USER MANUAL

MODEL 2085RC

RS-232 to RS-485 Converter:
Dual Port
Rack Mount Card

PATTON Electronics Co.

Part# 07M2085RC-B
Doc# 047052UB
Revised 05/11/99

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1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 2085RC 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 2085RC 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 2085RC 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 2085RC does cause interference to radio or television reception, which can be determined by turning the power off or disconnecting the RS-232 interface, the user is encouraged to try to correct the interference by one 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 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: use only data cables with an external outer shield bonded to a metal or metalized connector; and, configure the rear card as shown in section 3.2.1 of 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 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 Support:

Tel: **(301) 975-1007**
Email: **support@patton.com**.
www: **http://www.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 2085RC. 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 during installation or use of the 2085RC, contact Patton Electronics Technical Support at (301) 975-1007.

2.1 FEATURES

- Convenient rack card features two short range modems
- Data rates to 115.2 Kbps
- Supports up to 50 multipoint device drops in a polling environment
- Passes transmit & receive data, one control signal each direction
- Variable high/low impedance settings
- Carrier can be set as “constantly on” or “controlled by RTS”
- Able to operate with or without “echo”
- Features 6 easy-to-read LEDs
- Silicon Avalanche Diode surge protection
- Fits conveniently in Patton’s rack chassis

2.2 DESCRIPTION

The Model 2085RC RS-232 to RS-485 Interface Converter is a *dual* rack card incorporating converters. Both units support asynchronous data rates to 115.2 Kbps over 1 or 2 twisted pairs and support distances to 9.4 miles (19 AWG @19.2 kbps). The Model 2085RC features 6 easy-to-read front panel LEDs and incorporates Silicon Avalanche Diodes for protection against the damaging effects of nearby lightning strikes and other harmful transients.

The Model 2085RC passes one control signal in each direction and can handle up to 50 terminal drops in a multipoint polling environment. The Model 2085RC may be configured for high or low impedance operation, carrier may be set to “constantly on” or “controlled by RTS”. Additionally,, and the unit can operate with or without “echo”. RTS/CTS delay may be set for “no delay” or 8 mS.

Filling one function card slot on Patton’s Model 1000R16 rack chassis, the Model 2085RC is available with RJ-11 or RJ-45 rear interface cards. For workgroup and desktop communications, the Model 2085RC also fits in Patton’s 2, 4 and 8 slot ClusterBoxes™.

3.0 CONFIGURATION

This section describes the location and orientation of the Model 2085RC's configuration switches, provides detailed instructions on setting each switch and describes the settings for each of the rear connection cards.

3.1 FRONT CARD CONFIGURATION

The Model 2085RC front card houses interface converters –- Converter "A" and Converter "B"– *each* using two sets of DIP switches. The locations of these switches are shown in Figure 1 (below). These switches are accessible when the card is slid out of the rack chassis. Once configured, the Model 2085RC is designed to operate transparently, without need for frequent re-configuration.

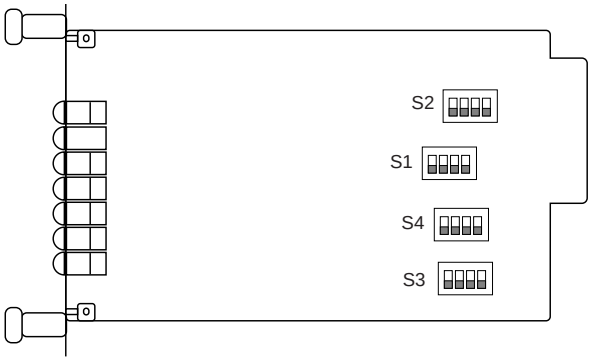


Figure 1. Model 2085RC board, showing location of configuration switches.

Each of the DIP switches on the Model 2085RC function card is a 4-position switch. Figure 2 (below) shows the On/Off orientation of these switches. Use a small screw driver or similar instrument to set each individual switch.

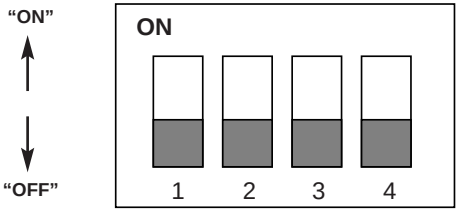


Figure 2. Close-up of DIP switches, showing ON/OFF orientation.

3.1.1 SWITCH SETTINGS - CONVERTER "A"

DIP switches S1 and S2 configure converter A on the Model 2085RC front card. The tables below provide an overview of converter A switch settings, including factory default settings. Following the tables is a descriptions of each switch's function.

SWITCH SET "S1"

DIP switch S1 is used to configure receive impedance, RTS/CTS delay, carrier control operation and "echo" enable/disable. The summary table below shows the factory default settings for switch S1. Following the summary table is a detailed description of each individual switch.

SWITCH S1 SUMMARY TABLE (factory defaults in bold)			
Position	**Function**	**ON Position**	**OFF Position**
S1-1	RX Impedance	**120 Ohm**	16K Ohm
S1-2	RTS/CTS Delay	**8 msec**	No Delay
S1-3	Carrier Control	**RTS Controlled**	Constantly On
S1-4	Echo Mode	Echo ON	**Echo OFF**

S1-1: Receive Impedance

The setting for switch S1-1 selects the impedance of the input receiver. You may select either a "low" impedance of 120 Ohms or a "high" impedance of 16K Ohms. By selecting the proper impedance for each drop, there may be up to 50 receivers in one application.

S1-1	Setting
On	Low (120 Ohm)
Off	High (16K Ohm typical)

S1-2: RTS/CTS Delay

The setting for switch S1-2 determines the amount of delay between the time the Model 2085RC "sees" RTS and when it sends CTS. **Note**: RTS/CTS Delay setting should be based upon transmission timing.

S1-2	Setting
On	8 msec
Off	no delay

S1-3: Carrier Control

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, multipoint and/or hardware handshaking applications.

S1-3	Setting
On	Controlled by RTS
Off	Constantly ON

S1-4: Echo Mode

The setting for switch S1-4 determines whether the Model 2085RC echoes data back to the transmitting device (half-duplex mode only).

S1-4	Setting
On	Echo On
Off	Echo Off

SWITCH SET "S2"

DIP switch S2 is used to configure transmit impedance, and 2-wire/4-wire operations. The summary table below shows the factory default settings for switch S2. Following the summary table is a detailed description of each individual switch.

SWITCH S2 SUMMARY TABLE (factory defaults in bold)			
Position	**Function**	**ON Position**	**OFF Position**
S2-1*	TX OFF Impedance	Intermediate	**High**
S2-2*	TX OFF Impedance	Intermediate	**High**
S2-3*	2-Wire/4-Wire	**2-Wire**	4-Wire
S2-4*	2-Wire/4-Wire	**2-Wire**	4-Wire
***Note:** Switches S2-1 and S2-2 must be switched simultaneously. Switches S2-3 and S2-4 must be switched simultaneously.			

S2-1 and S2-2: "Transmit Off" Impedance

Switches S2-1 and S2-2 are set together to determine whether the receiving device "sees" the impedance of the Model 2085RC's transmitter as being "high" or "intermediate" when the transmitter is turned off. The "intermediate" setting is useful in half-duplex environments where the receiving device does not respond well to the "high" setting.

S2-1	S2-2	Setting
On	On	Intermediate Impedance
Off	Off	High Impedance

S2-3 and S2-4: 2-wire/4-wire Modes

Switches S2-3 and S2-4 are set together to determine whether the Model 2085RC is in 2-wire or 4-wire operating mode. **Note:** 2-wire mode is half-duplex only.

S1-2	S1-3	Setting
On	On	2-wire mode
Off	Off	4-wire mode

3.1.2 SWITCH SETTINGS - MODEM "B"

DIP switches S3 and S4 configure converter B on the Model 2085RC front card. The tables below provide an overview of converter B switch settings, including factory default settings. Following each figure is a detailed description of each switch's function.

SWITCH SET "S3"

DIP switch S3 is used to configure receive impedance, RTS/CTS delay, carrier control operation and "echo" enable/disable. The summary table below shows the factory default settings for switch S3. Following the summary table is a detailed description of each individual switch.

SWITCH S3 SUMMARY TABLE (factory defaults in bold)			
Position	**Function**	**ON Position**	**OFF Position**
S3-1	RX Impedance	**120 Ohm**	16K Ohm
S3-2	RTS/CTS Delay	**8 msec**	No Delay
S3-3	Carrier Control	**RTS Controlled**	Constantly On
S3-4	Echo Mode	Echo ON	**Echo OFF**

S3-1: Receive Impedance

The setting for switch S3-1 selects the impedance of the input receiver. You may select either a "low" impedance of 120 Ohms or a "high" impedance of 16K Ohms. By selecting the proper impedance for each drop, there may be up to 50 receivers in one application.

S3-1	Setting
On	Low (120 Ohm)
Off	High (16K Ohm typical)

S3-2: RTS/CTS Delay

The setting for switch S3-2 determines the amount of delay between the time the Model 2085RC "sees" RTS and when it sends CTS. **Note**: RTS/CTS Delay setting should be based upon transmission timing.

S3-2	Setting
On	8 msec
Off	no delay

S3-3: Carrier Control

The setting for switch S3-3 determines whether the carrier is "Constantly On" or "Controlled by RTS". This setting allows for operation in switched carrier, multipoint and/or hardware handshaking applications.

S3-3	Setting
On	Controlled by RTS
Off	Constantly ON

S3-4: Echo Mode

The setting for switch S3-4 determines whether the Model 2085RC echoes data back to the transmitting device (half-duplex mode only).

S3-4	Setting
On	Echo On
Off	Echo Off

SWITCH SET "S4"

DIP switch S4 is used to configure transmit impedance, and 2-wire/4-wire operations. The summary table below shows the factory default settings for switch S4. Following the summary table is a detailed description of each individual switch.

SWITCH S4 SUMMARY TABLE (factory defaults in bold)

Position	Function	ON Position	OFF Position
S4-1*	TX OFF Impedance	Intermediate	**High**
S4-2*	TX OFF Impedance	Intermediate	**High**
S4-3*	2-Wire/4-Wire	**2-Wire**	4-Wire
S4-4*	2-Wire/4-Wire	**2-Wire**	4-Wire

***Note:** Switches S4-1 and S4-2 must be switched simultaneously.
Switches S4-3 and S4-4 must be switched simultaneously.

S4-1 and S4-2: "Transmit Off" Impedance

Switches S4-1 and S4-2 are set together to determine whether the receiving device "sees" the impedance of the Model 2085RC's transmitter as being "high" or "intermediate" when the transmitter is turned off. The "intermediate" setting is useful in half-duplex environments where the receiving device does not respond well to the "high" setting.

S4-1	S4-2	Setting
On	On	Intermediate Impedance
Off	Off	High Impedance

S4-3 and S4-4: 2-wire/4-wire Modes

Switches S4-3 and S4-4 are set together to determine whether the Model 2085RC is in 2-wire or 4-wire operating mode. **Note:** 2-wire mode is half-duplex only.

S4-2	S4-3	Setting
On	On	2-wire mode
Off	Off	4-wire mode

3.2 REAR CARD CONFIGURATION

The Model 2085RC has two interface card options: the 1Q11 (which comes equipped with two RJ-11 ports and two RJ-45 ports) and the 1Q45 (which comes equipped with four RJ-45 ports). Figure 3 (below) illustrates these two different rear interface options.

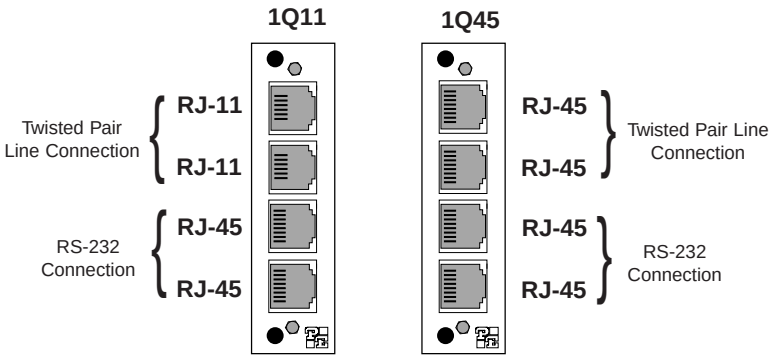


Figure 3. Model 2085RC interface card options

Prior to installation, you should examine the rear card you have selected and ensure that it is suitable for your application. Each rear card is configured by setting straps on the PC board. Section 3.2.1 describes the strap locations and settings for each card.

3.2.1 REAR CARD STRAP SETTINGS

Figure 4 (below) shows the strap locations for the 1Q11 and the 1Q45 rear cards. These straps determine various grounding characteristics for the RS-232 and twisted pair lines.

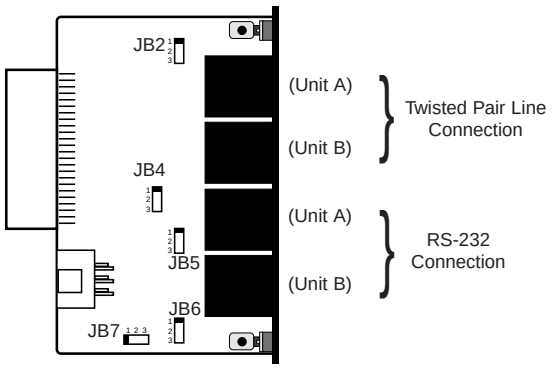


Figure 4. Strap locations for both rear cards

The table below provides a summary of strap functions for both of the rear cards. Following the summary table is a description for each strap function.

INTERFACE CARD STRAP SUMMARY TABLE #1		
Strap	**Position 1&2**	**Position 2&3**
JB2	Line A Shield	No Shield†
JB4	Line B Shield	No Shield†
JB5	SGND & FRGND	Open†
JB6	DTE A DSR†	N/A
JB7	DTE B DSR†	N/A

NOTE: † Indicates factory default setting

Line A Shield & Line B Shield (JB2 & JB4)

This strap pertains to the line interface. In the connected (closed) position, the strap links RJ-11 pins 1 and 6 (RJ-45 pins 2 and 7) to frame ground. These pins can be used as connections for the twisted pair cable shield. In the open (disconnected) position, pins 1 and 6 (or 2 and 7) remain connected, but are “lifted” from frame ground.

JB2
Position 1&2 = Line A Shield Connected
Position 2&3 = No Shield

JB4
Position 1&2 = Line B Shield Connected
Position 2&3 = No Shield

SGND & FRGND (JB5)

In the connected (closed) position, this strap links signal ground and frame ground. In the open (disconnected) position, pin 1 is “lifted” from frame ground.

JB5
Position 1&2 = SGND and FRGND Connected
Position 2&3 = SGND and FRGND Not Connected

DTE as DSR or RI (JB6 & JB7)

Because this rear card is designed to function in more applications than the Model 2085RC, this jumper must be installed only in one position. Place the jumper across pins 1&2 so that the terminal (DTE) sees DSR as high when the DTE raises DTR. The other positions, across pins 2&3, are for Ring Indicate as defined by EIA/TIA-561. The RI function is irrelevant (and on the Model 2085RC is also disconnected) and can cause improper operation if the jumper is installed incorrectly.

JB6 & JB7
Position 1&2 = DSR
Position 2&3 = N/A

4.0 INSTALLATION

This section describes the functions of the Model 1000R16 rack chassis, tells how to install front and rear Model 2085RC cards into the chassis and provides diagrams for wiring up the interface connections correctly.

4.1 THE MODEL 1000R16 RACK CHASSIS

The Model 1000R16 Rack Chassis (Figure 5) has card slots, plus its own power supply. Measuring only 3.5" high, the Model 1000R16 is designed to occupy only 2U in a 19" rack. Sturdy front handles allow the Model 1000R16 to be extracted and transported conveniently.

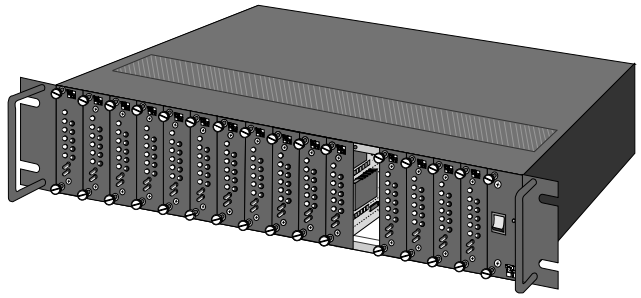


Figure 5. Model 1000R16 Rack Chassis with power supply

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 2085RC. 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 switch is located on the front panel. When plugged in and switched on, a red front panel LED will glow. Since the Model 1000R16 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.

NOTE: Please refer to the Model 1000RP Series User Manual *AC and DC Rack Mount Power Supplies* for fuse and power card replacement information.

4.2 INSTALLING THE MODEL 2085RC INTO THE CHASSIS

The Model 2085RC is comprised of a front card and a rear card. The two cards meet inside the rack chassis and plug into each other by way of mating 50 pin card edge connectors. Use the following steps as a guideline for installing each Model 2085RC into the Model 1000R16 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 1000R16 chassis allows *"hot swapping"* of cards, it is not necessary to power down the rack when you install or remove a Model 2085RC.

4.3 RS-232 CONNECTION

The RS-232 ports are always the *lower* ports on the interface card. The 10-pin RJ-45 is pinned according Patton's Modified Modular Interface Standard (based on the EIA/TIA-561Standard). For specific interface pin-outs, please refer to the diagrams in **Appendix D**.

(continued)

The Model 2085RC is wired as a DCE (Data Communications Equipment). Therefore, it wants to connect to a DTE (Data Termination Equipment). If your RS-232 output device is a DTE, you may need to use a special cable (such as a DB-25 to modular cable). If your RS-232 output device is DCE, you will require a null modem connection. Call Patton Technical Support at (301) 975-1007 for specific installation instructions.

4.4 TWISTED PAIR CONNECTION

The Model 2085RC operates half or full duplex over one or two twisted pair. In *all* applications, the twisted pair wire must be 26 AWG or thicker, unconditioned, dry, metallic wire. Both shielded and unshielded wire yield favorable results.

NOTE: The Model 2085RC can only communicate over unconditioned twisted pair wire. Dial-up analog circuits, like those in a standard Hayes-type modem, are *not acceptable.* For further information, see Appendix B.

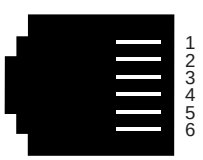
4.4.1 POINT-TO-POINT TWISTED PAIR CONNECTION

The 6-position RJ-11 and 8-position RJ-45 jack options for the Model 2085RC (always the *upper* jack on the rear interface card) are prewired for a standard TELCO wiring environment. Pin descriptions of the RJ-11 and RJ-45 modular jacks

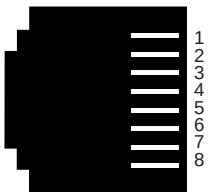
RJ-11	SIGNAL
1	GND†
2	RCV-
3	XMT+
4	XMT-
5	RCV+
6	GND

RJ-45	SIGNAL
1	N/C
2	GND
3	RCV-
4	XMT+
5	XMT-
6	RCV+
7	GND
8	N/C

†Connection to ground is optional



RJ-11 JACK



RJ-45 JACK

When connecting two Model 2085RCs, it is necessary to use a crossover cable. The diagrams below show how a *twisted pair cable* should be constructed for the following environments: 4-wire RJ-11, 4-wire RJ-45, 2-wire RJ-11 or 2-wire RJ-45.

RJ-11 Cable (4-Wire)

SIGNAL	PIN#	PIN#	SIGNAL
GND†	1	6	GND†
RCV-	2	4	XMT-
XMT+	3	5	RCV+
XMT-	4	2	RCV-
RCV+	5	3	XMT+
GND†	6	1	GND†

†Connection to ground is optional

RJ-45 Cable (4-Wire)

SIGNAL	PIN#	PIN#	SIGNAL
GND†	2	7	GND†
RCV-	3	5	XMT-
XMT+	4	6	RCV+
XMT-	5	3	RCV-
RCV+	6	4	XMT+
GND†	7	2	GND†

RJ-11 Cable (2-Wire)

SIGNAL	PIN#	PIN#	SIGNAL
XMT+	3	3	XMT+
XMT-	4	4	XMT-

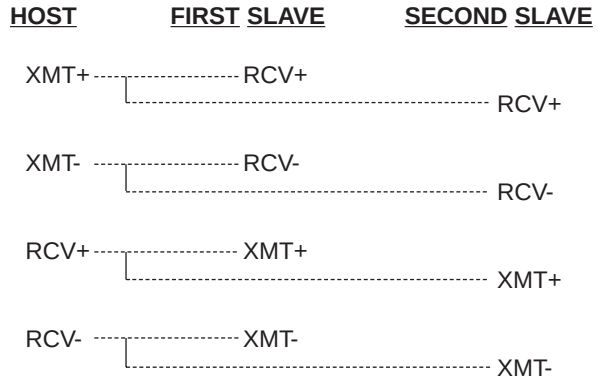
RJ-45 Cable (2-Wire)

SIGNAL	PIN#	PIN#	SIGNAL
XMT+	4	4	XMT+
XMT-	5	5	XMT-

†Connection to ground is optional

4.4.2 MULTIPOINT TWISTED PAIR CONNECTION

The Model 2085RC supports multipoint applications using a star daisy chain topology (Section 3.0 describes proper multipoint configuration). Maximum distance between the units will vary based upon the number of drops, data rate, wire gauge, etc. Call Patton Technical Support for specific distance estimates. The diagram below shows how to wire the two-pair cables properly for a Model 2085RC star topology. Note that the ground connection is not needed.



5.0 OPERATION

Once you have configured each Model 2085RC and connected the cables, you are ready to operate the units. Section 5.0 describes the LED status monitors and the power-up procedure.

5.1 LED STATUS MONITORS

The Model 2085RC features front panel LEDs that indicate the condition of the modem and communication link. Figure 6 (below) shows the positions of the LEDs.

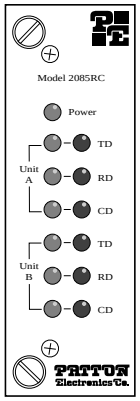


Figure 6. The Model 2085RC front panel, showing LED positions

- The green “PWR” LED glows when power is applied to the modem through its mid-plane chassis connection.
- The green “TD” and “RD” LEDs show positive state data activity. The red “TD” and “RD” LEDs show negative state data activity. A solid red light indicates an idle state.
- The green “CD” LED lights when the receive carrier is detected; the red LED lights when the receive carrier is absent.

5.2 POWER-UP

There is no power switch on the Model 2085RC: Power is automatically applied to the 2085RC when its card-edge connector touches the chassis’ mid-plane socket, or when the chassis’ power is turned on.

NOTE: The 2085RC is a “hot swappable” card—it will not be damaged by plugging it in or removing it while the rack is powered up.

APPENDIX A

PATTON ELECTRONICS MODEL 2085RC SPECIFICATIONS

Transmission Format:	Asynchronous
Data Rate:	0 to 115.2 Kbps
Control Signals:	DSR turns “ON” immediately after the terminal raises DTR; DCD turns “ON” after recognizing the receive signal from the line; CTS turns on after the terminal raises RTS
Transmission Line:	2-wire or 4-wire, unconditioned twisted pair
Transmit Mode:	Full or half duplex
Transmit Level:	2V ± 10% differential output voltage
Carrier:	Constantly on or controlled by RTS
RTS/CTS Delay:	8 msec or zero
Echo Mode:	Echo and No Echo, supported in both 2-wire and 4-wire modes
Receiver Impedance:	Low (120 ohms), High (100k Ohms)
Line Connection:	RJ-11 or RJ-45 jack
Surge Protection:	Compliant with IEC 801.5 level 2, 1kV
Power Supply:	Rack-mount power supply is switchable between 120V and 240V AC; rack chassis supplies 10V AC to the Model 2085RC, typical consumption is 700 mW per card
Fuse:	400mA for 120V applications; 200mA for 240V applications
Temperature Range:	0-50°C (32-122°F)
Altitude:	0-15,000 feet
Humidity:	Up to 95% non-condensing
Dimensions:	0.95”w x 3.1”h x 5.4”l

APPENDIX B

PATTON ELECTRONICS MODEL 2085RC CABLE RECOMMENDATIONS

The Patton Model 2085RC operates at frequencies of 115kHz or less and has been performance tested by Patton technicians using twisted-pair cable with the following characteristics:

Wire Gauge	Capacitance	Resistance
19 AWG	83nf/mi or 15.72 pf/ft.	.0163 Ohms/ft.
22 AWG	83nf/mi or 15.72 pf/ft.	.0326 Ohms/ft.
24 AWG	83nf/mi or 15.72 pf/ft.	.05165 Ohms/ft.
26 AWG	83nf/mi or 15.72 pf/ft.	.08235 Ohms/ft.

Using or simulating cable with the above characteristics, the following data rate/distance results were obtained by Patton during bench tests:

MODEL 2085RC Distance Table- Miles (Km)

Data Rate (kbps)	Wire Gauge			
	19 AWG (.9mm)	22 AWG (.6mm)	24 AWG (.5mm)	26 AWG (.4mm)
115.2	3.5 (5.6)	2.6 (4.2)	1.4 (2.2)	0.9 (1.4)
38.4	5.0 (8.0)	2.9 (4.7)	2.2 (3.5)	1.5 (2.4)
9.6	7.1 (11.4)	4.6 (7.4)	3.5 (5.6)	2.8 (4.5)
1.2	9.0 (14.5)	6.5 (10.5)	5.0 (8.0)	3.9 (6.3)

To gain optimum performance from the Model 2085RC, please keep the following guidelines in mind:

- *Always* use **twisted pair** wire—this is not an option.
- Use twisted pair wire with a capacitance of 20pf/ft or less.
- Avoid twisted pair wire thinner than 26 AWG (i.e. avoid higher AWG numbers than 26)
- Use of twisted pair with a resistance greater than the above specifications may cause a reduction in maximum distance obtainable. Functionality should not be affected.
- Many environmental factors can affect the maximum distances obtainable at a particular site. Use the above data rate/distance table as a *general guideline only.*

APPENDIX C

PATTON ELECTRONICS MODEL 2085RC FACTORY REPLACEMENT PARTS

The Patton Model 2085RC rack system features interchangeable rear half cards, power cords/fuses for international various operating environments and other user-replaceable parts. Model numbers and descriptions for these parts are listed below:

Patton Model #	Description
1000RPEM	120/240V Rear Power Entry Module
1000RPSM-2	120/240V Front Power Supply Module
1000RPEM-DC	DC Rear Power Entry Module
1000RPSM-48A	48V Front Power Supply Module
1000RPEM-V	120/240V CE Compliant Rear Power Entry Module
1000RPEM-V	120/240V CE Compliant Rear Power Supply Entry Module
0805US	American Power Cord
0805EUR	European Power Cord CEE 7
0805UK	United Kingdom Power Cord
0805AUS	Australia/New Zealand Power Cord
0805DEN	Denmark Power Cord
0805FR	France/Belgium Power Cord
0805IN	India Power Cord
0805IS	Israel Power Cord
0805JAP	Japan Power Cord
0805SW	Switzerland Power Cord
0516FPB1	Single Width Blank Front Panel
0516FPB4	4-Wide Blank Front Panel
0516RPB1	Single Width Blank Rear Panel
0516RPB4	4-Wide Blank Rear Panel

APPENDIX D

PATTON ELECTRONICS MODEL 2085RC INTERFACE PIN ASSIGNMENTS

PATTON MODULAR INTERFACE - 10 Wire RJ-45		
Contact Number	**Circuit**	**Description**
1	N/A	Not Used
2	125	DSR
3	109	Received Line Signal Indicator (CD)
4	108 / 2	DTE Ready (DTR)
5	102	Signal Common
6	104	Received Data
7	103	Transmitted Data
8	106	Clear to Send
9	105 / 133	Request to Send / Ready for Receiving
10	N/A	Not Used

Pins 2-9 conform to the EIA/TIA-561 eight position non-synchronous interface standard.