

USER MANUAL

MODEL 1110A Asynchronous, Carrier Controlled Fiber Optic Modem



PA PATTON
Electronics Co.



An ISO-9001
Certified Company

Part# 07M1110A-B
Doc# 018051UB
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1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 1110A 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 1110A 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 1110A has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are 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 1110A 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 Technical Support.

1.3 SERVICE

All warranty and non-warranty 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 **(301) 975-1007**, at our web site at **<http://www.patton.com>**, or at **support@patton.com**. *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 1110A. 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

- Communicates over dual optical fibers
- Data rates to 19.2 Kbps
- Distances to 4 miles (6.44 km)
- Plugs directly into an RS-232 port
- Immune to RFI/EMI noise, ground loops and transient surges
- Easily accessible DCE/DTE switch
- DIP Switch-selectable carrier control
- Requires no AC power or batteries
- Two easy-to-read status indicators
- Fits into tight installation spaces
- Male or female DB-25 and SMA or ST connectors available

2.2 DESCRIPTION

The Patton Model 1110A miniature RS-232 fiber optic modem brings fiber to the desktop. Communicating over dual optical fibers, the Model 1110A supports data rates to 19.2 Kbps and distances to 4 miles (6.44 km). The Model 1110A operates full or half duplex and plugs directly into a workstation's RS-232 port.

Like all fiber optic modems, the Model 1110A is inherently immune to RFI/EMI noise, ground loops and transient surges. The carrier may be switch selected as either "Continuously On" or "Controlled by RTS", while an easily accessible DCE/DTE switch eliminates the need for cumbersome RS-232 crossover cables. Two easy-to-read LED indicators monitor the status of carrier detect and fiber optic output. Drawing all necessary power from the RS-232 interface, the Model 1110A requires no AC power or batteries to operate.

Measuring only 2.66" x 2.10" x .73", the Model 1110A is able to fit into tight installation spaces. A convenient pop-open/snap-shut ABS plastic case allows easy access to configuration switches. On the RS-232 side, the Model 1110A comes equipped with either a male or female DB-25 connector; on the fiber side, it is available with a choice of SMA or ST connectors.

3.0 CONFIGURATION

The Model 1110A is simple to install and is ruggedly designed for excellent reliability. This section describes how to configure the Model 1110A's DCE/DTE switch and how to set the internal DIP switches.

3.1 CONFIGURATION SWITCHES

The Model 1110A uses a DTE/DCE switch and a 4 position internal DIP switch that allow configuration to wide range of applications. Figure 1, below, shows the position of the DIP switch and the DCE/DTE switch on the top of the Model 1110A PC board.

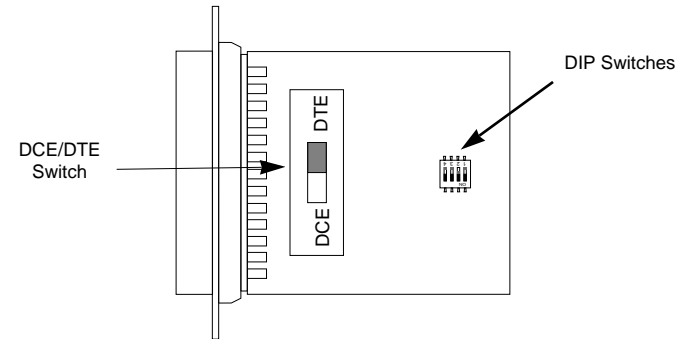


Figure 1. Model 1110A PC board, showing switch and strap locations

3.1 SETTING THE EXTERNAL DCE/DTE SWITCH

For your convenience, the Model 1110A has an externally accessible DCE/DTE switch (see Figure 2, below). If the device connected to the Model 1110A is a PC, terminal (or is wired like one), set the switch to "DCE" (Default Setting). This causes the Model 1110A to behave like Data Communications Equipment and transmit data on pin 3. If the device connected to the Model 1110A is a modem or multiplexer (or is wired like one), set the switch to "DTE". This causes the Model 1110A to behave like Data Terminal Equipment and transmit data on pin 2.

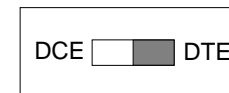


Figure 2 Externally accessible DCE/DTE switch
Default Setting = "DCE"

3.2 SETTING INTERNAL DIP SWITCHES

The Model 1110A uses four internal DIP switches that allow configuration for a wide range of applications. In order to set the internal DIP switches, you must open the Model 1110A case.

NOTE: Before opening the case, determine whether the default settings are correct for your application (see Section 3.2.2).

3.2.1 Opening the Case

To open the Model 1110A case, insert a flat head screw driver between the case lip and DB-25 connector (see Figure 3).

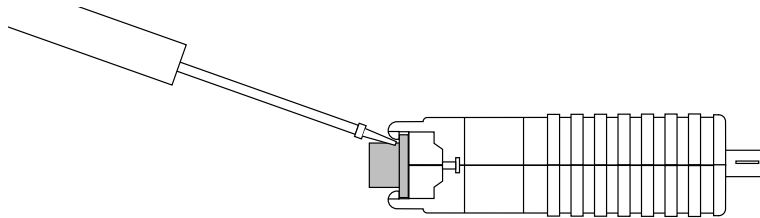


Figure 3. Using a small screwdriver to separate the Model 1110A case

Twist the screw driver head slightly and the top half of the case will separate from the lower half, as in Figure 4, below.

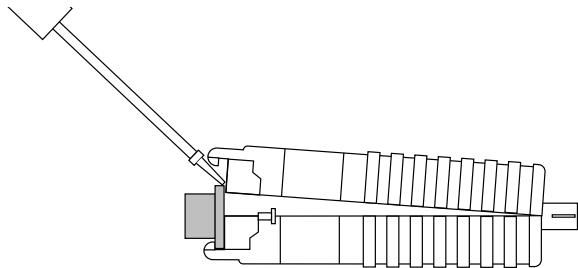


Figure 4. Using a small screwdriver to separate the Model 1110A case

To set the switches, use a small screwdriver and gently push each switch to its proper setting. Finally, fit the case halves together and push to snap closed.

3.2.2 Configuration Switch Set “S1”

The switches on DIP switch S1 are used to set the RTS/CTS delay and the method of carrier control. Figure 5 shows the orientation of the switches on DIP Switch S1 with respect to ON/OFF positions.

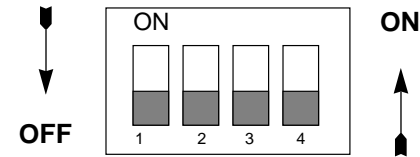


Figure 5. Close-up of DIP Switches Showing “ON” and “OFF” Positions

The default settings for DIP switch S1 are shown in the table below. Detailed descriptions of each switch follow the table.

S1 SUMMARY TABLE		
Position	Function	Factory Default
S1-1	RTS/CTS Delay	On
S1-2	RTS/CTS Delay	On
S1-3	Carrier Control	Off
S1-4	Factory Use Only	Off*

* Indicates Mandatory Setting

Switches S1-1 & S1-2: RTS/CTS Delay

The combined settings for switches S1-1 and S1-2 determine the amount of delay between the time the Model 1110A “sees” RTS and then sends CTS to the DTE device. Options are no delay, 9.5 ms and 79.5 ms.

S1-1	S1-2	Setting
Off	Off	No delay
On	On	9.5 ms
On	Off	79.5 mS
On	Off	Not a Valid Setting

4.0 INSTALLATION

Switch S1-3: Carrier Control Method

The setting for switch S1-3 determines whether the carrier is “constantly on” or “controlled by RTS”. This setting allows for operation in switched carrier or hardware handshaking applications.

S1-3	Setting
Off	Constantly on
On	Controlled by RTS

Switch S1-4: Factory Use Only

This switch is *reserved for factory use* and must remain in the OFF position.

S1-4	Setting
Off	Normal Operation
On	Not a Valid Setting

The Model 1110A is easy to install. After configuring the DIP switches, simply connect the two fiber cables and then connect the RS-232 interface. Figure 6 (below) shows the location of the fiber connections on the Model 1110A's rear panel.

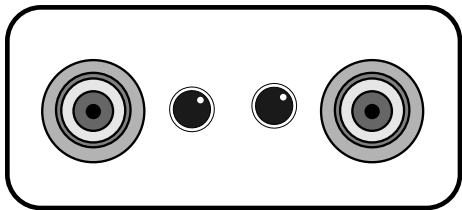


Figure 6. Rear panel of the Model 1110A, showing fiber connections

4.1 FIBER CONNECTIONS

The Model 1110A short range modems are designed to work in *pairs*. You will need one at each end of a dual fiber cable. This cable connects to each Model 1110A using either an ST or an SMA connector. Figure 7 (below) shows a close up of each of these connector types.

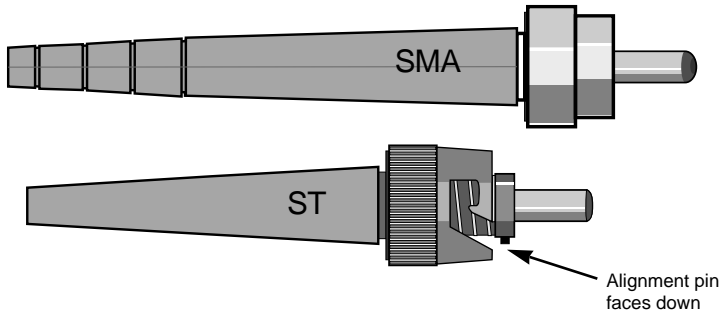


Figure 7. Close up of ST and SMA connections

4.2 RS-232 CONNECTION

Because the Model 1110A is designed to behave as either a DCE or a DTE device, it does not need special cables to operate. Always use a *straight-through* RS-232 cable.

Notice! Any terminal cable connected to the Model 1110A must be shielded cable, and the outer shield must be 360 degree bonded—at both ends—to a metal or metalized backshell.

5.0 OPERATION

Once you have configured each Model 1110A properly and connected the fiber and RS-232 cables, you are ready to operate the units. This section describes the LED status monitors and the power up process.

5.1 LED STATUS MONITORS

The Model 1110A features two status LEDs that indicate the condition of carrier detect and fiber optic output. Figure 8 (below) shows the back panel location of each LED. Following Figure 8 is a description of each LED's function.

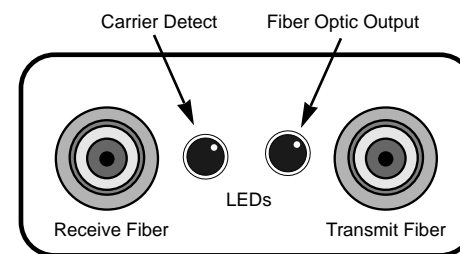


Figure 8. Back panel view of the Model 1110

- The “Carrier Detect” LED will glow red when a proper carrier frequency is recognized.
- The “Fiber Optic Output” LED will glow red to indicate presence of infrared output and transmit carrier

5.2 POWER UP

Once the Model 1110A is properly installed, it should operate transparently—as if it were a standard cable connection. Since operating power is derived from the RS-232 data and control signals; there is no “ON/OFF” switch. All data signals from the RS-232 interface are passed straight through.

When the local and remote Model 1110A's are both powered up and passing data normally, the following LED conditions will exist:

- Carrier detect = solid red
- Fiber optic output = solid red

APPENDIX A

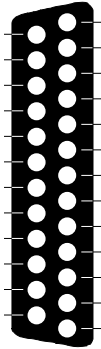
PATTON MODEL 1110A SPECIFICATIONS

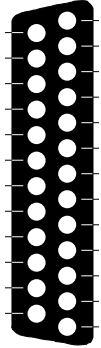
Transmission Line:	Dual optical cable
Transmission Mode:	Asynchronous, half or full duplex, point-to-point
Interfaces:	EIA RS-232, CCITT V.24
Data Rates:	0 - 19.2 Kbps
Distance:	4 mile (6.43km) over continuous fiber (62.5/125mm)
RTS/CTS Delay:	Switch-selectable: No delay, 9.5 mS, 79.5 mS
Receiver Sensitivity:	≥ -44dBm
Coupled Power Output:	-22 to -25dBm (in 62.5/125mm cable)
Optic Wavelength:	850 nm
LED Indicators:	Carrier Detect and Fiber Optic Output
Connectors:	DB-25 male or female on RS-232 side; ST or SMA connectors on fiber side
Power Supply:	No external power required; uses power from RS-232 data and control signals
Temperature Range:	0-50°C (32-122°F)
Altitude:	0-15,000 feet
Humidity:	Up to 95% non-condensing
Weight:	2 oz.
Dimensions:	2.66" x 2.10" x 0.73"

APPENDIX B

PATTON MODEL 1110A PIN CONFIGURATIONS

**RS-232 Pin Description
(DB-25 Female Connector)**

DIRECTION	"DCE" STANDARD SETTING	DIRECTION
To Model 1110A		To Model 1110A From Model 1110A To Model 1110A From Model 1110A From Model 1110A From Model 1110A

DIRECTION	"DTE" STANDARD SETTING	DIRECTION
From Model 1110A		From Model 1110A To Model 1110A From Model 1110A To Model 1110A To Model 1110A To Model 1110A

APPENDIX C

PATTON MODEL 1110A FIBER OPTIC CABLE DATA

The Model 1110A operational distance over multi-mode fiber optic cable may be determined based upon the following measured attenuation values:

Core/Cladding (in microns)	Attenuation Values (dB/km @850 nm)			
	Excellent	Very Good	Good	Fair
50/125	2.50	2.75	3.00	4.00
62.5/125	3.00	3.25	3.50	4.00
100/140	4.00	4.50	5.00	

APPENDIX D

PATTON MODEL 1110A BLOCK DIAGRAM

