.773.8899

Only qualified persons should service system.

The installation and service of this unit is to be performed only by service personnel having appropriate training and experience necessary to be aware of hazards to which they are exposed in performing a task and of measures to minimize the danger to themselves or other persons.

Electrical shock hazards from the telecommunication network and AC mains are possible with this equipment. To minimize risk to service personnel and users, the ICS must be connected to an outlet with a third-wire ground. In addition, all unused slots must have filler faceplates installed and the system cover must be locked in place at the completion of any servicing.

Service personnel must be alert to the possibility of high leakage currents becoming available on metal system surfaces during power line fault events near network lines. Risk points on the ICS are the Feature Cartridge, heatsink and power cord earth ground pin. These leakage currents normally safely flow to Protective Earth ground via the power cord. Therefore, it is mandatory that connection to an earthed outlet is performed first and removed last when cabling to the unit. Specifically, operations requiring the unit to be powered down must have the network connections (central office lines) removed first.

> **When upgrading, Call Log information will be lost.**
>
> When the system restarts, Call Log information is not saved. Be sure to notify users if a system restart is planned so any log information can be written down first.

Upgrading a restricted Feature Cartridge

You can upgrade your restricted feature cartridge by entering a series of Software Keys you obtain from Northern Telecom. This will add an additional eight ports for Norstar telephones. See page 222 for more information.

Upgrading from 16 telephones to 24 telephones

The third slot in the ICS is used for an 8-port Expansion Cartridge, with or without clocking. Installing a Clocking Cartridge (no expansion) does not add additional Norstar telephone ports.

You cannot add the Expansion Cartridge to a system using a restricted feature cartridge that has not been upgraded.

1. Verify your system programming and update the *Programming Record*.

2. Disconnect all central office and station line connections from the ICS.

3. Remove power from your system.

4. Insert the Expansion Cartridge according to the Installation chapter.

> **Risk of fire and electrical shock.**
>
> For continued protection against risk of fire and electrical shock, ensure all unpopulated cartridge slots are covered by filler faceplates prior to powering up. Immediately after powering up, connect the central office and station line connectors and replace the cover.

5. Power up the system.

6. Connect the central office and station line connectors.

7. Replace the cover.

> **Removing an Expansion Cartridge cold starts the system.**
>
> If you remove the Expansion Cartridge or Expansion Cartridge with Clocking from the Compact ICS, you will lose all the system programming.

Upgrading from Compact ICS 1.0 to Compact ICS 2.0

When you upgrade your Feature Cartridge to Compact ICS 2.0:

*   Lines 005-008 are renumbered as 025-028. Any peripheral devices (such as voice mail or call accounting software) which use these lines must be reprogrammed.

*   The I-RAD password (found under Passwords in programming) resets to the default value.

*   If your programming uses a dialing string between 73-89 (for example, as destination codes), the programming is overwritten to create the DNs for ISDN terminal equipment and the CTA 500*dm.*

1. Verify your system programming, and update the *Programming Record.*

2. Disconnect all central office and station line connections from the ICS.

3. Remove power from your system.

4. Remove the Compact ICS 1.0 Feature Cartridge.

5. Insert the Compact ICS 2.0 Feature Cartridge according to the Installation chapter.

⚠️ **Risk of fire and electrical shock.**

For continued protection against risk of fire and electrical shock, ensure all unpopulated cartridge slots are covered by filler faceplates prior to powering up. Immediately after powering up, connect the central office and station line connectors and replace the cover.

---

6. Power up the system.

7. Connect the central office and station line connectors.

8. Replace the cover.

Upgrading Expansion Cartridge for BRI Card installation

The ICS must be equipped with an Expansion Cartridge with Clocking or a Clocking Cartridge to support BRI Cards.

The Expansion Cartridge with Clocking adds eight Norstar telephone ports in addition to clocking.

1. Disconnect all central office and station line connections from the ICS.

2. Remove power from your system.

3. Remove the Expansion Cartridge (without clocking).

4. Insert the Expansion Cartridge (with clocking) according to the Installation chapter.

⚠️ **Risk of fire and electrical shock.**

For continued protection against risk of fire and electrical shock, ensure all unpopulated cartridge slots are covered by filler faceplates prior to powering up. Immediately after powering up, connect the central office and station line connectors and replace the cover.

---

5. Power up the system.

6. Connect the central office and station line connectors.

7. Replace the cover.

A

AbsorbLength: A setting that determines how many of the digits in a destination code will not be dialed by the system. AbsorbLength is assigned under Destination codes in Services.

access code: Different sequences of characters used to gain access to these Norstar features: Line pools, Call park, external lines, Direct-Dial telephone, Auto DN, and DISA DN.

alarm code: A number that appears on the alarm telephone's display, informing you that the ICS has detected a fault in the system.

Alarm telephone: A telephone that is designated to receive reports of Norstar system problems. This function is usually assigned to a prime telephone, but this can be changed under Feature settings in System programming.

Analog Terminal Adapter (ATA): A device that permits the connection of analog telecommunication devices such as fax machines, answering machines, and single line telephones to the Norstar system. Programmed defaults for the ATA are automatically assigned by the Norstar system.

ANSI: American National Standards Institute.

Answer button: A telephone button with an indicator that is used to monitor another telephone. The answer button indicates incoming calls destined for the other telephone. Someone working at a telephone with answer buttons (an attendant, for example) can receive all ringing and visual indication of incoming calls for other telephones, and answer those calls when necessary.

One telephone can have up to four Answer buttons. An Answer button is automatically assigned to a telephone when that telephone is assigned an Answer DN.

Answer DN: The internal or directory number (DN) of a telephone that is monitored by an Answer button. You can assign up to four Answer DNs to a telephone under Line Access in Terminals and Sets programming.

Auto Attendant: Gives your system the ability to answer calls with a recorded message and then prompt caller to leave a message, or enter a code or extension number for further access or services.

Autobumping:
Feature   8   1   5
A feature that determines what the system does with new Call Log items when your Call Log is full. When Autobumping is on, a new log entry causes the oldest entry to be deleted. If Autobumping is off, your Norstar system does not log calls when your log is full.

Autodial button: A memory button that, if programmed, provides

one-touch dialing of external or internal numbers.

Autolog options:

`Feature` `*` `8` `4`

A feature that allows you to select the type of calls that are stored in your Call Log. You can choose to log calls that were not answered by anyone within the system, to log calls that were unanswered at this telephone but answered elsewhere in the system, to log all calls answered and not answered at this telephone, or to not have calls automatically logged.

Automatic Dial: A feature that allows you to dial without having to pick up the receiver or select a line. You must have a prime line to use Automatic Dial. Automatic Dial is assigned under Dialing options in Terminals and Sets programming.

Automatic Handsfree: A feature which automatically activates Handsfree operation when you make or answer a call. Automatic Handsfree is assigned under Handsfree in Terminals and Sets programming.

Automatic Hold: A feature that automatically places an active call on hold when you select another line. Automatic Hold (Full AutoHold) is assigned in Lines programming.

Automatic Privacy: See Privacy.

Automatic Daylight Saving Time: A feature that switches the system to standard or daylight saving time at pre-programmed dates. It is turned on or off under Daylight time in System programming.

Automatic Telephone Relocation: A feature that lets a telephone retain its personal and system programming when it is plugged into a different Norstar modular jack. Automatic Telephone Relocation is enabled under Set relocation in System programming.

auxiliary ringer: A separate external telephone ringer or bell which can be programmed to ring when a line or a telephone rings. An auxiliary ringer may be programmed to ring only when the system is in a particular schedule. Programming of an auxiliary ringer is done in Services programming after the feature has been enabled under Capabilities in Terminals and Sets programming.

AWG: American wire gauge.

B

B channel (Bearer channel): An ISDN standard transmission channel used for voice or data transmission.

Background Music: A feature that lets you hear music from the speaker of your Norstar telephone. It is available only if a music source has been attached to the ICS and the feature has been enabled under Feature settings in System programming.

Basic password: A one- to six-digit password that prevents unauthorized access to the most commonly-used telephone settings. The Basic password can be assigned and changed in Passwords programming.

Basic Rate Interface (BRI): An ISDN interface that uses two B channels and a D channel (2B+D).

Bearer channel: See B channel.

BERT: See bit error rate test.

bit error rate test: A test that checks the transmission of data across the voice and data channels between the ICS and any Norstar telephone.

busy lamp field (BLF): A device with a liquid crystal display (LCD) panel of indicators that shows the status of up to 24 telephones in the Norstar system. The BLF attaches to the M7310 telephone.

button caps: Interchangeable plastic caps that fit over the buttons of Norstar telephones. They are used to indicate the features programmed onto each programmable memory button. Button caps are either pre-printed or have clear windows that allow you to insert labels.

Button Inquiry: [Feature] [*] [0]
A feature that lets you check the function of each programmable button on your Norstar telephone.

C

Call Duration timer:
[Feature] [7] [7]
A feature that lets you see how long you spent on your last call or how long you have been on your present call.

Call Forward: [Feature] [4]
A feature that forwards all the calls arriving at your telephone to another

telephone in your Norstar system. To have calls forwarded outside the system, use Line Redirection.

Call Forward No Answer: A feature that forwards all calls arriving at your telephone to another designated telephone in your Norstar system after a specific number of rings. Call Forward No Answer is assigned under Capabilities in Terminals and Sets programming.

Call Forward On Busy: A feature that forwards all calls at your telephone to another designated telephone if your telephone is busy. This feature is assigned under Capabilities in Terminals and Sets programming.

Call Forward Override: An automatic system feature that lets you call someone and ask them to stop forwarding their calls to you.

Call Information:
[Feature] [8] [1] [1]
Call Information allows you to display information about incoming calls. For external calls, you can display the caller's name, telephone number and the line name. For an internal call, you can display the name of the caller and their internal number. You can obtain information about ringing, answered, or held calls.

Call Information Trunk Cartridge: A Trunk Cartridge that allows you to connect loop start trunks with Call Information capability to the Norstar system.

Call Log:
[Feature] [8] [1] [2]
Enter your Call Log to view a record

of incoming calls. The log could contain the following information for each call: sequence number in the Call Log, name and number of caller, long distance indication, indication if the call was answered, time and date of the call, number of repeated calls from the same source, and name of the line that the call came in on. See Autobumping, Autolog options, and Call Log for further information.

Call Park:

Feature ☐ 7 4

With this feature you can place a call on hold so that someone can retrieve it from any other telephone in the Norstar system by selecting an internal line and entering a retrieval code. The retrieval code appears on the display of your telephone when you park the call. You can park up to nine calls on the system at one time.

Call Park Callback: See Callback.

Call Park prefix: The first digit of the retrieval code of a parked call. This digit cannot conflict with the first digit of any existing DNs, Line Pool access codes, the Direct-dial digit, or the external line access code. The default Call Park prefix digit is "1". It may be set to none, in which case Call Park is disabled. Call Park prefix is assigned under Access codes in System programming.

Call Pickup Directed:

Feature ☐ 7 6

A feature that lets you answer a call ringing at any Norstar telephone by entering the internal number of that telephone before taking the call. Call Pickup Directed is enabled under Feature settings in System programming.

Call Pickup Group: See Pickup Group.

Call Queuing:

Feature ☐ 8 0 1

If you have several calls waiting at your telephone, you can invoke the Call Queuing feature to answer them in order of priority. Priority is given to incoming calls, followed by callback and camped calls.

Callback: If you park, camp, or transfer a call to another telephone and it is not answered there, it will ring again at your telephone. How long the system will wait before Callback occurs is set under Feature settings in System programming.

Camp-on:

Feature ☐ 8 2

A feature that lets you reroute a call to a telephone even if all the lines on that telephone are busy. To answer a camped call, use Call Queuing or select a line if the camped call appears on your telephone. Priority is given to queued calls over camped calls.

Camp timeout: The length of a delay before a camped call is returned to the telephone that camped the call. The length of delay is set under Feature settings in System programming.

CCR: See Custom Call Routing

Central answering position (CAP): An M7324 telephone that has been designated as a CAP under CAP assignment in System programming. The CAP provides backup answering and can be used to monitor the telephones within a Norstar system.

Central answering position (CAP) module: A module connected to an M7324 telephone and provides 48 additional buttons that can be used as autodial buttons or feature buttons. A maximum of two CAP modules can be connected to a single M7324 telephone.

Class of Service (COS): The set of Norstar features and lines available to the user for a call. The Class of Service for a call is determined by the restriction filters and remote access packages assigned to the telephone in Lines programming. The Class of Service for a call can be changed by entering a six-digit Class of Service password. (Internal users cannot change their access to features with a COS password, only their restriction filters.) Class of Service and Class of Service passwords are assigned in Passwords programming. See Remote Access.

Class of Service password:
[Feature] [6] [8]
A six-digit code that lets you switch from your current Class of Service to one that lets you dial numbers prohibited by your current Class of Service.

Cold start: When all system programming is lost. This can happen because you have entered the Startup feature code ([*] [*] [S] [T] [A] [R] [T] [U] [P]), or after a major event (such as an extended power failure).

Conference:
[Feature] [3]
A feature that allows you to establish a three-person call at your Norstar telephone.

Contrast Adjustment:
[Feature] [*] [7]
Allows you to set the contrast level of your telephone display.

control telephone: A control telephone can place the lines for which it has responsibility in or out of a Service Mode. The direct-dial telephone is a control telephone for directing calls to the extra direct-dial telephone. A telephone is made a control telephone and has lines assigned to it under Common settings in Services programming.

COS: See Class of Service.

CTA 500*dm***:** A digital modem for Norstar that allows an ICS using BRI cards to support an end-to-end digital connection. The addition of a CTA 500*dm* gives you faster access to dial-up computer services such as an Internet Service Provider.

cursor: A short horizontal line that appears on the Norstar telephone display to indicate that characters can be entered using the dial pad.

Custom Call Routing: Answering and transferring calls can be taken over by CCR. The system answers the call and plays a recorded greeting. Callers are given options to route their call by pressing a digit.

D

D channel (Data channel): An ISDN standard transmission channel that is packet-switched and is used for call setup, signalling and data transmission.

Data channel: See D channel.

Data terminal: A device such as a modem that can be used to transfer data instead of sound over a telephone network. You cannot use Norstar programming to set up such devices. See the documentation that accompanies the device.

Date: See Show Time or Time and Date.

defaults: The settings for all Norstar features when the system is first installed. Settings are changed from their defaults in programming. In this manual, default settings are shown in **bold** text.

Delayed Ring Transfer (DRT) to prime: After a specified number of rings, this feature transfers an unanswered call on an external line, to the prime telephone associated with that line. This feature is activated under Feature settings in System programming.

Destination code: A two- to seven-digit number that the system interprets and then translates into the digits that you want dialed out. Both the code and its associated dialed digits are assigned under Routing service in Services programming.

Dialing restriction: See Restriction filter.

Dialing Modes:
[Feature] [*] [8] [2]
This feature allows you to set the dialing mode of your telephone. Norstar supports three dialing modes: Automatic Dial, Pre-Dial, and Standard Dial. All three modes support on-hook dialing (meaning you can dial a call without picking up the receiver). The special features of the Automatic and Pre-Dial modes are available only when you dial on-hook.

Direct-dial: A feature that lets you dial a designated telephone in your Norstar system with a single digit. Each telephone in the system can be assigned to the direct-dial telephone. The direct-dial telephone is established under Direct-dial in System programming. Telephones are assigned to the direct-dial telephone under Capabilities in Terminals and Sets programming.

Direct-dial #: A digit used system-wide to call the Direct-dial telephone. The digit is assigned under Access codes in System programming.

Direct-dial number: The digit used to call the direct-dial telephone.

Direct Inward System Access (DISA): The feature that lets remote users dial directly into the Norstar system and use Norstar features. Callers will hear stuttered dial tone and will be required to enter a Class of Service password to gain access to the system. See Remote Access.

Directed Pickup: See Call Pickup Directed.

Directory number (DN): A unique number that is automatically assigned to each telephone or data terminal. The DN, also referred to as an internal number, is often used to identify a telephone when settings are assigned during programming. Default DN assignments start at 21.

DISA DN: The received number assigned to the Norstar direct inward

system access facility. If a caller dials a number that is assigned to the DISA DN, the caller hears stuttered dial tone and must enter a Class of Service password. Once the password is accepted, the caller hears system dial tone and can use Remote Access features. See Remote Access.

Disconnect Supervision: A setting that enables the Norstar system to detect if an external caller hangs up. Once an external caller hangs up, the Norstar system can disconnect its line. Disconnect Supervision is enabled under Trunk/Line data in Lines programming.

Display: A liquid crystal display (LCD) on the Norstar telephone that guides you through feature operation and programming.

Display button: The Norstar M7310 telephone and M7324 telephone are each equipped with three buttons located directly beneath the display. During feature operation or programming, some or all of these buttons may be used to provide further options. If an option is available, it is shown in the bottom row of the two row display, directly above the corresponding display button. Display buttons are represented in this manual as underlined capital, such as OK.

DN: See Directory number.

Do Not Disturb (DND):

| Feature | 8 | 5 |

A feature that stops calls from ringing at your telephone. Only Priority Calls will ring at your telephone. A line button will flash when you receive a call, but the call will not ring.

DTMF: See Dual tone multifrequency.

Dual tone multifrequency: Two distinct telephone signaling tones used for dialing.

E

Emergency telephone: A single-line telephone (also referred to as a 500/2500 telephone) that becomes active when there is no power to the ICS.

Evening schedule: See Schedules, and Services.

Event message: Event messages are stored in the system log and displayed during a Maintenance session. They record a variety of events and activities in the Norstar system.

Exceptions: See Overrides.

Expansion Cartridge: A cartridge that allows you to connect an additional eight telephones to your Norstar system.

External call: A call to a destination outside the Norstar system.

External Call Forward: See Line Redirection.

External code: The number you dial to get an external line. By default it is 9, but this can be changed under Access codes in System programming. You do not always need an external code. It is primarily to support the M7100 telephone and single line telephones using an Analog Terminal Adapter.

External line: A line on your Norstar telephone used for making calls to destinations outside the Norstar system.

External music source: See Music source.

External paging: A feature you can use to make voice announcements over an externally-mounted loudspeaker connected to the ICS. The external speaker is not a Norstar component and must be supplied by the customer.

F

Feature button: Many Norstar features are invoked by pressing the Feature button followed by a feature code. The feature button is also used to exit a feature.

Feature Cartridge: A replaceable cartridge containing the Norstar features. The Feature Cartridge is inserted into the ICS.

Feature code: A number that is used to activate a particular feature.

Feature programming:

Feature	*	3

Allows you to program a feature code onto a memory button.

Forward: See Call Forward.

Full Autohold (on idle line): When this feature is on, if you select an available line, and then do something that selects another line, the first line is put on hold. Full Autohold is enabled under Trunk/Line data in Lines programming.

Full Handsfree: See Handsfree.

G

Group Listening:

Feature	8	0	2

A feature that allows you to have others in your office hear a caller through your phone's speaker. The caller hears you only when you speak into the receiver and cannot hear other people in the office. You can cancel Group Listen for the current call. Group Listen is cancelled automatically when you hang up the Group Listen call.

H

Handsfree:

Handsfree
Mute

A feature you can use to make calls without using the telephone receiver. Full Handsfree is activated under Capabilities in Terminals and Sets programming. When it is activated, a Handsfree/Mute button is automatically assigned to the telephone.

Handsfree (HF) Answerback: When activated, this feature automatically turns on the microphone at a telephone receiving a Voice Call so that the person receiving the call can respond without lifting the receiver. It is activated under Capabilities in Terminals and Sets programming.

Handsfree/Mute button: See Handsfree.

Hardware: A section in programming that shows what equipment has been installed in the ICS. This section is accessed by the installer.

Headset: A head-mounted or ear-mounted telephone receiver that is used instead of the hand-held receiver. Headsets are not Norstar components and must be supplied by the customer.

Held (Line) Reminder: A Norstar telephone rings and displays the message On hold: LINENAM when an external call has been placed on hold for a certain period of time. The Held Line Reminder feature and Remind delay are set under Feature settings in System programming.

HF Answerback: See Handsfree Answerback.

Hold button: [Hold]
This button is used to suspend calls so that the person using the telephone can perform another task without disconnecting the caller.

Hookswitch Flash: See Link time.

Host system signaling: (Also referred to as end-to-end signaling.) Norstar telephones can access a remote system or dial a number on an alternate carrier by means of host feature activation, such as Link, Pause and Run/Stop.

Hotline: This feature automatically calls a pre-assigned number when the telephone's receiver is lifted or the Handsfree/Mute button is pressed. A Hotline number can be an internal or external number. Hotline is assigned under Capabilities in Terminals and Sets programming.

I

I/C: An abbreviation of intercom.

ICS (integrated communication system): The central hardware component in the Norstar system. The ICS has its own processor and memory, and provides a physical point of connection for the various types of devices, telephones, and cartridges used in Norstar. The ICS can function on its own as a basic system (with eight Norstar telephones and four external lines), or be expanded to a total of 24 telephones and 8 lines.

I-ATA: See Internal Analog Terminal Adapter.

Incoming line group: A group of lines used for incoming calls. Incoming line groups provide a way of giving a telephone access to several incoming lines without taking up many line buttons. A line is assigned to be part of an incoming line group under Trunk/Line data in Lines programming.

Installer password: A one-to six-digit password that prevents unauthorized access to programming. The Installer password can be assigned and changed in Passwords programming.

internal analog terminal adapter (I-ATA): A device built into the Norstar ICS, which permits the connection of analog telecommunication devices such as fax machines, answering machines, and single line telephones. The system has one I-ATA.

integrated communication system: See ICS.

Integrated Services Digital Network (ISDN): A digital telephone service that allows for a combination voice and data connection over a single, high-speed connection. ISDN service can operate over the same copper twisted-pair telephone line as analog telephone service.

Intercom button: A button that provides access to internal lines used for calls within a Norstar system and access to external lines through a line pool or external code. A telephone may be assigned zero to eight Intercom buttons. This is done under Line access in Terminals and Sets programming.

Intercom keys: See Intercom button.

Internal line: A line on your telephone dedicated to making calls to destinations inside your Norstar system. An internal line may still connect you with an external caller if you use it to access a line pool or to pick up a call using Norstar call handling features such as Call Park or Call Pickup Directed.

Internal number: A number (also referred to as a Directory Number or DN) that identifies a Norstar telephone or device.

Internal user: Someone using a Norstar telephone within a Norstar system.

ISDN: See integrated services digital network.

ISDN DN: A directory number (DN) used by ISDN terminal equipment connected to the ICS. The system uses a maximum of seven ISDN DNs.

K

key service unit (KSU): See ICS (integrated communication system).

L

Last Number Redial:

| Feature | [5] |

A feature that allows you to redial the last external number you dialed.

Least cost routing: See Routing service.

Line: The complete path of a voice or data connection between one telephone (or other device) and another.

Lines: A programming section that lets you assign settings to each trunk and external line. Lines programming can be done by an installer or a system coordinator plus. A system coordinator can program the name of a line.

Line restriction: See Restriction filter.

Line number: A number that identifies an external line. The total number of lines depends on how many Trunk Cartridges are installed.

Line Pool:

| Feature | [6] [4] |

A group of lines used for making external calls. Line pools provide an efficient way of giving a telephone access to external lines without taking up many line buttons. A line is assigned to be part of a line pool

under Trunk/Line data in Lines programming.

Line Redirection:

`Feature` `8` `4`

A feature that allows you to redirect all calls on an incoming line to a destination outside the Norstar system. Once a line is redirected it cannot be answered within the Norstar system. The system may be set up to give a brief ring when a call comes in on a redirected line, under Capabilities in Terminals and Sets programming.

This feature differs from Call Forward in two ways. It redirects only external calls (not internal calls) and it redirects calls to destinations outside the system. Call forward redirects calls only to destinations inside the Norstar system. See Call Forward.

Link:

`Feature` `7` `1`

If your Norstar system is connected to a Private Branch Exchange (PBX), you can use a Link signal to access special features. The Link signal can also be included as part of a longer stored sequence on an External Autodial button or in a Speed Dial code. The Link symbol (██) uses two of the 24 spaces in a dialing sequence.

Long Tones:

`Feature` `8` `0` `8`

A feature that lets you control the length of a tone so that you can signal devices such as fax or answering machines which require tones longer than the standard 120 milliseconds.

Loop Start Trunk Cartridge: The Trunk Cartridge that allows you to

connect loop start trunks to the Norstar system.

Lunch schedule: See Schedules, and Services.

M

M7100 telephone: A telephone with a single line display and one programmable memory button without an indicator.

M7208 telephone: A telephone with a single-line display and eight programmable memory buttons with indicators.

M7310 telephone: A telephone that has a two-line display, three display buttons, 10 programmable memory buttons with indicators, and 12 dual memory programmable buttons without indicators. An M7310 can be equipped with a Busy Lamp Field.

M7324 telephone: A telephone with a two-line display, three display buttons, and 24 programmable memory buttons with indicators. An M7324 telephone can be equipped with one or two CAP modules.

Maintenance: A type of programming that is used to diagnose and repair problems in the Norstar system. Maintenance is accessed by an installer or a system coordinator plus.

Memory buttons: Buttons that can be programmed to dial frequently used features or numbers automatically. See M7100, M7208, M7310, and M7324 telephone entries for their exact memory button configurations.

x

Message: A feature that allows you to send a message to another Norstar user. The Message feature also lets you know if you have any messages waiting and maintains a Message Waiting List to keep a record of your internal messages and your (external) voice mail messages.

Module: A component of the Norstar 0X16 ICS.

Module status: A heading in Maintenance programming that shows what types of Trunk Cartridges are connected and whether they're busy, disabled, or malfunctioning.

Move Line buttons:

| Feature | * | 8 | 1 |

A feature that allows you to move external lines to different buttons on your telephone.

Music source: A radio or other source of music can be connected to the ICS to provide music for the Music on Hold and Background Music features. A music source is not part of the Norstar system and must be supplied by the customer.

N

Names: Names can be assigned to System Speed Dial numbers, external lines, telephones, and service schedules. This is done in programming. You can use up to sixteen characters to name a System Speed Dial number, and seven characters to name a telephone, line, or schedule. If a Name has not been assigned, the line number or DN will appear on the display instead of a name.

Network DN: A number supplied by the ISDN network service provider for ISDN trunks (incoming lines).

Night schedule: See Schedules; Services.

NT1 (Network termination type 1): A device used to connect the U interface of an ISDN service provider and the S/T interface (the customer's equipment). The Compact ICS can act as an NT1 when equipped with a BRI-U2 or BRI-U4 Card.

O

On hold: A setting that controls whether external callers hear music, periodic tones, or silence when they are placed on hold. It is assigned under Feature settings in System programming.

OPS: Off premise station.

OPX: Off premise extension.

Overlay: See Programming overlay.

Overflow: A setting in Routing Service that allows users to decide what path an outgoing call will take if all the lines used in a particular route are in use when the call is made.

Overrides: One component of a restriction filter. Overrides are numbers you can dial even if they are forbidden by a more general restriction. See Restrictions.

P

Page:

Feature 6 0

A feature you can use to make announcements over the Norstar system. You can make page announcements over the telephone speakers and/or external speakers.

Page Timeout: A setting that controls how long a Page Announcement can last. It can be assigned under Feature settings in System programming.

Page zone: An area in the office that receives internal page announcements independently of the rest of the office. Each page zone is identified by a number. Telephones are assigned to page zones under Capabilities in Terminals and Sets programming.

Park prefix: See Call park prefix.

Park timeout: The time before an unanswered parked call is routed back to the telephone that parked it. Park timeout is under Feature settings in System programming. See Call Park.

Password: A password is a specific sequence of digits that you enter to gain access to Norstar programming, to override restriction filters, or to use remote access with DISA.

Passwords: A programming section that lets you assign or change COS passwords, Call log passwords, or any of the programming passwords. Once you access the Passwords section, you

can only modify the passwords for your level of programming.

Pause:

Feature 7 8

A feature that enters a 1.5 second delay in a dialing sequence on an external line. This is often required for signaling remote devices, such as answering machines, or when reaching through to PBX features or host systems. The Pause symbol (🕭) uses one of the 24 spaces in a dialing sequence. For pulse dialing, ✳ inserts a 1.5 second pause into the dialing sequence.

PBX: private branch exchange.

Pickup Group:

Feature 7 5

A telephone can be placed into one of nine call pickup groups. A call ringing at a telephone within a pickup group can be picked up at any other telephone within the same pickup group. A telephone is assigned to a pickup group under Capabilities in Terminals and Sets programming.

Pool: See Line pool.

Pre-dial: A feature that allows you to enter a number and check it on your telephone display before it is actually dialed. If the number is incorrect, you can edit it. The number is dialed only when you pick up the receiver or select a line.

Prime line: The line on your telephone that is automatically selected when you lift the receiver, press the Handsfree/Mute button or use an external dialing feature. A Prime line is assigned to a telephone under Line access in Terminals and Sets programming.

Prime Set (prime telephone): A telephone that provides backup answering for incoming calls on external lines. The prime telephone for a line will ring for any unanswered calls on that line. A prime telephone is assigned to a line under Trunk/Line data in Lines programming.

Priority Call:
[Feature] [6] [9]
If you get a busy signal when you call someone in your office, you can interrupt them for an urgent call. This feature is enabled for a telephone under Capabilities in Terminals and Sets programming.

Privacy: This feature determines whether a Norstar user may select a line in use at another telephone and join an established call. Privacy is enabled under Trunk/Line data in Lines programming, but can be turned on and off by users during individual calls.

Private line: See Private to.

Private network: A telephone network consisting of owned or leased telephone lines used to connect different offices of an organization independently of the public network.

Private to: Lets you select the telephone that will use the line exclusively. The line cannot appear on any other telephone, except the prime telephone for that line. Private lines cannot be placed into line pools. Private lines are assigned under Trunk/Line data in Lines programming.

Programmed release:
[Feature] [*] [8] [9]

A feature that performs the function of the [Rls] button in a programmed dialing sequence.

Programming: Setting the way the Norstar system will work. Programming includes system-wide settings and individual telephone and line settings.

Programming overlay: A paper template that is placed over the top four memory buttons with indicators on the M7310 or M7324 telephone during programming. The overlay labels indicate the special function that each of the four buttons takes on in programming.

Public line: An external line that can be assigned to any telephone and to many telephones. A line is assigned as Public under Trunk/Line data in Lines programming.

Public network: The regular telephone network that connects most homes and businesses.

Pulse/tone dialing: An external line setting for pulse or tone dialing. Pulse is the traditional method of dialing used by rotary-dial or push-button single-line telephones. Tone dialing allows telephones to communicate with other devices such as answering machines. Tone dialing is required to access the features that PBX systems may offer or to use another Norstar system remotely.

R

Recall: See Link time.

Receiver: The handset of a telephone.

receiver card: An abbreviated list of Norstar feature codes that is stored under the telephone receiver. The card is found on a perforated sheet that comes with a Norstar telephone.

Remind delay: A feature that causes a telephone to beep and display the message
On hold: LINENAM when a call has been on hold for a programmable period of time. This period is the Remind delay.

Remote access: The ability to dial into a Norstar system from outside the system and make use of selected Norstar features. The lines, features, and dialing capabilities available to a remote user are determined by the Class of Service. If the remote access line is answered with DISA, the user must enter a Class of Service password to gain access to the Norstar system's features.

Remote access dial restriction: See Remote restriction.

Remote capability: A subset of Norstar features that are available to users connected through remote access.

Remote restriction: A restriction filter applied to a line in order to control which digits can be dialed during an incoming remote access call. It is the equivalent of a set restriction for a remote user.

Remote monitoring: A feature that lets an off-site technician with a PC call in and troubleshoot your system through the built-in modem.

Remote paging: This feature allows remote users to use the Norstar paging feature. Access to this feature is governed by the Class of Service for the call. See Remote Access and Class of Service.

remote user: Someone who calls into a Norstar system from a telephone outside that system and uses Norstar features or lines. See Remote Access.

Restriction filter: Through a combination of restrictions and overrides, restriction filters prevent certain telephone numbers or feature codes from being dialed. Restriction filters can be applied to lines, sets, specific lines on a set, and to Class of Service passwords. The Norstar system can handle up to 100 restriction filters.

Restriction service: A Services section that allows you to assign alternate restriction filters to lines, telephones, lines on a particular telephone, and alternate remote filters to lines at specified times of the day and on specified days.

restrictions: One component of a Restriction filter. Restrictions are numbers you cannot dial when that filter is in effect. See also Overrides.

Ring Again:
Feature 2
A feature that can be used when you can't get through to someone on your Norstar system because their telephone is busy or there is no answer. Ring Again instructs the Norstar system to inform you when they hang up or next use their telephone.

ring group: A setting under Services that lets you assign a number of different telephones to ring during one of the schedules.Up to 20 ring groups can be programmed by an installer or a system coordinator plus.

ring type:

| Feature | | ∗ | 6 |

A feature that allows you to select one of four distinctive rings for your telephone.

ring volume:

| Feature | | ∗ | 8 | 0 |

A feature that allows you to set the volume at which your telephone rings.

ringing service: A Services section that allows you to make additional telephones ring at specified times of the day and on specified days.

Rls button: Ends a call in the same way that hanging up the receiver does. The Release button may also be used to end programming, Maintenance sessions, and feature operations.

routing: See Routing service.

Routing service: A programming section that allows outgoing calls to be directed automatically based on the numbers a caller dials. For Norstar systems linked in a network, routing can create a transparent or coordinated dialing plan. It can also be used to direct calls to the least expensive lines according to a Services schedule (sometimes called least cost routing).

Run/Stop:

| Feature | | ∗ | 9 |

A feature that creates a break point in a programmed external dialing sequence. When you press a programmed key, the system dials the number up to the run/stop. When you press it again, the system dials the digits following the run/stop.

S

S loop: A type of loop provided by a BRI-ST Card. It connects the ICS to ISDN terminal equipment which uses an S interface.

S/T loop: A type of loop provided by a BRI-ST Card. It connects the ICS and ISDN terminal equipment to an ISDN network using an NT1.

S/T interface: A four-wire ISDN connection, usually seen on the customer side of an NT1 (the Compact ICS can act as an NT1).

SAPS: See station auxiliary power supply.

Saved Number Redial:

| Feature | | 6 | 7 |

A feature that allows you to save the number of the external call you are on (providing you dialed the call) so that you can call it again later.

Schedules: Any of six different sets of services that can be applied to your Norstar system. A schedule can be activated manually from a control telephone or activated automatically at specified times. See also Services.

Selective line redirection: See Line Redirection.

Service Modes: See Services.

Service Profile Identifier: See SPID.

Services: A programming section that lets you assign which telephones ring, which restrictions apply, and which call routing is used during any of six different schedules. There are three services: Ringing service, Restriction service and Routing service, all found in Services programming.

Set: A telephone.

Set Copy: A programming section that allows you to copy programmable settings from one telephone to another of the same type. Set Copy provides two options: duplicating System Data and User Data, or duplicating System Data only. Set Copy does not provide the same copy capability as COPY, which is more selective of the settings that can be duplicated.

Set filter: See Restriction filter.

Set lock (telephone lock): This feature allows you to limit the number of features that may be used or programmed at a telephone. Full set lock allows very few changes or features, Partial set lock allows some changes and features, and No set lock allows any change to be made and any feature to be used. Set lock is assigned under Capabilities in Terminals and Sets programming.

Set Relocation: See Automatic Telephone Relocation.

Shift button: A small triangular button beside the dual memory buttons on the upper half of the M7310 telephone. You press the shift button to store or access features on the top half of the dual memory buttons.

Show Time:

Feature ⬚ 8 0 3

While on a call, accessing this feature lets you see the current date and time on the Norstar telephone display.

Software Keys: A programming section used to enable the optional Remote monitoring feature. One setting provides a System ID, which an installer or system coordinator plus then uses to request three password keys from the Nortel Customer Response Center. Once these three passwords have been entered, the system will permit Remote monitoring.

SPID (Service Profile Identifier): A number that identifies devices connected to an ISDN network. Devices may share a SPID, or a device may have more than one SPID depending on the number of channels it uses. SPIDs may be used to identify terminal equipment to the ICS, or to the service provider.

Startup programming: When a Norstar system is first installed and powered up, Startup programming must be performed before any programming can be done. Startup initializes the system programming to defaults.

Station: An individual telephone or other Norstar device.

Station Auxiliary Power Supply (SAPS): A device which provides power to a Norstar telephone that is connected more than 300 m (975 ft.)

and less than 1200 m (3900 ft.) from the ICS, or to a CAP module.

Station set test:
[Feature] [8] [0] [5]
A series of diagnostic tests for these components of a Norstar telephone: display, buttons, handset, speaker, and power.

System Answer: This feature simplifies answering calls by ensuring all calls are answered within a pre-set number of rings. Unanswered calls are monitored and answered by a pre-recorded greeting. Callers can dial an internal number or else the call is put on hold until it can be retrieved.

System coordinator: The person responsible for customizing the Norstar system through programming and for helping co-workers use the Norstar system.

System coordinator password: A one- to six-digit password that prevents unauthorized access to programming. The System coordinator password can be assigned and changed in Passwords programming.

System coordinator plus: A system coordinator who also performs technical and maintenance functions for the Norstar system.

System coordinator plus password: A one- to six-digit password that prevents unauthorized access to programming. The System coordinator plus password can be assigned and changed in Passwords programming.

System coordinator plus programming: A combination of common and installer programming settings. Press [Feature]
[*] [*] [C] [O] [N] [F] [I] [G], then
[S] [C] [P] [L] [U] [S] to access System coordinator plus programming.

System coordinator programming: The programming settings that are most commonly changed once the Norstar system is installed. Press [Feature]
[*] [*] [C] [O] [N] [F] [I] [G], then
[A] [D] [M] [I] [N] to access System coordinator programming.

System Data: An option in the Set Copy function. System Data refers to the programmable system settings that apply to all telephones and lines.

System programming: A programming section that lets you assign and maintain certain settings on the Norstar system. System programming is performed by an installer or system coordinator plus.

System speed dial code: A two-digit code (01 to 70) that can be programmed to dial a telephone number up to 24 digits long. System speed dial codes are programmed for the entire Norstar system under the System Speed programming heading.

System Startup: See Startup programming.

System Startup access code: To begin System Startup, press
[Feature] [*] [*] [S] [T] [A] [R] [T]
[U] [P]. An Installer password is

required before Startup programming can begin.

T

T loop: A type of loop provided by a BRI-ST Card. It connects the ICS to an ISDN network using an NT1.

Target lines: Lines used to answer incoming calls only. A target line routes a call according to digits it receives from an incoming trunk. They are referred to by line numbers (049-074) in the same way as physical lines.

TE: See Terminal equipment.

TEI (Terminal Endpoint Identifier): A two-digit number used to identify devices that use an ISDN connection for D-channel packet service.

Telco features: A programming section that lets you specify the external telephone numbers that are dialed by the Message feature to retrieve voice messages, or to set up CLASS (CMS) services for lines and sets. Telco features are accessed by an installer or a system coordinator plus.

Terminal Endpoint Identifier: See TEI.

Terminal equipment (TE): A generic term for devices that connect to an ISDN network. Examples of ISDN TE are ISDN telephones, computers equipped with ISDN cards and video terminals.

Terminals and Sets: A programming section that lets you assign and change settings that apply to the telephones and other devices connected to the Norstar system. Terminals and Sets programming is performed by an installer or a system coordinator.

Time and date: A programming section that lets you manually change time or date. The time and date can also be changed by pressing ⌧ ⌧ T I M E and entering the Basic password or one of the programming passwords.

Transfer:
| Feature | 7 | 0 |

A feature that lets you redirect a call to another telephone in your Norstar system, over a network or outside your Norstar system.

Transfer Callback: If a transferred call is not answered after a specific number of rings, the call will return to the telephone that made the transfer. The number of rings is assigned under Feature settings in System programming. Transfer Callback does not apply to calls transferred externally.

Trunk: The physical connection between the Norstar system and the outside world using either the public telephone system or a private network.

Trunk Answer:
| Feature | 8 | 0 | 0 |

A feature you can use to answer a call on any line that has an active Ringing service schedule, even if that line does not appear on your telephone. Trunk Answer is enabled under each schedule in Services programming.

W

Wait for dial tone:

| Feature | 8 | 0 | 4 |

A feature that causes of sequence of numbers to pause until dial tone is present on the line before continuing to dial. The Wait for dial tone symbol (■5) uses two of the 24 spaces in a dialing sequence.

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R

norstar

Norstar-PLUS
Compact ICS 2.0
System Coordinator
Guide

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■ Getting started with Norstar

Your Norstar digital key system has many powerful features that can be customized to keep up with changes in your workplace.

■ Using this guide

The person who is responsible for adding or moving telephones or making changes to the system is called the system coordinator. This guide is designed to give the system coordinator all the information he or she needs to carry out these kinds of jobs.

The first section contains step-by-step instructions on changing the time and date, deciding how many rings it takes before a call is forwarded and other day-to-day programming. Once you understand these basic steps, you can move on to the many other features described in the second section of the guide, and only refer to the first section from time to time.

You can look at the contents page for an overview of the features that are available, or check the index for a specific feature or display you see on your telephone.

■ Understanding programming

When your system is installed, your installer or customer service representative programs it to work with your telephone lines, with your private network, if you have one, and with optional equipment. They also customize the system for your office. All programming is recorded in the Norstar *Programming Record*.

You may wish to further customize your system. For example, you can change how some features work, or adapt the system to changes in your office. Programming lets you change settings that probably need to be updated regularly because of staff turnover or new business contacts. You can also assign features and program buttons on individual telephones.

There are four ways to customize and maintain your Norstar system:

Initial programming is done for you by your installer or customer service representative. It deals mostly with how the system interacts with lines, telephones, and other equipment.

Your programming as a system coordinator changes how features work for the system, as needed. It requires a system coordinator password.

A basic programming password is also available to allow individuals other than the system coordinator to make changes without giving access to sensitive programming capabilities.

Personal programming is available to anyone through the Feature button on their Norstar telephone. It allows individuals to change how their telephone works to suit themselves.

Before you start

Before you start, plan what changes you want to make. Record the changes in the *Programming Record* so you will have the information at hand. For example, if you are going to program system speed dial numbers, fill out the page in the *Programming Record* so you will have all the numbers and codes handy once you start programming.

What you'll need to do programming

Programming is done using a telephone that can show two lines of information on its display. Examples of telephones with two-line displays are shown on the next page.

You will also need a programming overlay to show which buttons to press when you are doing programming. The programming overlay is found at the front of this guide.

When you use a telephone for programming, it is taken out of service. This means it is unable to receive or make calls, and the call forward

features do not work. Do not use the main reception telephone for programming because you may lose incoming calls.

Using Buttons

The two-line telephone you use for everyday calling is also used for changes and maintenance. Examples of telephones with two-line displays are shown in the illustration.

M7310   M7324
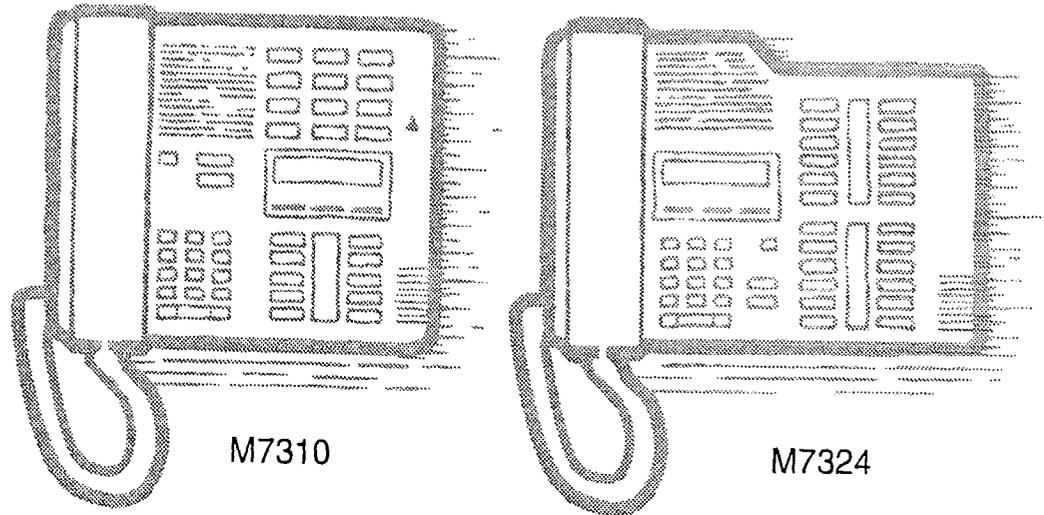
The next illustration numbers the buttons that are used for both day-to-day communication and programming on the M7310.
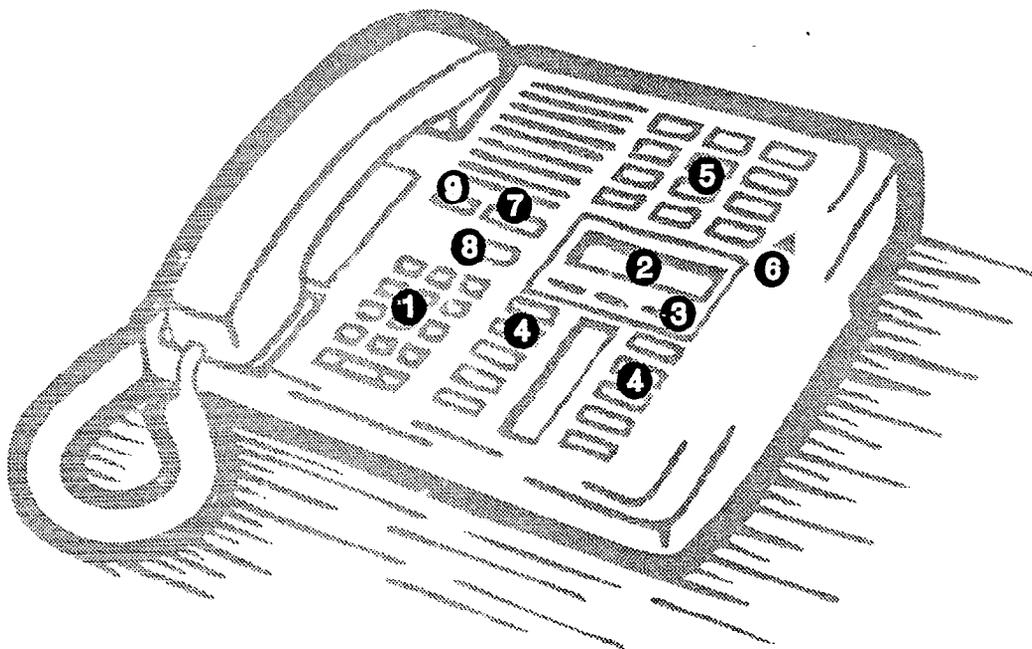
❶ Dial pad	Used for dialing numbers when you are making calls. It's also used for entering numbers and letters when you're programming.
❷ Display	Shows instructions for everyday calling as well as for programming.
❸ Display buttons	Have a variety of uses. The current use is shown on the display above each button.
❹ Memory button	Dials a number or feature code stored on the button.
❺ Dual memory button	Can store two numbers or feature codes (used with the shift button).
❻ Shift button	Press the shift button before a dual memory button to activate the second number or feature code stored on a dual memory button.
❼ Feature button	Allows you to enter a feature code while using or programming the telephone.
❽ Hold button	Puts an active call on hold.
❾ Release button	Hangs up an active call or ends programming.

The M7324 is different from the M7310 in two ways: it does not
dual memory buttons (item 5) or a shift button (item 6).

◼ Using the buttons under the display

The three display buttons are used both for telephone features a
programming, but what each button does depends on what the d
shows. Some display instructions that you may see when makir
changes on the system are OK, CHANGE or COPY. In this guide, dis
button instructions are underlined.

Display buttons

── display but
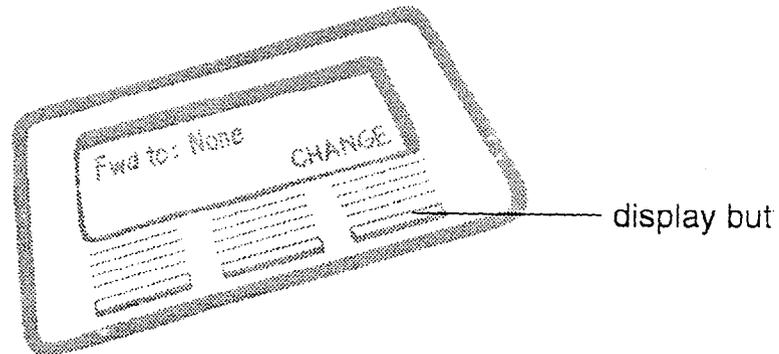
◼ The programming overlay

When you begin programming, a group of buttons on the telephc
become the buttons for moving through programming headings a
settings. The programming overlay is a paper cutout (found at the
of this guide) that shows the directions the four buttons will take
when programming.

Placing the programming overlay

Shows you the heading for the current level

Moves you one item back at the current level

Norstar Programming Overlay

Heading

Back

Show

Next

Shows you the first setting within the level

Moves you one item forward at the current level
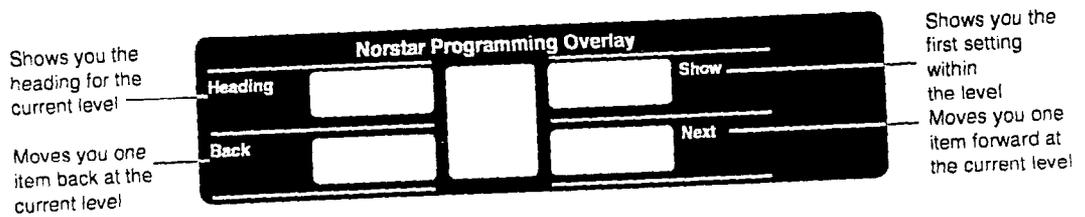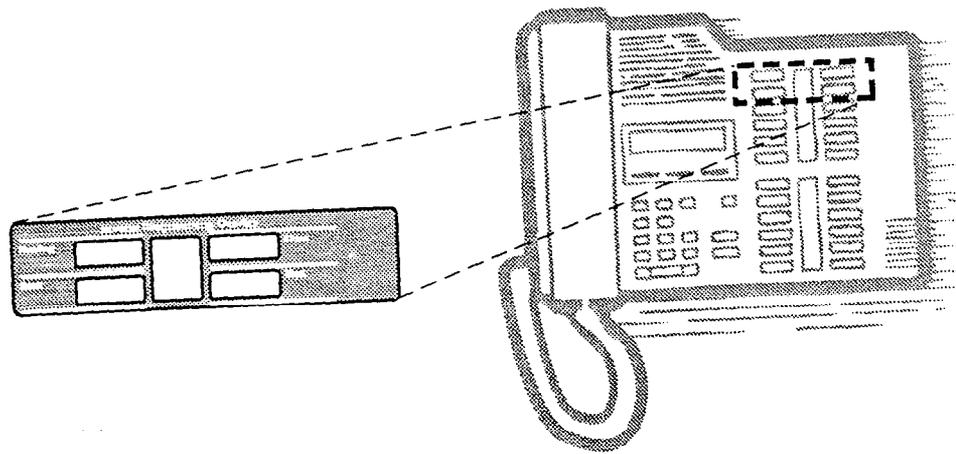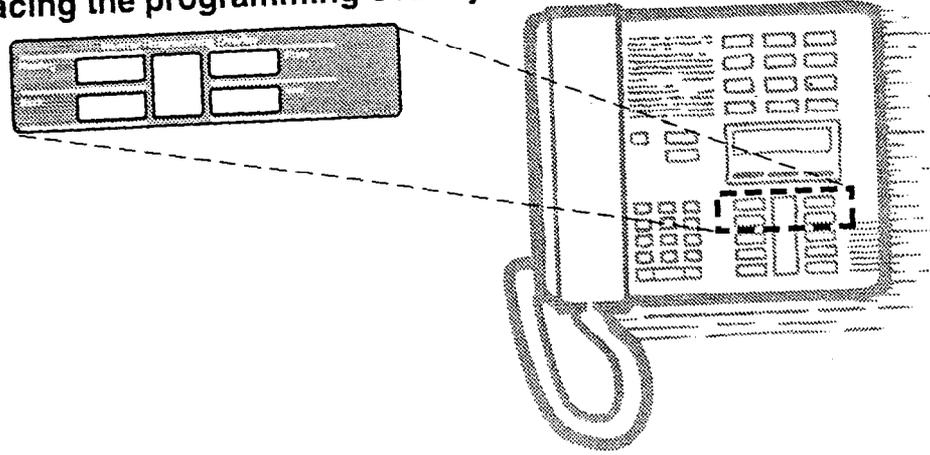
Programming buttons are active or inactive at different stages of programming. A button is active (meaning you can use that option), when the indicator next to it is lit (◄ or ►).

█A map for working in programming

The programming maps on the following two pages show the headings you'll see when you move through the display menu after pressing [Feature] [*] [*] [C] [O] [N] [F] [I] [G] and entering the password (the default password is [A] [D] [M] [I] [N] or [2] [3] [6] [4] [6]). Also, the maps show you the choices under each menu heading.

A Basic password can be used with a limited number of feature codes, including [*] [*] [T] [I] [M] [E] and the codes for turning call services on and off. For more information, see "Using passwords" on page 142.

Terminals&Sets	Terminals and sets - Customize the many features used by telephones. You can change where a call is forwarded, give a telephone a name, or allow certain features to be used at a telephone. You can also change the button programming on any telephone on the system.
Lines	Lines - Program names for each line.
Services	Services - Turn services on or off. These are Ringing service, (often called night service) that allows additional telephones to ring, Restriction service that blocks certain kinds of calls and Routing Service that decides what lines a call will use.
Sys speed dial	System speed dial - Program up to 70 different telephone numbers so that people in your office can dial them with a two-digit code.
Passwords	Passwords - Change the password you use for programming, or erase a Call log password.
Time & Date	Time and date - Change the time, date, or both.
System prgrming	System programming - Change the settings for the System Answer that handles the overflow when the attendant set is busy, and Custom Call Routing (CCR) that gives a caller a choice of where to direct their call.

Key to Navigation:

```
                    [Back]
              (go to previous item)
                      ↑
[Heading] ←                  → [Show]
(go to previous level)    (go to next level)
                      ↓
                   [Next]
              (go to next item)
```
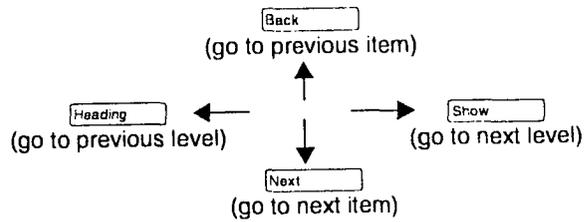
Legend:

Name (grey text) = appears only if needed to complete programming

Enter digits (italic text) = instructions or descriptions

(grey box) = enter an extension number, line number, or speed dial number

(black box) = items are in a list

Terminals & Sets

Show set:_ ▶

Enter digits or
Press [Next] to see
LIST

Capabilities ▶
Name
User Prefs ▶
Restrictions ▶
Telco features ▶

Fwd no answer ▶ — Fwd to / Fwd delay
Fwd on busy ▶ — Fwd to
DND on busy
Handsfree
HF answerback
Pickup grp
Page zone
Paging
D-Dial
Priority call
Hotline ▶ — Use prime
Aux. ringer
Allow redirect
Redirect ring

Model
Button Prgrming
User speed dial
Call log opt'ns
Dialing opt'ns
Language
Display cntrst
Ring type

Set restrns — Set lock / Allow last no / Allow saved no / Allow link
1stDisplay

Lines

Show line:_ ▶

Name

Enter digits or
Press [Next] to see
LIST

Services

Ringing service ▶

Restrn service ▶

Routing service ▶

Sched:Night

Sched:Night

Sched:Night
Sched:Evening
Sched:Lunch
Sched:Sched 4
Sched:Sched 5
Sched:Sched 6

Sys speed dial

Speed dial #:_ ▶

Enter digits or
Press [Show] *to see*
LIST

add/change tel#
Use prime line
Display digits
Name

Enter digits or
Press [Show] *to see*
LIST

Passwords

Call Log pswds ▶

Progrmng pswds▶

Show set:_ ▶

Log pswd

Sys Coord 23646
Basic 22742

Time&Date

Hour
Minutes
Year
Month
Day

Sys Prgrming

Auto Attendant ▶

Attd Set

Language ▶

System Answer ▶

CCR ▶

First
Second

After __ rings

After __ rings
CCR groups ▶

Show group:_ ▶

Enter digits or
Press [Show] *to see*
LIST

Starting and ending a session

As system coordinator the first steps in making any change to the Norstar system are always the same.

Jan 1 12:00pm	Press [Feature].
Feature:	Press [∗] [∗] [C] [O] [N] [F] [I] [G].

It's the same as pressing [∗] [∗] [2] [6] [6] [3] [4] [4].

Password: RETRY	Press [A] [D] [M] [I] [N] ([2] [3] [6] [4] [6]). Press RETRY to re-enter the password if it is entered wrong.
Terminals&Sets	The display shows the first of the seven headings available for administration programming.

[A] [D] [M] [I] [N] is the password, unless the password has been changed. Check the *Programming Record* for the most recent password.

Ending a session

Display digits:Y CHANGE	Press [Rls] to end the session.
End of session	After a few seconds, the time and date will reappear on the display.

The system goes ahead with any changes you make to programming as soon as you move away from a setting, either by using the navigation buttons or [Rls].

You can see if the changes you have made to telephone programming have taken effect by pressing UPDATE display key. The display will show you how many telephones have not been updated yet.

Press DNs to see the specific extensions where programming changes have not taken effect yet. Items will disappear from the list as they are updated.

Record any changes you make in the *Programming Record*. If there is a problem with the system, the installer needs to see a history of the changes you have made. Also remember to inform people in your office of any changes you have made that affect them. For example, you may change system speed dial codes or change the number of rings before an unanswered telephone is forwarded.

Frequently used programming operations

The following sections highlight the most frequently used programming operations. To consult these or other programming operations, see either the Table of Contents or the Index.

Changing the time and date on the display

Jan 1 12:00pm	Press Feature .
Feature:	Press * * 8 4 6 3 (which is the same as * * T I M E).
Password: RETRY	Press 2 2 7 4 2 (B A S I C) or 2 3 6 4 6 (A D M I N)

The passwords can be changed. See "Using passwords" on page 142 for more information.

In this example, you are changing the time to 1:30 p.m.

Hour:01 NEXT CHANGE	Press CHANGE.
Hour:_ CANCL	Press the dial pad buttons to enter the hour. Use two digits for all hours. The clock on the display will show either one or two digits.
AM OK CHANGE	The display will prompt you to choose a.m. or p.m. Press CHANGE and OK to select p.m.
Hour:01 NEXT CHANGE	Press NEXT.
Minutes: 00 NEXT CHANGE	Press CHANGE.
Minutes: __ CANCL	Press the dial pad buttons to enter the minutes.

If you are only changing the time and not the date, press Rls to end your session.

In this example, you are changing the date to July 15, 1998.

Minutes: 30 NEXT CHANGE	Press NEXT.
Year:97 NEXT CHANGE	Press CHANGE.
Year:__ CANCL	Press the dial pad buttons to enter the year.
Year:98 NEXT CHANGE	Press NEXT.
Month:01 NEXT CHANGE	Press CHANGE.
Month:__ CANCL	Press the dial pad buttons to enter the month.

Use numbers for the months: 01 is January; 12 is December.

Month:07 NEXT CHANGE	Press NEXT.
Day:01 NEXT CHANGE	Press CHANGE.
Day:__ CANCL	Press the dial pad buttons to enter the day.
Day:15 CANCL	Press [Rls] to end your session.
End of session	

The clock also controls the schedules used for services such as ringing and routing services.

After a power failure, the clock will be behind by the length of time power was lost. For example, if the power is out for two minutes, the clock will be two minutes behind.

Your Norstar system can change automatically between North American daylight saving and standard time. This option is set by your customer service representative or installer and can be changed by contacting them.

Adding or changing a system speed dial

You program a speed dial on your Norstar so that anyone in your office can dial a frequently used number using a two-digit code.

To change a speed dial that already exists, follow the same steps. The new programming will overwrite the previous number and settings.

Begin the programming session

`Jan 1   12:00pm` Press `Feature`.

`Feature:` Press `*` `*` `2` `6` `6` `3` `4` `4`.

`Password:` Press `2` `3` `6` `4` `6`.
`      RETRY`

Choose a speed dial code

`Terminals&Sets▶` Press `Next` three times.

`Sys Speed Dial▶` Press `Show`.

`Speed dial #:_` Press `0` `1`.

You can pick any system speed dial code between 01 and 70.

`Speed dial #:01▶` Press `Show`.

Add or change the telephone number

`01:No number` Press CHANGE.
`        CHANGE`

`01:_` Use the dial pad to program the telephone
`CANCL        OK` number that you want to add. The telephone number can be up to 24 digits long.

`01:nnnnnnnn_` Your display shows the telephone
`CANCL  BKSP  OK` number, and not n's as shown here. Press OK.

Select a line for the speed dial code

```
01:nnnnnnnn
CLR          CHANGE
```
Press `Next`.

```
Use Prime line
             CHANGE
```
Press CHANGE to see your options: Use Prime line, a specific line (for example Use line: 01), a line pool (for example Pool code:71), or Use routing tbl.

Stop pressing CHANGE when the display shows the prime line again.

```
Use Prime line
             CHANGE
```
In this example, the system selects the prime line automatically (the most common choice), to dial speed dial code 01.

If you assign a specific line to a system speed dial number, only telephones with an appearance of that line can use the speed dial number.

Choose what shows up on the display

```
Use Prime line
             CHANGE
```
Press `Next`.

```
Display digits:Y
             CHANGE
```
Your choices are Yes and No. Yes means the display will show the telephone number. Press CHANGE.

```
Display digits:N
             CHANGE
```
No means the display will show a name for the code.

Program a name for a speed dial

The system has a standard name to display, so it is not necessary for you to program one. However, if you have chosen not to display the telephone number, you may want a specific name.

```
Display digits:N
             CHANGE
```
Press `Next`.

```
Name:Sys Spd Di...
             CHANGE
```
Press `Show`.

```
...al 01 ...
             CHANGE
```
This is the name the display will show if you don't change it. Press CHANGE.

```
Name:_
             -->
```
Decide the name you want to give to the speed dial code.

Press the telephone's numeric dial pad button that has the first letter of the name until the display shows the letter you want.

Name:S
        BKSP   --->

Press --->.

Name:S_
<--   BKSP   --->

Use the dial pad and ---> until you have the entire name.

The name can be up to 16 characters long, including spaces.
Press # on the numeric dial pad to add spaces.

me:SAVINGS BANK
<--   BKSP   --->

Press [Next   ].

Name:SAVINGS BA...
CLR   CHANGE

Press [Rls] to end your session.

Or you can press [Heading   ] twice to begin programming another speed dial number.

End of session

Entering letters and numbers using the dial pad

fourth press

first press
second press
third press
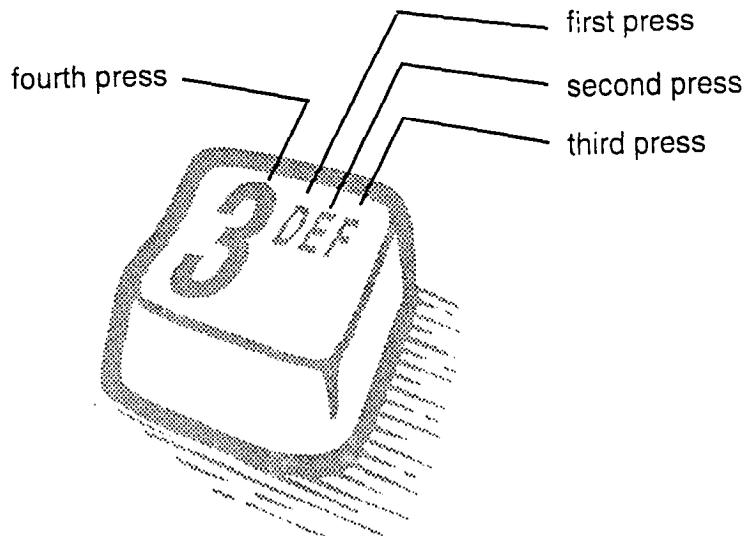
Changing the name of a telephone

Begin the programming session

| Jan 1   12:00pm | Press Feature . |

| Feature: | Press ✳ ✳ 2 6 6 3 4 4 |

| Password:
              RETRY | Press 2 3 6 4 6 . |

Change the name of a telephone

| Terminals&Sets▶ | Press Show . |

| Show set:__
              LIST | Enter the internal number (intercom number) of the telephone extension. In this example, it's 21. |

If the set has already been given a name, it will appear after DN: on the display.

| 21:21▶ | Press Show then Next . |

| Name:21
              CHANGE | This is the name the display will show if you don't change it. Press CHANGE. |

Decide what name you want to give to the telephone number.

| Name:_
                --> | Press the telephone's numeric dial pad button that has the first letter of the name until the display shows the letter you want. |

| Name:J
<--   BKSP   --> | Press -->. |

| Name:J_
<--   BKSP   --> | Use the dial pad and --> until you have the entire name. |

| Name:JEAN B
<--   BKSP   --> | Press Next to use the name you have entered. |

The name can be up to 7 characters long, including spaces.

| Name:JEAN B
              CHANGE | Press Rls to end your session. |

You can also press [Heading] once to continue programming this telephone, or press [Heading] twice to return to the Terminals and Sets heading.

End of session

Changing the name of a line

Begin the programming session

Jan 1 12:00pm   Press [Feature].

Feature: Press [*] [*] [2] [6] [6] [3] [4] [4].

Password: Press [2] [3] [6] [4] [6].
          RETRY

Change the name of a line

Terminals&Sets▶   Press [Next].

Lines▶   Press [Show].

Show line:___   Enter the three-digit number of the line
                       you want to name. In this example, it's
                       line 002.

This is the name the display will show if you don't change it.

Line002:Line002▶   Press [Show].

Name:Line002   Press CHANGE.
          CHANGE

Decide what name you want to give to the line.

Name:_   Press the telephone's numeric dial pad
        -->   button that has the first letter of the name
                       until the display shows the letter you
                       want.

Name:L   Press -->.
    BKSP   -->

Name:L_   Use the dial pad and --> until you have
<-- BKSP   -->   the entire name.

The name can be up to 7 characters long, including spaces.

Name:LOCAL   Press [Next] to use the name you
<-- BKSP   -->   have entered.

```
Name:LOCAL
CLR        CHANGE
```

Press [Rls] to end your session.

You can also press [Heading] once to continue programming this line, or press [Heading] twice to return to the Lines heading.

```
End of session
```

Making changes to Call Forward No Answer

Begin the programming session

Jan 1 12:00pm

Press [Feature].

Feature:

Press [*] [*] [2] [6] [6] [3] [4] [4].

Password:
              RETRY

Press [2] [3] [6] [4] [6].

Change where a call goes when there is no answer

Terminals&Sets▶

Press [Show].

Show set:___
           LIST

Enter the internal number (intercom number) of the telephone extension. In this example, it's 25.

If the set has been given a name, it will appear on the display.

25:25▶

Press [Show].

Capabilities▶

Press [Show].

Fwd no answer▶

Press [Show].

Fwd to:None
         CHANGE

Press CHANGE and enter the internal number where you want the calls to be sent. In this example, it's 21.

Fwd to:21
CLR   CHANGE

You can press CLR to change the destination back to None.

Change the number of times the telephone will ring before it is forwarded

Fwd to:21
CLR   CHANGE

Press [Next].

```
Forward delay:4
            CHANGE
```

Use the **CHANGE** button to choose the number of times the telephone will ring before it is forwarded.

Your choices are 2, 3, 4, 6 and 10 rings.

```
Forward delay:3
            CHANGE
```

Press ⌷Rls⌷ to end your session.

You can also press ⌷Heading⌷ and ⌷Next⌷ to continue programming capabilities for this telephone, or press ⌷Heading⌷ four times to return to the Terminals and Sets heading.

```
End of session
```

■ Making changes to Call Forward on Busy

Begin the programming session

`01 Jan 12:00pm`

Press [Feature].

`Feature:`

Press [*] [*] [2] [6] [6] [3] [4] [4].

`Password:` `RETRY`

Press [2] [3] [6] [4] [6].

Change where a call goes when a telephone is busy

`Terminals&Sets▶`

Press [Show].

`Show set:__` `LIST`

Enter the internal number (intercom number) of the telephone extension. In this example, it's 25.

If the set has been given a name, it will appear on the display.

`25:25▶`

Press [Show].

`Capabilities▶`

Press [Show].

`Fwd no answer▶`

Press [Next].

`Fwd on busy...`

Press [Show].

`Fwd to:None...` `CHANGE`

Press CHANGE and enter the internal number where you want the calls to be sent. In this example, it's 21.

You can press CLR to change the destination back to None.

`Fwd to:21` `CLR` `CHANGE`

Press [Rls] to end your session.

You can also press [Next] to continue programming capabilities for this telephone, or press [Heading] three times to return to the Terminals and Sets heading.

`End of session`

Change the Do Not Disturb on Busy feature

When you are on a call and a second call comes in, your telephone rings softly to alert you to the second call. You can turn this feature on or off for each telephone.

Begin the programming session

`Jan 1  12:00Pm`	Press [Feature].
`Feature:`	Press [*] [*] [2] [6] [6] [3] [4] [4].
`Password:` `         RETRY`	Press [2] [3] [6] [4] [6].

Change Do Not Disturb on Busy

`Terminals&Sets▶`	Press [Show].
`Show set:__` `         LIST`	Enter the internal number (intercom number) of the telephone extension. In this example, it's 25.

If the set has been given a name, it will appear on the display.

`25:25▶`	Press [Show].
`Capabilities▶`	Press [Show].
`Fwd no answer▶`	Press [Next] twice.
`DND on Busy:N` `         CHANGE`	Press CHANGE to turn the feature on.
`DND on Busy:Y` `         CHANGE`	A second press will turn it off again. Press [Rls] to end your session.

You can also press [Next] to continue programming capabilities for this telephone, or press [Heading] three times to return to the Terminals and Sets heading.

`End of session`

For more information on Call Forward and similar settings, see "Forwarding your calls to another Norstar telephone" on page 83.

▋ What would you like to do next?

Some of the most common programming tasks are listed below. For a comprehensive list of settings and instructions, see either the Table of Contents or the Index.

Redirect calls coming in on a line.	See "Turning on Line Redirection" on page 86.
Allow individuals to answer calls that are ringing at another telephone.	See "Picking up a call ringing at another telephone" on page 33.
Assign telephones to different zones for paging.	See "Paging" on page 91.
Turn the night service on and off.	See "Making additional telephones ring" on page 137.
Use a basic password so others can take care of programming such as, changing user speed dials, changing names and the time and date, and activating Auto Attendant features.	See "Using passwords" on page 142.

Answering calls

Answering an incoming call

There are three indications of an incoming call: ringing, a line button flashing, and a message on the display. You will not necessarily receive all three indications for any particular call. For example, you may have a line that has been set up not to ring at your telephone. If so, you will see only a flashing line button. There are many possible combinations, depending on how your system is set up. See "Choosing a line using a line button" on page 48 for more information on the use of lines.

If you receive a priority call and your telephone has no free internal line buttons, you cannot transfer the priority call, you must accept or release it.

Line buttons

One line button for each line is assigned to your telephone. Press the line button to select the line you want to answer or use to make a call. Having several line buttons allows you immediate access to more than one line.

The M7100 telephone has two intercom paths which are used instead of line buttons to answer and make calls. Each M7100 can be assigned two lines. You can press ⌐Hold⌐ to switch between two calls, one active and one on hold.

Incoming line group buttons

You have one incoming line group button for each incoming line group assigned to your telephone. You use an incoming line group button just like line button to answer calls, but you cannot use it to make a call.

M7100 telephones do not have incoming line group buttons.

What line indicators mean

▶ Flashing on and off for equal lengths of time   There is an incoming call on the line.

▶ Flashing on and off more quickly   You have placed a call on hold.

▶ Flashing on for longer than off   Someone else has put a call on hold on that line.

▶ On, not flashing   You are connected to the call on that line or the line is in use elsewhere.

Off   The line is free.

Rings you may hear

A double beep every ten seconds   A call has been camped to your telephone.

A long single ring   There is an external call on the line for you.

A shorter double ring   There is an internal call on the line for you or a call is being transferred to you.

A brief single ring   A call is being redirected on one of your redirected lines. You cannot answer this call.

Three beeps descending in tone   You are receiving a priority call.

Answering calls at a prime telephone

Each line in a Norstar system can be assigned a prime telephone. Calls not answered at their normal destinations are transferred to the prime telephone. The prime telephone is usually the attendant's telephone. The installer or customer service representative programs a prime telephone for a line.

Displays

DND from 21   The person at telephone 21 has forwarded a call to you using Do Not Disturb.

DND transfer   The system has transferred a call to you from a telephone with Do Not Disturb turned on.

DRT Line001   Nobody answered this call so the system transferred it to you.

Line001 callback
          CALLBACK

Someone has camped, parked or transferrec a call on line 001, but no one has answered it. Press CALLBACK or the line button to connect to the call.

Line001 to prime

There is no telephone that can receive a call on line 001 so the system has transferred it to you.

Line002>Line052

The call coming in on line 002 was intended for target line 052. Line 052 is busy so the call has come to you.

For other displays, see "Common feature displays" on page 167.

Using a central answering position (CAP) module

A central answering position (CAP) is a Norstar M7324 telephone and a CAP module that your installer or customer service representative programmed as a CAP. It is best if the CAP is also the prime telephone and direct-dial telephone for the lines and telephones it serves.

M7324 telephone
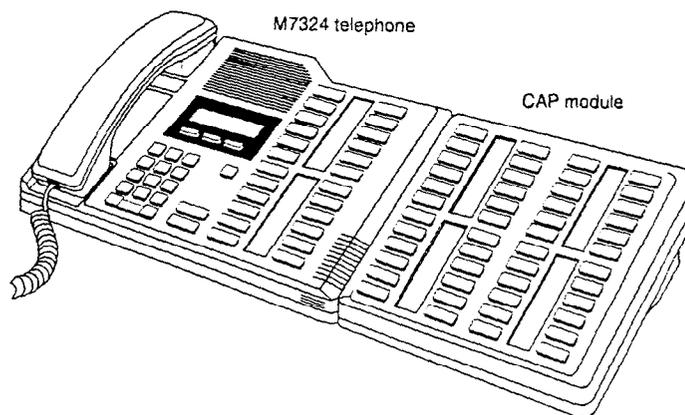
CAP module

A CAP module is an add-on device that provides 48 extra memory or line buttons. You can connect one Norstar CAP module to the telephone to increase the number of lines it can handle.

When a CAP module is first plugged into your telephone, some of the module buttons will already be programmed to dial an internal number.

Customizing your CAP module

If your installer has programmed the CAP module to be the central answering position for your system, you can move external lines onto the CAP module by using [Feature] [*] [8] [1] . See "Moving line buttons" on page 110.

Any of the buttons on your CAP module that do not select lines can be programmed to dial internal or external numbers automatically. You can also program features onto CAP module buttons. See "Time savers for making calls" on page 67 and "Customizing your telephone" on page 107 for information on programming memory buttons.

Buttons on a CAP module cannot be assigned as incoming line group or answer buttons.

Monitoring telephones with the CAP module

The indicators ▶ beside internal autodial buttons on your CAP module show the status of Norstar telephones.

The indicator is on when the telephone has:

- an active call
- Do Not Disturb turned on

The indicator is off when a telephone has:

- no active call
- a call on hold and no other active call

Tip - *You can send up to 30 messages from a CAP.*

Release button

Pressing [Rls] ends a call. You do not have to put the receiver down. [Rls] also ends feature programming.

While you are on a call, do not press [Rls] to end a feature you are using. If you do, you will disconnect the call. Use [Feature] instead

Hearing aid compatibility

The receivers on all Norstar telephones are compatible with hearing aids as defined in the FCC rules, Part 68, section 68.316. Not all hearing aids are optimized for use with a telephone.

Viewing information about a call on the display

If you subscribe to Call Display services from your local telephone company, one line of information about an external caller is displayed after you answer. Depending on the setting and the external information available, either the caller's name or telephone number is displayed.

When you transfer an external call to another Norstar user, this information is displayed on the recipient's telephone.

Call Display information becomes available between the first and second ring of an incoming call. If you answer before the Call Display information is available on your display, and you press [Feature] [8] [1] [1], you will only see the line number or line name.

To use logging features with Call Display, see "Using Call Log" on page 99.

Using Call Information for a particular call

[Feature] [8] [1] [1]

Call Information lets you see information about incoming calls. This information is more detailed than the Call Display information you can receive automatically. For external calls, you can display the caller's name, telephone number, and the line name. For an internal call, you can display the caller's name and their internal number. You can see information for ringing, answered, or held calls.

Call Information is available for calls even if they have been transferred, forwarded or rerouted in some way.

Names and numbers for external calls are displayed only if you have subscribed to Call Display services from your telephone company.

Tip - *Call Log displays the same information as Call Information, along with the date and time of the call, and the number of times the caller called.*

Displaying Call Information before or after answering

To find out who is calling or to display information about your current call:

- Press [Feature] [8] [1] [1].

- Press [#] or UIEW to display more information about an external call.

Call Display information becomes available between the first and second ring of an incoming call. If you answer before the Call Display information is available on your display, and you press [Feature] [8] [1] [1], you will only see the line number or line name.

Displaying Call Information for a call on hold

- Press [Feature] [8] [1] [1]. The display reads ▶Select a call.

- Select the line on hold. Information about the call is displayed.

- Press [#] or UIEW to display more information about an external call,

Tip - *If your telephone automatically displays Call Display information for a call, you still need to press* [Feature] [8] [1] [1] *before you can press* [#] *or* UIEW *to display more information about the call.*

Making Call Display information appear automatically at a telephone

Each telephone that rings for an external line can display Call Display information for that line. After the call is answered, Call Display information is always shown at the telephone that answered the call. Your installer or customer service representative can program telephones to have automatic Call Display.

Changing what information is shown first about a call

Depending on the services you subscribe to, Call Display information may contain up to three parts: the name of the caller, the number of the caller, or the name of the line in your Norstar system that the call is on. For each telephone, you can determine which information is displayed first.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Show] and enter the internal number of the telephone you wish to program.

4. Press [Show].

5. Press [Next] four times.

6. Press [Show].

7. Choose a setting at 1stDisplay: using the CHANGE button. The choices are Name, Numbr or Line.

You may see Unknown name or Unknown number on the display if the information is not available from your telephone company. You may see Private name or Private number on the display if the caller blocks that information.

Picking up a call ringing at another telephone

You can pick up a call ringing at another telephone using Directed Pickup or Group Pickup.

Answering any ringing telephone using Directed Pickup

Feature 7 6

You can answer any telephone that is ringing in your Norstar system.

- Press Feature 7 6.

- Enter the internal number of the ringing telephone.

Call Pickup cannot be used to answer private lines.

To use Call Pickup (Directed Pickup), the telephone must be ringing. If, for example, the auxiliary ringer is ringing, but the call is not ringing at a telephone, the call cannot be answered using Directed Pickup. It must be answered normally at a telephone that has a flashing indicator for the call, or by using Trunk Answer. You can also answer a call that is ringing because someone has transferred the call to a telephone and the call is ringing on an intercom button.

Tip - *Directed pickup can also retrieve calls that are ringing on an Answer DN. While you may enter the internal number of the telephone you hear ringing, it may be calls from another telephone you are answering.*

Answering a ringing telephone using Group Pickup

Feature 7 5

Your Norstar system can be divided into four pickup groups. If you are a member of a pickup group, you can pick up a call that is ringing at any telephone in your pickup group.

- Press Feature 7 5.

Group Pickup cannot be used to retrieve a camped call.

If there is more than one incoming call at a telephone in a pickup group, a call ringing on an external line is answered first followed by calls on the prime line and, finally, calls on internal lines.

Changing a telephone's pickup group

Telephones can be put into and taken out of pickup groups.

You will need the programming template found at the front of this guide. See Getting started with Norstar for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Show] and enter the internal number of the telephone you wish to program.

4. Press [Show] twice.

5. Press [Next] five times.

6. Press CHANGE at Pickup grp: to assign the telephone to pickup group 1, 2, 3, or 4, or to None.

Displays

Already joined	You are already connected to the telephone that made the call you are trying to pick up. This can happen if you are on a call to a co-worker, your co-worker dials the number of a telephone in your pickup group, and you attempt to pick up that call.
Pickup denied	There is no call that you can pick up or the call that was ringing has already been answered. You have tried to pick up a call on someone else's private line.
Pickup:	Enter the internal number of the telephone that is ringing. (You may use an internal autodial button to do this.) If you decide not to answer a ringing call after you have activated Directed Pickup, press [Feature].

Trunk Answer   [Feature] [8] [0] [0]

The Trunk Answer feature lets you answer a ringing call anywhere in the system from any telephone in the system. The line you are

answering does not have to appear or ring at the telephone you are using.

Trunk Answer works only with calls that are ringing on lines for which a Ringing Service schedule is active and if Trunk Answer is enabled by your installer or customer service representative.

Answering a call using Trunk Answer

- Press [Feature] [8] [0] [0].
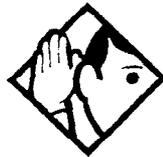
Tip - - *If there is more than one incoming call on lines in a Ringing Service, the Trunk Answer feature picks up the external call that has been ringing the longest.*

Displays

Line denied	You have tried to pick up a call on someone else's private line.
Pickup denied	The call that is ringing is on a line that is not in a Ringing Service.

Answer buttons

You can use an Answer button to monitor calls on another person's telephone. All calls to the monitored telephone appear on the Answer button. The calls can also be programmed to ring at the telephone with the Answer button. Answer buttons are useful for an attendant who monitors incoming calls for one or several other people.

You cannot make calls using Answer buttons.

If more than one call is ringing at someone's telephone, the first call appears on the attendant's Answer button. Any subsequent calls appear on intercom buttons, if they are available.

> **Tip** - *More than one attendant may have an Answer button for a single telephone. This allows two or more attendants to handle calls for a busy person.*
>
> *Each telephone can handle calls for up to four other people using separate Answer buttons for each person.*

Creating a Conference Call   [Feature   ] [3]

You can talk to two people at once.

*   Make sure you have two calls, one active and one on hold.

*   Press [Feature   ] [3].

*   Press the appropriate button to retrieve the held call (this is automatic on the M7100 telephone).

You can create a conference when you are on a call.

*   Make a second call.

*   Press [Feature   ] [3].

*   Press the button where the first call is on hold to create a conference.

Only the person who established the conference can process the conference by using the procedures described in this section.

> **Tip** - *You can also create a conference by releasing privacy on a call. See "Turning Privacy on or off for a call" on page 44.*

Disconnecting one party

You can disconnect one party from a conference and continue talking to the other.

On an M7208, M7310 or M7324 telephone:

- Press the line button of the call that you want to disconnect. The call that you want to keep is automatically put on hold.
- Press [Rls]. The call is disconnected.
- Press the line button of the held call to speak to the remaining person.

On an M7100 telephone:

- Press [Feature] [#] [3], to place one caller on hold. Press [Hold] again, to put the caller you want to keep on hold.
- Press [Rls]. The call is disconnected.
- Press [Hold] to speak to the remaining party.

Independently holding two calls

For all Norstar telephones except the M7100 telephone, you can put the two people in a conference call on hold independently so that they cannot talk to each other.

- Press the line button of one person. The other person is automatically put on hold.
- Press [Hold]. The second person is put on hold.

You can re-establish the conference.

- Take one call off hold.
- Press [Feature] [3].
- Take the other call off hold.

Putting a conference on hold

You can put a conference on hold, allowing the other two people to continue speaking to each other by pressing [Hold].

You can reconnect to the conference by pressing either of the held line buttons. For the M7100 telephone, press [Hold].

Splitting a conference

You can talk with one person while the other person is on hold.

On an M7208, M7310 or M7324 telephone:

- Press the line button of the person you want to speak to. The other person is automatically put on hold.

On an M7100 telephone:

- Press ⌜Feature⌟ ⎡#⎤ ⎡3⎤. The first party is on hold.

- Press ⌜Hold⌟, if necessary, to switch parties.

You can re-establish the conference.

- Press ⌜Feature⌟ ⎡3⎤.

- Take the held call off hold. This is not necessary for the M7100 telephone.

Removing yourself from a conference ⌜Feature⌟ ⎡7⎤ ⎡0⎤

You can remove yourself from a conference, and connect the other two callers through your Norstar system.

- Enter the Transfer feature code ⌜Feature⌟ ⎡7⎤ ⎡0⎤.

When you remove yourself from a conference using the Transfer feature, and both callers are from outside your system, one of the callers must have called you on a disconnect supervised line, or the call will be disconnected.

Displays

3 parties only	You are trying to add a fourth party to your conference call, or to join two conferences together. Release one call from the conference before adding another, or keep the two conferences separate.
Conf. on hold	You have put a conference call on hold.
Conference busy	You have tried to make a conference call, but your system is already handling its maximum of four conference calls.

Line001 21 TRANSFER	You are on a conference with the two lines or telephones shown. You can drop out of the conference and leave the other two parties connected (Unsupervised Conference) by pressing TRANSFER or entering the Transfer feature code.
Press held line	You have activated the Conference feature with one call active and another on hold. Press the line of the call on hold to bring that person into the conference.

For other displays, see "Common feature displays" on page 167.

Listening to a call as a group   [Feature] [8] [0] [2]

You can let people in your office listen in on a call using Group Listening.

• Press [Feature] [8] [0] [2].

You hear the caller's voice through your telephone's speaker. Continue to speak to the caller through the telephone receiver. Your telephone's microphone is off, so the caller will not hear people in your office.

Canceling Group Listening   [Feature] [#] [8] [0] [2]

• Press [Feature] [#] [8] [0] [2].

Group Listening is also canceled automatically when you hang up.

Tip - *Keep the receiver away from the speaker, or you may hear feedback. The higher the volume, the more the feedback. Press* [Ris] *to prevent feedback when hanging up.*

Using Handsfree/Mute

The ability to use Handsfree has to be turned on or off for each telephone. The type of Handsfree can also be changed, see "Changing Handsfree for a telephone" on page 42.

You must also turn on Handsfree for a telephone to be able to use a headset.

Answering calls without lifting the receiver

- Press the line button for the ringing call. (This step is not necessary if you have a prime line assigned to your telephone.)

- Press [Handsfree Mute]. The telephone's internal microphone and speaker are automatically turned on.

Handsfree is not available for an M7100 telephone.

Tip - *Direct your voice toward the telephone. The closer you are to the telephone, the easier it is for the microphone to transmit your voice clearly to your listener.*

Making calls without lifting the receiver

- If you don't have a prime line assigned to your telephone, press a line button.

- Press [Handsfree Mute]. The telephone's internal microphone and speaker are automatically turned on.

- Dial your call.

- Speak normally.

Muting Handsfree

You can switch off the telephone microphone so that you can speak privately to someone in your office while you are on a handsfree call.
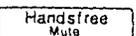
- Press [Handsfree Mute]. The microphone is turned off.

You can turn the microphone back on again and continue your handsfree call.

- Press [Handsfree Mute].

Changing a regular call to handsfree
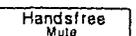
- Press [Handsfree Mute] and hang up the receiver.

Changing a handsfree to a regular call

- Lift the receiver.

Using Handsfree

The indicator next to [Handsfree Mute] is solid when you have Handsfree turned on. It flashes when you mute the microphone.

Wait for your caller to finish speaking before you speak. The microphone and speaker cannot both be on at once. Your caller's voice may be cut off if you both speak at the same time. Noises such as a tapping pencil could be loud enough to turn on your microphone and cut off your caller's speech.

To prevent a possible echo, keep the area around your telephone free of paper and other objects that might screen your microphone. Turning down the microphone's volume (press ◄▮ ▮◄» while speaking) also prevents echoes. When you change the volume level, both the microphone and speaker volume are adjusted to prevent feedback problems.

Place the telephone so that any unavoidable local noise (such as an air conditioner) is behind it. This limits the amount of disruptive background noise.

Tip - *In open-concept environments, use the receiver when handsfree communication is not necessary or when you need privacy during a call. Another option is to use a headset.*

Changing Handsfree for a telephone

You can program the type of Handsfree used with each telephone.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press ⌊Show⌋ and enter the internal number of the telephone you wish to program.

4. Press ⌊Show⌋ twice.
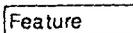
5. Press ⌊Next⌋ three times.

6. Choose a setting at Handsfree: using the CHANGE button.

There are three ways to set Handsfree for an individual telephone:

Handsfree:None CHANGE	Handsfree is not available to the telephone.
Handsfree:Auto CHANGE	You can make or answer a call without having to pick up the receiver or press ⌊Handsfree Mute⌋. The telephone's internal microphone and speaker turn on automatically when you press a line or intercom button to make or answer a call.
Handsfree:Std CHANGE	A standard version of Handsfree described "Using Handsfree/Mute" on page 40.

For other displays, see "Common feature displays" on page 167.

Both Auto and standard Handsfree allow you to use a headset with a Norstar telephone.

A Handsfree/Mute button is automatically assigned to a telephone that is programmed with Handsfree and is always located in the lower right-hand corner of the telephone.

Changing Handsfree Answerback for a telephone

Handsfree Answerback allows you to answer a voice call without lifting the receiver. It is always turned off for an M7100 telephone.

You can turn Handsfree Answerback on or off for a telephone that is programmed to use Handsfree.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press ⌊Feature⌋ ⌊*⌋ ⌊*⌋ ⌊2⌋ ⌊6⌋ ⌊6⌋ ⌊3⌋ ⌊4⌋ ⌊4⌋.

Making a call private

If a line is programmed to not have privacy, you can turn privacy or for a call, preventing other people with the same line from joining your conversation.

- Press [Feature] [8] [3].

Checking the length of a call using Call Duration Timer

[Feature] [7] [7]

By pressing [Feature] [7] [7], you can see how long you spent

- on your last call, or

- how long you have been on your present call.

Displays

21 02:47	The display shows the last call you made, or the current call, and the total elapsed time in minutes and seconds.
Line001 01:45	You parked your last call. The display shows the length of time the call was parked. You cannot see the length of time a call was parked unless the call is active at your telephone or has just been released by your telephone.

Disconnecting by accident

If you accidentally drop the receiver back into the telephone cradle while answering a call, you can quickly retrieve the call.

- Pick up the receiver again or press [Handsfree Mute] within one second to be reconnected to your call.

:

Making calls

There are many ways to make a call. Depending on programming and the type of call, these are the ways to make a call:

- Pick up the receiver and dial. The Norstar system supports three methods of dialing. See "Changing how you dial your calls" on page 49.

- Pick up the receiver, press a line button, and dial (if the call is not on your prime line).

- Press [Handsfree Mute] and dial (to talk without using the receiver). See "Using Handsfree/Mute" on page 40.

- Press [Handsfree Mute], press a line button, and dial (to talk without the receiver and if the call is not on your prime line).

- Press a line button and dial (to talk without the receiver and if Automatic Handsfree is assigned to your telephone).

- Use one of the features that make dialing easier. See "Time savers for making calls" on page 67.

Displays

21 busy PRIORITY LATER	The telephone you have called has no internal lines available. Press LATER to use the Ring Again or Message features or press PRIORITY to make a priority call.
9_ QUIT BKSP	You are dialing using Pre-Dial. To erase an incorrect digit, press the left end of ◀) [ ] ◀)) or BKSP. When the number is complete, select a line or lift the receiver.
95551234 TRANSFER	This prompt remains on your display as long as you are on a call you have dialed. To transfer the call, press TRANSFER.
Already joined	Your telephone is already connected to the telephone you are trying to call. Check your active line buttons, and return to that call.
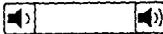
Calling 21 PRIORITY LATER	Wait for the telephone to be answered. If no one answers, press LATER to use the Ring Again (page 52) or Message (page 94) feature, or press PRIORITY to make a priority call.
Can't ring again	You cannot use Ring Again on your current call. You can only use Ring Again while you have a busy signal on an internal call or line pool request or while an internal call is ringing.
Do not disturb PRIORITY LATER	The telephone you are calling has Do Not Disturb turned on. Press LATER to use the Ring Again or Messages features, or press PRIORITY to make a priority call.
Expensive route	You have dialed a number, but the least expensive route that the system is programmed to use is busy. Unless you release the call, it will go through on a more expensive route.
Hidden number	The last number you dialed or the number you saved for Saved Number Redial was a speed dial number that displayed a name rather than the number. The number will be dialed correctly, but you cannot see it.
Line denied	You have attempted to use someone else's private line.
Line001 TRANSFER	Enter the digits of the number you want to dial.
No last number	You have not dialed an external telephone number since the last power interruption or system reset.
No line selected	Either you have no prime line or your prime line is busy. Select a line manually before dialing.
Not in service	You have entered the number of a telephone that is not in service.
On another call LATER	The telephone you have called is on another call. Press LATER to use the Ring Again or Message features.

Restricted call	The call you are trying to make has been restricted in programming. A possible reason is time-of-day restrictions on certain calls.
Ring Again? YES NO EXIT	Press YES to use Ring Again. Press NO to send a message. See "Sending messages using the display" on page 94 and "Turning on Ring Again" on page 52.
Select a line	Either you have no prime line, or the prime line is in use, or the line programmed for an autodial number, speed dial number, or Hotline is in use. Select a line and dial again.
Send message? YES NO	Press YES to send a message. See Messages.

For other displays, see "Common feature displays" on page 167.

Choosing a line using a line button

You have one line button for each line assigned to your telephone. Press the line button to select the line you want to answer or use to make a call. Having several line buttons allows you immediate access to more than one line.

The M7100 telephone has two intercom paths which are used instead of line buttons to answer and make calls. Each M7100 can be assigned two lines. You can press [Hold] to switch between two calls, one active and one on hold.

Line pools

A line pool is a group of external lines that can be shared by many telephones. You can use a line in a line pool to make an external call.

The Norstar Compact ICS can have three line pools, and a telephone can be programmed to access any number of them.

A line pool access code is a number you dial to get a line pool. The access code can be up to four digits long. You can have several different line pools for your system, each one giving you access to a different set of external lines. It is one way of sharing lines across telephones in a system.

Your installer or customer service representative programs the line pool access codes and gives each telephone access to a line pool.

Everyone in the office should have a list of the line pool access codes for the line pools their telephones can use.

Using a line pool to make a call   `Feature` `6` `4`

- Press `Feature` `6` `4`.

- Enter a line pool access code.

If you have a free internal line, you can make a call using a line pool without entering the feature code first.

- Select an internal line (intercom) and dial the line pool access code.

Tip - *If no lines are available in the line pool, you can use Ring Again at the busy tone. You will be notified when a line in the line pool becomes available. See "Using Ring Again" on page 52.*

Programming a memory button with a line pool feature code

When you program a button with the line pool feature code, you must enter a line pool access code after the feature code. The programmed line pool button accesses a specific line pool, not the line pool feature. See "Programming feature buttons" on page 108 for more information.

If you program a button with an indicator to access a line pool, when all the lines in a line pool are busy, the indicator for the line pool button turns on. The indicator turns off when a line becomes available.

Changing how you dial your calls   `Feature` `*` `8` `2`

- Press `Feature` `*` `8` `2`.

- Press `#` or NEXT until the dialing mode you want appears.

- Press [Hold] or OK to select the displayed dialing mode.

The dialing modes feature code cannot be programmed onto a memory button.

Using Standard Dial

Standard Dial lets you make a call by selecting a line and dialing the number. If you have a prime line, it is selected automatically when you lift the receiver or press [Handsfree Mute].

You cannot use Standard Dial on an M7100 telephone unless you pick up the receiver first. If you have an M7100 telephone, use the Automatic Dial or Pre-Dial feature for on-hook dialing.

Using Automatic Dial

Automatic Dial lets you dial a number without selecting a line. Your prime line is selected as soon as you start dialing a number.

Automatic Dial does not work if your telephone has no prime line or if your prime line is in use.

Telephones connected to an analog terminal adapter (ATA) cannot use Automatic Dial.

Using Pre-Dial

Pre-Dial lets you enter a telephone number, check it, then change it before actually making the call. The call is not dialed until you select a line or line pool, or pick up the receiver. You can pre-dial both external and internal numbers. You must, however, select the correct type of line (external or internal) for the type of number you have entered.

Tip - *If your telephone starts ringing while you are pre-dialing a number, you can stop the ringing by turning on Do Not Disturb ([Feature] [8] [5]). This does not affect numbers you are entering.*

You cannot pre-dial a telephone number if all the lines on your telephone are busy.

When the internal number you have called is busy

Priority Call

If you get a busy signal or a Do Not Disturb message when you call someone in your office, you can interrupt them. Use this feature for urgent calls only.

Making a priority call

- Press Feature 6 9.

- Wait for a connection, then speak.

A person who receives a priority call while on another call has eight seconds to accept or block the call. For information on blocking calls see "Stopping calls" on page 122. If the person does nothing, the priority call feature puts their active call, including conference parties, on Exclusive Hold and connects your call.

Giving a telephone the ability to make priority calls

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press Feature * * 2 6 6 3 4 4.

2. Press 2 3 6 4 6 (the default System Coordinator password).

3. Press Show and enter the internal number of the telephone you wish to program.

4. Press Show twice.

5. Press Next nine times. The display shows Priority call:.

6. Press CHANGE to choose Y (Yes) or N (No).

Displays

Call blocked	You tried to place a priority call to another Norstar telephone. The person you called has blocked your call. Try to call later.

Please wait	The party you are calling has eight seconds to decide whether to accept or reject your priority call.
Priority denied	The telephone you are calling has already received a priority call or is unable to receive priority calls.

You can make a priority call only while your telephone displays:

```
21 busy
PRIORITY    LATER

Calling 21
PRIORITY    LATER

Do not disturb
PRIORITY   LATER

On another call
PRIORITY   LATER
```

Using Ring Again

Feature   2

Use Ring Again when you call someone on your Norstar system and their telephone is busy or there is no answer. Ring Again can tell you when they hang up or next use their telephone. You can also use Ring Again to tell you when a busy line pool becomes available.

Turning on Ring Again

Feature   2

- Press Feature 2 before you hang up.

Using Ring Again cancels any previous Ring Again requests at your telephone.

Canceling Ring Again

Feature   # 2

To cancel a Ring Again request:

- Press Feature # 2.

Displays

Can't ring again

You cannot use Ring Again on your current call. You can only use Ring Again while you have a busy signal on an internal call or line pool request, or while an internal call is ringing.

Ring Again?
YES   NO   EXIT

Press YES to use Ring Again. Press NO if you prefer to send a message.

Auto Attendant

The built-in auto attendant automatically answers and directs incoming calls, which can reduce or eliminate the workload for the person who answers incoming calls for an office. The auto attendant carries out three tasks: System Answer, Custom Call Routing (CCR) and direct extension dialing.

Your installer or customer service representative enables the Auto Attendant for your Compact ICS, and programs which lines will be answered by CCR.

System Answer

The system answer feature simplifies the job of answering calls by making sure all calls are answered within a set number of rings. When calls go unanswered at the telephone monitored by System Answer (called the attendant set), Norstar answers the call and plays a greeting. It then puts the call on hold until someone can retrieve it.

If the caller knows the internal number he or she wants to reach, or is using the Norstar remote features, he or she can dial while the System Answer greeting is playing.

System Answer monitors all external calls that appear as a flashing line button on the attendant telephone, including incoming line groups, Answer buttons and external calls that have been transferred. After System Answer has played the greeting, the call will be put on hold at the same line indicator where it first appeared. The feature does not answer calls from internal extensions.

Custom Call Routing (CCR)

The job of answering and transferring calls can be taken over by CCR. When someone calls on lines monitored by CCR, the system answers the call and plays a greeting you have recorded. Callers using a tone dial set can then:

- direct their call by pressing a digit as instructed by your greeting (for example, "to reach our salespeople, press 4")

- enter an internal telephone number (a fast way for regular callers to reach someone directly)

- access remote features

- reach an attendant by pressing a single digit (a way to transfer out of CCR and talk to someone)

You can use two greetings with CCR: one for when your office is open and one for when it is closed. The business closed greeting may announce your office hours and give a digit to press to leave a message (if you have a voice mail system or answering machine), and callers can also dial an internal number to reach someone who is working after hours.

If CCR forwards a call and it goes unanswered (either because the caller enters an invalid extension number or no one is there to answer the call) the call will be redirected to ring at the prime telephone after the usual Callback delay. Once a caller has dialed out of the CCR greeting, he or she will not be able to return and make another selection.

CCR groups

CCR allows callers to reach groups of telephones by dialing a single digit they select from the audio menu. You create the CCR groups in programming.

When a call is sent to a CCR group in which all the telephones have the same programming, the call will go to the telephone with the lowest internal number.

If the telephones in a CCR group have different programming, the call is handled by the telephone programming that takes effect first. For example, if a telephone in a group forwards after two rings, it will forward the call from CCR before the telephones in the group that are programmed to forward after three rings.

A CCR call will also be forwarded by Forward on Busy, the Call Forward feature code, and Callback programming. Be sure to keep this in mind when programming the telephones in your CCR groups.

When a call that was handled by CCR rings at your telephone, call information will appear automatically on the display. You must

subscribe to a call display service and have the proper equipment installed in your system for this feature to work. If CCR is programmed to answer the call in less than two rings, the call information may not be captured and forwarded to the telephones ir the CCR group.

Direct extension dialing

Both System Answer and CCR give the caller the opportunity to dial an internal telephone number or use remote feature access like direct inward system access (DISA). This means callers do not have to wait to reach the person they are calling and only the person they are calling has to handle the call.

Customizing System Answer and CCR

Your installer or customer service representative turns on System Answer and CCR for your system. They also assign which lines can be answered with CCR. Until this master control is turned on, the Auto Attendant features are not available.

It is recommended that the CCR not be programmed to answer lines that will be answered by System Answer at the attendant telephone (usually the reception telephone).

It's a good idea to plan how you will customize System Answer and CCR before you start programming.

- Decide which telephone will be the attendant telephone (where calls can be answered automatically and put on hold).

- For pre-recorded greetings, decide which language will be used to greet callers. If you want two languages, decide which will be heard first.

- Write down the greetings or scripts that you will record as the company greeting and business closed greeting (see examples in "Recording customized greetings for System Answer and CCR" on page 65).

- Organize your telephones into groups and decide what number a caller will use to reach each group. Using the groups and numbers you have created, write down the greeting or "script" that will be heard as the CCR.

- Decide how many times a call will ring before System Answer and CCR will answer. Be sure it will not conflict with voice mail or other auto attendant applications you may be using. If CCR lines ring at the attendant set, CCR and System Answer can also conflict.

- Use a programming session and feature codes to create your custom System Answer and CCR.

- Test both System Answer and CCR to make sure they are working properly.

- Make sure your installer or customer service advisor has programmed your system to use the held line reminder tone. This will provide another indication that System Answer has placed a call on hold.

Turning System Answer on or off   Feature   ⁕ 8 3 1

System Answer can be turned on and off at any telephone in the system. System Answer only handles calls that ring at the attendant telephone (attendant set).

- Press Feature ⁕ 8 3 1 . The display shows the current status of System Answer.

- Press CHANGE or # and enter the System Coordinator password or Basic password (the default passwords are 2 3 6 4 6 and 2 2 7 4 2) to turn the feature on or off.

- Press OK or ⁕ to confirm the change.

Because System Answer answers calls and then puts them on hold, the feature should be turned off when no one is at the telephone to retrieve the calls.

Tip - *You can program the feature code for turning System Answer and CCR on or off on a memory button with an indicator at the attendant telephone. You will know that the feature is turned on when the indicator is lit at the attendant set.*

Turning CCR on or off

⌈Feature⌉ ⌈*⌉⌈8⌉⌈3⌉⌈2⌉

- Press ⌈Feature⌉ ⌈*⌉⌈8⌉⌈3⌉⌈2⌉. The display shows the current status of CCR.

- Press CHANGE or ⌈#⌉ and enter the System Coordinator password or Basic password (the default passwords are ⌈2⌉⌈3⌉⌈6⌉⌈4⌉⌈6⌉ and ⌈2⌉⌈2⌉⌈7⌉⌈4⌉⌈2⌉) to select a setting: OFF, Bus. Open, or Bus. Closed.

- Press OK or ⌈*⌉ to confirm the change.

See the section on recording greetings for a description of the Business Open and Business Closed greetings used with CCR.

Choosing the attendant telephone

Programming allows you to choose a telephone to be the attendant telephone (attendant set). External calls that go unanswered at this telephone are handled by System Answer.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press ⌈Feature⌉ ⌈*⌉⌈*⌉⌈2⌉⌈6⌉⌈6⌉⌈3⌉⌈4⌉⌈4⌉.

2. Press ⌈2⌉⌈3⌉⌈6⌉⌈4⌉⌈6⌉ (the default System Coordinator password). The display shows Terminals&Sets▶.

3. Press ⌈Back⌉ twice. The display shows System prgrming▶

4. Press ⌈Show⌉ twice. The display shows the internal number of the current attendant telephone.

5. Press CHANGE and enter the internal number of the telephone you want to assign as the attendant telephone.

Changing the language used by System Answer and CCR

The programmed greetings used with the auto attendant features are available in three languages. You can change which language callers will hear or program the system to play greetings in a second language as well.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password). The display shows Terminals&Sets▶.

3. Press [Back] twice.The display shows System prgrming▶.

4. Press [Show] twice. The display shows the setting for the attendant telephone.

5. Press [Next]. The display shows Language▶.

6. Press [Show]. The display shows the first language used in greetings.

7. Press CHANGE to select a language: English, French or Spanish.

8. Press [Next]. The display shows the second language callers will hear. Press CHANGE to select a different language or NONE.

Setting the number of rings before System Answer answers a call

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Back] twice.

4. Press [Show] twice.

5. Press [Next] twice. The display shows System Answer...

6. Press [Show].

7. Press CHANGE until you see the appropriate number of rings (between 1 and 12).

If the system is busy answering calls, the line will ring until System Answer can retrieve the call.

Setting the number of rings before a caller hears the CCR greeting

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Back] twice.

4. Press [Show] twice.

5. Press [Next] three times. The display shows CCR▶.

6. Press [Show].

7. Press CHANGE until you see the appropriate number of rings (between 1 and 12).

If the system is busy answering calls, the line will ring until CCR can retrieve the call.

If CCR is programmed to answer the call in less than two rings, the call information may not be captured and forwarded to telephones in the CCR group.

Adding or removing telephones from a group used with CCR

The greeting you create for CCR tells a caller to press a number to reach a group of telephones. You add or remove telephones from these groups (CCR groups) in programming.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Back] twice.

4. Press [Show] twice.

5. Press [Next] three times. The display shows CCR▶.

6. Press [Show   ].

7. Press [Next   ] . The display shows CCR groups▶.

8. Press [Show   ] and enter the number of the group to which you want to make changes.

9. Press [Show   ] and enter the internal number of the telephone you want to add or remove from the group.

10. Press CHANGE to select the status of the telephone in the group: Assigned, Unassgnd.

You can have a total of nine CCR groups. Each group can include up to 20 telephones.

Using the pre-recorded greetings

Pre-recorded greetings are always used when the System Answer or CCR are turned on, even if you don't create personalized recordings. The pre-recorded greetings cannot be changed, and you cannot turn the pre-recorded greetings off.

Incoming calls at the attendant telephone will hear the System Answer greetings. Lines that are set up to be answered by CCR will hear a different set of greetings. They are:

- *All of our operators are busy.*

- *If you know the extension that you want, and are using a touch-tone phone, please dial it now.*

- *Or, hold the line and your call will be answered as soon as possible.*

- *Thank you for calling.*

In the next section, these recordings appear (in italics) as part of examples of complete greetings that callers might hear. "Thank you for calling" is heard when the caller does not respond to the Business closed greeting after it has been repeated, before the system disconnects the caller.

Using customized greetings for System Answer and CCR

Norstar uses both greetings you record and pre-recorded greeting to tell callers how their call is being handled.

The following examples use greetings recorded for use at a company called Bluebird Consulting. You can use them as models for when you make your own recordings.

The pre-programmed parts of the greetings are shown in italics.

System Answer on:

You have reached Bluebird Consulting. *All of our operators are busy. If you know the extension that you want, and are using a touch tone phone, please dial it now. Or, hold the line and your call will be answered as soon as possible.*

CCR, Bus. open:

You have reached Bluebird Consulting. To reach one of our sales agents, press 1. To contact our accounting office, press 2. To reach Joan Smithers, press 3. To talk to an attendant, press 0. To repeat this menu, press star. *If you know the extension that you want, and are using a touch tone phone, please dial it now. Or, hold the line and your call will be answered as soon as possible.*

CCR, Bus. closed:

You have reached Bluebird Consulting. Our offices are closed. Our business hours are 8 a.m. to 5 p.m., Monday through Friday, Pacific Standard Time. *If you know the extension that you want, and are using a touch tone phone, please dial it now.*

Tip - *For better sound quality in your greetings, use the handset for recording greetings (not the handsfree microphone).*

Changing the time available for customized greetings

Each customized greeting has a maximum length by default.

Greeting	Maximum length
Company	5 seconds (cannot be changed)
Caller menu (CCR)	18 seconds
Business closed	9 seconds

The length of time available for your CCR and Business closed greetings can be changed using [Feature] [*] [8] [3] [3]. You have a total of 27 seconds to divide between the two greetings.

> If you change the maximum length of the CCR and Business closed greetings, the greetings you have recorded will be erased. The Company greeting will not be erased.

- Press [Feature] [*] [8] [3] [3] and enter the System Coordinator password (the default password is [2] [3] [6] [4] [6]). The display shows Change rec time?

- Press YES. The display shows Caller menu.

- Using the dial pad, enter the length of time you wish to use for the CCR greeting in seconds (a number between 0 and 27).

- Press OK. Whatever time remains of the 27 seconds will be the new maximum time for your Business closed greeting.
  For example, if you enter 15 seconds for the CCR (Caller menu) greeting, your Business closed greeting can be up to 12 seconds long.

Recording customized greetings for System Answer and CCR

Feature ☐ [*] [8] [3] [3]

The customized greetings are not available to System Answer and CCR while you are recording. Callers will hear only the pre-recorded greetings.

- Press Feature ☐ [*] [8] [3] [3] and enter the System Coordinator password (the default password is [2] [3] [6] [4] [6]).

- Press NO, or see "Changing the time available for customized greetings" on page 64 to adjust the recording times.

- Press REC to record the Company greeting.

- Press OK when you have completed your recording.

A company greeting is the first greeting your callers will hear. It can be up to five seconds long. Example: "You have reached Bluebird Consulting."

- Press NEXT, then REC to record the CCR greeting.

The greeting used with CCR matches the destinations you have chosen for each digit (see "Programming or changing CCR destinations" on page 66) and can be up to 18 seconds long (or the length you have chosen).

Example: "To reach one of our sales agents, press 1. To contact our accounting office, press 2. To reach Joan Smithers, press 3. To talk to an attendant, press 0. To repeat this menu. press star."

- Press NEXT, then REC to record the Business closed greeting.

- Press OK when you have completed your recording.

This greeting can be up to nine seconds long (or the length you have chosen). You don't have to say the name again in your after-hours greeting because it is always played after the company greeting.

Example: "Our business hours are 8 a.m.to 5 p.m., Monday through Friday, Pacific Standard Time."

Tip - *If you have recorded your greetings, you can press NEXT and go right into the menu for programming destinations for CCR.*

Programming or changing CCR destinations

- Press [Feature   ] [*] [8] [3] [3] and enter the System Coordinator password (the default password is [2] [3] [6] [4] [6]).

- Press NEXT until the display shows Dial 0: and the current destination when the caller presses zero.

- Press CHANGE to select the appropriate destination.

Each number from zero to nine and * can direct a call to the attendant telephone or one of the nine CCR groups. The * can be set up to make the system play the CCR greeting again (Repeat). If a digit is set to None, it has no destination.

- Using NEXT and CHANGE, select the destinations for the remaining digits.

Testing your custom System Answer and CCR

If you have more than one external line, you can call in to hear your greetings by dialing the number used by external callers to call the attendant set or a line that is answered using CCR.

To call systems with only one external line, you will have to go to a

Time savers for making calls

Storing a number on a memory button for Autodial

You can program memory buttons for one-touch dialing of internal or external telephone numbers.

Buttons used for lines, incoming line groups, answer or Handsfree/Mute cannot be used as autodial buttons.

If the power to your Norstar system is off for more than three days, autodial numbers (as well as some other system programming) may be lost from the memory.

Adding an autodial button

| Feature | [*] [1] or | Feature | [*] [2] |

- Press [Feature] [*] [1] to program an external number or [Feature] [*] [2] for an internal number. Choose a button and then enter the number as if you were dialing it.

When programming Autodial you can use:

- Last Number Redial

- Saved Number Redial

- destination codes (choose [Intercom] as the line)

- host system signalling

Choosing a line for Autodial

To include a line selection for an external number, press the line or intercom button before you enter the number. To select a line pool, press a programmed line pool button, or press [Intercom] and enter a line pool access code.

If you select a line before pressing the autodial button, the call will go out on the line you have selected instead of the line that is part of the autodialer programming.

For the M7100 telephone, an external autodialer can only be programmed using a line and not a line pool.

Tip - *If you do not include a line selection in an autodial number, the call will use your prime line (if you have one).*

Using intercom as the line for Autodial

If you press [Intercom] as the line for an external autodial number, you must include a valid line pool access code or a destination code. If line pool access codes or destination codes are changed, remember to reprogram autodial numbers as well.

Displays

987_ QUIT BKSP OK	Continue to enter digits until the number is complete. Press [◄] [◄)] or BKSP to erase an incorrect digit. Press [Hold] or OK when you are finished.
Autodial full	The memory allotted to autodial numbers in your Norstar system is full.
Button erased	While programming external Autodial, you erased the button by pressing [Hold] or OK before entering any digits.
Enter digits QUIT OK	Enter the number you wish to program (choosing the line first if necessary) exactly as you would if you were making a call.
Intercom #: _ QUIT	Enter the internal telephone number you wish to program.
Invalid number	You are programming an internal autodial button and have entered a number that is not an internal number on your system. Enter a valid internal number. If the number you are entering is a destination code, use external autodial.
Press a button QUIT	Press the memory button you want to program.

Program and HOLD	Enter the number you want to program onto the button, then press [Hold].
Program and OK QUIT OK	Enter the number you want to program onto the button, then press [Hold] or OK. You may include a line or line pool selection in an autodial sequence by selecting the line before entering any digits.
Programmed	The number is stored on the button.

For other displays, see "Common feature displays" on page 167.

Using Last Number Redial [Feature] [5]

You can redial the last external number you dialed.

• Press [Feature] [5].

Last Number Redial records a maximum of 24 digits.

Tip - *If you have a programmed Last Number Redial button, you can use Button Inquiry ([Feature] [*] [0]), then press the Last Number Redial button followed by [#]) to check the last number before you dial it.*

Preventing a telephone from using Last Number Redial

Last Number Redial can be restricted at individual telephones.

You will need the programming template found at the front of this guide. See Getting Started for more information.

• Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

• Press [2] [3] [6] [4] [6] (the default System Coordinator password).

• Press [Show] and enter the internal number of the telephone you wish to program.

• Press [Show].

• Press [Next] three times. The display shows Restrictions.

- Press [Show] twice.

- Press [Next]. The display shows Allow last no:.

- Press CHANGE to choose Y (Yes) or N (No).

Displays

Hidden number	The last number you dialed was a speed dial number that displayed a name rather than the number. The number will be dialed correctly, but you cannot see it.
No last number	You have not dialed an external telephone number since the last power interruption or system reset.

Tip - *You can copy a number onto an autodial button using Last Number Redial.*

Using Speed Dial

Norstar provides two types of speed dialing: system and personal. System Speed Dial programming allows you to assign two-digit speed dial codes to the external numbers your co-workers call most frequently. User Speed Dial programming allows individuals to program their own speed dial numbers.

Speed dial numbers are subject to the same restriction filters as regularly dialed numbers. Your installer or customer service representative can program system speed dial numbers to bypass dialing restrictions.

Speed dial numbers may include host system signaling codes.

Making a speed dial call   [Feature] [0]

You can quickly dial external telephone numbers that have been programmed onto speed dial codes.

- Press [Feature] [0].

- Enter the appropriate two-digit speed dial code.

Changing and adding System Speed Dials

System Speed Dial codes are numbered from 01 to 70. The system coordinator assigns numbers to System Speed Dial codes for the entire system. See "Adding or changing a system speed dial" on page 14.

Tip - *There is no difference between using User Speed Dial and using System Speed Dial. They differ only in how you program them.*

Adding or changing User Speed Dial [Feature] [*] [4]

To add or change a User Speed Dial number on your telephone:

- Press [Feature] [*] [4].

- Enter a two-digit code from 71 to 94 that you want to associate with a telephone number.

- To include a line selection for this number, press the line or intercom button. To select a line pool, press a programmed line pool button, or press [Intercom] and enter a line pool access code. For the M7100 telephone, you can only select a line pool.

- Enter the number you want to program.

- Press [Hold] or OK.

Displays

01:9_		
CANCL	BKSP	OK

Continue entering the number you wish to program. You can change the number by pressing BKSP or [◄] [►]. When you are finished, press [Hold] or OK.

Enter digits	
QUIT	OK

Enter the telephone number you wish to program exactly as you would if you were dialing it normally. When you are finished, press [Hold] or OK.

Invalid code

You have entered a code outside the code range (01-70 for system, 71-94 for personal).

No number stored

There is no number stored on the speed dial code you have dialed.

Pro9ram and HOLD	If you want to program a line or line pool selection for this speed dial number, select the line or line pool. Otherwise, enter the telephone number exactly as you would if you were dialing it normally. When you are finished, press [Hold].
Pro9ram and OK QUIT OK	If you want to program a line or line pool selection for this speed dial number, select the line or line pool. Otherwise, enter the telephone number you wish to program exactly as you would if you were dialing it normally. When you are finished, press OK.
Select a line	There is no line associated with the speed dial number you are trying to use. Select a free external line or line pool and enter the speed dial feature code again.
Unknown number	The system cannot dial the number stored. Reprogram the number.

For other displays, see "Common feature displays" on page 167.

Using Saved Number Redial   [Feature   ] [6] [7]

You can save the number of the external call you are on (provided you dialed the call) so that you can call it again later. Each telephone can save one number at a time with Saved Number Redial, not one number for each line.

Tip - *You can copy a number onto an autodial button using Saved Number Redial.*

Saving a number
- Press [Feature   ] [6] [7] while you are still on the call.

Saved Number Redial records a maximum of 24 digits.

Dialing a saved number
- Press [Feature   ] [6] [7] when you are not on a call.

If you have a programmed Saved Number Redial button, you can use Button Inquiry ([Feature] [*] [0]) to check the last number before you dial it.

Preventing a telephone from using Saved Number Redial

Saved Number Redial can be restricted at individual telephones.

You will need the programming template found at the front of this guide. See Getting Started for more information.

- Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

- Press [2] [3] [6] [4] [6] (the default System Coordinator password).

- Press [Show] and enter the internal number of the telephone you wish to program.

- Press [Show].

- Press [Next] three times. The display shows Restrictions.

- Press [Show] twice.

- Press [Next] twice. The display shows Allow saved no:.

- Press CHANGE to choose Y (Yes) or N (No).

Displays

Hidden number	You have saved a speed dial number that displays a name rather than the number. The number will be dialed correctly, but you cannot see it.
No number saved	You have tried to save the number of an incoming call. You can only save numbers that you have dialed yourself.

Handling many calls at once

Using Hold

You can temporarily suspend a call by pressing [Hold].

When a call is on hold, its indicator flashes on all telephones that have access to the line. The call can be retrieved from any of these telephones.

On the M7100 telephone, [Hold] alternates between two lines; one active, one on hold. The M7100 telephone cannot retrieve a call placed on hold by another telephone.

Retrieving a held call

You can connect to a call on hold by pressing the flashing line button of the held call.

Holding automatically

If your line has been programmed with full autohold, you can switch from one call to another and have your calls put on hold automatically.

* Press the line button of the caller you want to speak to. Your current caller is put on hold automatically.

Listening on hold

If you have been put on hold, you can hang up the receiver while you wait for the other person to return.

* Press [Hold].

* Hang up the receiver.

* Press the line button of the call. You may hear indications from the far end that you are on hold (for example, tones or music).

- When the person you were talking to returns you will hear them through your telephone speaker. Lift the receiver and talk.

> **Tip -** *If Automatic Handsfree has been assigned to your telephone, you can use the Handsfree/ Mute feature instead of Listen on Hold.*

Holding a call exclusively   `Feature` `7` `9`

You can put a call on Exclusive Hold so that it can be retrieved only at your telephone.

- Press `Feature` `7` `9` or `Feature` `Hold` . The line appears busy on all other telephones, and the call cannot be picked up by anyone else in the office.

Displays

On hold: LINENAM   You have placed one or more calls on hold. The name of the line that has been held the longest is displayed.

Using Call Queuing   `Feature` `8` `0` `1`

If you have more than one call ringing at your telephone, you can choose the call that has the highest priority by pressing `Feature` `8` `0` `1` .

Call Queuing answers incoming external calls before callback, camped, and transferred calls.

Transferring calls

Using the transfer feature   〔Feature 〕 〔7〕 〔0〕

Transfer allows you to direct a call to a telephone in your Norstar system, within the Norstar network, or external to Norstar.

Transferring a call

- Press 〔Feature 〕 〔7〕 〔0〕.

- Call the person to whom you want to transfer the call.

- If you want to talk to the person to whom you are transferring the call, wait for them to answer, and speak to them before proceeding.

- When you are ready to complete the transfer, press 〔Rls 〕 or JOIN.

You cannot use Last Number Redial, Saved Number Redial, a speed dial code, Priority Call or Ring Again to dial the number for a transfer.

Depending on how a private network call is routed, it may not always be possible for the system to return a transferred call to you if the transferred call is not answered. When transferring a call to a private network destination, stay on the line until the person to whom you are transferring the call answers.

You cannot use the Line Pool feature code to access a line pool for a transfer. To use a line pool, use a programmed line pool button, or press 〔Intercom 〕 and enter a line pool access code.

If you have an auxiliary ringer programmed to ring for calls on an external line, and you transfer a call on that line without announcing the transfer, the auxiliary ringer rings for the transferred call.

Transferring external calls

If an external call is transferred to a busy telephone, or not answered after a few rings, the call automatically rings again at the telephone from which it was transferred, and the display indicates that the telephone was busy or that no one answered.

When transferring an external call to an external number, the external call you are trying to transfer must be an incoming call on a disconnect supervised line.

While on a conference call, you can remove yourself from the conference and connect the other two callers using the Transfer feature. However, if both of the other people are from outside the system, at least one of the outside callers must have called you and both of the outside calls must be on disconnect supervision lines.

In certain situations, you may experience lower volume levels when transferring an external call to an external person, or when transferring two external callers from a conference call.

Canceling a transfer

You can reconnect to the person you are trying to transfer at any time before the transfer is complete.

- Press ⌈Feature⌋ ⌈#⌋ ⌈7⌋ ⌈0⌋ or CANCL.

- If you are not reconnected to your original call, press ⌈Rls⌋ and then press the line key of the original call, which is now on hold.

Displays

21>22 CANCL RETRY JOIN	You are talking to the person you want to transfer the call to. Press RETRY if you decide to transfer the call to someone else. Press ⌈Rls⌋ or JOIN to transfer the call.
21 no reply CALLBACK	The person to whom you tried to transfer a call did not answer. Press CALLBACK or the flashing line button to reconnect to the call. On the M7100 telephone, lift the receiver.
Do not disturb CANCL RETRY JOIN	The person to whom you tried to transfer a call has Do Not Disturb active on their telephone. Press JOIN to transfer the call anyway. Press RETRY to transfer the call to someone else. Press CANCL or the flashing line button to reconnect to the call (on the M7100 telephone, press ⌈Feature⌋ ⌈#⌋ ⌈7⌋ ⌈0⌋).

Invalid number CANCL RETRY	You entered an invalid internal number. Press RETRY and enter the number again.
Line001 hung up	The external caller you were transferring hung up before the transfer was complete.
Line001>21 CANCL RETRY JOIN	Press JOIN to transfer the call on line 001 to telephone 21. Press RETRY if, after talking to the person at extension 21, you decide to transfer the call to someone else.
Not in service CANCL RETRY	The telephone to which you are trying to transfer a call is out of service.
Restricted call CANCL RETRY	You cannot transfer the call because of telephone or line restrictions.
Still in trnsfer CANCL RETRY	Complete the transfer in progress before you access a new feature, answer another alerting call or select an outgoing line.
Transfer denied CANCL RETRY	Your transfer cannot be completed for one of these reasons: • All the resources needed to perform a transfer are in use. Try again later. • You have tried to transfer an external call to another external party. Some restrictions apply. • You cannot transfer your conference call.
Transfer to:2_ CANCL RETRY	Press RETRY if you entered the wrong internal number or if the person to whom you are transferring the call is unavailable.

For other displays, see "Common feature displays" on page 167.

Using Camp-on   ⌊Feature⌋ ⌊8⌋ ⌊2⌋

You can transfer an external call to another telephone, even if all its lines are busy.

• Press ⌊Feature⌋ ⌊8⌋ ⌊2⌋.

• Dial the number of the telephone you want to camp the call to.

Camped calls appear on a line button on the receiving telephone, if one is available. If there is no line button available, you receive a message on the display and hear Camp tones.

Each Norstar telephone can handle only one camped call at a time.

Displays

21 Camp max CALLBACK	You tried to camp a call to a telephone that already has a camped call. The call has come back to you. Press the CALLBACK button or the line button to reconnect to the call. On the M7100 telephone, just pick up the receiver.
21 DND CALLBACK	The person to whom you redirected a call has Do Not Disturb active on the telephone. The call has come back to you. Press the CALLBACK button or the line button to reconnect to the call. On the M7100 telephone, just pick up the receiver.
Camp denied	You have tried to camp an internal call. You can only camp external calls.
Camp to: CANCEL	Dial the number of the internal telephone to which the call will be sent.
Camped: 21 CALLBACK	The telephone to which you camped a call did not answer the call. The call has come back to you. Press CALLBACK or the line button to reconnect to the call. On the M7100 telephone, just pick up the receiver.
Line001 hung up	A call you camped has come back to you, but the caller hung up before you could reconnect.
Not in service CALLBACK	The telephone to which you have camped a call is out of service or is being used for programming. The call has come back to you. Press CALLBACK or the line button to reconnect to the call. On the M7100 telephone, just pick up the receiver.
Release a call	The line that the camped call is on is in use or that line does not appear at your telephone. Release the line or release an internal line.

For other displays, see "Common feature displays" on page 167.

Parking a call

Feature ┃ 7 ┃ 4 ┃

You can suspend a call so that it can be retrieved from any telephone in your system.

- Press Feature ┃ 7 ┃ 4 ┃.

- Use the Page feature (Feature ┃ 6 ┃ 0 ┃) or press PAGE to announce the retrieval code displayed by your telephone.

Retrieving a parked call

- Select an internal line. (On the M7100 telephone, pick up the receiver.)

- Dial the Call Park retrieval code.

Using Call Park

When you park a call, the system assigns one of nine codes for the retrieval of the call. These codes consist of the Call Park prefix, which may be any digit from 0 to 9, and a two-digit call number between 01 and 09. For example, if the Call Park prefix is 4, the first parked call is assigned Call Park retrieval code 401.

The Norstar system now assigns Call Park codes in sequence, from the lowest to the highest, until all the codes are used. This round-robin approach means that a greater variety of codes will be used, which will make it easier for a call to reach the right person when more than one incoming call is parked.

The highest call number (the Call Park prefix followed by 09) is used only by telephones or devices connected to the system using an analog terminal adapter (ATA).

Your installer or customer service representative programs both the Call Park prefix and the delay before parked calls are returned to the originating telephone. External calls parked for longer than the programmed delay are returned to your telephone.

Call Park can be disabled by your installer or customer service representative.

Displays

Already parked	The person you were talking to has already parked your call. You cannot park the same call.
Get call first	You have attempted to use Call Park with no active call on your telephone. If the call you wish to park is on hold, reconnect to it before you park it.
Invalid number	You have entered an invalid retrieval code.
No call on: 101	There was no call on the retrieval code you entered.
Park denied	You have tried to park a conference call. Split the conference and park the calls separately. The person who retrieves the calls can reconnect the conference.
Parked on: 402 PAGE EXIT	Record the code shown. Use Page ([Feature] [6] [0]) or press PAGE to announce the call and its retrieval code.
Parking full	All available retrieval codes are in use. Transfer the call or take a message instead.

For other displays, see "Common feature displays" on page 167.

Using Callback

When you direct a call you have answered to another telephone, the system monitors the call to make sure it is answered. If no one answers the call within a set length of time, the system directs it back to you.

Callback generates a variety of displays. Most occur after a set delay and are listed in the index. Some occur immediately if the telephone to which you are directing a call is out of service or otherwise unavailable. These are listed with the descriptions of the specific features like Transfer or Camp-on.

Forwarding your calls

Forwarding your calls to another Norstar telephone

`Feature` `4`

- Press `Feature` `4` and enter the number of the internal telephone to which you want your calls forwarded.

Use Line Redirection to forward calls outside the system.

Canceling Call Forward

- Press `Feature` `#` `4`.

Using Call Forward at your telephone

When you use `Feature` `4`, all calls go to the destination you select, regardless of how Forward on busy and Forward no answer are programmed.

If the telephone to which you forwarded your calls does not have the same external lines as your telephone, the forwarded calls appear on intercom buttons.

If a call is forwarded, it does not ring but the line indicator flashes on your telephone. You can still answer the call by pressing the button next to the flashing indicator.

Tip - *If you are one of a group of people who regularly forward their calls to one another, be aware that it is possible to set up forward loops where a call is forwarded from one telephone to another in a circle, and is never answered anywhere.*

Overriding Call Forward

If you call someone who has their calls forwarded to you, your call rings at that person's telephone even though they are forwarding their calls to you.

Changing the automatic Call Forward settings for a telephone

Call forwarding occurs automatically when a call is not answered or the line is busy. These automatic options are changed in programming.

For step-by-step instructions, see "Change where a call goes when there is no answer" on page 21.

Changing Forward no answer

Forward no answer redirects unanswered calls to another telephone on your Norstar system.

For step-by-step instructions for changing Forward no answer see "Change where a call goes when there is no answer" on page 21.

Line Redirection takes precedence over Forward no answer.

Changing the delay before a call is forwarded

You can assign the number of times that the incoming call rings at your telephone before the call is forwarded. To estimate the delay time in seconds, multiply the number of rings by six.

For step-by-step instructions, see "Change the number of times the telephone will ring before it is forwarded" on page 21.

Forward on busy

Forward on busy redirects your calls to another telephone on your Norstar system when you are busy on a call, or when you have Do Not Disturb activated at your telephone.

For step-by-step instructions, see "Making changes to Call Forward on Busy" on page 23.

Line Redirection takes precedence over Forward on busy. Calls that are redirected by Line Redirection are not affected by any Call Forward features or Call Forward programming.

Telephones that have Forward on busy active can still receive priority calls.

If you are busy on a target line call, another call to that target line is redirected to the prime telephone for that target line.

DND on Busy

When you are busy on a call and a second call comes in, your telephone rings softly to alert you to the second call. If you find this second ring distracting, you can have the system prevent a second call from disturbing you by assigning Do Not Disturb (DND) on Busy to your extension.

When DND on Busy is turned on for the set, internal and private network callers hear a busy tone instead of ringing when you are on the telephone. External callers are transferred to the prime set used in your system.

For step-by-step instructions, see "Change the Do Not Disturb on Busy feature" on page 24.

If you use DND on Busy, the line indicator for an external incoming call still flashes, but your telephone does not ring.

Forward on busy takes priority over DND on Busy.

If an external call uses a target line, the call will be processed according to the programming of the target line. If the target line is busy, the caller may hear a busy tone or be routed to the prime set for the target line regardless of the DND on Busy programming for the telephone.

Call Forward and Voice Mail

If you have a voice mail system and want it to pick up unanswered calls automatically

- use the internal number of your voice mail as the destination when you program Forward no Answer and Forward on busy, or

- make the ring delay greater than the delay used by your voice mail system, if your voice messaging system or service automatically retrieves calls.

Displays

Forward denied	There are several reasons why you may get this message. For instance, you cannot forward your calls to a telephone that has been forwarded to your telephone.
Forward>21 CANCEL	Your calls are being forwarded to telephone 21.
Not in service	Two or more telephones are linked in a forwarding chain, and one of them is out of service or is being used for programming.

For other displays, see "Common feature displays" on page 167.

Line Redirection

Line Redirection lets you send your external calls to a telephone outside the office. You may choose to redirect all your external lines or only some of them.

You cannot use the Line Redirection feature code at either an M7100 telephone or a telephone connected to an ATA.

Turning on Line Redirection

[Feature] [8] [4]

- Press [Feature] [8] [4].

- Select the outgoing line to be used for redirected calls.

- Enter the number to which calls will be redirected (the ways you can do this are listed below).

- Select the lines to be redirected.

Enter the telephone number to which you wish redirect calls to using one of the following methods.

- Press an external autodial button.

- Enter an external telephone number (using no more than 24 digits) then press [Hold] or OK.

- Press [Hold] or OK if the line you have chosen as the outgoing line is a private network line that does not require you to dial digits.

If you use ALL to redirect all your lines, it is important that you wait until all the lines on your telephone light up before pressing [Hold] or OK. If you press [Hold] or OK before all the lines light up, those lines not lit will not be redirected.

Tip - *The line chosen for redirecting calls on other lines can still be used normally when it is not busy on a redirected call. To avoid redirection failing because the chosen line is in use, choose a line pool with several lines in it.*

The system does not check that the number you give for line redirection is a valid one. If you redirect to an invalid number, redirection will fail. Using an autodial button to enter the redirection number helps avoid this possibility. An autodial button used for line redirection must be programmed to use a specific line.

Canceling Line Redirection
[Feature] [#] [8] [4]

- Press [Feature] [#] [8] [4].

- Select the lines you no longer want to be redirected.

Allowing a telephone to redirect calls

You can turn a telephone's ability to redirect calls on and off.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Show] and enter the internal number of the telephone you wish to program.

4. Press [Show] twice.

5. Press [Back] three times. The display shows Allow redirect:.

6. Press CHANGE to select Y (Yes) or N (No).

Turning the redirect ring for a telephone on or off

You can program a telephone to ring briefly (200 milliseconds) when a call is redirected on one of its lines.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Show] and enter the internal number of the telephone you wish to program.

4. Press [Show] twice.

5. Press [Back] twice. The display shows Redirect ring:.

6. Press CHANGE to select Y (Yes) or N (No).

Tip - *If a telephone has redirect ring enabled, it rings briefly for redirected calls on one of its lines even if another telephone set up the line redirection.*

Displays while redirecting lines

Intercom	You selected the intercom button as the facility to place the call on. Enter a line pool code or a destination code.
Line Redirection QUIT ADD REMOVE	Press [*] or ADD to begin redirection. Press [#] or REMOVE to cancel a previous redirection.

No line to use	You have one external line on your telephone, but you need a second line to perform line redirection. Redirect your external line using a line pool as the outgoing line.
Outgoing line	You are attempting to redirect a line and the line you have chosen is the outgoing line you have selected as a destination. You cannot redirect a line to itself. Select another line.
Pool code: _ QUIT	Enter a valid line pool access code.
Redir by 21 OVERRIDE	You have attempted to redirect a line, but someone else has already redirected that line. Press ⁎ or OVERRIDE to override the previous redirection and redirect the line as you wish.
Redirect denied	You have attempted to redirect calls on an incoming line group. You can only redirect calls on individual lines and you cannot redirect calls on an incoming line group.
Select line out QUIT	Select the line that will be used to redirect calls out of the system.
Select line(s) QUIT ALL	Press the lines to be redirected. To undo a line selection, press it again. Press ALL to redirect all your lines.
Select line(s) ALL OK	Continue to press the lines to be redirected. Press [Hold] or OK when you are finished.
Unequipped line	The line you are attempting to redirect cannot be redirected because the hardware does not support redirection.

Displays while canceling redirection

Select line(s) QUIT ALL	Press the lines that are no longer to be redirected. The lines light up as you press them. Once you cancel redirection for a line you cannot restore it by pressing the line again. Press ALL to cancel redirection for all your lines. When you are finished, press [Hold] or OK.

Select line(s)　Continue to press the lines that are no
　　ALL　　OK　longer to be redirected. Press [Hold_____]
　　　　　　　　　or OK when you are finished.

For other displays, see "Common feature displays" on page 167.

How Line Redirection is different from Call Forward

Call Forward forwards all calls that arrive at a particular telephone to
another telephone within the Norstar system. Line Redirection
redirects only the lines you specify, no matter which telephones they
appear on, to a telephone outside the Norstar system. Line
Redirection takes precedence over Call Forward.

Using Line Redirection

You redirect lines at a telephone, but once redirected, the lines are
redirected for the entire system.

You can only redirect lines that appear at line buttons on your
telephone.

You can answer the telephone if it rings while you are in the middle
of programming Line Redirection, but none of the Norstar call
handling features are available until the feature times out. If you
need to use a Norstar feature to process the call, quit Line
Redirection programming by pressing [Feature_____]. Do not press [Rls]
or you will disconnect the call you are trying to process.

While you are programming Line Redirection you will not receive
any indication of calls that do not actually ring at your telephone.

Be careful to avoid redirection loops. If for example, you redirect
your lines to your branch office and your branch office redirects its
lines to you, you can create a redirection loop. If these calls are long
distance, you will end up paying charges.

In certain situations, callers may experience lower volume levels
when you redirect calls to an external location.

Paging

Paging allows you to make announcements over the Norstar system using the telephone speakers, or your loudspeaker system, if one is available.

Making a page announcement

- Press `Feature` `6` `0`.

- Choose a page type.

Page types are:

`1` through the telephone speakers (internal page)

`2` through an external speaker (external page)

`3` both internal and external (combined page)

- If necessary, choose a zone.

- Make your announcement.

- Press `Rls`.

Tip - *Instead of entering the Page feature code followed by the page type, you can enter the following shortcut codes.*

Internal	`Feature` `6` `1`	and zone (1 to 3)
External	`Feature` `6` `2`	(code 2 has no zones)
Combined	`Feature` `6` `3`	and zone (1 to 3)

Activating and deactivating the ability to page

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Show] and enter the internal number of the telephone you wish to program.

4. Press [Show] twice.

5. Press [Next] seven times. The display shows Paging.

6. Press CHANGE to select the setting: Y (Yes) or N (No).

Creating page zones

Each telephone can be assigned to one of three zones for receiving pages.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Show] and enter the internal number of the telephone you wish to program.

4. Press [Show] twice.

5. Press [Next] six times. The display shows Page Zone.

6. Press CHANGE to select the setting: 1, 2, 3, or None.

You can make a telephone part of a page zone only if the telephone has paging set to Y (Yes).

A zone is any set of Norstar telephones that you want to group together for paging, regardless of their location.

Your installer will program whether a tone sounds before a page
begins, and the maximum number of seconds a page can last before
it is automatically turned off.
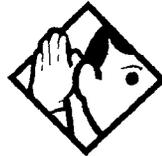
Tip - *Make sure that everyone who needs to
make page announcements has a list showing
which telephones are in which page zones.*

Displays

Enter zone:_ ALL	Enter the desired page zone number (1- 3) or press ALL.
Invalid zone	You have entered a page zone code that is not between 1 and 3.
Page choice: SETS SPKR BOTH	Select the type of page you want. See the list in "Making a page announcement".
Page timeout	The time allotted for paging has expired.
Paging ALL	You are making a page. The display shows the page zone you have chosen. Press Feature or Rls when you are finished.
Paging busy	A page is already being made in the page zone you have requested.

For other displays, see "Common feature displays" on page 167.

Tip - *You can make an announcement to one
person by placing a voice call to their telephone.*

:

Using Page with external paging equipment

When you make a page that uses external paging equipment (external page or combined page), the Long Tones feature is automatically activated for the external paging system only. This allows you to control optional equipment with the Long Tones feature.

Sending messages using the display

The Messages feature allows you to leave a message on the display of another Norstar telephone, and lets you know if you have any messages waiting. The Messages feature uses a message waiting list to keep a record of your internal messages and your (external) voice mail messages (if you subscribe to a voice message service with visual message waiting indication).

Sending a message

`Feature` `1`

You can leave a message on the display of another telephone in your Norstar system. You can send up to four messages to different telephones, including your voice message center.

If your telephone is a direct-dial telephone or a central answering position (CAP), you can send up to 30 messages.

If your reply to a message is forwarded or is answered at another telephone using the Call Pickup feature, the message remains on your telephone until you cancel it or successfully contact the telephone that sent the message.

- Press `Feature` `1`.

- On a telephone with a two-line display, press ADD. (This step is not necessary on a telephone with a one-line display.)

- Enter the internal number of the person you want to send the message to. The person's display reads Message for you.

Canceling a message you have sent

- Press `Feature` `#` `1`. The display reads Cancel for:.

- Enter the internal number of the person to whom you sent the message.

Viewing your messages

`Feature` `6` `5`

You can receive up to four messages from different telephones, including your voice message center. A single message from your voice message center may pertain to several voice messages.

On a telephone with a one-line display

- Press `Feature` `6` `5`. The display shows the first message.
- Press `*` or `#` to move through your messages.

On a telephone with a two-line display

- Press MSG. The display shows the first message you received.
- Press NEXT to move through your messages.

Replying to a message

You can call the person (or your voice message center) who sent a message while you are viewing the message.

On a telephone with a one-line display

- Press `0`.

On a telephone with a two-line display

- Press CALL.

If you wish to call your voice message center using a line other than the programmed line, exit your message list and dial the voice message center telephone number using normal dialing methods.

Removing items from your message list

You can erase a message while you are viewing it in your message list. If the message is from your voice message center, this only erases the message notification at your telephone. You still need to erase the voice message at your voice message center. Refer to your voice message center documentation.

On a telephone with a one-line display

- Press `Hold`.

On a telephone with a two-line display

- Press ERASE.

Viewing messages you have sent | Feature | 1 |

On a telephone with a two-line display, you can view the messages you have sent.

- Press | Feature | 1 |.

- Press SHOW to display your first sent message.

- Press NEXT to move through your sent messages.

Displays

Cancel denied	You have entered an invalid number when attempting to cancel a message.
Cleared>LINENAM NEXT	You have cleared an external message from your message waiting list. The message itself still exists in your voice message center until you erase it there.
In use: 21	You are trying to call from your message waiting list. The line that you are trying to use is being used by the identified Norstar user.
L001:LINENAMVMsg NEXT CALL CLEAR	You are viewing your message list. The display shows the number and name of the line that was used for your voice mail message.
Message denied	You have tried to send a message to an invalid internal number or to a telephone that is out of service.
Message list SHOW ADD EXIT	SHOW appears only if you have outstanding messages. Press SHOW to review messages you have sent. Press ADD to send a new message.
Message to:	Enter the internal number of the telephone to which you want to send a message.
Messages & Calls MSG CALLS	You have one or more messages and one or more new Call Logs. Press | Feature | 8 | 0 | 6 | to change the first line of the display to the current time and date.

No button free	You have no line button free with which to reply to a message.
No number stored	There has been no number programmed for the voice message center. Contact your voice messaging service provider.
Start of list NEXT	Your are at the beginning of your list of messages. Press NEXT to move through your messages.
Their list full	You are trying to send a message to a user whose message waiting list is full.
Your list full	You have tried to send a message but your telephone's list of sent messages is full. Cancel one of the messages you have sent, if possible, or wait until you have received a reply to one of those messages.

For other displays, see "Common feature displays" on page 167.

Using Voice Call

`[Feature    ] [6] [6]`

You can make an announcement or begin a conversation through the speaker of another telephone in the system.

Making a Voice Call

• Press `[Feature    ] [6] [6]`.

Muting Voice Call tones

When a voice call begins at your telephone, you hear a beep every 15 seconds as a reminder that the microphone is on. You can stop it from beeping.

• Pick up the receiver or press `[ Handsfree / Mute ]`.

Answering a Voice Call without touching your telephone

If Handsfree Answerback is assigned to your telephone, you can respond to a voice call without touching the telephone. Handsfree Answerback is not available to the M7100 telephone.

• When someone makes a voice call to you, simply start talking. Your telephone's microphone picks up your voice.

Tip - *Once you have answered a voice call, you can put it on hold, transfer it, or otherwise treat it as a normal call.*

Preventing Voice Calls to your telephone using Voice Call Deny

- Press [Feature] [8] [8]. Voice calls will ring like regular internal calls. Your other calls proceed normally.

Canceling Voice Call Deny

- Press [Feature] [#] [8] [8].

Displays

Dial voice call	Dial the internal number or press the internal autodial button of the person to whom you want to speak.
Microphone muted	Your handsfree microphone is muted. Press [Handsfree Mute] or pickup your receiver to respond to the voice call.
No voice call	The telephone receiving the call cannot accept voice calls for one of the following reasons: it is active or ringing with another call; Call Forward is turned on; Do Not Disturb is turned on; Voice Call Deny is turned on; it is not a Norstar telephone.
	Your call proceeds automatically as a regular ringing call.
Voice call	The line is open for you to speak.

Tracking your incoming calls

Using Call Log

Telephones can automatically log Call Display information for calls on an external line. The line must appear on that telephone but it does not have to be a ringing line.

If your system is equipped with the appropriate equipment and you have subscribed to the call information feature supplied by your service provider, you will be able to capture information about incoming callers in your call log. The same feature is supplied by an ISDN service package that comes with calling line identification.

Call Log creates a record of incoming external calls. For each call the log could contain:

- sequence number in the Call Log

- name and number of the caller

- indication if the call was long distance

- indication if the call was answered (and identity of who answered it)

- time and date of the call

- number of repeated calls from the same source

- name of the line that the call came in on

Call Log can help you to

- keep track of abandoned or unanswered calls

- track patterns for your callers (for example volume of calls and geographical location of calls)

- record caller information quickly and accurately

- build a personal telephone directory from log items

The long distance indicator, as well as the caller's name and number, may not be shown in the log, depending on the Call Display

services provided by your local telephone company and the caller's local telephone company.

To use the features on the following pages, your telephone must be have spaces available in its Call log. Your installer or customer service representative programs each telephone with an appropriate number of spaces.

Call Log options

Feature ⃞ ✻ 8 4

You can select the type of calls that will be stored in your Call Log. Choose from four Autolog options: No one answered, Unanswerd by me, Log all calls, No autologging.

- Press Feature ⃞ ✻ 8 4 . The display shows the current option.

- Press # or NEXT to change the option.

- Press Feature ⃞ or OK to select the display option.

Logging a call manually

Feature ⃞ 8 1 3

If your calls are not automatically logged, you can manually log call information when you are connected to an external call. Storing information for your current call can be helpful in many situations. For example, you may want to:

- record a caller's information without using paper and pencil

- record only selected calls that you choose, as opposed to using Call Log automatically

- quickly record caller information before a caller hangs up

To log an external call manually:

- Press Feature ⃞ 8 1 3 .

Deleting old log items

Feature ⃞ 8 1 5

Your log has a set number of items that it can hold. When it becomes full, new calls cannot be logged. When your log is full, Autobumping

automatically deletes the oldest Call Log item when a new call is logged.

To enable autobumping

- Press ⌈Feature⌉ ⌊8⌋ ⌊1⌋ ⌊5⌋.

To disable autobumping

- Press ⌈Feature⌉ ⌊#⌋ ⌊8⌋ ⌊1⌋ ⌊5⌋.

Viewing your Call Log   ⌈Feature⌉ ⌊8⌋ ⌊1⌋ ⌊2⌋

To view your log

- Press ⌈Feature⌉ ⌊8⌋ ⌊1⌋ ⌊2⌋. The display shows the number or previously read items (old) and the number of new, unread items (new) in the log.

- Press ⌊*⌋ or OLD to view old items; press ⌊#⌋ or NEW to view new items.

- Press ⌊0⌋ or RESUME to display the last item you viewed, the last time you viewed your Call Log.

Names and numbers for external callers are displayed only if you have subscribed to Call Display services from your local telephone company.

Viewing a Call Log item

To view the information for a call log item

- Press ⌈◄⌉ ⌊◄◄⌋ or MORE.

Erasing log items

You should routinely erase log items that you've read, to make space for new items in your log.

- Display the item you want to erase.

- Press ⌈Hold⌉ or ERASE.

- Press ⌊Rls⌋ to exit.

If you accidentally erase an item, you can retrieve it.

- Press [Hold] or UNDO immediately after accidentally erasing an item.

- Press [Rls] to exit.

Making a call using Call Log

You may find it helpful to place calls from within your Call Log. The number stored for each call may vary depending on the type of call. For example, if the call was placed from a Centrex or PBX system, the first few numbers may need to be trimmed before you can make the call. If the number you want to call is long distance, or if you want to use a line pool, you may need to add numbers.

To place a call

- Display the log item for the call you want to place.

- Display the associated telephone number.

- Press [◄)   ◄)] or TRIM, once for every digit that you want to remove.

- Dial any extra digits required.

- Press an external line or line pool button.

- Lift the receiver. (This is not necessary if Handsfree is programmed at your telephone.) The displayed number is dialed.

Creating a password to your Call Log [Feature   ] [*] [8] [5]

You have the option of accessing your Call Log through a password.

- Press [Feature   ] [*] [8] [5]. The displays reads New passwrd:.

- Enter your four-digit password. The display reads Repeat New:.

- Re-enter your four-digit password. The display reads Password changed, which confirms that your password has been assigned.

To enter Call Log using your password

- Press [Feature   ] [8] [1] [2] to enter Call Log. If you have programmed a password, the display reads Password:.

- Enter your four-digit password.

If you forget your Call Log password, it can be deleted in programming. See "Using passwords" on page 142.

Changing your Call Log password [Feature] [*] [8] [5]

- Press [Feature] [*] [8] [5]. The display reads Old Passwrd:.

- Enter your old password. The display reads New Passwrd:.

- Enter your new four-digit password. The display reads Repeat New:.

- Re-enter your password. The display reads Password changed, which confirms that your password has been changed.

Deleting an assigned password [Feature] [*] [8] [5]

- Press [Feature] [*] [8] [5]. The display reads Old Passwrd:.

- Enter your old password. The display reads New Passwrd:.

- Press [Hold] or OK. The display reads No Pswd assigned, which confirms that your password has been deleted.

Programming a telephone to log calls automatically

Your installer or customer service representative can program each telephone to log calls coming in on a line automatically.

Displays

1:Unknown name	The caller's name is unavailable.
1:Unknown number	The caller's number is unavailable.
12:KATE SMITH NEXT ERASE MORE	_ indicates a new item.
12]KATE SMITH NEXT ERASE MORE	] indicates that the call was answered.
12SKATE SMITH NEXT ERASE MORE	S indicates a long distance call.

49/1234567890123 NEXT ERASE MORE	/ indicates that the stored number has been shortened to its final 11 digits. Press ▣▶ ▶◁ or MORE to display additional information about the call.
Call(s) bumped	One or more log entries have been deleted by the Autobumping feature while you are looking at the Call Log.
Hold or release	Hold or release your active call before entering Call Log.
In use: SETNAME	The external line is in use.
Jan 4 9:00a 3X NEXT ERASE MORE	The repeat call counter, shown along with time and date, indicates the number of calls you have received from the same caller.
Line001 >27 NEXT ERASE MORE	This call was answered at another telephone (27).
Line001 >Logit NEXT ERASE MORE	This call was logged manually.
Line001 NEXT ERASE MORE	This call was not answered.
Messages & Calls MSG CALLS	There are one or more items in your message waiting list, and there are one or more new items in your Call Log. Press Feature 8 0 6 to change the first line of the display to the current time and date.
New calls begin	You have viewed your last old log item and will now view your new log items.
No info to log	No information is available for the call.
No log assigned	No log space has been assigned to the telephone.
No resume item	The resume item has been removed because of Autobumping, repeat call update, or log reallocation while you are looking at the Call Log.

For other displays, see "Common feature displays" on page 167.

Using Voice mail

If you subscribe to a voice message service outside your office, you can access that service through your Norstar system. Your installer or customer service representative programs your Norstar telephone to indicate when you have a voice message waiting on a particular line.

To find out if your external voice message service will work with Norstar, or if you have any problems with your service, contact your voice message service provider.

Finding out what a button does using Button Inquiry

`Feature` `*` `0`

You can check the function of any line, intercom, or programmed button on your Norstar telephone by pressing `Feature` `*` `0`. On the M7100 telephone Button Inquiry shows your internal number followed by the function assigned to your single memory button.

Displays

001 <LINENAME> SHOW OK	The display shows the number and name of the line. Press SHOW to view the redirection status of the line.
123456789012345... VIEW→ OK	Press `#` or press VIEW→ or ←VIEW to view a number that is too long to fit on the display. Press `Hold` or OK when you are done.
21 <SETNAME> **NEXT VIEW→**	The display shows the directory number of the telephone, and the assigned name. Press NEXT to see the first line assigned to ring at the intercom button.
<Feature name> SHOW OK	The name of the feature assigned to a button is displayed when you press the button. Press `#` or SHOW for additional information.
Press a button **EXIT**	Press the button you want to check. Press `Feature` or EXIT when you are finished.

For other displays, see "Common feature displays" on page 167.

Making the display darker or lighter using Contrast adjustment

`Feature` `*` `7`

- Press `Feature` `*` `7`.

- Press a number on the dial pad to choose the contrast level you like best.

On a two-line telephone, you can also use the UP and DOWN display buttons to adjust the contrast.

The number of contrast levels available varies from one telephone model to another.

Changing the language on the display

You can select the language used on the display of each Norstar telephone. Norstar supports three languages: English, French and Spanish. Button caps are available for each language. When your system is first installed, all telephones use English.

If you program [Feature___] [*] [5] [0] [1] on to a memory button, you can then simply press the button until the language you want appears on the display. You cannot program [Feature___] [*] [5] [0] [2] or [Feature___] [*] [5] [0] [3] onto a memory button.

English
- Press [Feature___] [*] [5] [0] [1].

French
- Press [Feature___] [*] [5] [0] [2].

Spanish
- Press [Feature___] [*] [5] [0] [3].

Programming a feature code onto a memory button

You can program a feature code onto a memory button. In some cases, pressing the button a second time cancels the feature.

Programming feature buttons   [Feature___] [*] [3]

Any memory button not programmed as an external or internal line, target line, Answer button, or Handsfree/Mute button, is available for features.

- Press [Feature___] [*] [3].

- Press the memory button you want to program with a feature.

- Enter the appropriate feature code you want to assign onto the button.

The following feature codes cannot be programmed onto a memc button: Long Tones and any code beginning with ⌗* except Feature ⌗* 5 0 1 (Language Choice) and Feature ⌗* 7 (Contrast Adjustment).

Tip - *When you program a button with the line pool feature code, you must enter a line pool access code after the feature code. The programmed line pool button accesses a specific line pool, not the line pool feature.*

Erasing a feature button

- Press Feature ⌗* 1 .

- Press the feature button.

- Press Hold or OK to erase the button.

Displays

‹Feature name› SHOW OK	The name of the feature assigned to a button is displayed when you press the button. SHOW appears when there is more information available. Press ⌗# or SHOW for additional information.
Enter code:	If you are checking a speed dial button, enter the two-digit speed dial code that you want to check.
F_ QUIT CLEAR	Enter the feature code, or press Rls or QUIT to quit programming or CLEAR to clear the numbers you have entered. The system accepts the entry as soon as you enter a valid feature code.
Feature code: QUIT	Press Feature and enter the feature code you want to assign to the button. You cannot enter invalid codes.
Feature moved	You have programmed a button with a feature that was already programmed onto another button. The feature has moved to the button you just programmed. Its original button is now blank.

Press a button EXIT	Press the button you want to check. Press Feature or EXIT when you are finished.
Program and HOLD	Enter the number you want to program and press Hold . To erase the button, just press Hold .
Program and OK QUIT OK	Enter the number you want to program and press OK. To erase the button, just press Hold or OK.

For other displays, see "Common feature displays" on page 167.

Moving line buttons   Feature ✻ 8 1

You can move external lines to different buttons on your telephone
to arrange your lines in the way that makes the most sense to you.

You cannot move intercom, answer or Handsfree/Mute buttons and
you cannot move incoming line group buttons onto a CAP module.

- Press Feature ✻ 8 1 .

- Press the button you want to move the line from.

- Press the button you want to move the line to.

Displays

Exchanged	The two buttons you selected have exchanged position.
Invalid location	You have tried to move a line to a button that cannot be used as a line button, such as an intercom button, Handsfree/Mute button, or an answer button.
Move line from: QUIT	Press the button of the line you want to move. Press Feature or QUIT when you have finished moving lines.
Move line to: QUIT	Press the button you want to move the line to. Neither of the buttons is erased. The lines, or the line and feature, simply switch places.

Press a line   The button you are trying to move is not a line button. If you are trying to switch a line and a feature, move the line to the feature button and not the feature button to the line.

Changing the type of ring   `Feature` `*` `6`

You can choose one of four distinctive rings for your telephone. This makes it easier to identify your telephone in an open office.

*   Press `Feature` `*` `6` .

*   Press `1` . `2` . `3` . `4` or NEXT. You hear the selected ring for two seconds.

*   Repeat until you hear the ring you prefer, then press `Hold` or OK.

Adjusting the Ring volume   `Feature` `*` `8` `0`

*   Press `Feature` `*` `8` `0` . The telephone rings.

*   Press `◄)` `◄))` to adjust the volume.

Hiding the message or calls indication

`Feature` `8` `0` `6`

The display that shows you have messages or calls can be replaced with the current time and date. You can still retrieve your message and call information by using the display buttons that appear on the second line of the display.

If you are using a telephone with a single-line display, the message or call indication is hidden.

*   Press `Feature` `8` `0` `6` . The current time and date appears on the top line of the display.

*   Press MSG or `Feature` `6` `5` to see your messages, or press CALLS or `Feature` `8` `1` `2` to see your calls.

Restoring the messages and calls indication
*   Press `Feature` `#` `8` `0` `6`

User Preferences

The User Preferences section of programming allows you to program memory buttons, speed dial codes and other settings for any Norstar telephone on the system.

For example, an employee may want to have the Do Not Disturb feature programmed onto a memory button or create a speed dial code. Instead of programming from the employee's telephone, you can go into programming on the telephone nearest you to make the change.

Using User Preferences

Feature ⎤ [*] [*] [8] [7] [3] [7]

- Press [Feature ⎤ [*] [*] [U] [S] [E] [R]
  ([Feature ⎤ [*] [*] [8] [7] [3] [7]).

- Enter your System Coordinator or Basic password (the default passwords are [2] [3] [6] [4] [6] and [2] [2] [7] [4] [2]).

By using a Basic password, it is possible to have someone else do day-to-day upkeep of people's telephones without giving out access to sensitive programming. See "Using passwords" on page 142.

After you enter the proper password, the display will show you the telephone with the lowest internal number followed by its name (For example, 21:RECEPTN).

- Press [Next ⎤ to move through all the telephones on the system.

- Press [Show ⎤ when you see the telephone you want to change. The display shows the model number of the telephone at the extension.

The display will show Connect set if no telephone is connected at that internal number.

You cannot make changes if the model is Other.

- Press [Next ⎤ to move through all the sub-headings in User Preferences.

User Preferences programming is also available under the heading User Preferences in Terminals&Sets in the main body of programming.

Sub-headings in User Preferences

User prefernces
Model
Button prgrming
User speed dial
Call log opt'ns
Dialing opt'ns
Language
Display cntrst
Ring type

Changing button programming

- Press [Show] at Button prgrming. The display shows the number of buttons on the telephone (an example is shown in Displays at the end of this section).

If the telephone has a CAP module, you can also press CAP1 to see the buttons on the module.

- Press [Next] to move through all the buttons on the telephone.

Button numbering used with User Preferences programming

M7100 telephone

M7310 telephone

B12 B11	B20 B19	B28 B27
B14 B13	B22 B21	B30 B29
B16 B15	B24 B23	B32 B31
B18 B17	B26 B25	B34 B33
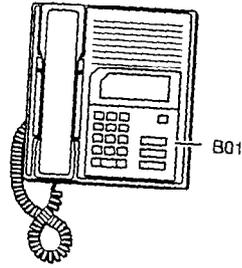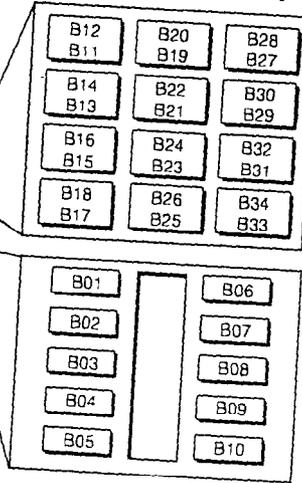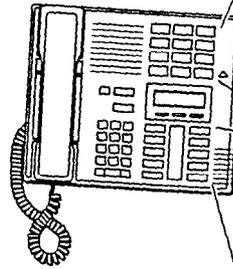
Press △ to use even-numbered buttons

B01

B01		B06
B02		B07
B03		B08
B04		B09
B05		B10

M7208 telephone

| B01 |
| B02 |
| B03 |
| B04 |
| B05 |
| B06 |
| B07 |
| B08 |

M7324 telephone

B01		B13
B02		B14
B03		B15
B04		B16
B05		B17
B06		B18
B07		B19
B08		B20
B09		B21
B10		B22
B11		B23
B12		B24

CAP module

B01	B13		B25	B37
B02	B14		B26	B38
B03	B15		B27	B39
B04	B16		B28	B40
B05	B17		B29	B41
B06	B18		B30	B42
B07	B19		B31	B43
B08	B20		B32	B44
B09	B21		B33	B45
B10	B22		B34	B46
B11	B23		B35	B47
B12	B24		B36	B48
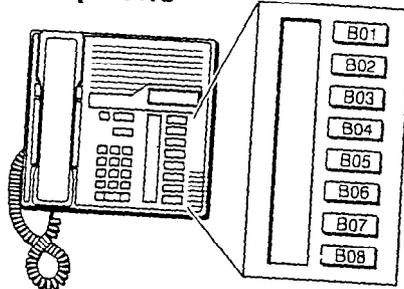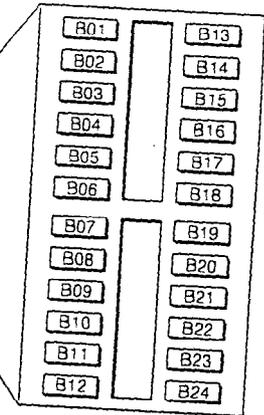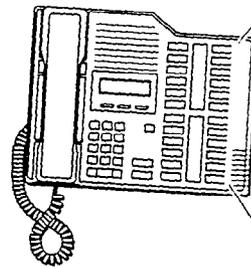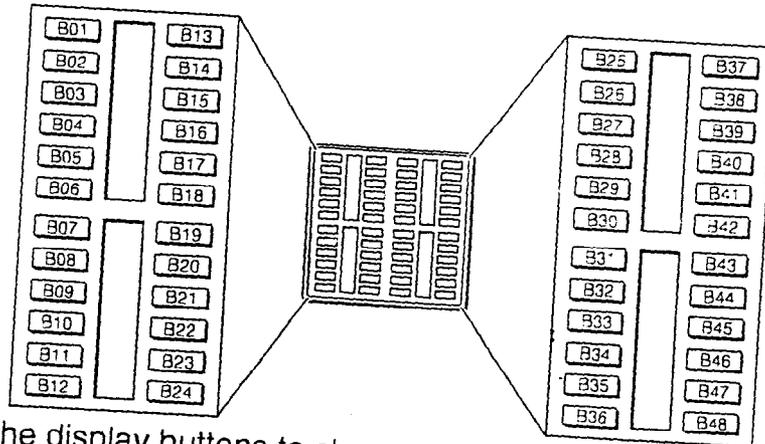
Use the display buttons to change the programming for a button. User Preferences programming cannot change the buttons that are used by lines, intercom, the handsfree feature, and incoming line groups.

The display buttons used in button programming

CANCL	Moves you out of a setting without making any changes to it.
CLR	Erases the button.
TEL#	Programs the key as an autodial number for an internal or an external number. If it is an external autodial number, you have to choose a line, line pool, or the routing table for the call to use.
CHANGE	Used when you are setting up an external autodial number. Press CHANGE until you see the type of line or pool you want the number to use.
FEATR	Press to store a feature code on the button.
FIND	Locates a specific button on a telephone by entering its number. Button numbers are shown in the illustrations.
LIST	Takes you to a list of feature codes. Press [Next____] to move through the list and press OK when you see the feature you want to program on the button.

Information about individual displays you may see is described at the end of this section.

Changing User Speed Dial

- Press [Show____] at User Speed Dial. The display shows the number of speed dial codes that are available.

- Press [Next____] to see the first speed dial code (71).

- Press [Next____] to move through all the speed dial codes.

- Press [Show____] at the code you want to change.

- Press CHANGE and enter the telephone number the same way you would dial it on the telephone.

- Press OK.

- Press [Next____] and choose the line (or enter a code for a line pool) the speed dial code should use.

Use the line pool code to select a particular line pool for use with Speed Dial. If you select Use routing tbl, a line or pool will be chosen by the routing programming according to the initial digits in the number.

The route you choose for a User Speed Dial code must be one that the telephone can use. For example, if the telephone does not have access to Line Pool B and you use that pool code with the speed dial code, the code will not work.

To change a system speed dial code, see "Adding or changing a system speed dial" on page 14.

Changing Call Log options

- Press [Show] at Call log opt'ns...

- Press CHANGE until you see the option you want to use. For Call Log options see "Call Log options" on page 100

Changing how calls are dialed

- Press [Show] at Dialing opt'ns...

- Press CHANGE until you see the option you want to use.

Descriptions for dialing options are found on the *Telephone Feature Card*, or see "Changing how you dial your calls" on page 49.

Changing the language used on the display

- Press CHANGE at Language: until you see the language you want to use.

For language choices see "Changing the language on the display" on page 108

Making the display lighter or darker

- Press CHANGE at Display cntrst until you see the value you want to use.

The display contrast on the telephone you are using for the programming session does not change when you are programming another telephone.

Changing the telephone's ring

- At Ring type:, press CHANGE until you see the option you want to use.

Descriptions for ringing options are found on the *Telephone Feature Card* or in "Changing the type of ring" on page 111.

Displays

10+24 buttons FIND	There are ten memory buttons and twelve dual memory buttons on the telephone you are viewing. Press [Next____] to begin looking at what's on each button.
B01:L06:Line 001 FIND	A line appears on the button. You cannot store a feature or number on it.
B02:ILG 02 FIND	An incoming line group appears on the button. You cannot store a feature or number on it.
B03:#Reply Msg… CLR TEL# FEATR	A feature is stored on this button. Press [Show____] to see the feature code. A full list of names and codes for features is included in the index.
Code:F#65… CLR TEL# FEATR	Shows the feature code stored on a button. Press [Show____] to see the button number and feature name.
B04:1604555512… CLR TEL# FEATR	The button has a telephone number stored on it. Press [Show____] to see the rest of the number.
Externl tel #… CLR TEL# FEATR	The autodial is an external number. Press [Show____] to see what line or pool the call is programmed to go out on.
Internl tel #… CLR TEL# FEATR	The autodial is an internal number. Press [Show____] to see more information.
B05:Intercom… FIND	The button is used for intercom. Press [Show____] to see more information about the button. You cannot store a feature or number on it.
B06:Answer 93 FIND	The button is used for an Answer DN. You cannot store a feature or number on it.

B07:Blank button **CLR TEL# FEATR**	Either nothing is stored on the button or you have just cleared the button by pressing CLR.
B10:Handsfree **FIND**	The button is occupied by the Handsfree feature. You cannot store a feature or number on it.

For other displays, see "Common feature displays" on page 167.

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Telephone features

Naming a telephone or a line

You can assign names to identify external lines, target lines, and your co-workers' telephones. During a call, the name (if programmed) is shown on the telephone display instead of the external line number or internal telephone number of the caller. Step-by-step instructions for adding or changing the name of a telephone or a line are in "Changing the name of a telephone" on page 17.

Telephone names and line names can contain both letters and numbers, but cannot be longer than seven characters. You cannot use the # and * symbols.
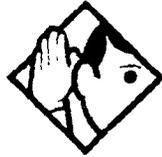
Tip - *You can give the same name to two or more telephones, or to a telephone and a line in your system. To avoid confusion, avoid such duplication. Use initials, abbreviations, or even nicknames to give each telephone a unique name.*

If automatic telephone relocation is turned on, the name and internal number of a telephone are saved if the telephone is moved within your system.

Moving telephones

If automatic telephone relocation is enabled in programming by your installer or customer service representative, you can move your telephone from one Norstar jack to another without losing any of its custom programming.

Stopping calls from ringing at your telephone using Do Not Disturb (DND)   [Feature] [8] [5]

Stopping calls

You can stop calls from ringing at your telephone by pressing
[Feature] [8] [5].

Only priority calls will ring at your telephone. A line button will flash when you receive a call, but the call will not ring.

Refusing to answer a call

While you are on a call, you can refuse to answer a second call (including a priority call).

• Press [Feature] [8] [5] while your telephone is ringing.

Canceling Do Not Disturb   [Feature] [#] [8] [5]

• Press [Feature] [#] [8] [5].

Displays

Allow calls   Your telephone will receive calls normally.

Using Do Not Disturb

Once you turn Do Not Disturb on, calls will be forwarded to the prime telephone only if there is no other telephone on which the line appears. If there is another telephone that shares the same line, the call may be answered by that person. (The Delayed Ring Transfer feature transfers all unanswered calls to the prime telephone after a specified time.)

Do Not Disturb also prevents voice calls from alerting at your telephone. Voice calls are presented as normal intercom calls.

Using Background Music

Feature ⬚ 8 6

Listen to music through your telephone speaker by pressing
Feature ⬚ 8 6 .

Your installer or service representative makes this feature availal
to all telephones in programming. You will need to supply a mus,
source, such as a radio, and have it attached to your ICS.

> In accordance with U.S. copyright law, a license may be required from the American Society of Composers, Authors and Publishers or a similar organization if radio or TV broadcasts are transmitted through the Background Music feature of this telecommunication system.
> Northern Telecom Inc. hereby disclaims any liability arising out of the failure to obtain such a license.

Turning Background Music off

The music stops automatically if you make or answer a call or if you press Feature ⬚ # 8 6 .

Using the device attached to the internal analog terminal adapter

The internal analog terminal adapter (I-ATA) connects a standard analog voice device (for example, a single-line telephone) or a data communication device (for example, a modem or fax machine) to your Compact ICS. Unlike an external adapter, the I-ATA only supports a device that is located on the same premises as your ICS.

You activate all of the features available from the I-ATA by pressing Link ⬚ * on your telephone and entering a feature or access code. On some telephones, you use FLASH instead of Link ⬚ .

If your telephone or device does not have Link ⬚ , you must use the Hook Switch (located under the handset) to enter feature codes. Press the Hook Switch for approximately half a second, then enter the rest of the code.

To make an external call using the device attached to the I-ATA, you must access an external line. To access an external line, lift the handset and enter the external access code. The external access code is 9 or the number programmed by your installer or customer service representative.

The feature codes for the I-ATA the telephone use ⌈*⌉ and ⌈#⌉. If your telephone does not have ⌈*⌉, press ⌈1⌉ instead. If your telephone does not have ⌈#⌉, press ⌈3⌉ instead.

To make an external call, lift the handset and enter the external access code followed by the external telephone number. In most cases, the external access code is 9.

Alternate line	⌈Link ⌉ ⌈2⌉ Allows you to switch between using your two intercom paths. When a path is in use, you will hear an error tone informing you that the path is already in use.
Call Forward	⌈Link ⌉ ⌈*⌉ ⌈4⌉ Cancel ⌈Link ⌉ ⌈#⌉ ⌈4⌉ Directs your calls to another telephone connected to your Norstar system. Enter the feature code followed by the internal number of the telephone to receive the forwarded calls. Call Forward cannot be used with a telephone that is not connected to your Norstar system.
Call Park	⌈Link ⌉ ⌈*⌉ ⌈7⌉ ⌈4⌉ Parks the call on hold and allows it to be retrieved from any other telephone within the system. After an external call is parked, and is not answered within a specified time, the call returns to the I-ATA. An unanswered intercom call does not return to the I-ATA The I-ATA can only park calls on X09. X is 1, or the number assigned by your installer or customer service representative as the call park code. You will hear an error tone if you attempt to park a second call while X09 is in use.
Call Pick-up – directed	⌈Link ⌉ ⌈*⌉ ⌈7⌉ ⌈6⌉ <plus the ringing number> Allows you to answer a ringing telephone within your Norstar system.

Call Pick-up – group	[Link] ✱ 7 5 Allows you to answer a ringing telephone within your Norstar system.
Call Queuing	[Link] ✱ 8 0 1 Allows you to answer the first incoming external call to your telephone, while you are on a call. All other incoming callers will hear a busy signal unless there is another telephone programmed to ring for the call.
Camp-on	[Link] ✱ 8 2 <plus internal number> Allows you to reroute an external call to another Norstar system telephone.
Class of Service password	[Link] ✱ 6 8 <plus a COS password> Allows you to override restrictions on the telephone or line using a Class of Service password before you enter the restricted number.
Conference	[Link] ✱ 3 Allows you to establish a three-way conference between you, one external caller and one intercom caller. To establish a conference call:

- Make or answer the first call.
- Enter [Link] 2. This automatically puts the first caller on hold.
- Make or answer the second call. If the second caller is busy, replace the handset and enter [Link] 2 to return to the first caller.
- Enter [Link] ✱ 3 to complete the conference call.

Conference Hold

Allows you to put the two conferenced callers on hold. The held callers are still conferenced. To put the conference on hold:

- Enter [Link] 2 to put the two conferenced callers on hold.
- Enter [Link] 2 to restore the three-way call.

Split Conference

Allows you to alternate between two parties in a three-way conference call. To consult with one caller and put the other caller on hold:

- Enter [Link] # 3 to split the conference.
- Enter [Link] 2 to alternate between calls.
- Enter [Link] ✱ 3 to restore the three-way call.

Disconnecting One Party

Allows you to disconnect one party in a three-way conference call. To disconnect a party:

- Enter `Link` `#` `3` to put one caller on hold. You are connected with the other call.
- Replace the handset.
- Lift the handset and enter `Link` `2`. You are connected with the caller on hold.

Hold   `Link` `2`

Allows you to put an active call on hold and allows it to be picked up from other telephones. When Tones are turned on, a held call reminder tone is heard on external calls only.

Retrieve a call on Hold.

- Enter `Link` `2`.

Exclusive Hold

`Link` `*` `7` `9`

Allows you to put an active call on hold and prevents it from being picked up from other telephones. When Tones are turned on, a held call reminder tone is heard on external calls only.

Last Number Redial   `Link` `*` `5`

Automatically dials the last external telephone number you dialed.

Link   `Link` `*` `7` `1`

Generates a Link signal to access non-Norstar features available from other systems or carriers.

Line pools   A line pool allows several telephones to access a group of lines used for outgoing calls. To access a line pool:

- Enter the line pool access code.
  OR
- Enter `Link` `*` `6` `4` <plus the line pool code>.

Messages   `Link` `*` `1`   Cancel `Link` `#` `1`

Generates a longer Link signal. Use this feature when you want to release a call from your line but retain the use of the line for another call.

Page	⌈Link⌉ ⌊*⌋ ⌊6⌋ ⌊0⌋ <plus code 1-3> <plus zone 0-6>

Allows you to make an announcement to all Norstar telephones programmed to receive a page, as well as any other connected paging equipment. You must enter a paging zone. See "Paging" on page 91 for more information.

Page (Intercom)

⌈Link⌉ ⌊*⌋ ⌊6⌋ ⌊1⌋ <plus zone code>

Page (External)

⌈Link⌉ ⌊*⌋ ⌊6⌋ ⌊2⌋

Page (Intercom and External)

⌈Link⌉ ⌊*⌋ ⌊6⌋ ⌊3⌋ <plus zone code>

Pause	⌈Link⌉ ⌊*⌋ ⌊7⌋ ⌊8⌋

Generates a 1.5 second delay in the sequence of numbers you are entering (for Tone or Pulse dialing).

Priority Call	⌈Link⌉ ⌊*⌋ ⌊6⌋ ⌊9⌋

Allows you to interrupt an internal call in progress on a Norstar telephone using Voice Call Deny or Do Not Disturb. The calls at the telephone you are calling are automatically put on hold.

Telephones must be programmed to use Priority Call. See "Priority Call" on page 51 for more information.

Privacy	⌈Link⌉ ⌊*⌋ ⌊8⌋ ⌊3⌋

Prevents another telephone that shares your line from joining your current call, or permits another telephone that shares your line to join the call.

Ring Again	⌈Link⌉ ⌊*⌋ ⌊2⌋ Cancel ⌈Link⌉ ⌊#⌋ ⌊2⌋

Allows you to queue a call to another Norstar telephone that is busy or is not answered, or to a busy line in a line pool. You can only use Ring Again on calls placed on an intercom line. When the telephone is available, you are alerted with one short ring from your telephone.

Reply to a Ring Again signal

To connect with a Ring Again request when you are on a call (or your telephone is off-hook):

- Enter [Link] [2]. This automatically places your call on hold.
- To return to the caller on hold, enter [Link] [2].

To connect with a ring again request when your telephone is on-hook:

- Lift the handset. The Ring Again number is automatically redialed.

If you do not respond to the Ring Again signal within 30 seconds, Ring Again is canceled.

Saved Number Redial

[Link] [*] [6] [7]

Allows you to save an external number while you are on a call or while the called telephone is ringing. To automatically redial the saved number:

- Enter [Link] [*] [6] [7].

System Speed Dial

[Link] [*] [0] <plus the speed dial code>

Allows you to use a speed dial code to quickly dial preprogrammed telephone numbers. See "Using Speed Dial" on page 70 for more information.

You cannot program personal speed dial numbers for the telephone connected to the I-ATA.

Timed Release

[Link] [*] [7] [2]

Generates a longer Link signal. Use this feature when you want to release a call from your line but retain the use of the line for another call.

Transfer

Allows you to transfer a call. To transfer a call you must have an available intercom line.

- Enter [Link] [*] [7] [0].
- Enter the transfer destination number.
- Replace the handset.

To Transfer using Conference

- Enter [Link] [2].
- Make the second call.
- Enter [Link] [*] [3].
- Replace the handset.

Trunk Answer

[Link] [*] [8] [0] [0]

Allows you to pick up a ringing external call on a line for which Ringing Service is turned on.

Voice Call   [Link   ] [*] [6] [6] <plus the intercom number>
Allows you to make a voice announcement or begin a
conversation through the speaker of a Norstar
telephone without making the telephone ring.

Using a data communication device with the I-ATA

The internal analog terminal adapter (I-ATA) can connect a data
communication device such as a fax machine, modem or answering
machine to the Compact ICS. In some cases, these devices require
additional programming to work properly.

Turning off tones that can interfere with data transmissions

The tones used for Held Line Reminder, Call Waiting, and Ring
Again can disrupt the operation of a device or the transmission of
data. Lift the handset and enter [Link   ] [*] [8] [0] [9] to turn these
tones off for the device. Enter [Link   ] [#] [8] [0] [9] to turn the
tones back on.

Programming answering machines or modems to answer calls automatically

The device connected to the Compact ICS using the I-ATA can ring
for an external line, or be set up to ring when Ringing Service (Night
Service) is turned on. Contact your installer or customer service
representative to have these features programmed for your system.

Using the I-ATA with modems and fax machines

The I-ATA is designed to be compatible with commercial fax and
and modem equipment. The Compact ICS has been shown to
support data transmission rates of up to and including 28.8 kilobits
per second (Kbps).

The maximum data transmission rate is subject to the quality of the
end-to-end channel and cannot be guaranteed.

Troubleshooting for the device attached to the I-ATA

Check the following before you call a repair person:

- Check to see that the data parameters (for example, Parity or Baud Rate) are set correctly.

- Ensure that tones are turned off for the I-ATA using [Link] [*] [8] [0] [9] .

- Make sure you are dialling out on an intercom or external line. Use [Link] [2] to choose an alternate line. Contact your installer or customer service representative to change the prime line for the telephone or device.

- Substitute a single-line telephone for your data communication device. If you receive a dial tone on the single-line telephone, the problem might be with the data communication device.

ISDN terminals and services

Integrated Services Digital Network (ISDN) technology provides a fast, accurate and reliable means of sending and receiving data, image text and voice information through the telephone system.

By using Basic Rate Interface (BRI), your ISDN service allows for faster transmission speeds and the addition of a variety of powerful business applications, including remote LAN access, videoconferencing, file transfer and Internet access.

Your Compact ICS supports up to 8 Basic Rate Access loops (four 2B+D channels) that can be used for fully digital connections to ISDN networks and devices. Loops are connections between the ICS and devices or between the ICS and the network.

Each loop provides two separate B-channels that can be used to make two simultaneous voice or data calls, or one data call and one voice call.

Your installer configures your ISDN services and terminal equipment.

ISDN applications

ISDN terminal equipment delivers a wide range of powerful business applications:

Videoconferencing and video telephony

Videoconferencing offers instant visual and audio contact between distant parties using either studio-based or desktop ISDN terminals.

Desktop conferencing

ISDN allows computer users in distant locations to share and edit any image, data or text file on their own computer screens while they discuss the information.

File transfer

The ISDN network allows you to transfer files containing data, text, images, data, or audio clips, faster and cheaper than with a conventional modem.

Telecommuting

Convenient retrieval, processing and storage of files is possible for the employee working at home by using ISDN lines to give high-speed access to information resources at the office.

Group 4 fax

ISDN fax applications save money by increasing both transmission speed and the quality of resolution.

Remote LAN access

ISDN provides an affordable and fast means for employees at remote sites (at home or branch offices) to access local area networks (LANs).

Leased line backup

Essential backup for leased lines can be provided using ISDN as required, rather than duplicating costly permanent leased lines.

LAN to LAN bridging

Local area network (LAN) bridge/routers allow flexible interconnection between LANs using ISDN, with charges only incurred when information is actually transmitted.

Broadcasting

By using ISDN and digital codecs (an analog to digital interface), broadcasters can transmit music, news, or commentaries with superior clarity.

Video surveillance

Dial-up access using videocodecs (an analog to digital interface) provides advanced surveillance on demand.

Internet and database access

The fast call set up and high bandwidth of ISDN are ideal for accessing information services such as the Internet and databases.

ISDN network features

Selected ISDN network features can be used from a Norstar telephone. Your central office switch (ISDN network) determines which features are available to you.

Nortel DMS-100 switch

Call Forward

Call Forward lets you forward your calls to an external telephone number.

- Select an ISDN line by selecting a line button, a line pool, or the Handsfree button, or by lifting the handset (if an ISDN line is your prime line).

- Press ✶ ⑦ ②. Listen for three tones followed by dial tone.

- Enter the internal number of the telephone to which you want your calls forwarded. If the call is answered, stay on the line for at least five seconds to activate the Call Forward feature.

Canceling Call Forward

- Select an ISDN line by selecting a line button, a line pool, or the Handsfree button, or by lifting the handset (if an ISDN line is your prime line).

- Press ✶ ⑦ ③. Listen for a series of tones.

- Press Ris.

AT&T (Lucent) 5ESS switch

Call Forward

Call Forward lets you forward your calls tò an external telephone number.

- Select an ISDN line by selecting a line button, a line pool, or the Handsfree button, or by lifting the handset (if an ISDN line is your prime line).

- Press ✶ ⑤ ⓪. Listen for three tones followed by dial tone.

- Enter the internal number of the telephone to which you want your calls forwarded. If the call is answered, stay on the line for at least five seconds to activate the Call Forward feature.

Canceling Call Forward

- Select an ISDN line by selecting a line button, a line pool, or the Handsfree button, or by lifting the handset (if an ISDN line is your prime line).

- Press ⌻ ⑤ ①. Listen for a series of tones.

- Press Rls.

Calling the number your calls are forwarded to

- Select an ISDN line by selecting a line button, a line pool, or the Handsfree button, or by lifting the handset (if an ISDN line is your prime line).

- Press ⌻ ⑤ ⑥.

Siemens EWSD switch

Automatic Call Back

If you call a number and it is busy, press ⌻ ⑥ ⑥ to receive a distinctive ring at your set when the line becomes available for calls.

Automatic Recall

Automatic Recall lets you automatically dial the number of the last call you received. You may not see the number on the display if the information is not available from your service provider, or you do not have Caller ID as part of your ISDN service.

- Press ⌻ ⑥ ⑨

Call Forward

Call Forward lets you forward your calls to an external telephone number.
:

- Select an ISDN line by selecting a line button, a line pool, or the Handsfree button, or by lifting the handset (if an ISDN line is your prime line).

- Press ⌻ ⑦ ②. Listen for three tones followed by dial tone.

- Enter the internal number of the telephone to which you want your calls forwarded. If the call is answered, stay on the line fo, at least five seconds to activate the Call Forward feature.

Canceling Call Forward

- Select an ISDN line by selecting a line button, a line pool, or the Handsfree button, or by lifting the handset (if an ISDN line is your prime line).

- Press [*] [7] [3]. Listen for a series of tones.

- Press [Rls].

Using System features

Using alternate or scheduled services

There are three types of Services to make your Norstar system handle calls differently on different days and at different times of the day: Ringing service, Restriction service and Routing service.

Each of the three services, and the six schedules available to each service, are customized for you by your installer or customer service representative. They program which telephone is used to turn Services on and off, and display what Services are in use. This is called the control telephone.

Preventing certain calls from being made

Restriction service prevents a user from making certain kinds of calls from a telephone or from lines that are available at the telephone. The restrictions are programmed by your installer or customer service representative.

Making additional telephones ring

Ringing service makes additional telephones ring for incoming calls on external lines. For instance, all incoming external calls can also ring at a security guard's telephone during the night, or calls to one attendant can also ring at another attendant's telephone during lunch. It does not suppress your normal ringing assignment.

Changing the lines used by outgoing calls

Routing service allows you to assign alternate routes to calls. In this way you can take advantage of lower costs available on particular routes on certain days and at certain times. Both the regular and alternate routes are programmed by your installer or customer service representative.

Turning Services on and off

The master control for how different services and their schedules are used by your system is in programming. There are three settings: Manual, Automatic and Off.

- Manual allows you to turn the service on and off at any time from a control telephone using a feature code.

- Automatic allows you to use the preassigned stop and start time for a service. You are still able to start and stop the service by entering the appropriate feature code at a control telephone. If you select this setting, you will use the start and stop times programmed by your installer or customer service representative.

- Off prevents the service from being activated.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Next] twice.

4. Press [Show] at Services.

5. Press [Next] until you see the Service you want to program.

6. Press [Show] and [Next] until you see the schedule you want to program.

7. Press [Show] and use CHANGE to select the setting that will work best for your office: Off, Manual or Automatic.

Each schedule can have its own configuration of a Service which works independently of automatic start and stop times. For example, there may be a version of Restriction service called Night Schedule that prevents anyone from making long distance calls. But calling it Night Schedule does not mean it can only be used with a schedule. You can turn the Night Schedule for Restriction Service on or off as needed any time of the day or night. If you decide to run a service on a schedule, the system will use the start and stop times used for that schedule.

An example of how to turn on a Service manually

You may have Ringing service (your night service) set up to run according to the Night Schedule. You may decide you want that ringing arrangement to come into effect only when it is turned on and off manually.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press ⌜Feature⌐ ⌈∗⌉ ⌈∗⌉ ⌈2⌉ ⌈6⌉ ⌈6⌉ ⌈3⌉ ⌈4⌉ ⌈4⌉.

2. Press ⌈2⌉ ⌈3⌉ ⌈6⌉ ⌈4⌉ ⌈6⌉ (the default System Coordinator password).

3. Press ⌜Next⌐ twice.

4. Press ⌜Show⌐ at Services. The display shows Ringing Service▶.

5. Press ⌜Show⌐. The display shows Sched:Night▶.

6. Press ⌜Show⌐ and use <u>CHANGE</u> to set the Service to Manual.

Night Schedule for Ringing Service will no longer follow the schedule but can be turned on and off by using the feature code and selecting Night Ringing. See "Turning Services on and off using feature codes" on page 139.

Turning Services on and off using feature codes

The master control for services is in programming, see"Turning Services on and off" on page 137. Day-to-day use of Services is controlled using the following feature codes.

⌜Feature⌐ ⌈8⌉ ⌈7⌉ ⌈1⌉	Turns on Ringing service. When used at the direct-dial telephone, it also activates the alternate direct-dial telephone (extra-dial telephone).
⌜Feature⌐ ⌈#⌉ ⌈8⌉ ⌈7⌉ ⌈1⌉	Turns off Ringing service.
⌜Feature⌐ ⌈8⌉ ⌈7⌉ ⌈2⌉	Turns on Restriction service.
⌜Feature⌐ ⌈#⌉ ⌈8⌉ ⌈7⌉ ⌈2⌉	Turns off Restriction service.
⌜Feature⌐ ⌈8⌉ ⌈7⌉ ⌈3⌉	Turns on Routing service.
⌜Feature⌐ ⌈#⌉ ⌈8⌉ ⌈7⌉ ⌈3⌉	Turns off Routing service.

To turn a Service on

- Enter the appropriate feature code from a control telephone.

- For Restriction and Routing service you also have to enter the System Coordinator or Basic password.

- Press NEXT to move through the schedules until the display shows the version of the service you want to be turned on.

- Press OK to select the setting, or press QUIT to exit the feature without making any changes.

To turn a Service off

- Enter the appropriate feature code from a control telephone.

- For Restriction and Routing service you also have to enter the System Coordinator or Basic password.

> **Do not confuse activating Normal service with canceling a Service.**
>
> Setting a Service to Normal is not the same as canceling a Service using a feature code. If you set the Service to Normal, the normal version of a Service overrides any automatic schedule and remains in effect until you manually cancel it. If you cancel the Service, you return to the automatic schedule.

Viewing the active Services from a two-line display telephone

When a Service is active, the control telephone display reads Services ON.

- Press LIST. The display shows the first active Service and the schedule that is in use.

- If there are several active Services, press NEXT to see them all.

- Press EXIT to exit the feature.

Viewing the active Services from a one-line display telephone

- Press `Feature` `8` `7` `0`. The display shows the first active Service.

- Press `#` to move through the active schedule.

- Press `Rls` to exit.

Displays

`<Sched> Restr'n` `EXIT   NEXT`	You are viewing the active Services. Press `#` or NEXT to see the other active Services. Press `Rls` or EXIT to quit.
`<Sched> Restr'n` `QUIT  OK  NEXT`	The name of the current Restriction service schedule is displayed. Press `#` or NEXT to see the other Ringing service schedules. Press `Hold` or OK to select the desired schedule.
`<Sched> Ringing` `EXIT   NEXT`	You are viewing the active Services. Press `#` or NEXT to see the other active Services. Press `Rls` or EXIT to quit.
`<Sched> Ringing` `QUIT  OK  NEXT`	The name of the current Ringing service schedule is displayed. Press `#` or NEXT to see the other Ringing service schedules. Press `Hold` or OK to select the desired schedule.
`<Sched> Routing` `EXIT   NEXT`	You are viewing the active Services. Press `#` or NEXT to see the other active Services. Press `Rls` or EXIT to quit.
`<Sched> Routing` `QUIT  OK  NEXT`	The name of the current Routing service schedule is displayed. Press `#` or NEXT to see the other Routing service schedules. Press `Hold` or OK to select the desired schedule.
`<Sched> until *` `QUIT  OK  NEXT`	Press `Hold` or OK to select this schedule, `#` or NEXT to see the next available schedule, or `Rls` or QUIT to exit. If you select this schedule, it will be in effect until the next automatic schedule takes effect.

No services ON
You have entered the Show Services feature code and there is no active Service.

Services ON
MODES
There is a Service active in your system. Press [*] or LIST to view the active Services.

For other displays, see "Common feature displays" on page 167.

Services that have been turned on automatically are indicated by an asterisk (*) before the name on the display. You can neither manually activate nor cancel scheduled services, although you can override them by manually turning on another schedule.

The control telephone can override Services that are turned on and off according to a schedule at any time by entering a Services feature code, and selecting a different schedule. This override remains in effect until it is canceled. If you select a schedule with an asterisk (*), the next automatic service schedule comes into effect at the programmed time.

Direct-dial calls to a direct-dial telephone ring at the extra-dial telephone (the extra-dial telephone is designated by your installer or customer service representative) only when you enter the Ringing service feature code ([Feature] [8] [7] [1]) at that direct-dial telephone. Note that only the extra-dial telephone is activated, not the actual Ringing service (unless that direct-dial telephone is also a control telephone).

Tip - *Norstar provides six service schedules named Night, Lunch, Evening, Sched 4, Sched 5, and Sched 6. Your installer or customer service representative can change these names to suit your business.*

Using passwords

Your passwords prevent unauthorized or unintentional changes to your Norstar system. To keep your telephone service secure, distribute the password only to selected personnel or make use of the basic password described below. Record your password in a secure place and change it periodically.

If you forget the administration or basic passwords, you cannot do any programming. Call your customer service representative or service department to assign a new password.

The password is a one to six-digit number.

The default System Coordinator password is [A] [D] [M] [I] [N], which is the same as [2] [3] [6] [4] [6].

One password cannot be a subset of another one. For example, you cannot have 123 and 12345.

Using a Basic password

In addition to a System Coordinator password, there is a Basic password. This lets you delegate some of the duties of being a system coordinator to someone else without allowing access to sensitive programming.

The default Basic password is [B] [A] [S] [I] [C] or [2] [2] [7] [4] [2].

You can enter the Basic password after the following feature codes:

- [Feature] [*] [*] [U] [S] [E] [R] (User Preferences)

- [Feature] [*] [*] [T] [I] [M] [E] (to change the system time and date)

- [Feature] [*] [8] [3] [1] (turn System Answer on or off)

- [Feature] [*] [8] [3] [2] (turn Custom Call Routing on or off)

Because the Basic password can be used to change the time, you should give it out with care and change it when necessary (for example, when an employee leaves the company). If restrictions, routing or other services operate on a schedule, changing the time can allow someone to bypass the programming.

Changing passwords

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Next] four times.

4. Press [Show] at Passwords.

5. Press [Next] until you see Progrming Pswds ▶.

6. Press [Show].

7. Press [Next] until you see the name of the password you want to change.

8. Use [Show], CHANGE and the dial pad to enter the new password. Press OK to accept the new password.

You cannot erase or eliminate the need for programming passwords.

Clearing a Call Log password

If an individual has forgotten their Call Log password, you can clear it in programming. The individual can then enter a new password from his or her telephone.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Next] four times.

4. Press [Show] at Passwords.

5. Press [Show] and enter the internal telephone number of the telephone where you wish to clear the Call Log password.

6. Press [Show], then press CLR to clear the password.

Using special telephones

Direct-dial

You can reach the direct-dial telephone by dialing a single digit. The direct-dial telephone is usually in a central location, such as a attendant's desk. It is usually the prime telephone or the central answering position (CAP).

The direct-dial telephone can send up to 30 messages and can invoke Services to activate the extra-dial telephone.

You cannot forward calls to a direct-dial telephone that is outside your Norstar system. See "Making changes to Call Forward No Answer" on page 21.

Changing the direct-dial telephone assignments

Your installer or customer service representative sets up the direct-dial telephone.

You can change which direct-dial telephone a telephone is assigned to, or assign it no direct-dial telephone.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press ⌊Feature⌋ ⌊*⌋ ⌊*⌋ ⌊2⌋ ⌊6⌋ ⌊6⌋ ⌊3⌋ ⌊4⌋ ⌊4⌋.

2. Press ⌊2⌋ ⌊3⌋ ⌊6⌋ ⌊4⌋ ⌊6⌋ (the default System Coordinator password).

3. Press ⌊Show⌋ at Terminals&Sets.

4. Enter the internal number of the telephone you wish to program and press ⌊Show⌋ . The display reads Capabilities.

5. Press ⌊Show⌋ .

6. Press ⌊Next⌋ until the display reads D-Dial.

7. Press CHANGE to select either Set1 or None.

Any number of telephones can be assigned to call the direct-dial telephone.

Tip - *The digit you dial in order to get the direct-dial telephone to ring can be programmed by your installer or customer service representative*

Hotline

A hotline telephone calls a preset internal or external telephone number when you pick up the receiver of a hotline telephone (or press [Handsfree Mute]).

> **Tip -** *Label the telephone to inform anyone using it that Hotline is active.*

Bypassing a Hotline

Press a line button, or use the Pre-Dial or Automatic Dial feature before you pick up the receiver or press [Handsfree Mute] on a hotline telephone. See the *Telephone Feature Card* or see "Changing how you dial your calls" on page 49.

Making a telephone a hotline telephone

You can set up a telephone as a hotline.

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature] [*] [*] [2] [6] [6] [3] [4] [4].

2. Press [2] [3] [6] [4] [6] (the default System Coordinator password).

3. Press [Show] at Terminals&Sets.

4. Enter the internal number of the telephone you wish to program and press [Show] . The display reads Capabilities.

5. Press [Show] .

6. Press [Next] until the display reads Hotline.

7. Press CHANGE to select the type of call the hotline will make: None, Intrnl, or Extrnl.

Internal assigns an internal number.

External assigns an external number. If you select an external number, you can also select the line on which the call is made: the prime line, an external line, a line in a line pool, or a line selected by

the routing table. If you select a line pool, you will have to specify the line pool access code. If you select the routing table, the number dialed is treated as a destination code and is routed according to the routing tables.

A telephone's prime line, line pool access codes, and access to a line pool can be programmed by your installer or customer service representative.

Control telephone

The control telephone lets you place the telephones and external lines for which it has responsibility into and out of service schedules. See "Using alternate or scheduled services" on page 137.

Using Set lock

Set lock limits the ways in which you can customize your telephone. There are three levels of Set Lock: Full, Partial, or no set lock. With no set lock, you have access all features on your telephone.

Partial prevents:

• programming autodial buttons	• changing dialing modes (Automatic Dial, Pre-Dial, and Standard Dial)
• programming user speed dial numbers	• using Voice Call Deny
• programming feature buttons	• saving a number with Saved Number Redial
• moving line buttons	
• changing the display language	

Full, in addition to the restrictions outlined for Partial lock, prevents:

• changing Background Music	• using Call Forward all calls
• changing Privacy	• using Send Message
• changing Do Not Disturb	• using Trunk Answer
• using Ring Again	• activating Services

Changing Set Lock programming for a telephone

You will need the programming template found at the front of this guide. See Getting Started for more information.

* Press ⌈Feature⌉ ⌈*⌉ ⌈*⌉ ⌈2⌉ ⌈6⌉ ⌈6⌉ ⌈3⌉ ⌈4⌉ ⌈4⌉.

- Press ⊡ ⊡ ⊡ ⊡ ⊡ (the default System Coordinator password).

- Press [Show_____] and enter the internal number of the telephone you wish to program.

- Press [Show_____].

- Press [Next_____] three times. The display shows Restrictions.

- Press [Show_____] twice.

- Press CHANGE to choose Full, Partial, or None.

Using an auxiliary ringer

An auxiliary ringer is a separate device that has to be connected to Norstar.

Turning the auxiliary ringer for a telephone on or off

You will need the programming template found at the front of this guide. See Getting Started for more information.

1. Press [Feature_____] ⊡ ⊡ ⊡ ⊡ ⊡ ⊡ ⊡ ⊡ ⊡.

2. Press ⊡ ⊡ ⊡ ⊡ ⊡ (the default System Coordinator password).

3. Press [Show_____] at Terminals&Sets.

4. Enter the internal number of the telephone you wish to program and press [Show_____]. The display reads Capabilities.

5. Press [Show_____].

6. Press [Next_____] until the display shows Aux. ringer.

7. Use CHANGE to select Y (Yes) or N (No).

Your installer or customer service representative can program the auxiliary ringer to start ringing for incoming lines as part of Ringing Service.

Using Host System dialing signals

You can access host systems, such as private branch exchanges (PBX) from Norstar by using host system signaling features (also known as end-to-end signaling). These features either send a special signal to the host system or allow you to program delays

required by host systems in external autodial or speed dial sequences.

Link
`Feature` `7` `1`

If your Norstar system is connected to a private branch exchange (PBX), you can use a Link signal to access special features. On some telephones, Link is called FLASH.

The Link signal can also be included as part of a longer stored sequence on an external autodial button or in a speed dial code. The Link symbol (**≊**) uses two of the 24 spaces in a dialing sequence.

Preventing a telephone from using Link

Link can be restricted at individual telephones.

You will need the programming template found at the front of this guide. See Getting Started for more information.

- Press `Feature` `*` `*` `2` `6` `6` `3` `4` `4`.

- Press `2` `3` `6` `4` `6` (the default System Coordinator password).

- Press `Show` and enter the internal number of the telephone you wish to program.

- Press `Show`.

- Press `Next` three times. The display shows Restrictions.

- Press `Show` twice.

- Press `Next` three times. The display shows Allow link:.

- Press CHANGE to choose Y (Yes) or N (No).

Tip - *If your Norstar system is connected to a private branch exchange (PBX), program Link onto a memory button for one-touch access.*

Pause

Feature ⬜ [7] [8]

The Pause feature enters a 1.5 second delay in a dialing sequence on an external line. This is often required for signaling remote devices, such as answering machines, or when reaching through to PBX features or host systems.

You can program more than one pause in an external autodial or speed dial sequence.

The Pause symbol (⑤) uses one of the 24 spaces in a dialing sequence.

For pulse dialing, [*] inserts a 1.5 second pause into the dialing sequence.

Long Tones

Feature ⬜ [8] [0] [8]

The Long Tones feature lets you control the length of a tone so that you can signal devices such as fax or answering machines which require tones longer than the standard 120 milliseconds.

- While on a call, press Feature ⬜ [8] [0] [8].

- Press the dial pad buttons to produce the appropriate tones. Each tone sounds for as long as you hold down the button.

Long tones can be used on any call except a conference call. You can use internal lines of the Norstar system to activate a device connected to an analog terminal adapter (ATA) in another area of your office, or external lines to access devices outside the Norstar system.

Displays

Long Tones:

At the appropriate time, press any dial pad button. Hold each button down for as long as necessary. Press Feature ⬜ or Hold ⬜ to cancel Long Tones.

Programmed Release

Feature ⬜ [*] [8] [9]

The Programmed Release feature performs same function as [Rls] in a programmed dialing sequence. When the system encounters

Programmed Release in a dialing sequence, it stops dialing and hangs up the call.

The Programmed Release symbol (■■) takes up two of the 24 spaces in a programmed dialing sequence.

The system will ignore any digits or commands that follow a Programmed Release in a programmed dialing sequence.

Run/Stop

| Feature | ✱ | 9 |

Run/Stop inserts a break point into a sequence of dialed numbers or characters used for automatic dialing. This may be necessary when you are connecting to a PBX or similar host system.

For example, you can call a company with an automated attendant that instructs you to dial the internal number you need. You can program the company number, a Run/Stop, then the internal number on one external autodial button. Press the autodial button once to dial the company number. When you hear the automated attendant, press the autodial button again to dial the internal number.

The Run/Stop symbol (■) uses one of the 24 spaces in an autodial or speed dial sequence.

You can include up to three Run/Stop commands in a dialing string. The system will ignore a fourth Run/Stop, and any digits or commands that follow it in a programmed dialing sequence.

Wait for Dial Tone

| Feature | 8 | 0 | 4 |

Wait for Dial Tone causes a sequence of numbers to pause until dial tone is present on the line before continuing to dial. This is useful if you must dial a remote system and then wait for dial tone from that system before dialing the rest of your number.

The Wait for Dial Tone symbol (■■) uses two of the 24 spaces in an autodial or speed dial sequence.

Displays

Invalid code	You have entered a code that can only be used in a programmed autodial or speed dial sequence, not on a call you dial directly. Programmed Release and Run/Stop are for use in programmed dialing sequences only.

Using pulse dialing for a call

If your external telephone lines use pulse dialing, you can temporarily switch to tone dialing by pressing ▣ after selecting the line. Tone dialing lets your Norstar telephone communicate with devices and services that respond to tone signals, such as automatic switchboards, and fax or answering machines.

Using your Norstar system from an external location

You can use the lines and some of the features of a Norstar system from outside the system. You can do this over the public telephone network when you are away from the office, or you can call from another system, over a private network.

An example of how remote access works is a sales representative who spends a lot of time out of the office needs to make long distance calls to the European office. Your Norstar system has a leased line to Europe with reduced transatlantic charges. You provide that sales representative with a Class of Service password that gives access to the transatlantic line. The sales representative can then telephone into the Norstar system from a hotel, enter their Class of Service password, and use the leased transatlantic line to make calls.

Remote users can access Norstar lines, line pools, the page feature, and remote administration (if enabled through Software Keys). The exact facilities available to you through remote access vary depending on how your installer or customer service representative set up your system.

Controlling access to your Norstar system

It is important to maintain the security of your Norstar system by limiting access to authorized users and limiting those users to the features they need.

Remote users can make long distance calls.

Remember that a remote user can make long distance calls that will be charged to your company and can make page announcements in your office.

Direct inward system access (DISA)

Control access to your Norstar system with direct inward system access (DISA). Access to your Norstar system from the public telephone network should always be controlled with DISA. If your installer or customer service representative programs the line used for remote access to answer a call automatically and wait for a DISA internal number, callers will hear a stuttered dial tone and must enter a Class of Service password before they are allowed into the system.

Class of Service (COS)

To control the level of telephone service a remote user can access, your installer can assign a remote filter and remote package to the line used for remote access. The remote filter restricts the numbers that can be dialed on the line, and the remote package restricts the use of line pools and the page feature. To change the restrictions for the line, the user can enter their Class of Service (COS) password when the system answers with DISA, or can dial the DISA internal number and enter their Class of Service password.

Maintaining security

To maintain the security of your system, the following practices are recommended:

- Warn anyone to whom you give the remote access number to keep it confidential.

- Change Class of Service passwords often.

- Warn anyone to whom you give a Class of Service password to remember it and not to write it down.

- Remove the Class of Service password of anyone who leaves your company.

Accessing Norstar remotely over the public network

- Dial the Norstar system's remote access number.

- When you hear a stuttered dial tone, enter your COS password.

- Wait for the system dial tone.

If your system is using System Answer or CCR, you may also enter the DISA number or Auto DN once your call has been automatically answered by one of the features.

To use the system remotely, you must use a telephone with tone dialing to call the system.

Remote access is possible only on lines that your installer or customer service representative programs to auto-answer calls.

To use features on a remote Norstar system, press ⁌✶⁆ followed by the feature code. Even if you are calling from a Norstar system, press ⁌✶⁆ instead of ⁌Feature ⁆.

In certain situations, you may experience lower volume levels when using Norstar remotely.

Tones

You may hear some of the following tones while accessing Norstar remotely.

Tone	What it means
Busy tone	• Dialed a busy line pool access code. You will hear system dial tone again after 5 seconds.
Norstar system dial tone	You may use the Norstar remotely.

Fast busy tone	You have done one of the following
	• Entered an incorrect COS password. Your call will be disconnected after five seconds. • Taken too long while entering a COS password. Your call will be disconnected after five seconds. • Tried to use a line pool or feature not permitted by your Class of Service. You will hear system dial tone again after five seconds. • Dialed a number in the Norstar system which does not exist. Your call will be disconnected after five seconds.
Stuttered dial tone	Enter your COS password.

Using Class of Service (COS) passwords

Class of Service passwords permit controlled access to a system's resources both by internal and remote users. When you enter a Class of Service password at a telephone, the restriction filters associated with your Class of Service password apply, rather than the normal restriction filters. Similarly, when a remote user enters a Class of Service password on an incoming auto-answer line, the restriction filters and remote package associated with their Class of Service password apply, rather than the normal restriction filters and remote package. COS passwords are programmed by either your customer service representative or installer.

Users should memorize their COS passwords instead of writing them down. Employees' COS passwords should be deleted when they leave the company. Typically, each user has a separate password. Several users can share a password or one user can have several passwords.

Changing your Class of Service   [Feature] [6] [8]

You must enter a Class of Service password each time you wish to make a call that is normally restricted on a line or telephone.

To change the restriction filters on a line or telephone:

• Press [Feature] [6] [8].

• Enter your six-digit COS password.

COS passwords lets you define individual passwords and determine the restriction filters, and remote package associated with each.

Tip - *If you use your Norstar system from outside the office, you may have to enter a Class of Service password to gain access to the system. See "Using your Norstar system from an external location" on page 152.*

Displays

(Blank display)	(Blank display) Enter your password. It will not be shown on the display.
Invalid Password	You have entered a password that is not programmed into your system.
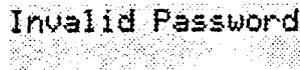
General System features

The following features are available for the entire Norstar system.

Disconnect supervision

When Disconnect Supervision is assigned to a line, the Norstar system monitors it to detect if an external caller hangs up. This allows the system to release the line for other uses. Your installer or customer service representative assigns disconnect supervision.

Incoming line groups

Lines can be assigned to an incoming line group to provide line concentration for incoming calls. You can then assign the incoming line group to appear at a telephone rather than each individual line. This frees up memory buttons for programming features or autodial numbers.

You can assign the same incoming line group to several telephones.

You answer calls on an incoming line group in the same way as you answer calls on a line.

Internal numbers

Each telephone in the Norstar system has its own internal number. The length of internal numbers in your system can be from two to seven digits. All numbers in your system are the same length. Your installer or customer service representative sets the length of internal numbers (also called the DN length).

To find out your internal number, use the Button Inquiry feature (Feature ✳ ⓪) on an intercom button. On the M7100 telephone, Button Inquiry shows your internal number followed by the function assigned to your single-memory button.

Line assignment

Any of the lines in your system can be assigned to any of your telephones. Your installer or customer service representative assigns lines to telephones in Configuration programming.Lines can be assigned to appear only, appear and ring, or to ring only.

Usually, only the lines that are appropriate for a particular person appear at that person's telephone. When a line is assigned to a telephone it is automatically given a line button on that telephone, if a button is available. The M7100 telephone has no line buttons for its lines.

Calls on lines that ring but do not appear at a telephone are presented at an intercom button.

You may be able to answer a call on a line that does not appear or ring at your telephone. To pick up such a call, use Call Pickup, Call Park, or Trunk Answer.

A telephone may have buttons assigned for lines 001 to 003, but have only lines 001 and 002 programmed to ring as well. An incoming call on any of the three lines causes a line button indicator to flash, and the telephone can be used to answer the call. This is especially useful for people who monitor other telephone lines, but want only their own lines to ring.

Target line

A target line is used to route a call directly to a particular telephone or group of telephones. Target lines are only used for incoming calls. A single incoming line may provide connections to several different target lines. This allows each person or department in the office to have their own number without having a separate external line for each number.

Line pools

A line pool allows each telephone access to external lines from a group (or pool) of external lines. You can access such lines by pressing an intercom button and entering a line pool access code or by pressing a memory button programmed with the line pool feature code and a line pool access code.

Overflow call routing

If a call comes in for a target line that is busy, Norstar routes the call to the prime telephone for that target line. If there is no prime telephone assigned to the target line or if a call cannot be directed to a target line, the call goes to the prime telephone for the external line used.

Overflow routing for incoming calls is used with the Routing Service programmed by your installer. A Service must be active for overflow routing to be in effect. Overflow routing is not available in normal service.

M7100 telephone

Because the M7100 telephone does not have line buttons, it sometimes works slightly differently from other Norstar telephones. Where other telephones can require that you select a line button to answer a call, on the M7100 telephone you simply pick up the receiver. Where other telephones require you to select a line button to take a call off hold, you press [Hold   ] on the M7100 telephone.

On M7100 telephones, you can answer a second call by pressing [Hold   ]. Your active call is put on hold and you are connected to the waiting call. You can have no more than two calls at a time.

The M7100 telephone cannot have a [Handsfree Vote] button. When applicable, special instructions for the M7100 telephone are included with each feature description.

Memory buttons

Memory buttons are the buttons with indicators on the M7208, M7310, and M7324 telephones, and the dual buttons without indicators on the M7310 telephone. There is also a single memory button, without an indicator, on the M7100 telephone. Memory buttons can be used as answer, autodial, line, incoming line group,

and programmed feature buttons. Line, incoming line group, intercom and answer buttons must have indicators.

One-line display

The M7100 and M7208 telephones have a one-line display. Other Norstar telephones have a second line on the display which shows the functions of the three buttons directly below it.

Some display buttons, such as TRANSFER and ALL, are simply shortcuts which are not available on a one-line display.

Other display buttons, such as OK and SHOW, perform essential functions. For a one-line display telephone, use the following buttons instead of these display buttons.

Substitutes for display buttons

Display button	Dial pad button
OK	[Hold]
QUIT	[Rls]
ADD	[*]
SHOW	[#]
CANCEL	[#]
VIEW	[#]
OVERRIDE	[#]
BKSP	[◄)] [◄))]
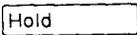
All displays listed in this book are shown as they appear on the two-line display.

Prime line

Your telephone can be programmed to select an internal or external line or a line pool automatically whenever you lift the receiver or press [Handsfree Mute]. This is your prime line.

Private lines

A private line is exclusive to a particular telephone. Calls that are put on hold or left unanswered on a private line cannot be picked up at any telephone except the prime telephone.

Volume bar

The volume bar controls the volume of the receiver, telephone ringer, handsfree speaker, and headset. Press either end of the volume bar 🔊◻◻◻◻🔊 to adjust the volume.

Wall mounting

Norstar telephones can be mounted on a wall. Contact the installer or customer service representative if you wish to have any telephones in your system wall-mounted.

Troubleshooting

Using the alarm telephone

An alarm telephone displays Norstar's system alarm codes, should they occur. It is a Norstar telephone with a two-line display (M7310 or M7324 telephones) that the installer or customer service representative has assigned as an alarm telephone.

Reporting and recording alarm codes

If an alarm message appears on the alarm telephone's display

- record the alarm number

- press TIME and record the time displayed

- call your installer or customer service representative and report the alarm code

- after speaking to your installer or customer service representative, press CLEAR

Displays

Alarm: 61-4-2 TIME CLEAR	Report this alarm and the time it occurred to your installer or customer service representative.

Testing the telephone

If you suspect something is wrong with a button, the speaker, the displays, or some other part of the Norstar telephone hardware, you can do a quick test to see which part of the telephone is broken.

Tip - *Ensure that the function of a button matches its label by pressing* [Feature] [*] [0] *and then the button to see its function.*

You can end the telephone testing session anytime by pressing [Rls] *or* [Feature] *unless you are testing those buttons. The test feature will time-out after 30 minutes of no activity.*

Testing the telephone display

Use a display test if you suspect that one of the indicators on the telephone is not working.

Display test is the first display you will see after pressing ⌊Feature⌋ ⌊8⌋ ⌊0⌋ ⌊5⌋.

Press TEST or ⌊Hold⌋ to go ahead with a display test.

Adjust the contrast for the telephone display so you will be able to see the test results clearly. Enter a number to change the contrast or press DOWN and UP.

Press OK or ⌊Hold⌋ to go ahead with the test.

During the test, the display should be filled with solid, dark blocks and all the indicators next to the buttons on the telephone should be turned on. Any Busy Lamp Field (BLF) or CAP modules that are attached to the telephone should also be completely lit. You will lose any information that was showing on the BLF before the test started.

Pressing any button ends the test.

Testing the telephone buttons

- Press ⌊Feature⌋ ⌊8⌋ ⌊0⌋ ⌊5⌋, then ⌊#⌋ or NEXT.

- Press TEST or ⌊Hold⌋ to go ahead with a button test.

- Press button to see its function. If the button you pressed uses an indicator, it should also turn on when you test the button.

- Pressing the ⌊Rls⌋ button puts Rls button on the display briefly and returns you to the Button test display.

Testing the speaker in the telephone handset

The handset test is not available if you have a headset plugged into the telephone.

- Press ⌊Feature⌋ ⌊8⌋ ⌊0⌋ ⌊5⌋, then ⌊#⌋ or NEXT twice. The display shows Handset test.

- Press TEST or ⌊Hold⌋ to go ahead with a handset test.

- . Pick up the handset and listen. You should hear dial tone through the handset at a maximum volume. The volume is reset to maximum only while the test is going on.

Pressing any button or hanging up ends the test.

Testing the telephone headset

The headset test is not available to telephones that do not have a headset jack or a headset plugged in.

- Press [Feature   ] [8] [0] [5], then [#] or NEXT until the display shows Headset test.

- Press TEST or [Hold   ] to go ahead with a headset test.

You should hear dial tone through the headset. The volume will be reset to a default level during the test.

Pressing any button ends the test.

Testing the telephone speaker

- Press [Feature   ] [8] [0] [5], then [#] or NEXT until the display shows Speaker test.

- Press TEST or [Hold   ] to go ahead with a speaker test.

You should hear page tone through the telephone speaker at the maximum volume. The volume returns to its previous setting when you end the test.

Pressing any button ends the test.

Testing the power supply to a telephone

- Press [Feature   ] [8] [0] [5], then [#] or NEXT until the display shows Power test.

- Press TEST or [Hold   ] to go ahead with a power supply test.

You should see all the indicators on the telephone go on and hear ringing at maximum volume. When the test has ended, the display should briefly show Power OK.

The test lasts for five seconds or until you press a button.

Common feature displays

You may see the following displays when you use a feature.

Access denied	Someone is already using programming, or the feature you are trying to use is not compatible with the configuration of the telephone or line.
Denied in admin	You have tried to use a feature, but you have not been given access to it in administration programming.
Feature timeout	You have taken more than 15 seconds to press a button in response to a display.
Inactive feature	You have entered a feature code that is used by an application program that your system does not have.
Invalid code	You have entered an invalid feature code.
Not available	You have tried to use a feature that is not available in the present setup of your Norstar system.
Set locked	You cannot use the feature you have chosen because your telephone is locked. See "Using Set lock" on page 147.
1234567890123... VIEW→ OK	Press [#] or press VIEW→ or ←VIEW to view a number that is too long to fit on the display. Press [Hold] or OK when you are finished.
S	This indicates a long distance call. (May be available with Call Display services.)
39>21	Either you are receiving an internal call from telephone 39 forwarded by telephone 21 or you have an Answer button for telephone 21 and an internal call from 39 is ringing on 21.
21 TRANSFER	You are connected to an internal call. Press TRANSFER to transfer the call.

21 calling	You are receiving a call from telephone 21.
Call 21? **YES NO**	You have received a Ring Again offer for a call to an internal telephone. Press the flashing internal line button or YES to call the number again. On the M7100 telephone, just lift the receiver. Otherwise, press NO or wait 30 seconds for the Ring Again offer to expire. For an explanation of Ring Again, see "Using Ring Again" on page 52.
Camped: 21 **CALLBACK**	The person to whom you camped the call did not answer it. The call has come back to you. Press the line button or CALLBACK to reconnect to the call.
Line001 **TRANSFER**	You are connected to an external call. Press TRANSFER to transfer the call.
Line001>21	Either you are receiving an external call forwarded from telephone 21 or you have an answer button for telephone 21 and an external call is ringing on that telephone.
Line001 transfer	The call on line 001 is being transferred to you by someone else in your Norstar system.
Line001 waiting	A camped call is waiting. Press the line button or use Call Queuing to answer the call. Press [Hold] if you have an M7100 telephone.
No calls waiting	You tried to use Call Queuing but no call was ringing at your telephone.
No line selected	There is no call ringing at your telephone. If you have a flashing line button but your telephone is not ringing, press the line button to answer the call on that line.
Not in service	The telephone to which you directed a call is not in service or is otherwise unavailable. The call is returned to your telephone.
Parked call **CALLBACK**	No one answered the call you parked. The call has come back to you.

Pick up receiver

You have used the Call Queuing feature without picking up the receiver. Auto Handsfree has not been assigned to your telephone. You must use the receiver or [Handsfree Mute] to answer a call.

Priority>21
BLOCK

You are receiving a priority call. If you are on another call, inform the person you are speaking to that the call is about to be put on hold. Press the flashing line indicator of the priority call or wait until the call connects automatically (in eight seconds). The priority call goes through when you hear the next beep. Your active call is placed on Exclusive Hold. It is reconnected automatically when the priority call ends (unless you transfer the priority call, in which case you must press the line button of your original call to reconnect). Use DND ([Feature] [8] [5]) or press BLOCK to reject a priority call.

Release a call

You have no free line buttons on which to receive a call. Release one of your current calls and try again to answer the incoming call.

Use line pool?
YES   NO

You have received a Ring Again offer for a line pool. Press the flashing internal line button or YES to use the line pool. On the M7100 telephone, just lift the receiver. Otherwise, press NO or wait 30 seconds for the Ring Again offer to expire.

Hold or release

You cannot program a feature button while you are on a call.

Release calls

You have tried to use a feature while you were on a call or had calls on hold. Release the call or calls, before using the feature.

Line in use

The line is in use. Make the call using normal methods or wait until the line is free.

No button free

You have tried to make, receive or pick up a call when no line button was available. Some features also require you to have a button free. Releasing calls can free up line buttons.

Make calls first	The feature you tried to use requires you to be on an active call at your telephone. This display also appears when information about a call has been cleared by a system reset.
No free lines	All the lines or line pools available to the telephone are in use. This display also appears when you have tried to dial an external number or use a feature that conflicts with the lines, line pools or prime line used by the telephone. This must be corrected by your customer service representative or installer.
No line selected	The telephone has been set up to dial an external number on a prime line but the telephone does not have a prime line. This must be corrected by your customer service representative or installer.
In use: 21	You have tried to program redirection while someone else is programming redirection. Only one person can program line redirection at a time.
Incoming only	The line you are trying to use for redirecting calls is for incoming calls only. Choose an outgoing line.
9_ **QUIT BKSP OK**	Continue entering digits. Press 🔊 ⟷ 🔊 or BKSP to delete incorrect digits. Press [Hold] or OK when you are finished.
Invalid number	You have entered an invalid line pool code or an invalid destination code.
Line denied	You have selected a line that is private to another telephone.
Restricted call	The destination you have chosen for line redirection is restricted.

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