

# USER MANUAL

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## MODEL 457B Seven Port Active Twinax Star Hub



**PA PATTON**  
**Electronics Co.**



An ISO-9001  
Certified Company

Part #07M457B-C  
Doc. #069011UC  
Revised 4/22/98

SALES OFFICE  
(301) 975-1000  
TECHNICAL SUPPORT  
(301) 975-1007  
<http://www.patton.com>

## 1.0 WARRANTY INFORMATION

**Patton Electronics** warrants all Model 457B components to be free from defects, and will—at our option—repair or replace the product should it fail within one year from the first date of shipment.

This warranty is limited to defects in workmanship or materials, and does not cover customer damage, abuse, or unauthorized modification. If this product fails or does not perform as warranted, your sole recourse shall be repair or replacement as described above. Under no condition shall **Patton Electronics** be liable for any damages incurred by the use of this product. These damages include, but are not limited to, the following: lost profits, lost savings, and incidental or consequential damages arising from the use of or inability to use this product. **Patton Electronics** specifically disclaims all other warranties, expressed or implied, and the installation or use of this product shall be deemed an acceptance of these terms by the user.

### 1.1 RADIO AND TV INTERFERENCE

The Model 457B generates and uses radio frequency energy, and if not installed and used properly—that is, in strict accordance with the manufacturer's instructions—may cause interference to radio and television reception. The Model 457B is designed to provide reasonable protection from such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. If the Model 457B does cause interference to radio or television reception, which can be determined by disconnecting the RS-232 interface, the user is encouraged to try to correct the interference by one or more of the following measures: moving the computing equipment away from the receiver, re-orienting the receiving antenna, and/or plugging the receiving equipment into a different AC outlet (such that the computing equipment and receiver are on different branches).

### 1.2 CE NOTICE

The CE symbol on your Patton Electronics equipment indicates that it is in compliance with the Electromagnetic Compatibility (EMC) directive and the Low Voltage Directive (LVD) of the Union European (EU). A Certificate of Compliance is available by contacting Patton Technical Support.

## 1.3 SERVICE

All warranty and nonwarranty repairs must be returned freight prepaid and insured to Patton Electronics. All returns must have a Return Materials Authorization number on the outside of the shipping container. This number may be obtained from Patton Electronics Technical Service at

telephone: **(301) 975-1007**,  
web address: **<http://www.patton.com>**;  
email: **support@patton.com**.

**NOTE:** Packages received without an RMA number will not be accepted.

Patton Electronics' technical staff is also available to answer any questions that might arise concerning the installation or use of your Model 457B. Technical Service hours: **8AM to 5PM EST, Monday through Friday**.

## 2.0 GENERAL INFORMATION

Thank you for your purchase of this Patton Electronics product. This product has been thoroughly inspected and tested and is warranted for One Year parts and labor. If any questions or problems arise during installation or use of this product, please do not hesitate to contact Patton Electronics Technical Support at (301) 975-1007.

### 2.1 FEATURES

- Provides "Star" distribution for seven AS/400 or 3X terminals
- Supports cost-effective unshielded *twisted pair* communication
- Active signal regeneration enables hub-to-terminal distances of 2250 ft and host-to-terminal distances of 4500 ft
- LED status indicators for each RJ-45 twisted pair port
- Transparent to data protocol—supports data rates to 1 Mbps
- 100% compatible with Patton Model 410 Twinax baluns
- Separate signal-to-pin configuration for each port
- Transformer isolation at every port

### 2.2 DESCRIPTION

The Patton Model 457B AllStar™ is an active seven port distribution hub for AS/400 and 3X systems. The Model 457B distributes one twisted pair 1Mbps host to seven twisted pair 1Mbps terminals. It is designed to be used in conjunction with Patton's Model 410 Series twinax baluns which adapt the host and terminal ports from twinax to twisted pair.

The Model 457B features modular RJ-45 ports on the seven terminal channels, and an RJ-45 port plus screw terminals on the host channel. The host and terminal can be at distances up to 2250 feet, and each terminal and its port can also be at distances up to 2250 feet. This yields a maximum host-to-terminal distance of 4500 ft, and a total aggregate cabling distance of 18,000 feet. The Model 457B has one LED per port to indicate data activity. For added convenience, each port has its own pair of internal straps that allow "tip" and "ring" to be assigned to any of the eight RJ-45 pins.

Optional 19" rack mount hardware allows two Model 457Bs to be installed side-by-side in a single 1U rack space. Additional space is conserved by operating the two rack mounted 457Bs from a single AC power supply harness. Power supplies of 120 or 240 volts are available for both stand alone and rack mount units.

## 3.0 CONFIGURATION

The Model 457B offers the option of configuring individual RJ-45 ports for specific twisted pair pin-outs. This section tells how to access and set the internally mounted jumpers for each port.

### 3.1 DEFAULT SIGNAL-TO-PIN CONFIGURATION

The Model 457B is configured at the factory so that **RJ-45 pin 4 corresponds to TIP and RJ-45 pin 5 corresponds to RING**. This default setting applies to the single host connection as well as the seven terminal connections. Figure 1 (below) shows the pin numbering scheme Patton follows with respect to the RJ-45 jack. If your wiring scheme uses RJ-45 pins 4 and 5 in the manner described above, you may move on to Section 4.0 Installation.

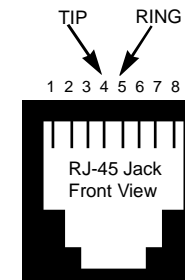


Figure 1. RJ-45 pin numbering scheme showing default configuration

### 3.2 CHANGING THE SIGNAL-TO-PIN CONFIGURATION

If your RJ-45 twisted pair wiring scheme calls for pin-outs other than TIP-4 and RING-5, you will need to re-configure the Model 457B according to the following instructions.

1. Make sure the Model 457B's power is OFF.
2. Remove the two black Phillips head screws from the front of the Model 457B and slide the PC board out of the case.

(continued)

## 4.0 INSTALLATION

- On the Model 457B PC board (see figure 2, below), locate the jumper blocks corresponding to each RJ-45 port. They are labeled JP1 - JP8. As figure 3 (below) shows, each jumper block has 16 pins and two jumpers.

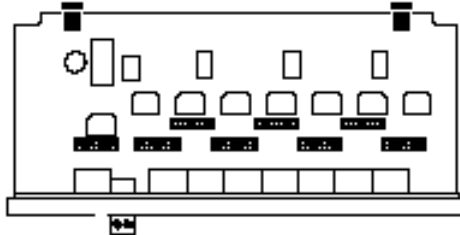


Figure 2. Model 457B PC board, showing jumper block locations

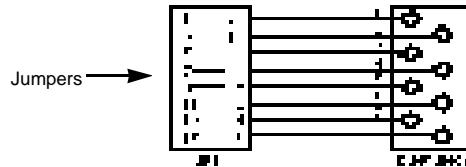


Figure 3. Jumper block, showing two jumpers and pin correspondence to RJ-45

- Having located the jumper blocks for the ports you need to re-configure, set the jumpers for TIP and RING according to the table below. For example, placing the TIP jumper on jumper pins 5 and 6 activates RJ-45 pin 3. Placing the RING jumper on jumper pins 11 and 12 activates RJ-45 pin 6. The resulting configuration for that RJ-45 port would be TIP-3, RING-6.

TIP Jumper Pins	Active RJ-45 Pin
1 & 2 .....	1
3 & 4 .....	2
5 & 6 .....	3
7 & 8 .....	4 (default setting)

RING Jumper Pins	Active RJ-45 Pin
9 & 10 .....	5 (default setting)
11 & 12 .....	6
13 & 14 .....	7
15 & 16 .....	8

- After you have repositioned the jumpers, slide the PC board back into the case and replace the two Phillips screws.

After the internal jumpers are configured for your equipment, you are ready to connect up the Model 457B. This section explains how to connect the host and terminals to the Model 457B in a star topology using twisted pair cable.

### 4.1 CONNECTION TO THE HUB

**Host Connection**—The host port of the Model 457B allows RJ-45 or terminal block connection of a single twisted pair cable. The maximum distance between the Model 457B and the host is 2250 feet. Only *one* host may be connected to the hub at a time.

**Terminal Connections**—RJ-45 ports 00 - 06 on the Model 457B allow connection of up to seven terminals using single pair cable. The maximum distance between the Model 457B and each terminal is 2250 feet. Note: Pin-outs of RJ-45 cables must match the pin configurations chosen for the Model 457B's ports (see Section 3.0 for more details).

### 4.2 CONNECTION TO HOST AND TERMINAL HARDWARE

Most AS/400 and System 3X hardware is equipped with twinax ports, and is set up to communicate over twinax cable. In order to communicate over a single twisted pair, *you must use a twinax to twisted pair adapter or "BALUN" at each host and terminal connection.* The **Patton Model 410 Series Twinax Balun** is 100% compatible with the Model 457B, and is highly recommended for this application. Model 410 baluns are available for RJ-11, RJ-45, or terminal block twisted pair connection. Figure 4 (below) illustrates wiring for a star network using one Model 457B hub and eight Model 410 baluns.

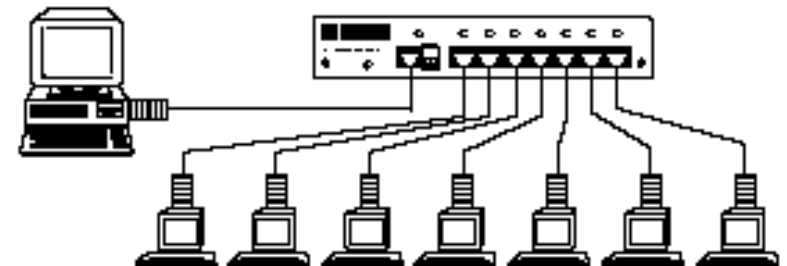


Figure 4. A twisted pair star network for seven terminals

## 5.0 OPERATION

Having connected the host and terminal cables to the Model 457B, you are ready to operate the unit. This section tells how to power the unit, and how to read the port status LED indicators.

### 5.1 POWER UP

There is no power switch on the Model 457B. To apply power to the unit, plug the AC adapter into one of the two rear jacks (see figure 5, below) and then into a wall outlet. The front panel "Power" LED should glow yellow when power is applied. The port status LEDs should be off if the host and terminals are not yet powered up.

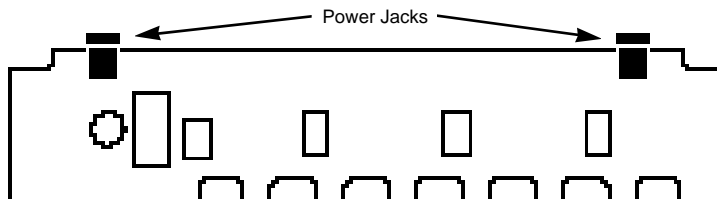


Figure 5. Rear panel of Model 457B, showing power jacks

### 5.2 "PORT STATUS" LED INDICATORS

As figure 6 (below) illustrates, there is a status LED for each port on the Model 457B. Having followed the normal start-up procedures for your system, the host port LED should glow faintly red and each active terminal port's LED should glow faintly green. Inactive ports should not show any LED activity. When data activity is occurring on a port, its LED should glow brightly. Failure of a particular port's LED to behave as described here may indicate a problem with the cable connection or with the host/terminal hardware.

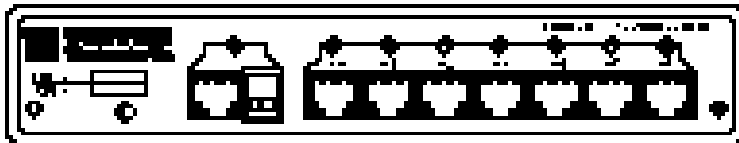


Figure 6. Front panel of Model 457B, showing LED indicators

## APPENDIX A SPECIFICATIONS

**Connectors:** Host port—terminal block and RJ-45 jack  
Terminal ports—RJ-45 jack

**Applicable Hardware:** IBM AS/400 and System 34/36/38 compatible hosts and terminals

**Range:** 2250 ft (24 AWG unshielded twisted pair) between the hub and each connected device; maximum host-to-terminal range is 4500 ft

**Transmission Protocol:** Transparent to user

**Link-to-Data Isolation:** 500 Volts RMS

**Operating Temperature:** 40°F to 130°F (5°C to 54°C)

**Storage Temperature:** 0°F to 185°F (-17°C to 85°C)

**Humidity:** Up to 95% non-condensing

**Dimensions:** 7.25"w x 1.6"h x 3.75"d

**Weight:** 0.9 lb

**Power Requirements:** Regulated 5VDC @ 250 mA

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