USER MANUAL

MODEL 1180RC and 1184RC Single Fiber Rack Card Modem

PATTON Electronics Co.

1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 1180RC/1184RC 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 1180RC/1184RC 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 1180RC/1184RC 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 1180RC/1184RC does cause interference to radio or television reception, which can be determined by turning the power off, 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).

In the event that the user detects intermittent or continuous product malfunction due to nearby high power transmitting radio frequency equipment, the user is strongly advised to take the following steps:

1) Use only data cables with an external outer shield bonded to a metal or metalized connector.

2) Configure the rear card as shown in Section 3.2 in this manual.

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, http://www.patton.com,** or **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 1180RC. 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 by Patton's qualified technicians. 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

- Synchronous or Asynchronous operation
- Communicates point-to-point over a single optical fiber
- Local and remote test modes
- Mounts in Patton's Cluster Boxes and Rack System 1000R16P
- Data Rates:
  Model 1180RC: aysnc; 0 to 38.4 Kbps
  sync; 2.4, 9.6, 19.2, 38.4, 56, 64, 192 and 256 Kbps

  Model 1184RC: aysnc; DC to 19.2 Kbps
   sync; 4.8, 9.6, 14.4, 19.2, 28.8, 32.0, 56.0, 64.0, and 128 Kbps
- Distances to 2.5 Km (for Standard)
- Distances to 5 Km (for Double)
- Internal, external or receive loopback clocking
- Hardware and software flow control
- Ten front panel LEDs
- Available with ST or SMA connectors

2.2 DESCRIPTION

The Model 1180RC/1184RC Single Fiber Rack Card Modem accomplishes point-to-point RS-232/V.35 communication over a *single* optical fiber. Mounting in Patton's cluster box and 1000R16P rack system. the Model 1180RC supports synchronous data rates to 256 Kbps, and asynchronous data rates to 38.4 Kbps, and the Model 1184RC supports synchronous data rates to 128 kbps and asynchronous data rates from DC to 19.2 kbps. The Model 1180RC/1184RC automatically adapts to hardware or software flow control. Synchronous timing can be set for internal, external or receive loopback clock.

The Model 1180RC/1184RC features extended data rate circuitry that allows for single fiber distances between 2.5 and 5 Km. Optical fiber may be connected to the Model 1180RC/1184RC using an ST or SMA type interface. The Model 1180RC/1184RC encodes the electrical signal using 3B4B modulation. The electrical signal is then converted to an optical signal and transmitted using an 880 nm light emitting diode, communicating over a single 62.5μ multi-mode fiber.

The Model 1180RC/1184RC features two test modes: local and remote loopback. These loopback tests are activated via the serial communication interface on the rear card. The local loopback test monitors the RS-232/V.35 to modem connection. The remote loopback test monitors the condition of the connection between the modems.

3.0 CONFIGURATION

This section describes the location and orientation of the Model 1180RC/1184RC's configuration switches and jumpers. Separate descriptions are provided for the front "brains" card and the rear "interface" card.

3.1 FRONT CARD CONFIGURATION

The Model 1180RC/1184RC front card uses two sets of DIP switches that allow configuration to a wide range of applications. DIP switch set S1 has 4 switches and allows selection of data rates. DIP switch set S2 has 8 switches and allows selection of clocking, handshake and test mode parameters.

Figure 1 (below) shows the location of switch set S1 and S2 on the 1180RC/1184RC front card. Figure 2 (below) shows the orientation of DIP switch set S2 (S1 is identical).
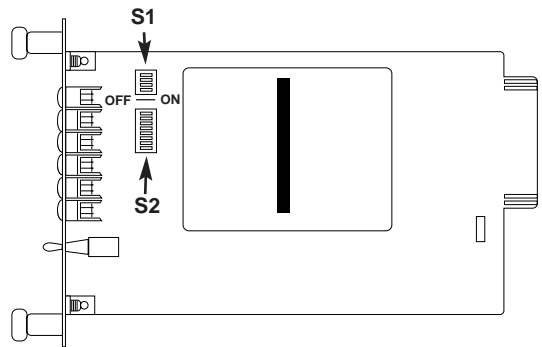

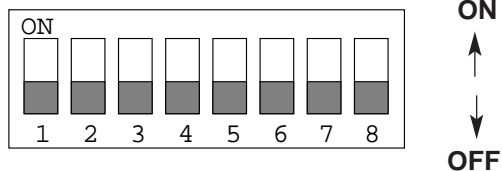**Figure 1.** Switch locations on the 1180RC/1184RC front card

Figure 2. Orientation of front card switch set S2

3.1.1 SWITCH SET S1 OVERVIEW

DIP switch set S1 has 4 switches and is used to select the data rate. Below are Table 1 (Model 1180RC) and Table 1A (Model 1184RC) which shows each possible data rate and switch settings.

Important: When the data rate is followed by "dbl", the space between data packets is doubled. This means communication distances up to 5Km are possible. When the data rate is followed by "std", the space between data packets is standard. This means communication distances are limited to 2.5 Km.

1180RC DIP Switch Set S1				
	1	2	3	4
Asynchronous				
dc - 19.2k dbl.	ON	off	off	ON
dc - 38.4k std.	ON	off	off	off
Synchronous				
2.4k std.	ON	ON	ON	off
9.6k std.	off	ON	ON	off
9.6k dbl.	off	ON	ON	ON
14.4k std.	ON	off	ON	off
19.2k dbl.	ON	off	ON	ON
38.4k dbl.	off	off	ON	ON
48k std	ON	ON	off	off
48k dbl.	ON	ON	off	ON
56k std.	off	ON	off	off
64k std.	off	off	off	off
64k dbl.*	off*	off*	off*	ON*
128k std.	off	off	ON	off
192k std.	off	ON	off	ON
256k std.	ON	ON	ON	ON

Table 1. Model 1180RC Switch Set SW1 Configurations, * Indicates Factory Default

1184RC DIP Switch Set S1				
	1	**2**	**3**	**4**
Asynchronous				
dc - 19.2k dbl.	ON	off	off	ON
Synchronous				
4.8k dbl.	off	ON	ON	off
9.6k dbl.	off	ON	ON	ON
14.4k std.	ON	off	ON	off
19.2k dbl.	ON	off	ON	ON
28.8k std.	off	off	ON	off
32k dbl.	off	off	off	off
56k std.	off	ON	off	off
64k dbl.*	off*	off*	off*	ON*
128k dbl.	ON	ON	ON	ON

Table 1A. Model 1184RC Switch Set SW1 Configurations, * Indicates Factory Default

3.1.2 SWITCH SET S2 OVERVIEW

DIP switch set S2 has 8 switches and is used to specify clocking, handshake and loopback modes.   Table 2 (below) shows each setting at a glance.

Dip Switch Set S2					
	1	**2**	**3**	**7**	**8**
Transmit Clk Selection:					
Internal Transmit Clock*	ON*	off*			
Receive Loopback Clock	off	off			
External Transmit Clock	off	ON			
Handshake Mode:					
RTS/CTS(default)			ON		
Standard Modem*			off*		
RS232/V.35 Loopback Control:					
Local Analog Loopback					
Toggle Switch Control Only*				off*	
RS232/V.35 & Toggle Ctrl				ON	
Remote Loopback					
Toggle Switch Control Only*					off*
RS232/V.35 & Toggle Ctrl					ON

Table 2. Switch Set SW2 Configurations, * Indicates Factory Default

NOTE: Switches 4, 5 and 6 not used

3.1.3 DETAILED SWITCH SETTINGS - S2

Whereas DIP switch set S1 is dedicated specifying data rates, switch set S2 has multiple functions.   Please refer back to Table 2, above for an overview of all possible S2 configurations.

S2-1 & S2-2: Transmit Clock Selection

Switches 1 and 2 are used to specify the clocking method. The Model 1180RC/1184RC can provide an internal clock, receive a clock loopback, or receive an external clock. Internal clocking is the normal (default) method.

S2-1	S2-2		
On	off	=	Internal Clock *(default setting)*
off	off	=	Received Loopback Clock
off	On	=	External Clock

S2-3: Handshake Mode

The setting for switch 3 determines whether the Model 1180RC/1184RC operates in RTS/CTS (hardware) handshaking mode or standard modem handshaking mode. In RTS/CTS mode, when one unit drops RTS, CTS will drop on the other unit. In standard modem mode, handshaking only functions on the local loops (between each Model 1180RC/1184RC and its own DTE device).

S2-3		
On	=	RTS/CTS
Off	=	Standard Modem *(default settings)*

S2-4, S2-5 & S2-6: Not Used

S2-7 & S2-8: RS-232 Loopback Control

The Model 1180RC/1184RC gives you the option of enabling test modes via the front panel toggle switch or via the RS-232/V.35 interface. Switch S2-7 controls the enabling of local analog loopback. Switch S2-8 controls the enabling of remote loopback.

Local Analog Loopback

S2-7		
off	=	Toggle Switch Control Only *(default settings)*
On	=	RS-232/V.35 <u>or</u> Toggle Switch Control

Remote Loopback

<u>S2-8</u>
off = Toggle Switch Control Only *(default settings)*
On = RS-232/V.35 <u>or</u> Toggle Switch Control

3.1.4 REVERSIBLE "DAUGHTER BOARD"

The Model 1180RC/1184RC supports both RS-232 and V.35 electrical interfaces for the terminal connection port. Which electrical interface is active is determined by the orientation of the small reversible daughter board on the front card (see Figure 3, below). The daughter board is clearly marked **"This side up for RS-232"** and **"This side up for V.35"**. Note: When plugging the daughter board into the socket, the **arrow** should always point toward the *front panel* of the PC board.
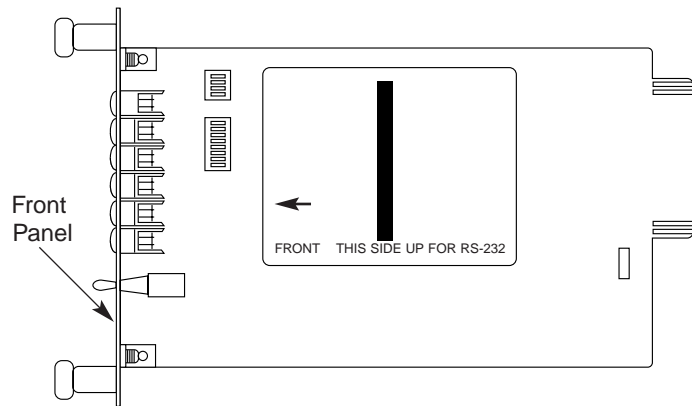

Front
Panel

FRONT   THIS SIDE UP FOR RS-232

Figure 3. Terminal interface selection "daughter board"

3.2 REAR CARD CONFIGURATION

The Model 1180RC/1184RC is compatible with four single-fiber rear interface cards. Figure 4 (below) shows a rear view of each of the cards.
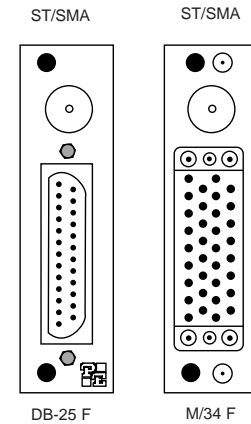

ST/SMA   ST/SMA

DB-25 F   M/34 F

Figure 4. Model 1180RC/1184RC interface card options

Figure 5 (below) shows each of the possible interface port combinations and their part numbers.

RS-232/V.35	Fiber Optic	Rear Card Part No.
DB-25 Female	ST	1000RCM125ST
DB-25 Female	SMA	1000RCM125SMA
V.35	**Fiber Optic**	
M/34 Female	ST	1000RCM134ST
M/34 Female	SMA	1000RCM134SMA

Figure 5. Possible interface port combinations

3.2.1 REAR CARD JUMPER SETTINGS

Figure 6 (below) shows jumper locations for the four rear card options. These jumpers determine various grounding characteristics for the RS-232/V.35.
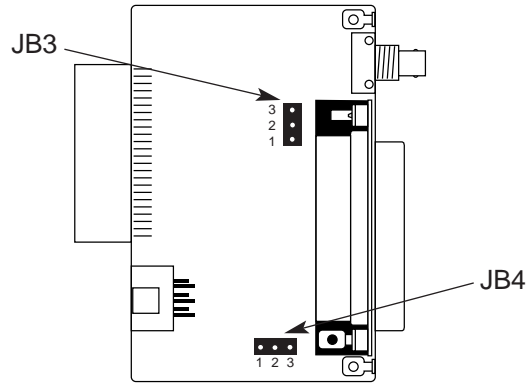

Figure 6. Rear card jumper locations

Figure 7 (below) shows the orientation of the rear interface card jumpers. The jumper can either be on pegs 1 & 2, or on pegs 2 & 3.
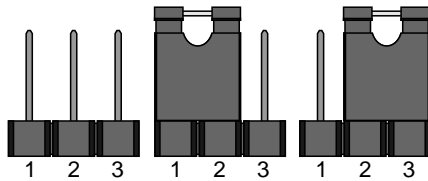

Figure 7. Orientation of interface card straps

Table 3 (below) provides an overview of interface jumper functions for the rear interface cards. Following this overview is a detailed description of each jumper's function.

REAR CARD STRAP SUMMARY			
Strap	**Function**	**Position 1&2**	**Position 2&3**
JB3	DTE Shield (Pin1) & FRGND	Connected	Open*
JB4	FRGND & SGND	Connected	Open*

Table 3. Summary of Strap Settings, * Indicates Factory Default

DTE Shield & Frame Ground (JB3)

In the connected position, this jumper links DB-25 pin 1 (M/34 pin A) & frame ground. In the open position, pin 1(pin A) is "lifted" from frame ground.

JB3
Position 1&2 = DTE Shield (DB-25 Pin 1 or M/34 Pin A)
    and FRGND Connected

Position 2&3 = DTE Shield (DB-25 Pin 1 or M/34 Pin A)
    and FRGND Not Connected

Signal Ground & Frame Ground (JB4)

In the connected position, this jumper links DB-25 pin 7 or M/34 pin B (Signal Ground) and frame ground. In the open position, pin 1 (or pin B) is "lifted" from frame ground.

JB4
Position 1&2 = SGND (DB-25 pin 7 or M/34 pin B)
    and FRGND Connected

Position 2&3 = SGND (DB-25 pin 7 or M/34 pin B)
    and FRGND Not Connected

4.0 INSTALLATION

This section describes the functions of the Model 1000R16P rack chassis, tells how to install front and rear Model 1180RC/1184RC cards into the chassis, and provides instructions for connecting the interface cables.

4.1 THE MODEL 1000R16 RACK CHASSIS

The 1000R16 Rack Chassis (Figure 8, below) has sixteen short range modem card slots, plus its own power supply. Measuring only 3.5" high, the 1000R16 is designed to occupy only 2U in a 19" rack. Sturdy front handles allow the 1000R16 to be extracted and transported conveniently.
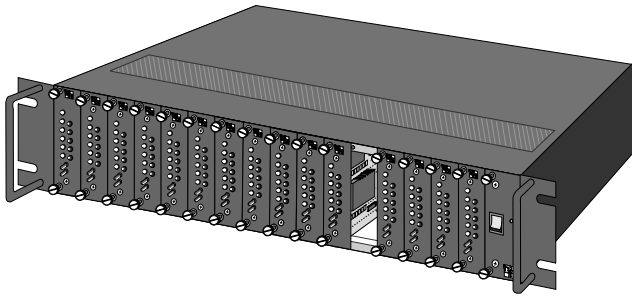

Figure 8. Model 1000R16 rack chassis with power supply

4.1.1 THE RACK POWER SUPPLY

The power supply included in the Model 1000R16 rack uses the same mid-plane architecture as the modem cards. The front card of the power supply slides in from the front, and the rear card slides in from the rear. They plug into one another in the middle of the rack. The front card is then secured by thumb screws and the rear card by conventional metal screws.

> **WARNING!** **There are no user-serviceable parts in the power supply section of the Model 1180RC/1184RC. Voltage setting changes and fuse replacement should only be performed by qualified service personnel. Contact Patton Electronics Technical support at (301)975-1007 for more information.**

Switching the Power Supply On and Off

The power supply on/off switch is located on the front panel. When plugged in and switched on, a red front panel LED will glow. Since the Model 1000R16P is a "hot swappable" rack, *it is not necessary for any cards to be installed before switching on the power supply*. The power supply may be switched off at any time without harming the installed cards.

4.2 INSTALLING THE MODEL 1180RC/1184RC INTO THE CHASSIS

The Model 1180RC/1184RC is comprised of a front card and a rear card. The two cards meet inside the rack chassis and plug into each other via mating 50 pin card edge connectors. Use the following steps as a guideline for installing each Model 1180RC/1184RC into the Model 1000R16P rack chassis:

1. Slide the rear card into the back of the chassis along the metal rails.

2. Secure the rear card using the metal screws provided.

3. Slide the front card into the front of the chassis. It should meet the rear card when it's almost all the way into the chassis.

4. Push the front card *gently* into the card-edge receptacle of the rear card. It should "click" into place.

5. Secure the front card using the thumb screws.

    NOTE: Since the Model 1000R16P chassis allows "hot swapping" of cards, it is *not necessary to power down* the rack when you install or remove a Model 1180RC/1184RC.

4.3 WIRING THE MODEL 1180RC/1184RC

Each of the rear interface cards compatible with the Model 1180RC/1184RC has one terminal interface port (DB-25 or M/34) and a single multimode fiber port (ST or SMA). This section describes connection procedures for the terminal cable and fiber cable.

4.3.1 TERMINAL INTERFACE CONNECTION

The Model 1180RC/1184RC is wired as a DCE, and allows for three possible terminal interface connections:

- RS-232C/V.24 (electrical) + DB-25 female (physical)
- V.35 (electrical) + DB-25 female (physical)
- V.35 (electrical) + M/34 female (physical)

To select the appropriate *electrical* interface, please refer to **Section 3.1.4** of this manual. To select or construct a cable with the appropriate *physical* interface pin-outs, please refer to the diagrams in **Appendix B and Appendix C** of this manual.

4.3.2 FIBER CONNECTIONS

The Model 1180RC/1184RC is designed to work with the stand-alone Model 1180, or with another Model 1180RC/1184RC. In either case, you will need one unit at each end of a ***single*** fiber cable. This cable connects to the Model 1180RC/1184RC using either an ST or an SMA connector. Figure 9 (below) shows a close-up of each of these connector types. ***The cable must be multi-mode 50 or 62.5µ, for optimal performance, use 62.5µ.***
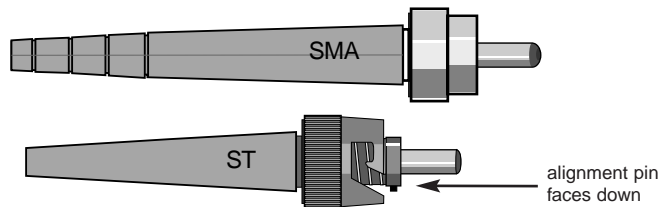

Figure 9. Close-up of ST and SMA connections

5.0 OPERATION

Once you have configured each Model 1180RC/1184RC and connected the cables, you are ready to operate the units. This section describes the LED status monitors, the power-up procedure, and the use of the built-in test modes.

5.1 LED STATUS MONITORS

The Model 1180RC/1184RC features eleven front panel status LEDs that indicate the condition of the modem and communication link. Figure 10 shows the front panel location of each LED. Following Figure 10 is a description of each LED's function.
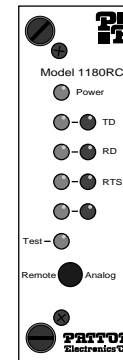
Figure 10. Model 1180RC/1184RC Front Panel, Showing LEDs and Switch

- The green "PWR" LED glows when power is applied to the modem card through its mid-plane chassis connection.

- The green "TD" and "RD" indicators blink to show positive state data activity. The Red "TD" and "RD" indicators blink to show negative state data activity. Solid red indicates an idle state.

- The green "RTS" and "CD" indicators glow solid to show the control signal is on. The red "RTS" and "CD" indicators glow solid to show the control signal is off. When the 1180RC/1184RC is connected to a DTE, RTS will glow green. CD will glow green for an incoming signal from the line.

- The green "Test" LED glows when either test mode is activated.

5.2 POWER-UP

There is no power switch on the Model 1180RC/1184RC: Power is automatically applied to the 1180RC/1184RC when its card-edge connector makes contact with the chassis' mid-plane socket, or when the chassis' power supply is turned on. *Note: The 1180RC/1184RC is a "hot swappable" card—it will not be damaged by plugging it in or removing it while the rack is powered up.* When the local and remote Model 1180RCs/1184RCs are *both* powered up, and are passing data *normally*, the following LED conditions will exist:

- PWR = green
- TD & RD = flashing red and green
- RTS & DCD = green
- TEST = off

5.3 LOOPBACK TEST MODES

The Model 1180RC/1184RC offers two loopback test modes to evaluate the condition of the modems and the communication link (see Figure 11, below). Both tests can be activated physically from the front panel, or via the RS-232/V.35 interface.
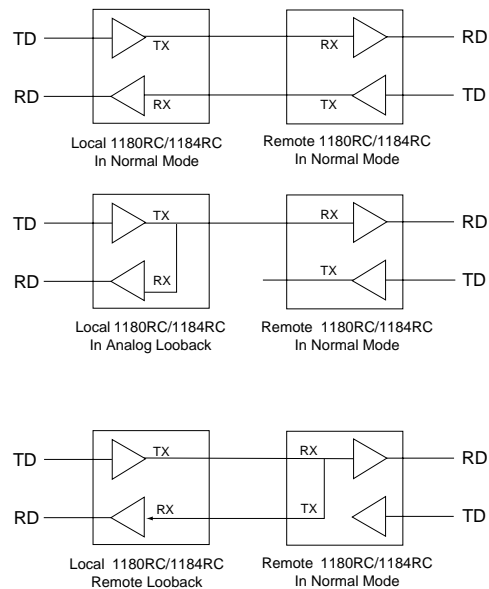

Figure 11. Local and Remote Loopback Test Modes

5.3.1 ANALOG LOOPBACK

The Analog Loopback test checks the operation of the local Model 1180RC/1184RC, and is *performed separately on each unit.* Any data sent to the local Model 1180RC/1184RC in this test mode will be echoed (returned) back to the user device. For example, characters typed on the keyboard of a terminal will appear on the terminal screen. To perform an analog loopback test, follow these steps:

1. Activate Analog Loopback. This may be done in one of two ways: (1) by moving the front panel toggle switch RIGHT to "Analog", (2) by raising the LAL signal pin on the RS-232/V.35 interface. Note: Make sure switch SW1-7 is enabled. Once Analog Loopback is activated, the Model 1180RC/1184RC transmit output is connected to its own receiver. The "TEST" LED should be lit.

2. Verify that the data terminal equipment is operating properly and can be used for a test.

3. Perform a BER (bit error rate) test on the system, using external test equipment.

4. Perform a BER test on each unit. If the BERT test equipment indicates no faults, and the data terminal indicates a fault, follow the manufacturer's checkout procedures for the data terminal. Also, check the RS-232/V.35 interface cable between the terminal and the Model 1180RC/1184RC.

5.3.2 REMOTE LOOPBACK

The Remote Loopback test checks the performance of both the local and remote Model 1180RCs/1184RCs, *and* the communication link between them. Any characters sent to the remote Model 1180RC/1184RC in this test mode will be returned back to the originating device. For example, characters typed on the keyboard of the local terminal will appear on the local terminal screen *after* having been passed to the remote Model 1180RC/1184RC/1184RC and looped back. To perform an RDL test, follow these steps:

1. Activate Remote Loopback. This may be done in two ways: (1) by moving the front panel toggle switch LEFT to "Remote", (2) by raising the RDL signal pin on the RS-232/V.35 interface. Note: be sure that DIP switch SW1-8 is enabled.

2. Verify that the DTE equipment on the local end is operating properly and can be used for a test.

3. Perform a BER test on the system, using external test equipment.

4. If the remote BER test indicates that errors *are* present, and the local analog loopback/BER tests showed that both Model 1180RCs/1184RCs were functioning properly, this suggests a problem with the FIBER between the two modems. If you still have errors, call Patton Technical Support at (301) 975-1007.

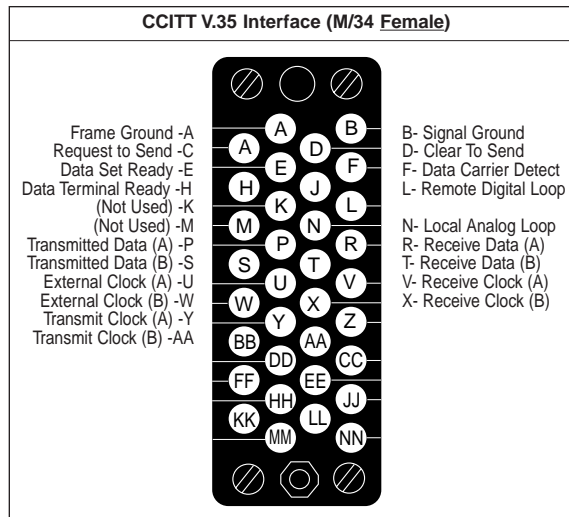| SYMPTOM	PROBLEM	SOLUTION
Carrier Detect (CD) LED is *red*	If CD is red, possible synchronization loss	Check for ongoing power loss or break in fiber if CD does not go green **within 60 seconds.**
OR		
Carrier Detect (CD) LED is *green*, but 1180RCs/1184RCs are not communicating.	Test Mode switch is in the wrong position	Make sure the Test Mode switch is set to NORMAL on both Model 1180RC/1184RC
	DIP switches are set improperly	Check all DIP switch settings, esp. **Data Rate**, against Section 3; make sure both Model 1180RC/1184RC are configured the same way
	Fiber link is connected improperly	Check the ST or SMA connection on the back of both Model 1180RC/1184RC
	RS-232/V.35 connections are faulty or cables are pinned wrong	Check RS-232/V.35 cable continuity and pinning
Data passed, but hardware flow control doesn't work	Incorrect DIP switch setting	Switch 7 must be in the ON condition for hardware flow control signals to pass between Models 1180RCs or 1184RCs; both units must be set the same way

SYMPTOM	PROBLEM	SOLUTION
Model 1180RCs and 1184RCs work in async. mode, but not sync. mode	Incorrect DIP switch setting	Switch 8 (internal/external clock) must be set the same way for both Model 1180RC/1184RC

APPENDIX B
V.35 INTERFACE STANDARDS (DCE)

DIRECTION	CCITT V.35/EIA-530 INTERFACE (DB-25 Male)		DIRECTION
To 1180RC/1184RC	Transmit Data B - 14	1 - (FG) Frame Ground	Common
From 1180RC/1184RC	Transmit Clock A - 15	2 - Transmit Data A	To 1180RC/1184RC
From 1180RC/1184RC	Receive Data B - 16	3 - Receive Data A	From 1180RC/1184RC
From 1180RC/1184RC	Receive Clock A - 17	4 - (RTS) Request to Send	To 1180RC/1184RC
To 1180RC/1184RC	Local Analog Loop (LAL) - 18	5 - (CTS) Clear to Send	From 1180RC/1184RC
		6 - (DSR) Data Set Ready	From 1180RC/1184RC
		7 - (SG) Signal Ground	Common
To 1180RC/1184RC	Data Term. Ready (DTR) - 20	8 - (CD) Carrier Detect	From 1180RC/1184RC
To 1180RC/1184RC	Remote Digital Loop (RDL) - 21	9 - Receive Clock B	From 1180RC/1184RC
To 1180RC/1184RC	External Clock A - 24	11 - External Clock B	To 1180RC/1184RC
From 1180RC/1184RC	Test Mode - 25	12 - Transmit Clock B	From 1180RC/1184RC

CCITT V.35 Interface (M/34 Female)

Frame Ground -A
Request to Send -C
Data Set Ready -E
Data Terminal Ready -H
(Not Used) -K
(Not Used) -M
Transmitted Data (A) -P
Transmitted Data (B) -S
External Clock (A) -U
External Clock (B) -W
Transmit Clock (A) -Y
Transmit Clock (B) -AA

B- Signal Ground
D- Clear To Send
F- Data Carrier Detect
L- Remote Digital Loop
N- Local Analog Loop
R- Receive Data (A)
T- Receive Data (B)
V- Receive Clock (A)
X- Receive Clock (B)

APPENDIX C
RS-232 INTERFACE STANDARDS (DCE)

DIRECTION	STANDARD "DCE" SETTING (DB-25 Male)		DIRECTION
		1- (FG) Frame Ground	
From 1180RC1184RC	Transmit Clock - 15	2- (TD) Transmit Data	To 1180RC/1184RC
		3- (RD) Receive Data	From 1180RC/1184RC
From 1180RC/1184RC	Receive Clock - 17	4- (RTS) Request to Send	To 1180RC/1184RC
		5- (CTS) Clear to Send	From 1180RC/1184RC
		6- (DSR) Data Set Ready	From 1180RC/1184RC
To 1180RC/1184RC	Data Term. Ready (DTR) - 20	7- (SG) Signal Ground	
		8- (DCD) Data Carrier Detect	From 1180RC/1184RC
To 1180RC/1184RC	External Clock - 24		

SPECIFICATIONS

Transmission Format:	Asynchronous or synchronous
Range:	2.5 Km at all data rates, 5 Km at specified data rates
Data Rates:	Model 1180RC: aysnc; 0 to 38.4 Kbps sync; 2.4, 9.6, 19.2, 38.4, 56, 64, 192 and 256 Kbps
	Model 1184RC: aysnc; DC to 19.2 Kbps sync; 4.8, 9.6, 14.4, 19.2, 28.8, 32.0, 56.0, 64.0, and 128 Kbps
Interface:	EIA RS-232/V.35 / CCITT V.35
Transmit Mode:	Single 62.5 or 50 μ core, multi-mode fiber cable, Optimal performance is with 62.5 μ cable
Clocking:	Internal, external or Receive Recovered clock
Handshaking:	Software (X-ON/X-OFF) or hardware (RTS/CTS), both modes available at all times
Application:	Point-to-point
Typical Link Budget:	8 dB with 50 μ cable; 12 dB with 62.5 μ cable
Responsivity Minimum:	0.12 A/w
LED Indicators:	TD, RD, RTS, CD, Power, Test
Diagnostics:	Local and remote loopback
Connectors:	DB-25 female (RS-232/V.35), ST or SMA (fiber), M/34 female (V.35)
Dimensions:	4.127" W x 1.52 H x 5.0" L

PATTON ELECTRONICS MODEL 1180RC/1184RC
FACTORY REPLACEMENT PART NUMBERS
FRONT AND REAR CARDS

PART NUMBER	DESCRIPTION
1180RC/35/SMA	Single-Fiber SRM Rack Card (M34F/SMA Fiber)
1180RC/35/ST	Single-Fiber SRM Rack Card (M34F/ST Fiber)
1180RC/SMA	Single-Fiber SRM Rack Card (DB25F/SMA Fiber)
1180RC/ST	Single-Fiber SRM Rack Card (DB25F/ST Fiber)
1184RC/35/SMA	Single-Fiber SRM Rack Card (M34F/SMA Fiber)
1184RC/35/ST	Single-Fiber SRM Rack Card (M34F/ST Fiber)
1184RC/SMA	Single-Fiber SRM Rack Card (DB25F/SMA Fiber)
1184RC/ST	Single-Fiber SRM Rack Card (DB25F/ST Fiber)
1000RCM125ST	Rear Card (DB25F/ST)
1000RCM125SMA	Rear Card (DB25F/SMA)
1000RCM134ST	Rear Card (M34F/ST)
1000RCM134SMA	Rear Card (M34F/SMA)