SPIRIT™ CS MODEL 2448 T110

(Instructor Guide)

GENERAL BUSINESS SYSTEMS

SERVICES EDUCATION

JULY 1987

AT&T

SPIRIT CS MODEL 2448

T110

INSTRUCTOR GUIDE

AT&T Technical Training Services
Dublin, Ohio

First Edition
June. 1987

Developed by
AT&T Technical Training Services
5151 Blazer Memorial Parkway
Dublin, Ohio 43017-1392

Printed in the United States of America.

SPIRIT CS MODEL 2448
INSTRUCTOR INFORMATION

INSTRUCTOR GUIDE

TABLE OF CONTENTS

COURSE INFORMATION

COURSE HISTORY

Course T110 was developed to provide the systems technician with the skills and knowledge required to install, administer, and test the SPIRIT CS Model 2448.

COURSE DEVELOPMENT

AT&T Technical Training Services at Dublin, Ohio, developed this course in accordance with AT&T Training Development Standards. The content of this course is a result of reviewing the SPIRIT CS Model 2448 documentation and discussion with the Indianapolis, Indiana, AT&T Consumer Products Labs personnel in conjunction with demonstrations of SPIRIT CS Model 2448 features.

COURSE DESCRIPTION

Course T110 is a lecture-oriented, instructor-led course, which uses written and hands-on exercises to reinforce the material presented in each lesson. Standard documentation is the primary reference for the course material.

COURSE OBJECTIVES

The purpose of Course T110 is to prepare installation personnel to meet the following objectives:

1. Identify the basic hardware configuration required for the SPIRIT CS Model 2448.
2. Identify the SPIRIT CS Model 2448 documentation.
3. Identify the typical wiring plan and the steps required to install the system.
4. Identify the features and use the Administration Manual to administer system changes or to program individual stations.
5. Analyze troubles and perform the troubleshooting necessary to identify defective hardware.

LESSON DESCRIPTIONS

LESSON 1 contains a general overview of the SPIRIT CS Model 2448 capacities, capabilities, station sets, and documentation.

LESSON 2 provides an overview of the system installation procedures as applicable to existing and new building wiring.

LESSON 3 covers feature administration affecting the entire system and the individual stations.

LESSON 4 provides information to help installation personnel diagnose and correct system troubles to the hardware replacement level.

LESSON FORMAT DESCRIPTION

Each lesson in the Instructor Guide uses the same format and is organized into the following sections:

PREPARATION - This section contains information that prepares you to teach the lesson. Included are lesson strategies, lesson purposes, relationship of this lesson to preceding and succeeding lessons and feedback.

OVERVIEW - You are directed to use the brief statements provided to present the major topics covered in the lesson.

OBJECTIVES - The objectives give the measurable standards of the lesson through the use of action words. You are directed to state the objectives as they are written.

PRESENTATION - This section contains the material to be presented to the students. Directive sentences that tell the instructor to do specific things are in italics.

APPLICATION - Directions are given to perform exercises with instructions and to have students complete the exercises using the material provided. You are then directed to review the exercises and clear up any misunderstandings.

SUMMARY - You are directed to review the lesson using the lesson objectives.

WRITTEN EXERCISES WITH ANSWERS - There are duplicate copies of the student exercises with the answers for the instructor.

TARGET POPULATION

Course T110 is designed for SPIRIT CS Systems Technicians. It is assumed that most technicians will be familiar with the SPIRIT CS Model 308/616.

PREREQUISITES

The following prerequisite will give students the background they need to understand and perform SPIRIT CS Model 2448 installation, administration, and maintenance:

- Course T217 - SPIRIT CS Model 308/616

This course is offered at the AT&T Regional Training facilities and by General Business Systems Area Training Managers at other facilities.

COURSE LENGTH

SPIRIT CS Model 2448 T110 is a 1-day course.

CLASS SIZE

The number of students in each class should not exceed 8.

SECURITY REQUIREMENTS

Students should understand that when attending course T110, they may receive or have access to information of a private, proprietary, or confidential nature belonging to or under the control of AT&T. Such information must be kept in confidence.

ADMINISTRATIVE INFORMATION

RECOMMENDED INSTRUCTOR QUALIFICATIONS

The instructor should be experienced in conducting instructor-led, group-paced PBX courses. In addition, he or she should have experience in administering the existing SPIRIT system.

INSTRUCTOR PREPARATION

It is recommended that you prepare for this course by:

- Completing the entire course before your first presentation
- Reviewing the course material for content and arrangement

You should have approximately 12 hours of preparation time before presenting the course. This will allow time to prepare for course presentation, to equip the classroom properly, and to inventory materials. This time should decrease considerably with subsequent classes.

REQUIRED FACILITIES, EQUIPMENT, AND MATERIALS

Course T110 is designed to be conducted in a standard, well-lit classroom that contains a chalkboard, chalk, and erasers. The classroom should be arranged so each student has adequate desk space, and can see you while you are addressing them. You must be able to move freely among the students to assist and observe them during work assignments.

The hardware should include the Basic Control Unit, Power Supply Unit, an Expansion unit (without Power Supply Unit), 6- and 24-button sets, and a 48-button Attendant Adjunct. Normal AT&T security and safety procedures apply during the training session.

COURSE MATERIAL AND DOCUMENTATION

The following is a list and ordering information of the course material and documentation required for instructing the course:

COURSE MATERIAL	SOURCE
(one) Instructor Guide (per instructor)	ATT-IS
(one) Student text (per student)	ATT-IS

DOCUMENTATION	SELECT CODE	DOC. NUMBER
Customer Installation Instructions, 1224 Controller	950-232	999-500-232
Installation Instructions 2448 Expansion Unit	950-233	999-500-233
Line and Station Cards	950-234	999-500-234
Administration Manual	950-235	999-500-235
48-Button Attendant Adjunct	950-236	999-500-236
User Manual	950-237	999-500-237

To order Course Material write:

AT&T-IS
Services Division Education
99 Jefferson Road
Parsippany, New Jersey 07054

To order Documentation write:

Customer Information Center
P.O. Box 19901
Indianapolis, Indiana 46219

or call: 1-800-432-6600

COURSE SCHEDULE

Training hours are normally 7:30 a.m. to 4:00 p.m., with 30 minutes for lunch. Normally, 15-minute breaks are taken in the morning and in the afternoon.

COURSE MAINTENANCE

We would like to ensure the continuous maintenance of this course. Please send comments and/or corrections to:

AT&T General Business Systems
Product Training - Services
c/o Rudy Enrille, Staff Manager
Room 59A-3B74
99 Jefferson Road
Parsippany, New Jersey 07054

LESSON 1

SPIRIT™ CS MODEL 2448 - OVERVIEW

INSTRUCTOR GUIDE

TABLE OF CONTENTS

LIST OF FIGURES

SPIRIT™ CS MODEL 2448 - OVERVIEW

PREPARATION

The documentation required for this lesson will be the Instructor Guide and the student text.

LESSON OVERVIEW

This lesson provides a general introduction to the SPIRIT CS Model 2448 features, capabilities, capacity, station sets, and documentation.

LESSON OBJECTIVES

Upon completion of this lesson, you should be able to:

1. Identify the physical design of the SPIRIT CS Model 2448 main controller and expansion unit.
2. Identify the documentation provided with the SPIRIT CS Model 2448.

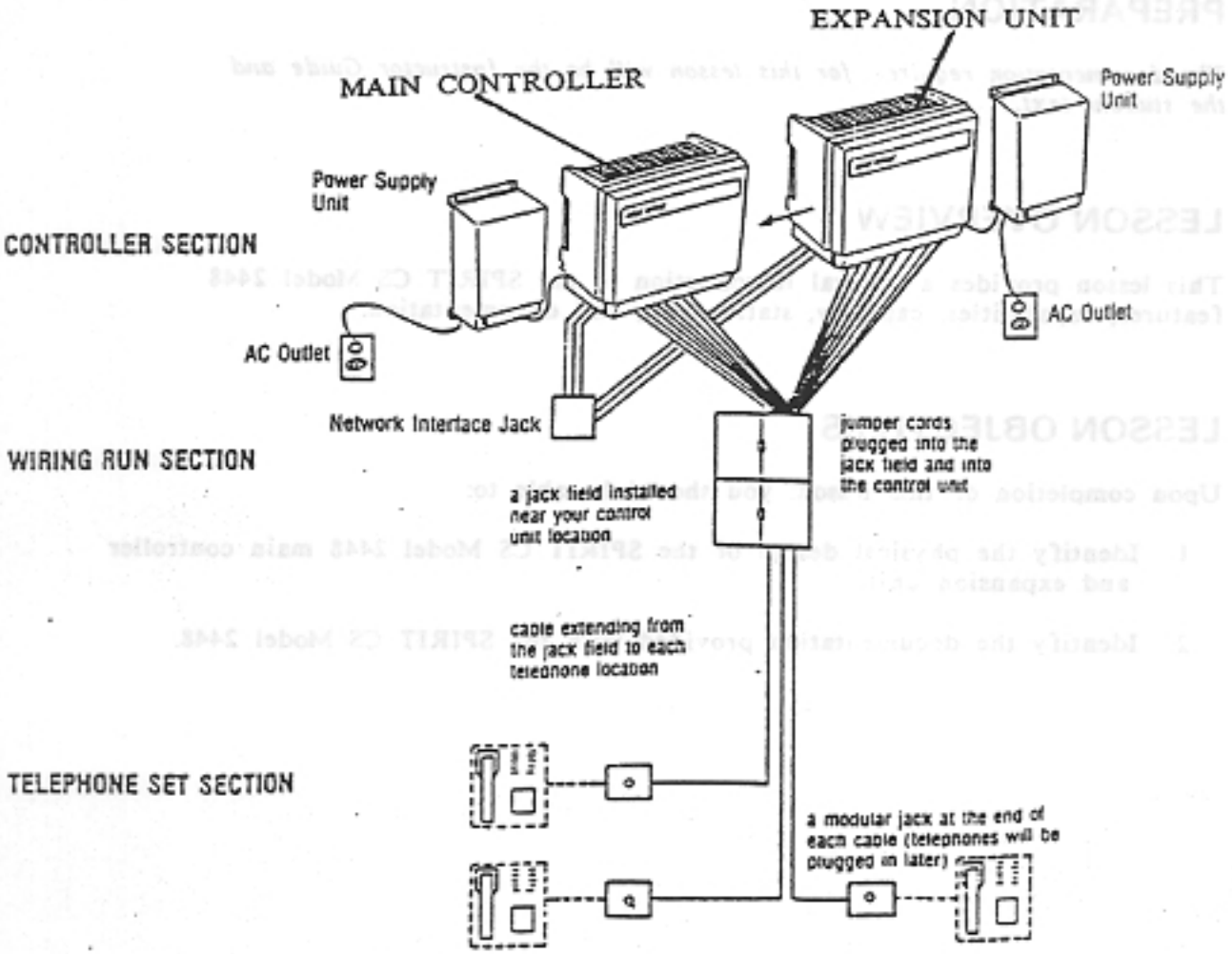

Figure 1. SPIRIT CS MODEL 2448

PHYSICAL DESIGN

☞ *Refer the Students to Figure 1, page___, in the student text.*

The SPIRIT CS Model 2448 accommodates up to 24 outside lines and supports a maximum of 48 stations. A fully equipped system consists of a main controller and one expansion unit; each equipped with up to 12 lines and 24 stations. Both the main controller and expansion unit use external power supplies.

The approximate dimensions of the controller units (main controller and expansion unit) are 13 inches wide, 11 inches high, and 8 inches deep. The power supply units are approximately 6 inches wide, 10 inches high, and 4 inches deep. The system can be either wall or table mounted.

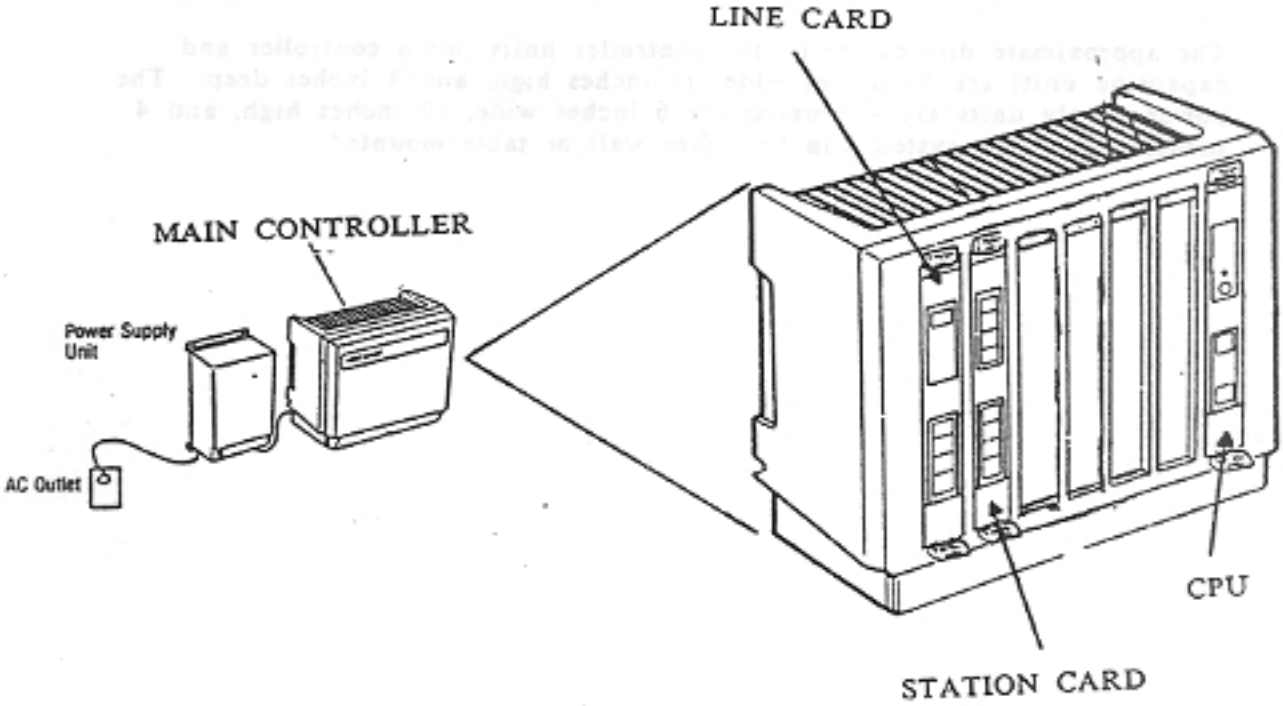

Figure 2. MAIN CONTROLLER UNIT

MAIN CONTROLLER HARDWARE

☞ *Refer the Students to Figure 2. page___, in the student text.*

The main controller comes equipped in the minimal configuration with three circuit cards installed:

- (1) Line Card - has 4 Central Office line jacks and 1 auxiliary jack.
- (1) Station Card - has 8 station jacks for wiring to the SPIRIT CS sets.
- Central Processing Unit (CPU) - houses the microprocessor control circuitry and has three jacks for optional features:
  1. MUSIC IN with MUSIC VOL - for music on hold and volume control.
  2. ALERT - for external alerting.
  3. SMDR (Station Message Detailed Recording) - for call reports on CO lines.

The Music On Hold and External Alerter features are the same as those used in the SPIRIT CS 308/616. There is no dedicated paging jack. Any unassigned line jack can be used.

The Call Report feature is used to track telephone usage. The AT&T 475 serial printer or a Personal Computer must be plugged into the SMDR jack to print the contents of system memory for:

- Call Report information (Incoming and Outgoing call information automatically prints when calls are processed)
- Customization information (System Features, Telephone Features and Call Report)
- System SpeedCall directory

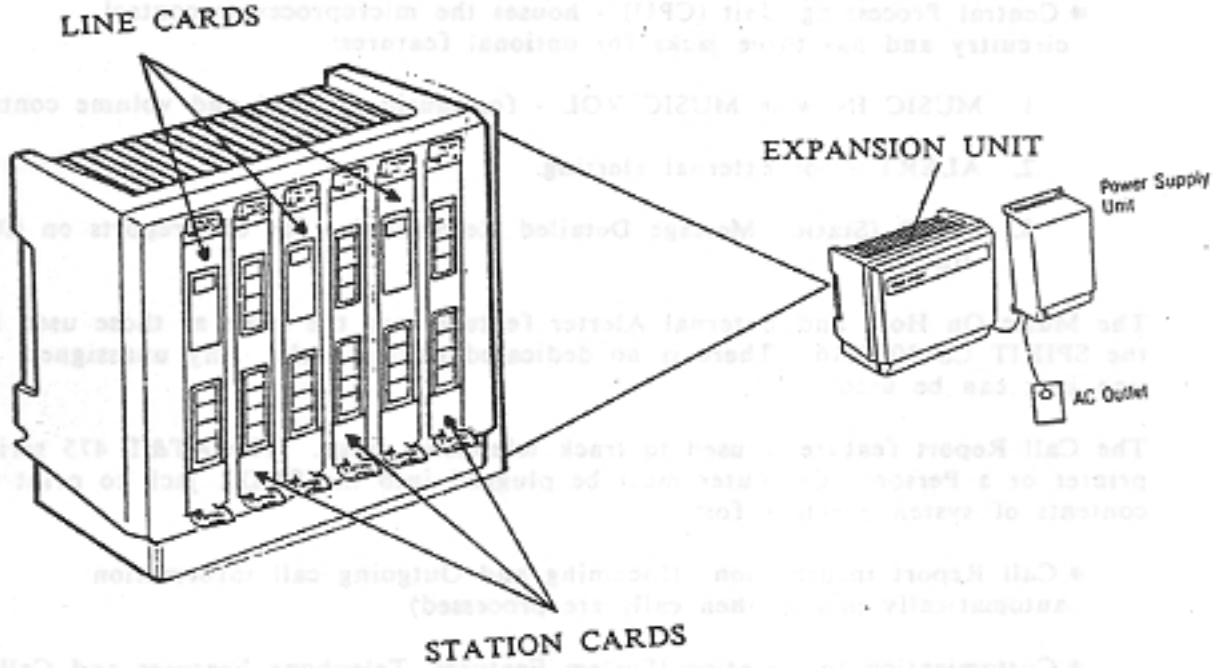

Figure 3. EXPANSION UNIT

EXPANSION UNIT

☞ *Refer the Students to Figure 3. page___, in the student text.*

When more than 12 lines and/or 24 stations are required, an expansion unit must be added. The expansion unit holds a maximum of three Line Cards (12 additional line jacks), and three Station Cards (24 additional station jacks).

☞ *Point out that* ***each*** *Line Card increases the capacity by four lines and each Station Card increases the capacity by eight stations.*

The expansion unit does not contain a CPU card. The CPU that serves the main controller also serves the expansion unit.

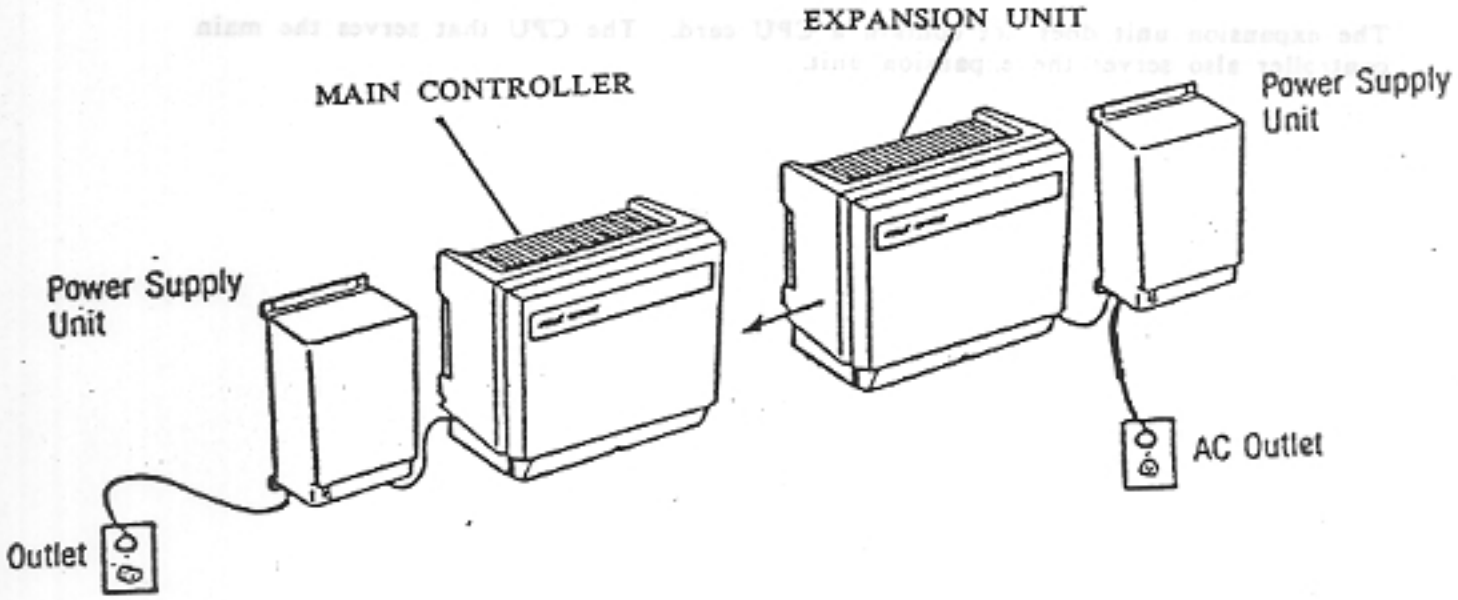

Figure 4. SPIRIT CS MODEL 2448 POWER SUPPLY UNIT

POWER SUPPLY UNIT

☞ *Refer the Students to Figure 4, page___, in the student text.*

The main controller and expansion unit each require a separate power supply. Each power supply unit is equipped with an ON/OFF switch and a green LED indicator lamp. The LED lights when the power is ON.

CAUTION: Both power supply units must be turned OFF when adding or removing cards.

The main controller power supply unit supplies some power for the expansion unit. The LED in the expansion unit power supply remains ON for several seconds after the power is turned OFF.

The power supplies should be mounted within 6 inches of the control unit they serve, and no more than 5 feet from the AC outlet. The only ground serving the SPIRIT CS Model 2448 is the AC outlet ground.

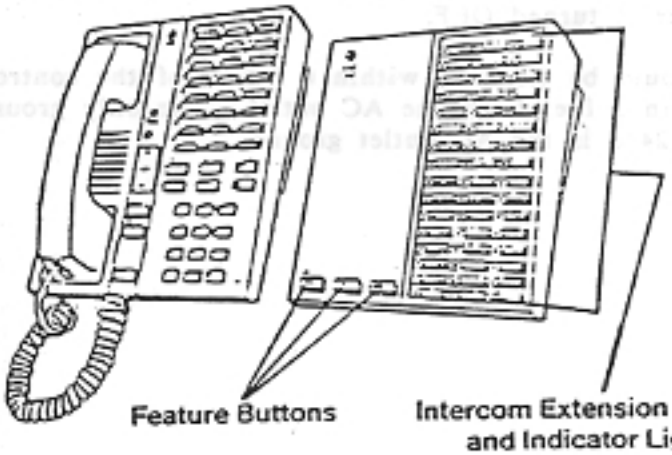

Figure 5. ATTENDANT ADJUNCT

ATTENDANT ADJUNCT

☞ *Refer the Students to Figure 5, page___, in the student text.*

The 6- and 24-button sets used with the Model 2448 are the same sets used with the 308/616 system. The sets are referred to as "dumb" and have control buttons to activate the features in the control unit memory.

The handset used with the sets are not interchangeable with other K-type handsets. The letter "N" is molded under the receiver end of the handset.

The Model 2448 system supports an optional 48-button Attendant Adjunct which provides:

- Pre-set intercom extension buttons for one-button dialing.
- LED indicator lights for a visual status of all phones in the system.
- Buttons for sending and canceling messages, and turning Night Service on and off.

NOTES

MODEL 2448 NEW FEATURE CUSTOMIZATION

Point out that most system and telephone features listed are common to both SPIRIT models. Explain that the features listed are covered in Lesson 3 - Administration.

The Model 2448 TELEPHONE feature customization not found in the 308/616 model are:

- Line to Button assignments
- Copy to Group (used as a tool during station customization)

Additional SYSTEM features not available with the model 308/616 are:

- SMDR (Station Message Detailed Recording) or Call Reports
- Availability to Print Customization

SYSTEM DOCUMENTATION

☞ *All documentation should be left with the System Administrator.* The following documentation is available with the SPIRIT CS Model 2448:

Document Title	Select Code	Document Number	Key
Customer Installation Instructions, 1224 Controller	950-232	999-500-232	1
Installation Instructions, 2448 Expansion Unit	950-233	999-500-233	2
Installation Instructions, Line and Station Cards	950-234	999-500-234	5
Administration Manual and Overlay	950-235	999-500-235	1
48-Button Attendant Adjunct, Instruction Card	950-236	999-500-236	3
User Manual with a Reference Card and Labels	950-237	999-500-237	4
Reference Card (set of 10)	950-238	999-500-238	6
Set (1 each of the above)	950-000		6
Customer Convenience Kit (set labels and Overlay)	999-240	999-500-240	6

Key:

1. Furnished with the main controller unit.
2. Furnished with the expansion unit.
3. Furnished with the 48-button attendant adjunct.
4. Furnished with the telephone sets.
5. Furnished with Line and Station Expansion Card
6. Can be ordered from Customer Information Center

SUMMARY

Review the Lesson objectives with the Students and answer any questions.

APPLICATION

As this Lesson is an Overview of the system, no written or hands-on work exercises are included.

LESSON 2

SPIRIT™ CS MODEL 2448 - INSTALLATION

INSTRUCTOR GUIDE

TABLE OF CONTENTS

LIST OF FIGURES

SPIRIT™ CS MODEL 2448 - INSTALLATION

PREPARATION

The documentation required for this lesson will be the Instructor Guide and the student text. Other manuals used for reference are the SPIRIT Communications System Model 2448:

- *Customer Installation Instructions (999-500-232)*
- *2448 Expansion Unit Installation Instructions (999-500-233)*
- *Line and Station Cards Installation Instructions (999-500-234)*

LESSON OVERVIEW

This lesson provides an overview of the system installation procedures as applicable to existing and new building wiring.

LESSON OBJECTIVES

☞ *Refer the Students to the student text as you state the lesson objectives.*

Upon completion of this lesson, you should be able to:

1. Identify the steps required to install the SPIRIT CS Model 2448.
2. Identify the system wiring plan.
3. Identify the station sets and the new 48-button Attendant Adjunct.
4. Install the optional equipment supported by the Model 2448.
5. Identify the system test procedures used to activate the Model 2448.

NOTES

PRESENTATION

PREINSTALLATION REQUIREMENTS

The area where the equipment will be installed should meet the same environmental requirements as the SPIRIT 308/616 system.

- Air temperature should range between 40 and 104 degrees.
- Adequate ventilation, not installed near to heater or furnace.
- Clean area free from excessive dirt and dust.

When you receive the material, check the shipping summary and note any equipment shortages or damage.

INSTALLATION PROCEDURE

There are eight steps required for installing the Model 2448:

1. Plan Your System
2. Mount Controller
3. Install Wiring
4. Power Up the System and do the Controller Self-Test
5. Install Telephone Sets (Install set 10 first to allow the System Administrator to practice the customizing procedures)
6. Connect Controller to Wiring Runs
7. Install Optional Equipment
8. Install cabinet covers

☞ *Refer the students to the SPIRIT CS Model 2448 - Customer Installation Instructions (900-500-232) for additional information (See Table Of Contents).*

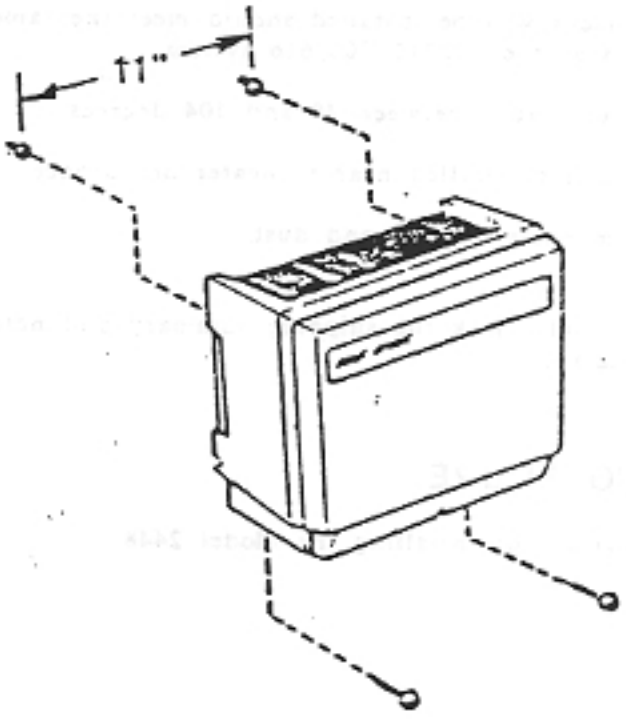

Figure 1. MAIN CONTROLLER UNIT

PLAN YOUR SYSTEM

To determine the location of the controller consider the location of the RJ Network Interface (CO Lines), the customer provided AC outlet, and space for adding an expansion unit. The controller and power supply may be installed on a table or desk top. The switch side must be up to allow for proper ventilation.

CAUTION: Do not place anything on top of the unit.

INSTALL MAIN CONTROLLER UNIT

☞ *Refer the Students to Figure 1 page___, in the student text.*

CAUTION: Take special care to reduce the possibility of the equipment moving or falling.

Perform the following steps to mount the 2448 Controller:

☞ *The front cover can be used as a template for drilling the top hole's for mounting the controller. There are four ribs along the top of the cover. The ribs closest to each edge on the front cover are 11 inches apart and can be used as a guide for marking prior to drilling.*

- Install the top two screws using the ribs on the front cover as a guide.
- Mount the controller by the top two key hole slots.
- Mark the locations of the bottom two screws.
- Remove the controller from the wall.
- Install the bottom two screws in the housing slots.
- Place the slots over the controller and pull down.
- Tighten screws

If the system configuration requires ONLY the main control unit, position the unit to allow a minimum of 2-feet of wall space to the right for adding the expansion unit.

When the controller is mounted and secured in place, write the date on the **(DATE INST:)** label and place it on the left side of the controller. Date installed labels should also be affixed to the power supply unit(s) and expansion unit if installed at a later date.

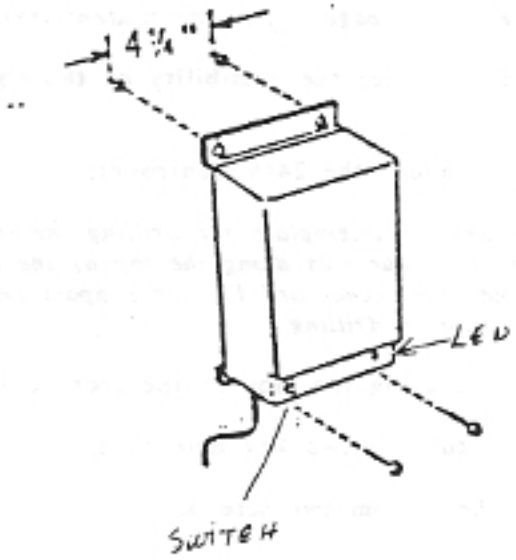

Figure 2. MODEL 2448 POWER SUPPLY UNIT

INSTALL MODEL 2448 POWER SUPPLY UNIT

☞ *Refer the Students to Figure 2 page___, in the student text.*

Perform the following steps to install the Power Supply unit:

- Install two screws using the top flange as a guide.
- Mount the Power Supply Unit on the two screws.
- Install screws through the two holes in the bottom flange and tighten.

The AC outlet for the power supply unit must be within 5 feet and not controlled by a switch. The green-wire ground of the AC outlet is the only ground for the system and is the same method used for grounding the SPIRIT 308/616 system. Verify proper grounding by checking the AC outlet wiring with the Ideal 61-035 tester or equivalent. If the AC outlet test shows improper grounding, notify the customer.

The order of the installation of the Power Supply and Controller is interchangeable.

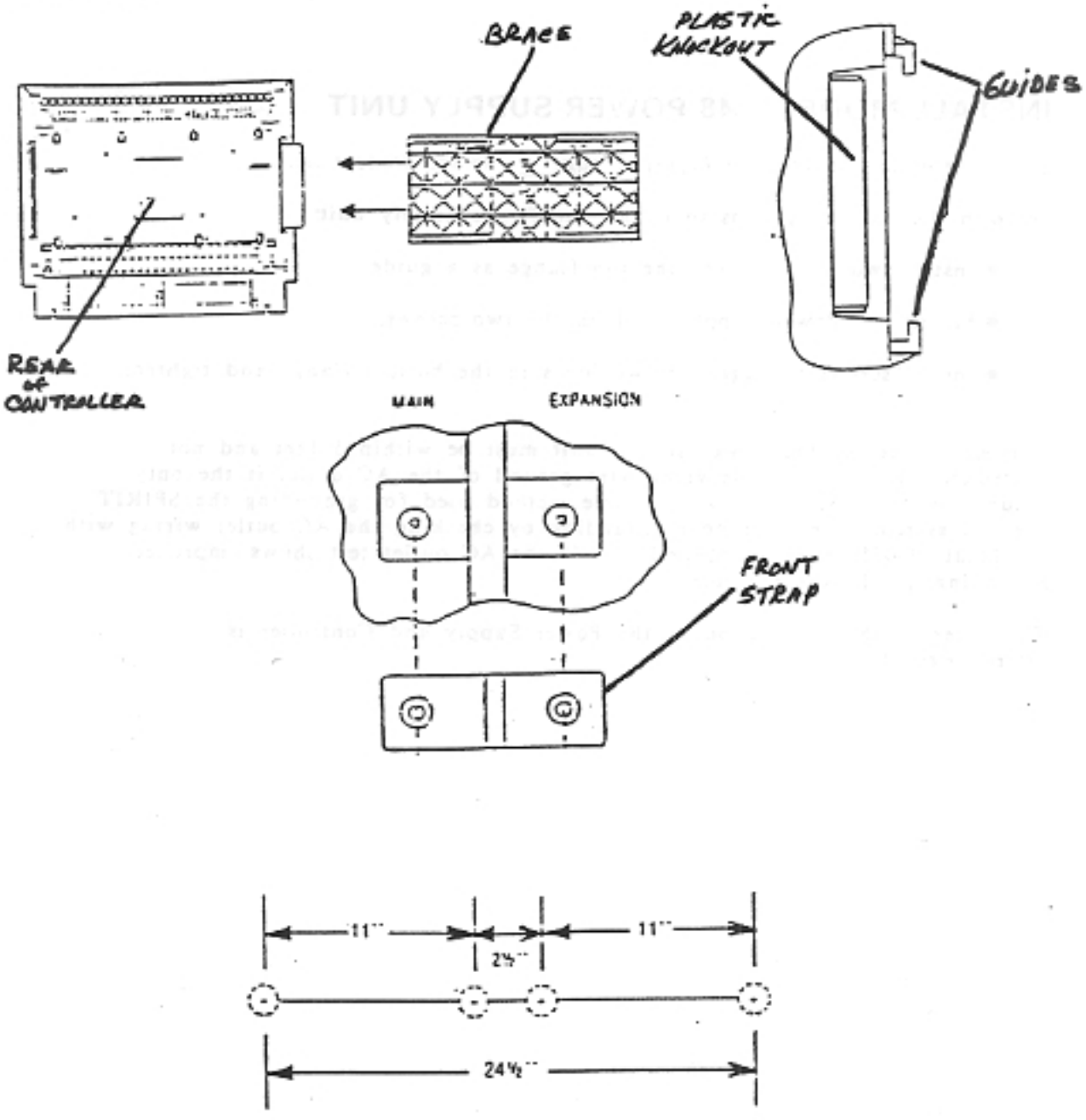

Figure 3. EXPANSION UNIT HARDWARE

INSTALL THE EXPANSION UNIT AND POWER SUPPLY UNIT

WARNING: If you are adding the expansion unit to a working system, the main control unit must be unplugged.

The following steps are required for adding the Expansion Unit and Power Supply Unit:

- Make sure all the cords plugged into the main controller are labeled before you disconnect them.
- Turn off the power and remove the main controller from the wall.
- Use two screws to fasten the brace on the rear left side of the Expansion Controller.
- Remove the breakout strip on the right side of the Main Controller.
- Use the brace as a guide to slide the two controllers together.
- Use two screws to fasten the brace to the Main Controller.
- Use two screws to fasten the front strap between the Controllers.
- Install top two screws using the front cover ribs as a guide. (The center two ribs are 2 1/2 inches apart as shown in figure 3.)
- Place the Main Controller and the Expansion Controller over the screws and pull down.
- Mark the two locations of the 2448 Controller bottom screws.
- Remove the controller from the wall.
- Install the two screws for the 2448 controller bottom.
- Place the controller slots over the screws and pull down.
- Tighten the bottom screws.
- Mount the Power Supply as previously described.

☞ *The four outside screws alone can be used to mount both Controllers.*

The power cord length limits the distance between the control unit(s) and the power supply unit(s). One additional outlet is needed when adding the expansion unit and the power supply.

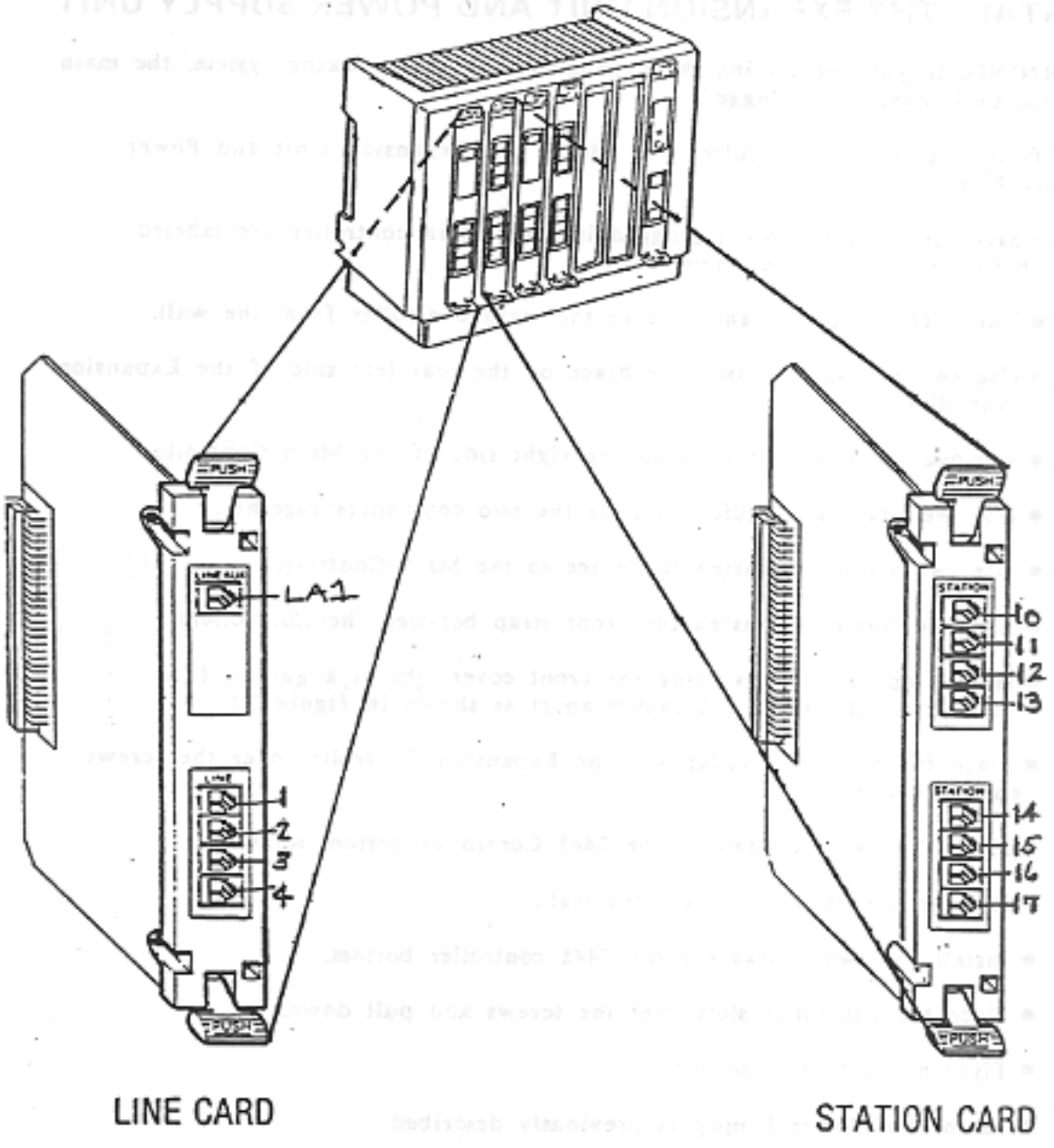

Figure 4. LINE AND STATION CARDS

LINE AND STATION CARD INSTALLATION

☞ *Refer the Students to Figure 4, page_____, in the student text. Additional information can be found in the Line and Station Cards Installation Instructions manual (999-500-234) shipped with the cards.*

CAUTION: Always turn OFF the power switch on BOTH power supply units when you are adding or removing a Line or Station Card.

To prevent damage from Electrostatic discharge (ESD) when you handle a circuit card, avoid touching the leads, connectors, or connector pins of the card. Handle the card by the plastic faceplate or by the top and bottom latches.

Each Line Card has four line jacks to accommodate the incoming (loop-start) lines. Each line card has one LINE AUX jack to provide standard telephone service that is not affected by system features. The LINE AUX should also be used to provide line access for computer modems and answering machines.

A standard 2500 set can be plugged into the LINE AUX jack to provide telephone service during a commercial power failure. If the power failure is less than 2-1/2 days, the RAM (Random Access Memory) or customized memory will be maintained. If the system is out of service for more than 2-1/2 days, the memory may be lost and ALL features reset to the installed (default) values.

NOTE: A system power failure interrupts the system clock and affects Call Reporting records. If the system has the optional printer, the system clock should be reset.

Each LINE AUX jack uses the same incoming line as the lowest numbered line on the card. When the jack is being used (the device that is plugged into that jack is actually off-hook or in-use) the lowest numbered line on that card will be unavailable for use by the system. There is no need to have a toggle switch on that line.

Each Station Card has eight station jacks (one group in the system) to provide service to the SPIRIT 6- and 24-button sets. The optional Attendant Adjunct also plugs into the Station Card jack and can be used with either set. The station jacks can be customized for any available system features. The main controller supports up to three station cards or a maximum of 24 stations. Adding an expansion unit, allows growth for up to three additional cards (24 stations) increasing the total number to 48 in the system and 12 additional lines.

NOTES

TEST CENTRAL OFFICE LINES

Locate the CO (Central Office) line terminations and test the lines with a basic telephone (rotary or touch tone) equipped with a modular cord.

Each CO line termination has an assigned telephone number. If RJ blocks are installed, each line should be labeled. If not labeled, take the time to verify each line for CO dial tone and label each line with the assigned number.

If you find a CO line that does not have dial tone, report it to the customer. The customer should report the trouble to the local TELCO.

☞ *Point out the time saved at cutover and the importance of this test in a replacement installation.*

INITIAL CONTROLLER TEST

☞ *Direct the Students to read page_____, section E "Test the Controller" in the Customer Installation Instructions manual. Also refer the Students to the block of 15 indicators lights on page_____.*

The controller self-test should be performed at this time to insure the unit is functioning properly. If the unit has been damaged during shipment this will allow you extra time for hardware replacement.

The controller self-test is initiated by operating the 24-button telephone plugged into station jack 10.

NOTE: To initiate a controller self-test all stations must be on-hook and all 48-button Attendant Adjuncts must be unplugged.

☞ *Self-test procedures are covered later in Lesson 4 - MAINTENANCE.*

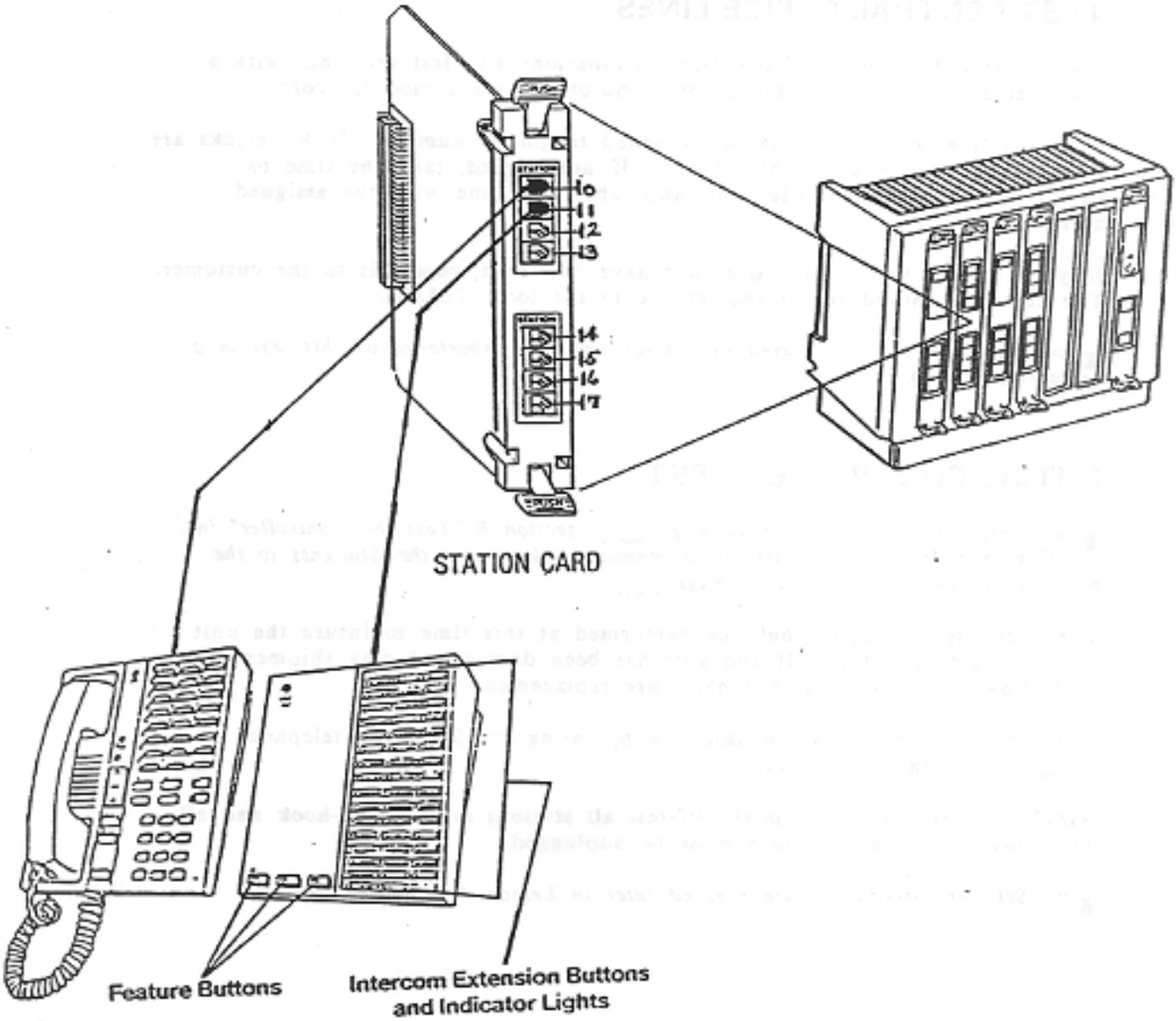

Figure 5. 24-BUTTON SET WITH THE ATTENDANT ADJUNCT

STATION SET AND ATTENDANT ADJUNCT WIRING

☞ *Explain to the Students that the sets can either be wall-mounted or desk-mounted. Demonstrate the hardware modification required to wall mount a set.*

The Model 2448 uses the same wiring plan as the SPIRIT 308/616 system. The SBDS (Small Business Distribution System) is designed to use existing wiring, and is compatible with new building wiring. The Model 2448 requires two-pair but four-pair wiring is to be utilized to facilitate migration to four-pair systems in the future. The systems ship with the line cords to accommodate the number of Line Cards ordered with the system configuration. Each set ships with a 14 foot cord, labels, plastic strips, User Manual, and a Reference card.

Determine how many station and line cords are to be wired to the controller and be sure to label BOTH ends.

CAUTION: In a replacement installation, the building wiring terminations to existing equipment will need to be removed after hours or during low traffic periods to avoid any service interruption.

If the system has an Attendant Adjunct an additional wiring run is required. It must be plugged into a station jack numbered one higher than the telephone set with which it is paired. For example, if the adjunct is to be used with telephone set 10 (the operator position), it must be plugged into station jack 11. No special customization is required for that jack assignment.

The intercom extension buttons on the adjunct are numbered 10 through 57, starting at the lower left and ascending left to right, bottom to top. You should label the buttons with the name or location of the telephone assigned to that extension number.

The SPIRIT system requires a reversal in the station set wiring. This reversal is in the telephone (tinsel) cord that is packed with the set. All other station wiring should be straight.

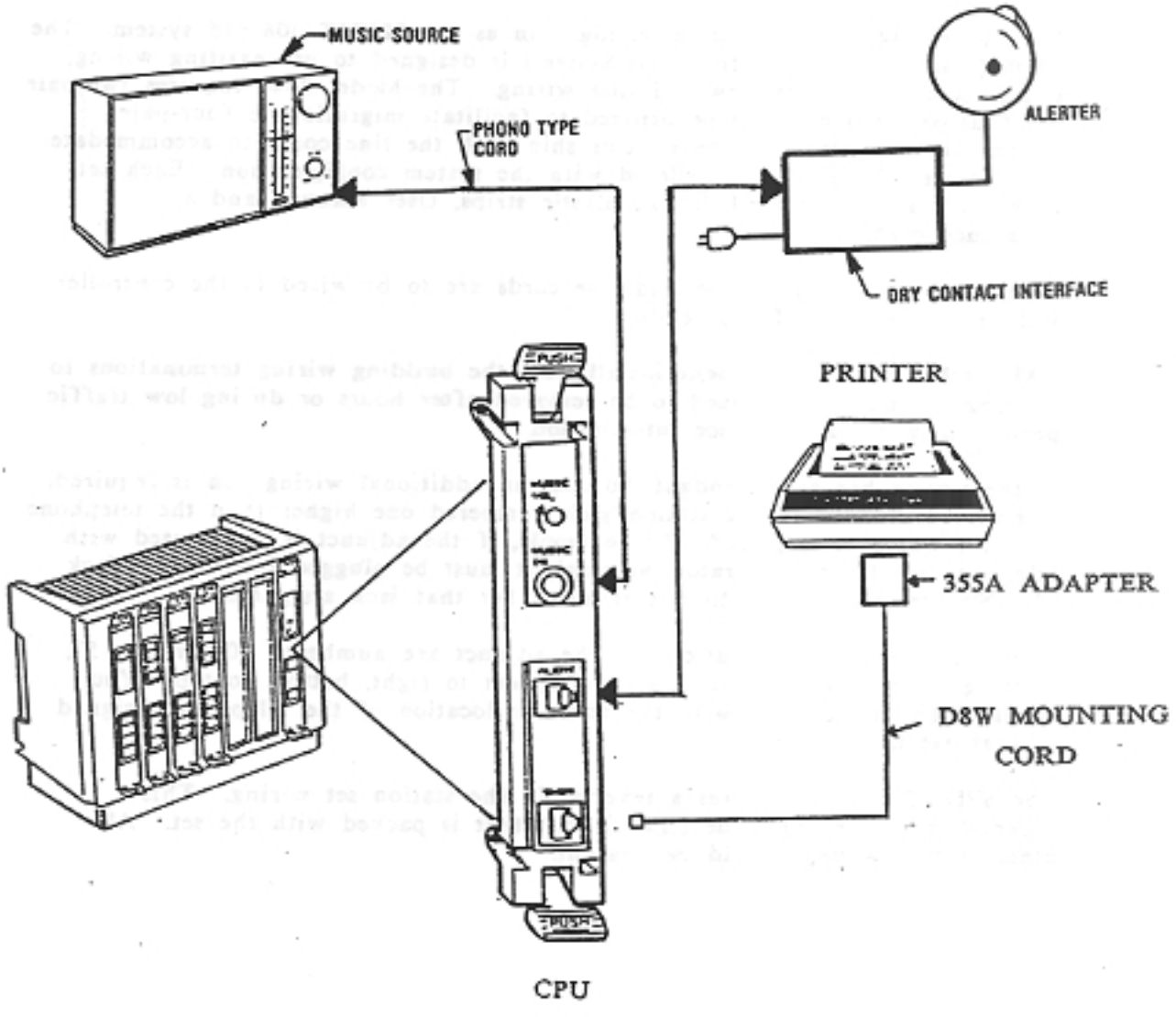

Figure 6. JACKS FOR OPTIONAL EXTERNAL EQUIPMENT

OPTIONAL EQUIPMENT

☞ *Refer the Students to Figure 6, page_____, in the student text.*

The main control unit houses the CPU (Central Processing Unit) card that has interface jacks labeled:

- SMDR - Any 80 column serial printer may be used for SMDR Call Reports; however, the AT&T Model 475 is recommended. A modular D8W connects between the SMDR jack and the 355A (105016637) plug adapter or 355AF (105012645) connector adapter used for the printer. The printer must be within 50 feet of the controller to function properly.

☞ *The Model 475 printer options are listed on page 19 in this lesson.*

- MUSIC IN - An RCA type phono jack is used for the Music-On-Hold interface. The PagePac® 20 MusicMate module is recommended for the Model 2448 system.

- ALERT - The Wheelock DCI 48-48 is used for a dry contact closure for up to five external alert bells.

The Starmate-E (MHO528-1) headset is supported by the SPIRIT systems. The headset does not have switchook control.

NOTES

475 PRINTER DIP-SWITCHES

	8	7	6	5	4	3	2	1
SW1	0	0	0	0	0	0	C	0

	8	7	6	5	4	3	2	1
SW2	0	C	0	0	0	0	0	0

	8	7	6	5	4	3	2	1
SW21	C	0	C	C	C	0	0	0

	4	3	2	1
SW22	0	C	C	0

	6	5	4	3	2	1
SW23	0	C	0	0	0	C

	8	7	6	5	4	3	2	1
SW24	C	0	0	C	C	0	C	0

C = CLOSED (or toward number)

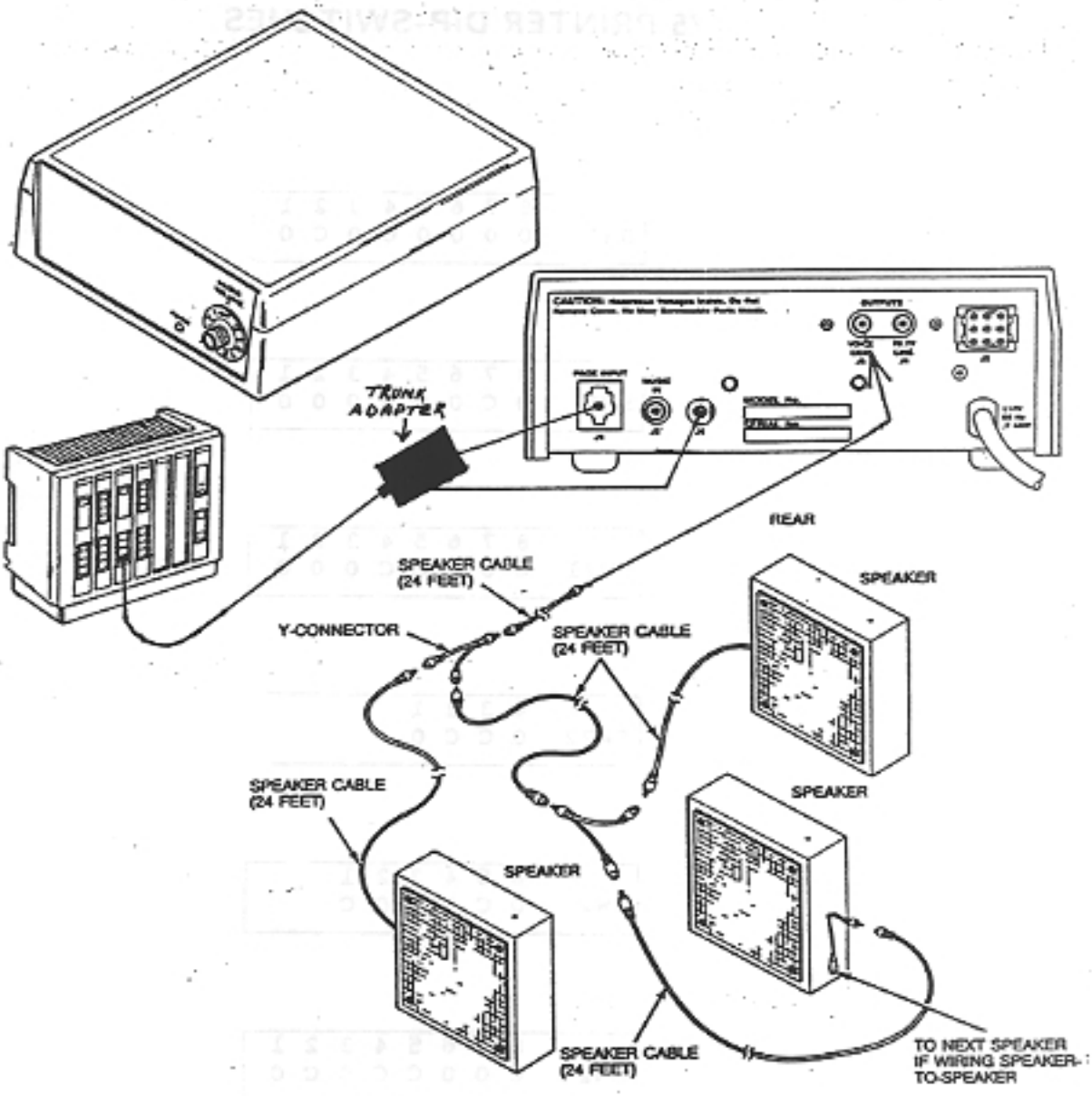

Figure 7. PAGEPAC 20 POWERMATE SYSTEM

PAGEPAC 20 POWERMATE SYSTEM

☞ *Refer the Students to Figure 7, page___, in the student text.*

The SPIRIT Model 2448 supports the PagePac® 20 PowerMate loudspeaker paging system. The PagePac 20 requires external power and should mount within 6 feet of an electrical outlet. The unit has an ON/OFF MUSIC VOLUME control switch for controlling power to the unit. The MUSIC VOLUME control on the front of the PowerMate controls ONLY the background music volume (not paging volume).

Any unassigned Line jack in the system may be used to interface the paging equipment. The external system is self-contained with all the necessary connectors, cords, and speakers. A standard 2-pair double-ended cord, approximately 6 feet long, is used for the page input.

In a replacement installation, the output (voice coil J5) jack requires an RCA phono plug (purchase locally at Radio Shack) for cabling to the existing speakers. If the existing speakers are equipped with transformers (more speaker power is required) the J4 output jack should be used.

A system with single-zone paging requires a Loop-Start Trunk Adapter. This unit is equipped with two short cords for the J1 and J6 connections. Another cord is provided for cabling from the Loop-Start Trunk Adapter to the line jack assignment at the control unit.

If your system has multi-zone paging, additional equipment is required:

- Common Control Unit - AnswerBack capability is a feature of the CCU.
- ZoneMate 9 - The CCU provides paging dialtone when you access the unit. Zones can then be paged using dial codes 80-88.

Paging can be programmed for button-access or dial-access. Dial-code 8 and the 2-digit codes (01-24) are dialed for the line assignment. When administering the paging line jack assignment, the Line Type must be set for "outside" and the Automatic Line Selection feature must be set to "not eligible". This restricts station users from accessing paging by going off-hook.

CAUTION: The speaker cable supplied with the unit is not suitable for use in air-return plenums.

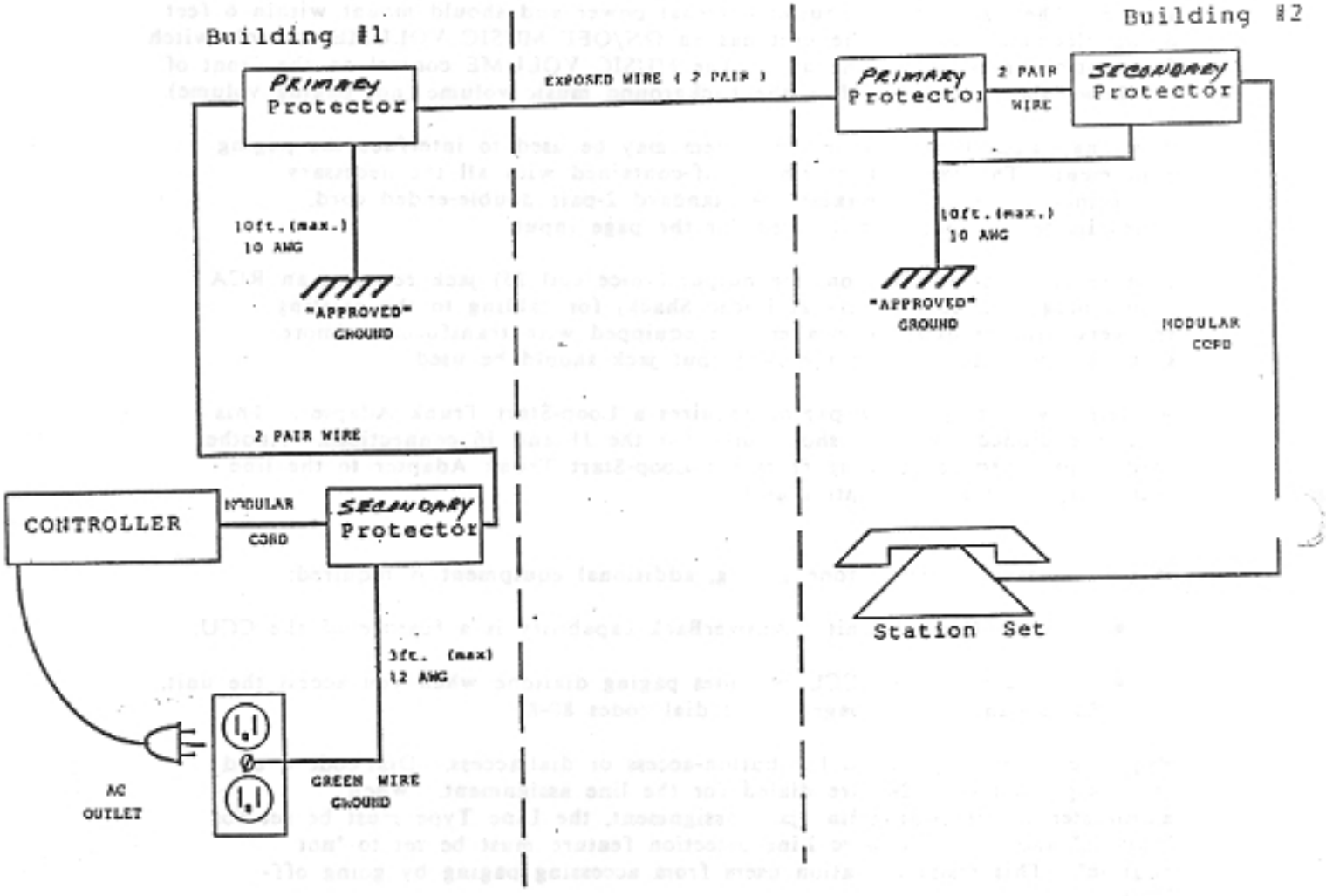

Figure 8. SPIRIT IROB INSTALLATION

SPIRIT IROB

☞ *Refer the Students to Figure 8 page___, in the student text.*

In an installation requiring station wiring between buildings, the TII Model 371 IROB (In Range Out of Building) station protector assembly is used. It has a TII Model 349 2LG MKII **primary** protector and a TII Model 371-02 **secondary** protector.

The Model 371 protector assembly is used at each end of the inter-building wiring. Installation instructions ship with the units.

APPLY POWER AND TEST THE SYSTEM

The lighted (green) LED on the power supply unit(s) indicate the ON/OFF switch is ON. If the LED does not light, check the AC outlet.

Test each line jack at the controller for CO dial tone. Check for proper operation of the SPIRIT set at each station jack prior to placing the set at the permanent location. Troubles encountered at the permanent location could be the wiring between the set and controller. The main controller functions without the expansion unit. When you are performing a controller self-test you must have at least one working Line Card and one working station Card for a valid test.

☞ *Additional information on troubleshooting and testing is covered in Lesson 4.*

SUMMARY

☞ *Review the Lesson objectives with the Students and answer any questions.*

WRITTEN EXERCISE

Using the Lesson material and the SPIRIT CS Model 2448 manuals, answer the following questions in the space provided.

1. List the major installation steps for the Model 2448 main controller unit:

Plan the system

Install the controller

Run the wiring

Install the telephone sets

Connect station wiring to controller

Install optional equipment

Replace the front cover

Power up the system

2. Whenever possible; if the expansion unit is not installed at the same time as the main controller, two feet of space should be left on the *right* side of the main controller to allow for future expansion.

3. How is the expansion unit circuitry physically connected to the main controller?

plugs into the right side of controller

4. Where is the power on/off switch located on the Model 2448 system?

On the two power supply unit(s)

5. What must be done before inserting or removing circuit packs from either the main controller or the expansion unit?

turn all equipped power supplies OFF

6. Name the two system components that should be tested after the main control unit and the expansion unit have been installed.

incoming telephone lines

the control unit

7. During the controller self-test, results are shown on a block of 15 indicator lights. Where are these lights located?

on the 24 button set

8. What capability does the optional SMDR feature give the SPIRIT CS Model 2448?

printed call records

customization reports

9. What circuit card has the SMDR interface jack?

the central processing unit (CPU)

10. What loudspeaker paging system is supported by the Model 2448 system?

the PagePac 20

11. Where does the paging system plug into the controller?

plugs into any available line jack

12. How does the customer know the system power is ON?

green LED lit on power supply unit(s)

13. The SPIRIT CS Model 2448 main controller consists of a CPU and enough hardware to support a minimum of *4* lines and *8* stations.

14. How many lines and stations are supported by a fully-equipped main controller unit?

12 lines and 24 stations

15. Adding an expansion unit increases the maximum capacity of the system to *24* lines and *48* stations.

16. Both the main controller and expansion unit are served by the same power supply. (True or False) *False*

17. How is the SPIRIT CS Model 2448 grounded?

green-wire at the AC outlet

18. How many telephone lines can be connected to each Line Card?

up to 4

19. How many stations can be served by each Station Card?

up to 8

20. What jack(s) provide basic telephone service during power a failure?

LINE AUX

21. Name two other uses for these jacks.

dedicated lines for computer modems

lines for answering machines

22. What optional equipment can be plugged into the SPIRIT CS Model 2448 system via the jacks mounted in the CPU unit?

Music on hold source

External alerter

Printer (SMDR feature)

23. Where does the loudspeaker paging system plug into the controller?

Plugs into any available LINE jack.

24. What additional unit allows one-button dialing of all stations in Model 2448 system?

48-button Attendant Adjunct

25. Which station jack must this unit be plugged into?

One higher than the station with

which it is paired

26. Which documents ship with the main controller unit?

Customer Installation Instructions

Administration Manual and Overlay

27. Which documents are included with the telephone sets?

User Manual and Reference card

LESSON 3

SPIRIT™ CS MODEL 2448

FEATURE OPERATION AND ADMINISTRATION

INSTRUCTOR GUIDE

TABLE OF CONTENTS

LIST OF FIGURES

SPIRIT™ CS MODEL 2448
FEATURE OPERATION AND ADMINISTRATION

PREPARATION

The purpose of this lesson is to introduce the Systems Technician to the system features and individual telephone features available in the SPIRIT CS Model 2448. A lecture-led presentation with figures in the Instructor Guide and student text are used as a focal point during the delivery, and the Administration Manual (999-500-235) is referred to and used during this lesson.

LESSON OVERVIEW

This lesson covers feature administration affecting the entire system and the individual stations.

LESSON OBJECTIVES

☞ *Refer the Students to the student text, as you state the lesson objectives.*

Upon completion of this lesson, you should be able to:

1. Identify the features of the SPIRIT CS Model 2448.
2. Use the Model 2448 Administration Overlay at station set 10 to administer system and telephone features.

PRESENTATION

FIXED FEATURES OF THE MODEL 2448

Both 6- and 24-button telephone sets can be used with the Model 2448, just as with the Model 308/616. The same control keys are used for the system's fixed features:

- 2 Intercom buttons (the system has 6 intercom paths)
- Conference (any combination of lines and stations to a maximum of 4 conferees)
- Transfer
- Hold/Pause
- Recall/Drop
- Volume (ringer, speaker, and handset)
- Memory
- Mute/HFAI

Telephones are installed in groups of up to eight per group. One Station Card (8 station jacks) represents one group in the system. Station 10, which is used for customization, must be a 24-button set.

SPIRIT CS MODEL 2448 DIAL CODE FEATURES

Model 2448 has the same dial code features as the Model 308/616, with the exception of these:

- Call Pickup in your Group (*7) - This feature allows the user to answer any phone ringing in the same group.

- Retrieve a Held Line Not Programmed on a Button (*5 01-24) - This allows a user to pick up a call that is on hold at another station set, even if the user does not have a button programmed for that line on his phone.

- Use Specific Line Not Assigned to a Line Button (801-824) - This allows the user to access any line (where permission allowed) in the system with a 3-digit dial code.

- Auto Call Back (Intercom Only) (*1) - This feature allows a user to request a callback to a station that is busy or does not answer.

- Intercom Call Forward (Follow Me) (*3) - This feature allows the user to forward incoming intercom calls to a different telephone.

- Group Paging (61-66) - This feature allows a user to page all the telephones in a group. There are six groups in a fully-equipped system.

- Programming multi-purpose buttons (*0) - This feature allows a user to program a multi-purpose button for one of the following uses:

    - Intercom Extension Button - this allows one-touch dialing to another SPIRIT telephone and provides lamp supervision.

    - Group Paging Button (61-66) - This allows one-touch paging to one of the groups of telephones in the system. (There are six paging groups but no PAGE ALL feature).

    - Account Code Entry Button (70) - This allows the user to enter an account code into the call records.

    - Manual Signal Button (71) - This allows tone-signaling to another SPIRIT telephone when used with an intercom extension button.

    - Personal SpeedCall Button (10-21) - This allows one-touch dialing of a personal SpeedCall number. There are a total of 12 Personal SpeedCall numbers.

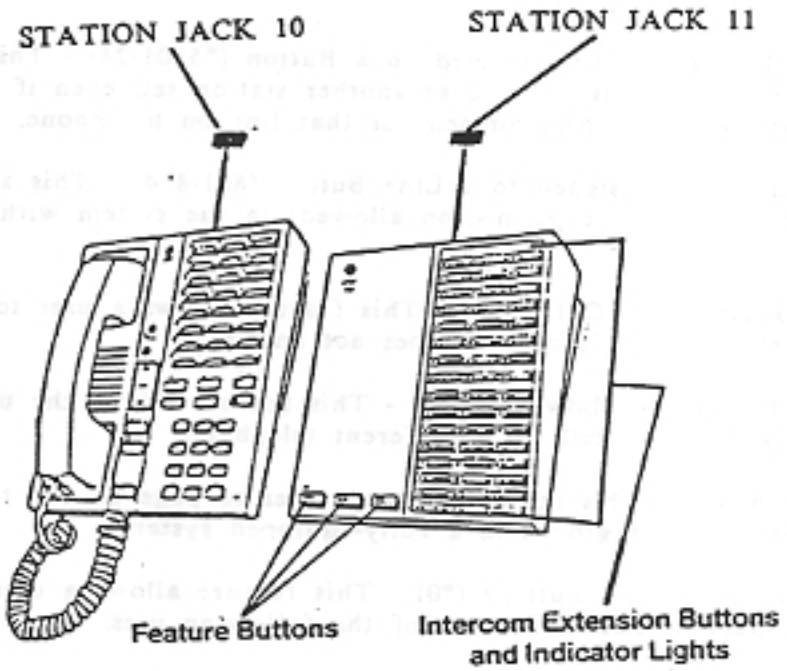

Figure 1. 48-BUTTON ATTENDANT ADJUNCT

ATTENDANT ADJUNCT

☞ *Refer the Students to Figure 1, page _____, in the student text.*

A 48-button Attendant Adjunct is available as an option with the Model 2448. It provides intercom extension buttons for one-button dialing of all the intercom extensions in the system. It also provides feature buttons for sending and canceling messages and for turning night service on and off.

You can tell what activity is occurring at any telephone in the system by looking at the LEDs (indicator lights) next to the intercom extension button on the attendant adjunct.

- If the light is OFF, the telephone is idle.
- If the light is ON, the telephone is busy.
- If the light is FLASHING rapidly, you are being signaled or called from that telephone.
- If the light is FLASHING slowly, that telephone is receiving an intercom call that you may answer by using the call pickup procedure described in the User Manual.

NOTES

IDENTIFYING THE SYSTEM

If users do not know which system they have, this simple test will determine if it is a Model 308/616 or a Model 2448:

1. Press INTERCOM
2. Lift receiver
3. Dial 8

If the system is a 308/616, they will hear a siren-like tone of alternating pitches (error tone). If the system is a 2448 they will hear an intercom dial tone.

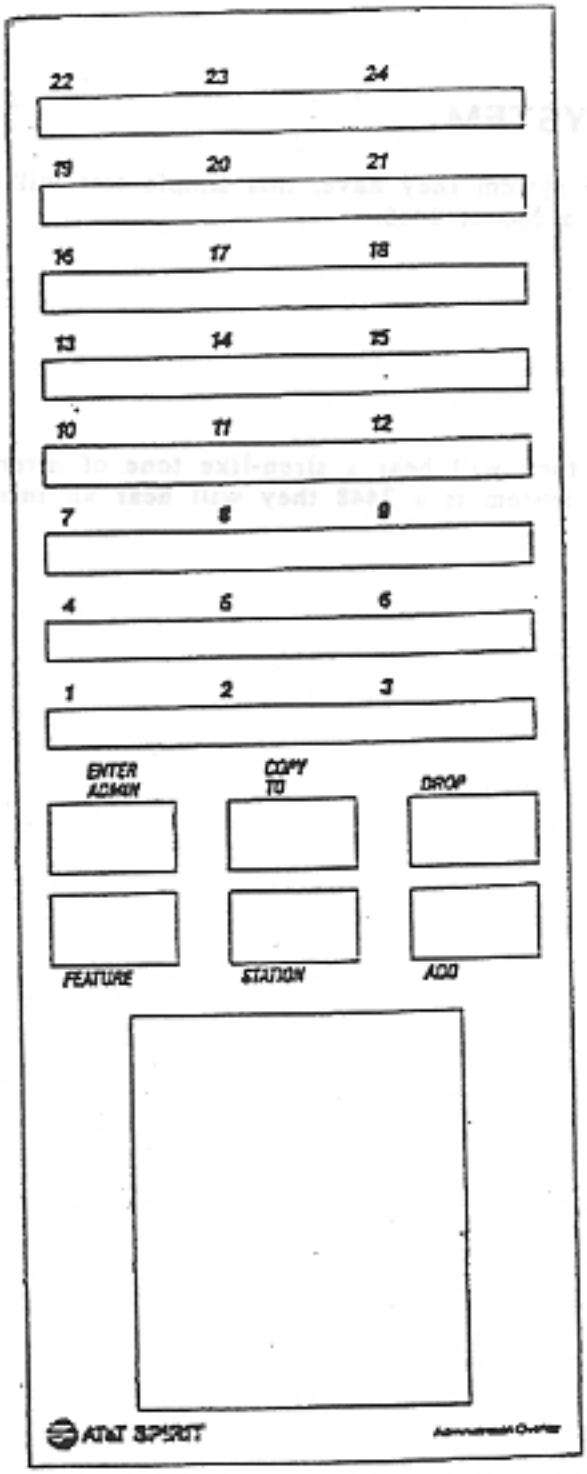

Figure 2. MODEL 2448 ADMINISTRATION OVERLAY

MODEL 2448 ADMINISTRATION OVERLAY

☞ *Refer the Students to the SPIRIT CS Model 2448 Administration Manual, (999-500-235), page _____, "Parts of the Telephone Used in Administration," as you discuss the Administration Overlay and the parts of the telephone used in Administration.*

The Administration Overlay is used to administer **System** and **Telephone** features. It is in the pocket on the back cover of the Model 2448 Administration Manual. Prior to entering the Administration mode, the System Administrator places the Overlay over the buttons representing lines, control keys, and touch-tone pad to station set 10. Call processing is interrupted at station set 10 during administration.

☞ *Refer the Students to Figure 2, page _____, in the student text.*

The six labels of the Administration Overlay are:

- ENTER ADMIN - used to choose another kind of customization
- COPY TO - used to duplicate customization of one telephone to another
- DROP - used to remove PBX Line Access Codes
- FEATURE - used to begin customization of another feature
- STATION - used to begin customization of another telephone
- ADD - used to add PBX Line Access Codes

GROUPS AND INTERCOM EXTENSIONS

☞ *Explain the intercom and groups in the system.*

Each telephone in the system has a 2-digit intercom extension number. The intercom extensions are in groups of eight (one station card) according to these numbers:

Intercom Extension Numbers	Group Paging Number
10-17	61
18-25	62
26-33	63
34-41	64
42-49	65
50-57	66

There are a number of features that depend on groups. This include:

- Group Paging
- Group Call Pickup
- The ability to COPY telephone customizing to a group

SYSTEM PLANNER AND CUSTOMIZATION CHART

Refer the Students to the Model 2448 Administration Manual, page _____, "System Planner." As with the entire manual, the area with a gray background is for system features and the blue background is for telephone features.

There are two types of features you can customize: **system** features and **telephone** features. When you customize a system feature, you have made a change in the whole system that affects all the telephone extensions. When you customize a telephone feature, the change is made for one telephone only.

The System Planner guides the customer in planning the customization of the system. Customers attend a training session on filling out the charts which should be given to the Systems Technician the day of the installation. The charts should be left at the customer site after installation.

Give the Students a few minutes to familiarize themselves with the Planner and answer any questions they may have. When you are done with that section, refer them to the Customization Chart on page ___.

The Customization Chart gives concise instructions for all administration. This is a helpful tool when actually customizing the Model 2448.

CUSTOMIZING STEPS

Refer the Students to the Administration Manual page _____, "Instructions for Customizing" and have them read the eight steps. Answer any questions they may have.

There are eight steps in customizing, not including the actual steps involved in administering a specific feature. Administering the Model 308/616 involves setting the controller Administration ON/OFF switch to ON. The Model 2448 uses a dial access code to enter the Administration mode.

Make certain that students are comfortable with all the material covered to this point before continuing on. Point out that detailed information on administration is contained in the Administration Manual, but that the Customization Chart is their primary reference during Administration.

NOTES

CUSTOMIZING NEW FEATURES OF MODEL 2448

Model 2448 **system** features are customized the same as Model 308/616 system features except for:

- **SMDR Call Report** - The user sets the Day of Week, Time of Day, Reported Call Duration, and incoming Call Report. As long as the printer is ON, a call record will print automatically. This feature is not available on the Model 308/616.

- **Print Customization Information** - The user can print a copy of all the customizing information, including the System SpeedCall directory. This feature is not available on the Model 308/616.

Model 2448 **telephone** features are customized the same as Model 308/616 except for:

- **Line Button Assignments** - this feature allows the system administrator to assign different lines to each telephone. The lines assigned to line buttons on one telephone may not be the same lines assigned to buttons on another telephone in the system; or sometimes the same line will appear in a different position on different telephones. On a 6-button telephone in a system that has 24 lines, the administrator can assign any six lines to the buttons. The system assigns lines to buttons in consecutive order starting with the lowest numbered line on button one.

  The line indicator lights show which lines have or have not been assigned to buttons on a particular telephone. The installed setting is for the first 12 lines to appear on buttons. If more than six lines are assigned to an intercom extension number, only the first six lines will appear on buttons if a six-button set is installed at that position.

  Remember, the more lines you assign to buttons, the fewer SpeedCall and Intercom Extension buttons the telephone can have.

- **Copy to Group** - This feature allows the system administrator to copy a telephone customization from one telephone to all telephones in any group.

NOTES

☞ *Instruct the students to read pages _____, "SMDR Call Report -4" in the Administration Manual and ask for questions when they are done. Refer to the sample "SMDR Call Report" on page___ to explain each column in the Call Report.*

Also instruct students to read page _____, "Printing Customization Information - 5" in the Administration Manual and ask for questions when they are done. Refer to the "Sample Customization Report" on page___to illustrate how this feature works.

ADDITIONAL INFORMATION

☞ *The Administration Manual contains additional information Students may find helpful when administering Model 2448. Instruct Students to read pages _____, "Section 2 - Additional Information" and ask for questions when they are done.*

If the customer does not have the customization charts filled out prior to the installation, the following features should be administered:

- Line Type
- Dial Type
- Customize all sets for square configuration (1 line per each button with no ghost lines):
  - Administer line to button assignment on set 10
  - Copy set 10 to ALL sets

SUMMARY

☞ *Review the lesson objectives with the Students and clear up any misunderstanding.*

HANDS-ON EXERCISE #1

Divide the class into groups, preferably two students per group (although this can be modified to suit classroom, equipment, time, or other constraints). Direct two groups of students to the SPIRIT telephone sets for hands-on exercises and direct the remaining students to answer the questions at the end of Lesson 3 in the Written Exercise.

Prepare to do System Administration. Make sure you are at station set 10 and that you have an administration overlay ready to use. Using the following worksheets that have been completed, administer the system as requested. Then answer the questions that follow. If at any point you are not sure of how to proceed, please ask the Instructor.

Before you begin, do a System Reset so you can be sure you are starting from factory default values.

SYSTEM CUSTOMIZATION WORKSHEET #1

System Planner

INCOMING LINES

Use this page to plan the customization for your system. Permission is granted to make a copy of this page to record your decisions for the whole system.

Telephone Number of Line

Line 01 _____
Line 02 _____
Line 03 _____
Line 04 _____
Line 05 _____
Line 06 _____
Line 07 _____
Line 08 _____
Line 09 _____
Line 10 _____
Line 11 _____
Line 12 _____
Line 13 _____
Line 14 _____
Line 15 _____
Line 16 _____
Line 17 _____
Line 18 _____
Line 19 _____
Line 20 _____
Line 21 _____
Line 22 _____
Line 23 _____
Line 24 _____

SYSTEM CUSTOMIZATION

AUTOMATIC PRIVACY
1 Privacy Off X
2 Privacy On †

TOLL CALL CHECK
1 1 Digit X †
2 2 Digits

HELD CALL REMINDER
0 0 minutes
1 1 minute X †
2 2 minutes
3 3 minutes
4 4 minutes

LINE TYPE
1 Unavailable
2 Outside †
3 PBX

Line 22 1	Line 23 1	Line 24 1
Line 19 1	Line 20 1	Line 21 1
Line 16 1	Line 17 1	Line 18 1
Line 13 1	Line 14 1	Line 15 1
Line 10 1	Line 11 1	Line 12 1
Line 07 1	Line 08 1	Line 09 1
Line 04 2	Line 05 1	Line 06 1
Line 01 2	Line 02 3	Line 03 3

PBX LINE ACCESS CODES
9 †
70
_____
_____

EXTERNAL ALERT
1 Never
2 Night Operation Only †
3 Day Operation Only
4 Always

Line 22 2	Line 23 2	Line 24 2
Line 19 2	Line 20 2	Line 21 2
Line 16 2	Line 17 2	Line 18 2
Line 13 2	Line 14 2	Line 15 2
Line 10 2	Line 11 2	Line 12 2
Line 07 2	Line 08 2	Line 09 2
Line 04 2	Line 05 2	Line 06 2
Line 01 2	Line 02 2	Line 03 2

DIAL TYPE
1 Touch Tone
2 Dial Pulse †

Line 22	Line 23	Line 24
Line 19	Line 20	Line 21
Line 16	Line 17	Line 18
Line 13	Line 14	Line 15
Line 10	Line 11	Line 12
Line 07	Line 08	Line 09
Line 04 1	Line 05	Line 06
Line 01 1	Line 02 1	Line 03 1

CALL REPORT

DAY OF WEEK
(Enter digit 1-7) (1 is Sunday)
Installed setting: 7

TIME OF DAY
(Enter 4-digit time) (24-hour format)
Installed setting: 99:99

REPORTED CALL DURATION
(Enter digit 1-9) 4
(1 is ten seconds)
Installed setting: 3 (30 sec.)

INCOMING CALL REPORT
1 Disabled X
2 Enabled †

SYSTEM CONFIGURATION

(Larger version on page 36)

STATION	LOCATION	GROUP
10		61
11		61
12		61
13		61
14		61
15		61
16		61
17		61
18		62
19		62
20		62
21		62
22		62
23		62
24		62
25		62
26		63
27		63
28		63
29		63
30		63
31		63
32		63
33		63
34		64
35		64
36		64
37		64
38		64
39		64
40		64
41		64
42		65
43		65
44		65
45		65
46		65
47		65
48		65
49		65
50		66
51		66
52		66
53		66
54		66
55		66
56		66
57		66

SYSTEM CUSTOMIZATION QUESTIONS

1. Which system features required no customization?

   Toll Call Check

   Held Call Reminder

   External Alert

2. Which lines are now touch-tone?

   Lines 1 through 4

3. Is there any way I can use LINE 05?

   No, line 05 is unavailable

4. With automatic privacy on, what method is used if you want someone else to join your call?

   You must press the line button at the same time to allow them to join the call.

PRINTER OPTION QUESTIONS

1. What is the minimum length of call that will be logged?

   Forty (40) seconds

2. Will incoming calls be logged?

   No.

TELEPHONE CUSTOMIZATION WORKSHEET #1

System Planner

TELEPHONE CUSTOMIZATION

TELEPHONE(S) 10 LOCATION(S) _____ GROUP(S) 61

Make a copy of this page for every different Telephone Customization. Complete one page for telephones or groups of telephones that will be customized identically.

LINE BUTTON ASSIGNMENTS *Check below the lines assigned to buttons on telephone(s). Installed setting is lines 01-12 Assigned and lines 13-24 Not Assigned*	LINE USE PERMISSION 1 No Permission 2 Full Permission † 3 Answer Only	AUTOMATIC LINE SELECTION 1 Not Eligible 2 Eligible †	LINE RINGING OPTIONS 1 No Ringing 2 Normal Ringing † 3 Abbreviated Ringing 4 Delayed Ringing
Line 01 1	3		4
Line 02 2			
Line 03 1			
Line 04 1			
Line 05 1			
Line 06 1			
Line 07 1			
Line 08 1			
Line 09 1			
Line 10 1			
Line 11 1			
Line 12 1			
Line 13			
Line 14			
Line 15			
Line 16			
Line 17			
Line 18			
Line 19			
Line 20			
Line 21			
Line 22			
Line 23			
Line 24			

NIGHT RINGING
1 Normal Ring _____
2 Customized Ring † X

OUTSIDE SERVICE
1 Outward Restricted _____
2 Unrestricted † X
3 Toll Restricted _____

† Installed Setting

The system places the line assignments on function buttons according to number, starting with lower left button and proceeding left to right.

Using the Line Button Assignments above, write on the button chart at the right the lines you have assigned to the telephone(s).

24-button set

Line____ Button 22	Line____ Button 23	Line____ Button 24
Line____ Button 19	Line____ Button 20	Line____ Button 21
Line____ Button 16	Line____ Button 17	Line____ Button 18
Line____ Button 13	Line____ Button 14	Line____ Button 15
Line____ Button 10	Line____ Button 11	Line____ Button 12
Line____ Button 7	Line____ Button 8	Line____ Button 9

6-button set

Line____ Button 4	Line____ Button 5	Line____ Button 6
Line____ Button 1	Line____ Button 2	Line____ Button 3

TELEPHONE CUSTOMIZATION WORKSHEET #2

System Planner

TELEPHONE CUSTOMIZATION

TELEPHONE(S) 12 LOCATION(S) _____ GROUP(S) 61

Make a copy of this page for every different Telephone Customization. Complete one page for telephones or groups of telephones that will be customized identically.

LINE BUTTON ASSIGNMENTS *Check below the lines assigned to buttons on telephone(s). Installed setting is lines 01-12 Assigned and lines 13-24 Not Assigned*	LINE USE PERMISSION 1 No Permission 2 Full Permission † 3 Answer Only	AUTOMATIC LINE SELECTION 1 Not Eligible 2 Eligible †	LINE RINGING OPTIONS 1 No Ringing 2 Normal Ringing † 3 Abbreviated Ringing 4 Delayed Ringing
Line 01 2			
Line 02 2	3		4
Line 03 1			
Line 04 1			
Line 05 1			
Line 06 1			
Line 07 1			
Line 08 1			
Line 09 1			
Line 10 1			
Line 11 1			
Line 12 1			
Line 13			
Line 14			
Line 15			
Line 16			
Line 17			
Line 18			
Line 19			
Line 20			
Line 21			
Line 22			
Line 23			
Line 24			

NIGHT RINGING
1 Normal Ring _____
2 Customized Ring † X

OUTSIDE SERVICE
1 Outward Restricted _____
2 Unrestricted † _____
3 Toll Restricted X

† *Installed Setting*

The system places the line assignments on function buttons according to number, starting with lower left button and proceeding left to right.

Using the Line Button Assignments above, write on the button chart at the right the lines you have assigned to the telephone(s).

24-button set	Line___ Button 22	Line___ Button 23	Line___ Button 24
	Line___ Button 19	Line___ Button 20	Line___ Button 21
	Line___ Button 16	Line___ Button 17	Line___ Button 18
	Line___ Button 13	Line___ Button 14	Line___ Button 15
	Line___ Button 10	Line___ Button 11	Line___ Button 12
	Line___ Button 7	Line___ Button 8	Line___ Button 9
6-button set	Line___ Button 4	Line___ Button 5	Line___ Button 6
	Line___ Button 1	Line___ Button 2	Line___ Button 3

TELEPHONE CUSTOMIZATION QUESTIONS

1. How many lines appear on buttons on set 10 and which buttons?

   One (1) line on button 1

   Set 12?

   Two (2) lines on buttons 1 and 2

2. If I go off-hook at station 10 when no line is ringing, which line will I get?

   Line 2

   At set 12?

   Line 1

3. Line 4 is ringing. Which set(s) can answer it?

   Both sets from the intercom button 2

   Which set(s) can answer it just by going off-hook?

   Neither set

   Line 1 is ringing. What do I hear at Set 10?

   Delayed ring

   Set 12?

   A normal ring

4. Which set(s) can make a call using line 1?

   Only set 12

5. Which set(s) can make toll calls?

Only set 10

What about toll calls that are stored in System SpeedCall 30-79?

Toll calls that are stored in System SpeedCall 30-79 can be accessed by station 10 and by station set 12.

Those stored in System SpeedCall 80-99?

Toll calls that are stored in 80-99 are restricted SpeedCall numbers and may not be called from a toll-restricted station.

6. What effect will it have on the operation of these sets if I invoke night service?

None.

HANDS-ON EXERCISE #2

PERSONAL PROGRAMMING

Refer to the User Manual, pages_____, and follow the instructions to program and use each of the following:

- An intercom extension button for one of the other extensions in the system
- A group paging button
- A manual signal button
- Store two numbers on buttons
- Store a third number that can only be used by dialing the two-digit code.

WRITTEN EXERCISE

Using the material you have just completed and the Administration Manual, answer the following questions in the space provided. Assume the system has been reset to the default values.

1. The Model 2448 contains six extension groups. How many intercom extension numbers can be assigned in each group?

   up to 8 (eight)

2. Name the two main types of features that can be customized in the Model 2448 system.

   system features

   telephone features

3. The installed setting for line button assignments is to have the first *12 (twelve)* lines appear on buttons; assuming that 24 button sets are used.

4. What action is necessary to start and stop the call reporting feature if a printer is installed in the SMDR jack on the controller?

   no action is required

5. What parameters must be entered for the Call Report feature after a commercial power failure?

   Reset time of day and possible day of week

6. When the SMDR Call Report feature is equipped, both incoming and outgoing call data is always printed. (True or False) *False*

7. The system stores Call Report information for up to *24* calls.

8. During administration, the 48-button Attendant Adjunct must be plugged into the attendant console at station jack 11. (True or False)

False

9. Name the new dial code features of the Model 2448.

Call pickup in your group

Retrieve a held line not programmed on a button

Use specific line not assigned to a line button

Auto call back (intercom only)

Intercom Call Forward

Group paging

Programming multi-purpose buttons

10. During line button assignment, on a 6-button telephone, the administrator can assign any six lines to the buttons. (True or False)

True

11. What new Model 2448 feature allows the administrator to copy customization features on one telephone to all the telephones in any group?

COPY TO GROUP

LESSON 4

SPIRIT™ CS MODEL 2448 - MAINTENANCE

INSTRUCTOR GUIDE

TABLE OF CONTENTS

SPIRIT™ CS MODEL 2448 - MAINTENANCE

PREPARATION

The purpose of this lesson is to introduce the Systems Technician to the maintenance features available in the SPIRIT CS Model 2448. A lecture-led presentation with figures in the Instructor Guide and student text are used as a focal point during the delivery, and the SPIRIT CS Model 2448 Customer Installation Instructions (999-500-232) is referred to and used during this lesson.

LESSON OVERVIEW

This lesson provides information to help you diagnose and correct system troubles to the hardware replacement level.

LESSON OBJECTIVES

Upon completion of this lesson, you should be able to:

1. Analyze hardware problems and perform the necessary steps to clear the troubles.
2. Perform Controller, Telephone, and Attendant Adjunct self-test procedures.

PRESENTATION

TROUBLESHOOTING

☞ *Refer students to the Model 2448 Customer Installation Instructions, page _____, "Troubleshooting." The first page in this section includes instructions for the customer to help troubleshoot the system before calling the AT&T representative or authorized dealer. Have students read this page so they know what the customer is expected to do and the test results.*

Answer any questions before going on to the next section.

CONTROLLER SELF-TEST

☞ *Review the CAUTION notes at the top of page _____. Have the Students read the rest of the page and answer any questions they may have about running a Controller Self-Test.*

Remember that any 48-button attendant adjunct must be disconnected before running any diagnostics.

The procedure for the Controller Self-Test is the same as that for the 308/616, except for two areas:

1. There is no Administration switch on the Model 2448. Instead it is done through station set 10 by pressing *92448.

2. The code *0 and 9#*# initiates the 308/616 Controller Self-Test. For the Model 2448, only code 9#*# is required.

INDICATOR LIGHTS

☞ *Refer students to page _____, "Key to Indicator Lights During Controller Self-Test." Answer any questions they may have about the Key. Then have the Students read pages _____, to familiarize themselves with the specific tests and repair procedures. Answer any questions they may have about the tests.*

This chart shows the indicator lights that apply to all cards.

TELEPHONE SELF-TEST

The Telephone Self-Test for the Model 2448 sets is the same as Model 308/616. Activate the Self-Test using dial codes #*# at the set being tested.

To test the speakerphone and handset transmit and receive paths:

- Place the handset receiver to the microphone and listen for audible feedback.
- Place the handset transmitter to the speaker and listen for audible feedback.

WIRE REVERSALS

The SPIRIT system requires a reversal in the station set wiring. This reversal is in the telephone (tinsel) cord that is packed with the set, so all other station wiring should be straight.

The wiring polarity does not apply to the red-green pair (blue/white-blue pair of SBDS) in the SPIRIT system. Only the polarity of the black-yellow (green/white-green of SBDS) pair affects the system functions. If you have side-tone at the set and the indicator lights do not light, the black-yellow (green/white-green of SBDS) pair may be reversed.

A stuck button on a set allows the user on-hook/off-hook operation only at the set.

ADJUNCT SELF-TEST

☞ *Have the Students read page _____, on "Adjunct Self-Test" and answer any questions they may have about the test.*

The adjuncts may be tested by running a self-test procedure at each adjunct.

Activate the adjunct self-test by unplugging the adjunct and then press the SEND MESSAGE and CANCEL MESSAGE buttons simultaneously while plugging in the adjunct.

The adjunct must be unplugged to exit the self-test.

HANDS-ON EXERCISE

☞ *Divide the class into groups, preferably two students per group (although this can be modified to suit classroom, equipment, time, or other constraints). Direct one group of students to the SPIRIT telephone sets for hands-on exercises and direct the remaining students to answer the questions at the end of Lesson 4 in the Written Exercise.*

1. Do Controller Self-Test. How many line cards are in your system? How many station cards are in your system? Did anything fail self-test?

2. Do Telephone Self-Test. Did you turn on every indicator light by pressing the button next to it? Test the mouthpiece and speakerphone speaker. Test the earpiece and speakerphone microphone.

3. Do the Adjunct Self-Test. Press two buttons to make sure the indicator lights go off and stay off.

TELEPHONE SELF-TEST

The Telephone Self-Test for the Model 2448 sets is the same as Model 308/616. Activate the Self-Test using dial codes #*# at the set being tested.

To test the speakerphone and handset transmit and receive paths:

- Place the handset receiver to the microphone and listen for audible feedback.
- Place the handset transmitter to the speaker and listen for audible feedback.

WIRE REVERSALS

The SPIRIT system requires a reversal in the station set wiring. This reversal is in the telephone (tinsel) cord that is packed with the set, so all other station wiring should be straight.

The wiring polarity does not apply to the red-green pair (blue/white-blue pair of SBDS) in the SPIRIT system. Only the polarity of the black-yellow (green/white-green of SBDS) pair affects the system functions. If you have side-tone at the set and the indicator lights do not light, the black-yellow (green/white-green of SBDS) pair may be reversed.

A stuck button on a set allows the user on-hook/off-hook operation only at the set.

ADJUNCT SELF-TEST

☞ *Have the Students read page _____, on "Adjunct Self-Test" and answer any questions they may have about the test.*

The adjuncts may be tested by running a self-test procedure at each adjunct.

Activate the adjunct self-test by unplugging the adjunct and then press the SEND MESSAGE and CANCEL MESSAGE buttons simultaneously while plugging in the adjunct.

The adjunct must be unplugged to exit the self-test.

HANDS-ON EXERCISE

Divide the class into groups, preferably two students per group (although this can be modified to suit classroom, equipment, time, or other constraints). Direct one group of students to the SPIRIT telephone sets for hands-on exercises and direct the remaining students to answer the questions at the end of Lesson 4 in the Written Exercise.

1. Do Controller Self-Test. How many line cards are in your system? How many station cards are in your system? Did anything fail self-test?

2. Do Telephone Self-Test. Did you turn on every indicator light by pressing the button next to it? Test the mouthpiece and speakerphone speaker. Test the earpiece and speakerphone microphone.

3. Do the Adjunct Self-Test. Press two buttons to make sure the indicator lights go off and stay off.

WRITTEN EXERCISE

Using the material you have just completed and the ADMINISTRATION MANUAL, answer the following questions in the space provided. Assume the system has been reset to the default values.

1. Before performing the Controller Self-Test, what unit must be disconnected from the system?

   all Attendant Adjuncts

2. All stations except 10 must be idle before running any of the diagnostic tests. (True or False) *True*

3. Indicator light 5 does not light during a Controller Self-Test on a fully equipped main controller unit. What component is not functioning properly?

   line card 2

4. What cards must be inserted in the controller to make up a minimal system configuration?

   the CPU, 1 station, and 1 line card

5. Name the failures that cannot be detected by the diagnostics:

   tone failures

   ring detectors (line card)

   loop current detector (line card)

   music on hold failures