TBDK-0004
April 22, 1997

DK16e Power Supply Modification

This technical bulletin provides instruction for modifying your Strata DK16e Power Supply Unit (TPSU16A).

Background

In some areas of the country, we have received reports of the Strata DK16e power supply shutting down. At first, these incidents were isolated to areas with different or poor power conditions caused by the local utility company or heavy power switching within a building or industrial park. However, recently it has become apparent that the power supply can shut down in many areas across the country. The shut down may happen once per week or much less frequently. We know of less than 1% of DK16e systems shipped to date which have had shut downs.

Symptom

At first appearance, the shut down of the power supply makes it look as if the DK16e has failed. It has not. A protective circuit inside the power supply has been triggered by some over voltage event. This electronic circuit breaker can be reset by following the procedure at the end of this bulletin. (This procedure is also on page 3-7 of the current *Strata DK Installation and Maintenance Manual)*. It calls for removing the AC plug, waiting a few minutes until the reset can occur, then plugging in the AC plug. Then everything returns to normal operation.

Modification

The actual modification takes about 15 minutes and can be done on a wall-mounted unit without difficulty. The system will be out of operation for most of that time. Make sure you have the proper tools before beginning.

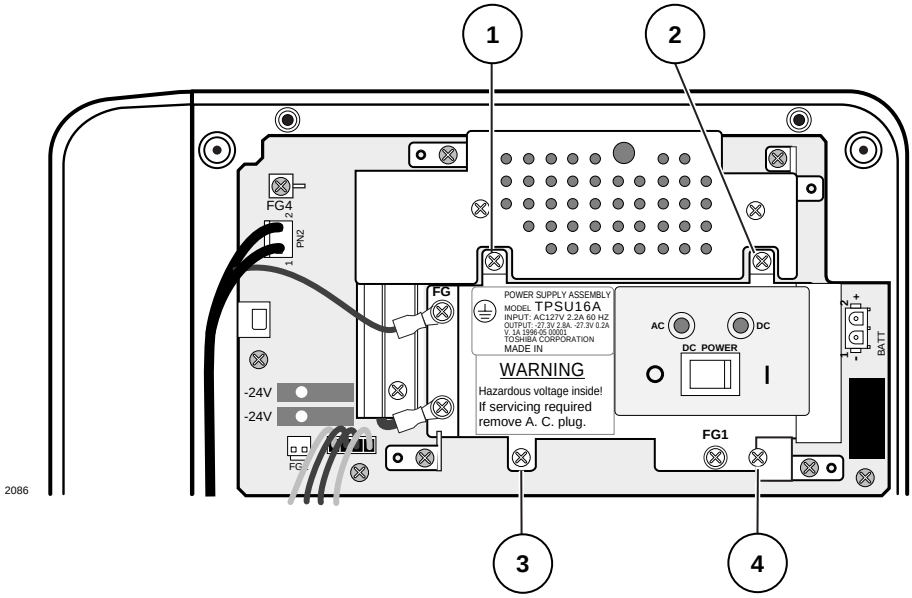
Tools

- A #2 (medium size) Phillips screwdriver
- An angled cutter to get into a small space (an ordinary nail clipper works well)
- A marking pen with indelible black ink (an ultra fine point Sharpie® works well)

DK16e Power Supply Modification

Procedure

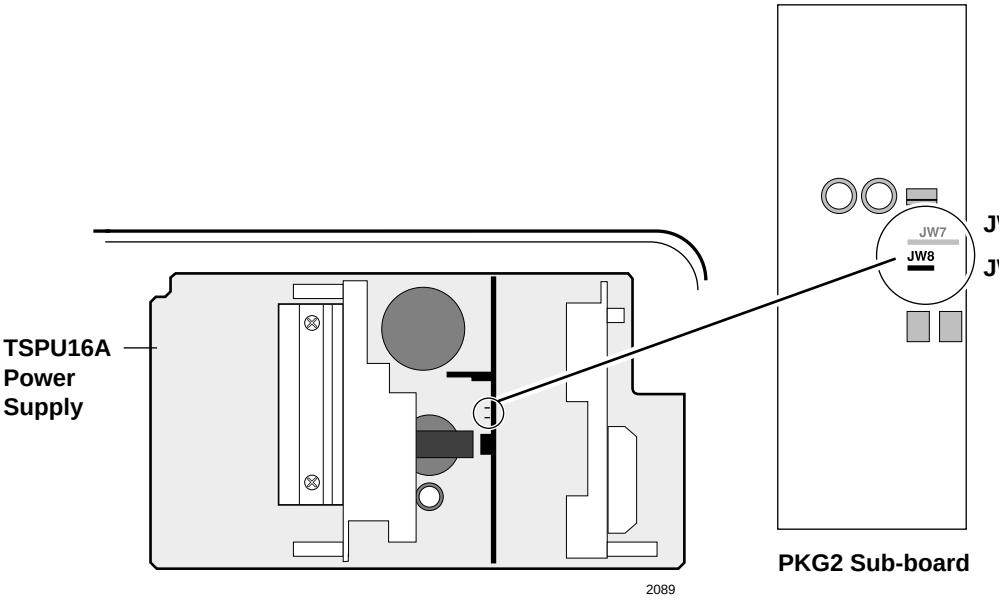
1. Turn off the DK Power Switch to the OFF position. Remove the AC plug from the outlet. Wait for six minutes before touching any parts inside the power supply.
2. Remove the front cover of the KSU by loosening the four corner screws on the front cover.
3. Remove the Power Supply front panel by removing the four Power Supply screws (shown below).



DK16e Power Supply Modification

4. Cut the jumper wire “JW8” on the PKG2 of the TPSU16A. Bend the cut side up slightly to open the circuit.

Important! *Be careful not to cut the longer JW7 wire. If the JW7 wire is cut, the Power Supply will become more sensitive to overvoltage. In addition, the output will reduce from 28V to 20V under a maximum full board configuration.*

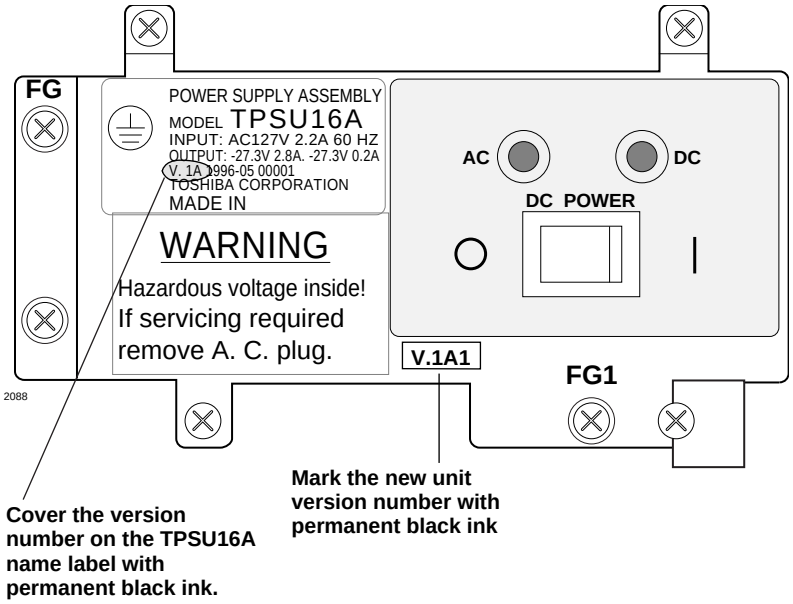


5. Reinstall the Power Supply switch panel with the four screws.
6. Use an indelible black marker to add a “1” to the TPSU16A unit number, as follows:

V.1A	V.1A1
V.1B	V.1B1
V.1C	V.1C1

Note New factory-modified Power Supply will be labeled V.ID.

DK16e Power Supply Modification



7. Insert the plug into the AC outlet. Turn on the DC power switch.
8. Check the TPSU16A power supply unit normality by checking the output voltage. (See “Testing the Power Supply” later in this bulletin.
9. Make an All Call Page and check the output voltage and that the paging function works correctly while talking. (This function puts the maximum load on the Power Supply).
10. Check the TPSU16A power supply normality by making a DKT incoming call, outgoing call, and checking the speech paths on both.
11. Change the DKSUBT16A/C unit version on the name label of the Base KSU with an indelible black marker (shown above).
12. Reattach the Power Supply cover and the KSU cover.

Note Another method can be used to avoid the shut down: use a power conditioner from ONEAC, Model CL11007, appropriate for DK16e. This unit should be used in lightning environments to protect your customer’s equipment even if the above modification has been done. The ONEAC will reduce a 6000-volt spike on the AC down to 10 volts on the DK16e.

Also, our experience shows that the MAXII surge protector does a poor job of reducing spikes. DK16e systems in the field have shut down with the MAXII installed.

DK16e Power Supply Modification

Testing the Power Supply

➤ **To test the system's power supply**

1. Plug the AC power cable into an outlet. The "AC" LED on the power supply lights green. If the "AC" LED fails to light, see "TPSU16 Circuit Breaker Reset Procedure".
2. Turn the DC power switch on the TPSU16 power supply to the ON position.

   The "DC" LED on the power supply lights green. If not, see "TPSU16 Circuit Breaker Reset Procedure".
3. Using a voltmeter or other device which checks voltage, measure the voltages referenced to frame ground (FG) at the P16 connector pins (test points) located on the motherboard. The voltages should fall within the ranges below.

   - Yellow-green, black, and green wires: 0V
   - Two yellow wires: -27V
   - Range: -25.94V ~ -28.66V

   If the voltages do not fall within the ranges, unplug the DC power pins from the P16 connector and measure again at the same location; if the ranges remain unacceptable. See "TPSU16 Circuit Breaker Reset Procedure".

TPSU16 Circuit Breaker Reset Procedure

If the AC and DC LEDs on the TPSU16 power supply in the Strata DK16e Base KSU do not light, even though the AC power plug is inserted into the wall outlet and the TPSU16 DC power switch is turned on, the AC overvoltage circuit breaker may have opened.

➤ **To reset the AC overvoltage circuit breaker**

1. Remove the AC power plug from the wall outlet, turn the DC power switch OFF, and wait six minutes.
2. After six minutes, insert the AC plug back into the wall outlet and turn the DC power switch ON. The AC and DC LEDs should turn on and the system should operate.

   If the system fails to operate, either the wall outlet is not providing AC power or the system's power supply is defective.

If the AC power checks good, replace the power supply. (See "Power Supply Removal and Replacement" in Chapter 3 of the *Strata DK Installation and Maintenance Manual.)*

DK16e Power Supply Modification

Case 2

If the TPSU16 power supply AC and DC LEDs light, but the system does not operate, the TPSU16 DC output overcurrent circuit breaker may have opened because of a DC short circuit.

➤ **To reset the DC output overcurrent circuit breaker**

1. Turn the DC power switch OFF for 15 seconds and then turn it back on. The system will go back to normal operation if the overcurrent breaker resets.
2. If the system continues to fail, press in the two -24 volt circuit breakers located on the bottom left corner of the TPSU16 power supply.

   If, then, the system does not return to normal operation, the TPSU16 power supply may be defective or an optional PCB may be shorting out the TPSU16.
3. Remove all optional PCBs and the Expansion KSU to locate the short, then repeat Steps 1 and 2 and perform the power supply test.

If the power supply fails the test, replace the power supply. “Power Supply Removal and Replacement” in Chapter 3 of the *Strata DK Installation and Maintenance Manual.)* If the power supply passes the test, the DK16e Base KSU is probably defective.