

USER MANUAL

MODEL 1010R and 1010RS

Async. Short Range
Modem with
Transformer Isolation for
EIA/TIA-561 Systems



PATTON
Electronics Co.

Part# 07M1010R-A
Doc# 082021UA
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SALES OFFICE
(301) 975-1000
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1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 1010R 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 1010R 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 1010R 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 1010R does cause interference to radio or television reception, which can be determined by disconnecting the modem, 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 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**. *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 1010R. 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

- Connects directly to the EIA/TIA-561 device
- Transformer isolation
- No AC power or batteries required
- Range to 9 miles
- Data rates to 19,200 bps
- Full duplex
- RJ-11 and RJ-45 twisted pair connection
- Miniature size fits in tight locations
- Silicon Avalanche Diode surge protection (1010RS only)
- Compatible with Patton Models 1010, 1016, 1017 and 1019
- Made in USA

2.2 DESCRIPTION

The Patton Model 1010R Short Range Modem allows an EIA/TIA-561 device to communicate with either an RS-232 device or another EIA/TIA-561 device at asynchronous data rates to 19.2 Kbps. Requiring no AC power or batteries, the Model 1010R supports distances up to 9 miles over two unconditioned twisted pair. Built-in transformer isolation provides protection against ground potential differences and AC/DC over-voltages, making the Model 1010R ideal for connections between two buildings.

Measuring only 2.0" x 1.7" x .8", the Model 1010R is housed in an ABS plastic case. Connection to the EIA/TIA-561 serial port is achieved using a modular RJ-45 jack. Connection to the twisted pair interface is made through an RJ-11 jack or an RJ-45 jack. The serial device at the other end of the twisted pair cable can be connected to the Model 1010R using a Patton Model 1010 (DB-25), 1016 (DB-15), 1019 (DB-9) or another Model 1010R. The surge protected Model 1010RS incorporates Silicon Avalanche Diodes which provide 600 watts per wire of protection against harmful transient surges.

3.0 INSTALLATION

The Model 1010R is easy to install. This section tells you how to properly connect the Model 1010R to the twisted pair and EIA/TIA-561 interfaces, and how to operate the Model 1010R.

3.1 CONNECTION TO THE TWISTED PAIR INTERFACE

The Model 1010R supports data-only communication between an EIA/TIA-561 device and another serial device. There are two requirements for installation:

1. These units work in pairs. Therefore, you must have one Model 1010R at each end of a two twisted pair cable.
2. To function properly, the Model 1010R needs two twisted pairs of metallic wire. The pairs must be unconditioned, dry metallic wire, between 19 and 26 AWG (the higher number gauges may limit distance). Standard dial-up telephone circuits, or leased circuits that run through signal equalization equipment are not acceptable.

For your convenience, the Model 1010R is available with two different twisted pair interfaces: an RJ-11 jack or an RJ-45 jack.

3.1.1 TWISTED PAIR CONNECTION USING RJ-11 OR RJ-45

The RJ-11 and RJ-45 connectors on the Model 1010R's twisted pair interface are pre-wired for a standard TELCO wiring environment (see Figure 1). The table on the following page shows the signal/pin relationships.

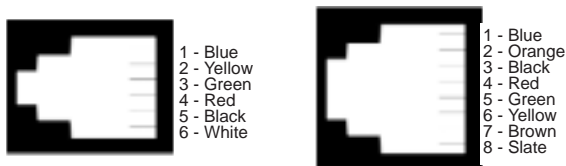


Figure 1. AT&T standard modular color codes

<u>RJ-11</u>	<u>SIGNAL</u>	<u>RJ-45</u>	<u>SIGNAL</u>
1-----	GND [†]	1-----	N/C
2-----	RCV-	2-----	GND [†]
3-----	XMT+	3-----	RCV-
4-----	XMT-	4-----	XMT+
5-----	RCV+	5-----	XMT-
6-----	GND [†]	6-----	RCV+
		7-----	GND [†]
		8-----	N/C

When connecting two Model 1010Rs, it is necessary to use a "crossover" cable. The diagram below shows how a crossover cable should be constructed for an environment where both Model 1010Rs use a 4-wire RJ-11 connector. Similar logic should be followed when using an RJ-45 connector or a combination of the two.

<u>SIGNAL</u>	<u>PIN#</u>	<u>COLOR[‡]</u>	<u>COLOR</u>	<u>PIN#</u>	<u>SIGNAL</u>
GND [†]	1	Blue -----	White	6	GND [†]
RCV-	2	Yellow -----	Red	4	XMT-
XMT+	3	Green -----	Black	5	RCV+
XMT-	4	Red -----	Yellow	2	RCV-
RCV+	5	Black -----	Green	3	XMT+
GND [†]	6	White -----	Blue	1	GND [†]

[†]Connection to ground is optional

[‡]Standard color codes—yours may be different

3.2 CONNECTION TO THE EIA/TIA-561 SERIAL PORT

Every serial device connected to the Model 1010R must have a special interface cable that conforms to the EIA/TIA-561 standard. On one end, this cable must have a male RJ-45 plug, on the other end, it must have a connector that fits into your serial device. The diagram on the following page shows the pin connections for the Model 1010R. Connect the pin to the appropriate connection on your serial device.

Model 1010R EIA/TIA-561 8 Position Interface:

RJ-45 Pin No.	Function
1-----	DSR
2-----	DCD
3-----	DTR
4-----	SG
5-----	RD
6-----	TD
7-----	CTS
8-----	RTS

3.3 OPERATING THE MODEL 1010R

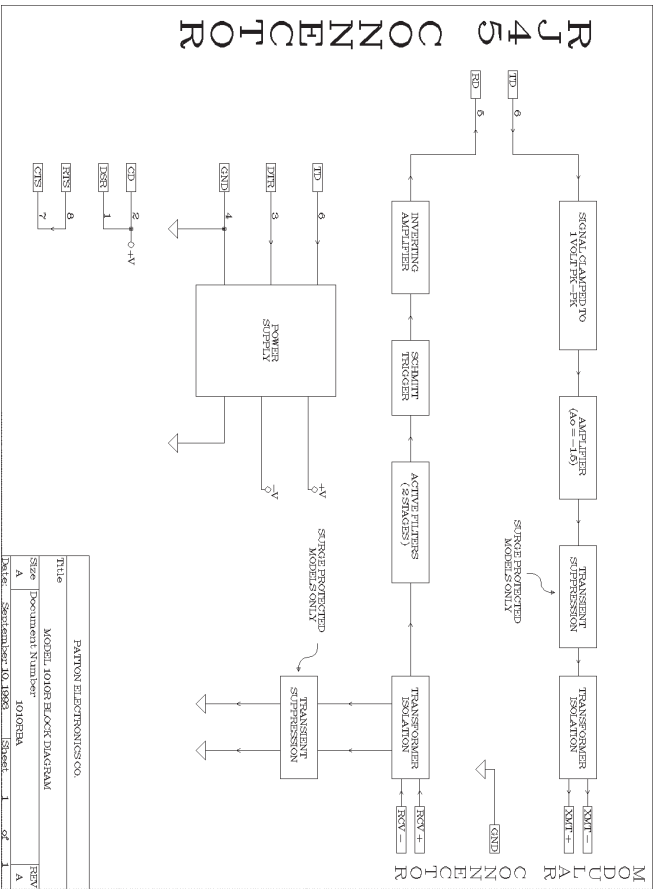
Once the Model 1010R is properly installed, it should operate transparently—as if it were a standard cable connection. Operating power is derived from the EIA/TIA-561 data and control signals; there is no “ON/OFF” switch.

**APPENDIX A
SPECIFICATIONS**

- Transmission Format:** Asynchronous
- Data Rate:** 300 to 19,200 bps
- Distance:** See table below
- Surge Protection:** 600W power dissipation at 1 mS and response time of 1.0 pS (Model 1010RS only)
- Control Signal:** DCD (pin 2) and DSR (pin 1) turn on when modem is powered up (connected); CTS (pin 7) turns on immediately after the terminal raises RTS (pin 8)
- Transmit Line:** 4-wire, unconditioned line
- Transmit Mode:** Full duplex, 4-wire
- Transmit Level:** 0 dBm
- Line Connection:** RJ-11, RJ-45
- Power Supply:** No external power required, uses ultra low power from data and control signals
- Size:** 2.0" x 1.7" x 0.8"

Distance Table (miles)			
Data Rate	Wire Gauge		
	19	24	26
19,200	2.5	1.8	1.2
9,600	5.5	3.7	2.5
4,800	7.5	5.0	3.0
2,400	8.5	5.6	3.7
1,200	9.0	6.2	4.3

APPENDIX B BLOCK DIAGRAM



PATRON ELECTRONICS CO.	
Title	MODEL MOTOR BLOCK DIAGRAM
Size	Document Number
A	101081A
Date	September 10, 1983
Sheet	1 of 1
REV	A