USER MANUAL

MODEL 1017 and 1017S

Mac Short Range Modem with Transformer Isolation

PATTON Electronics Co.

Part# 07M1017-A
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1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 1017 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 1017 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 1017 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 1017 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 1017. 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 Mac
- Range to 9 miles
- Full duplex
- Data rates to 19,200 bps
- No AC power or batteries required
- Transformer isolation
- Miniature size fits in tight locations
- RJ-11 and RJ-45 twisted pair connection
- Compatible with Patton Models 1010, 1016 and 1019
- Silicon Avalanche Diode surge protection (1017S only)
- Made in USA

2.2 DESCRIPTION

The Patton Model 1017 MacXtend II Short Range Modem allows a Macintosh to communicate with any serial printer, terminal server or PC clone at distances up to 9 miles over two unconditioned twisted pair. Supporting full duplex asynchronous data rates to 19.2 Kbps, the Model 1017 requires no AC power or batteries. Built-in transformer isolation provides protection against ground potential differences and AC/DC over-voltages, making the Model 1017 ideal for connections between two buildings.

Measuring only 2.0” x 1.7” x .8”, the Model 1017 is housed in an ABS plastic case. Connection to the Mac serial (phone) port is achieved using an 8-pin mini Din connector at the end of a 1 foot extension cable. Connection to the twisted pair interface is made through either a modular RJ-11 or an RJ-45 jack. The serial device at the other end of the twisted pair cable can be connected to the Model 1017 using a Patton Model 1010 (DB-25), 1016 (DB-15), 1019 (DB-9) or another Model 1017. The surge protected Model 1017S incorporates Silicon Avalanche Diodes, which provide 600 watts per wire of protection against harmful transient surges.

3.0 INSTALLATION

The Model 1017 is easy to install. This section tells you how to properly connect the Model 1017 to the twisted pair interface and Mac phone port, and how to operate the Model 1017.

3.1 CONNECTION TO THE TWISTED PAIR INTERFACE

The Model 1017 supports data-only communication between a Mac and another Mac or another serial device. There are two requirements for installation:

1. These units work in pairs. You must have one Model 1017 (or a compatible model) at each end of the two twisted pair cable.

2. To function properly, the Model 1017's modular jacks must be connected to 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 1017 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 Model 1017's RJ-11 and RJ-45 connectors on the twisted pair interface are pre-wired for a standard TELCO wiring environment (see Figure 1). The table on the following page describes the signal/pin relationships.

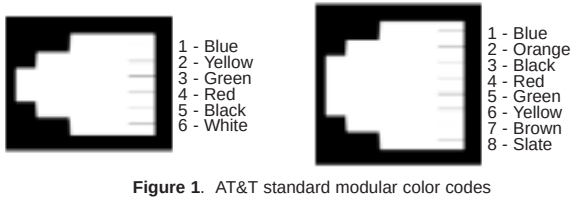

Figure 1. AT&T standard modular color codes

RJ-11	SIGNAL	RJ-45	SIGNAL
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 1017s, 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 1017s use a 4-wire R-11 connector. Similar logic should be followed when using an RJ-45 connector or a combination of the two.

SIGNAL	PIN#	COLOR‡	COLOR	PIN#	SIGNAL
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 MAC PHONE PORT

The Model 1017 should be connected to your Mac through the 1 foot extension cable. Simply plug one end of the cable into the Model 1017 and the other end directly into the phone (serial) port of your Mac. The pin-outs are listed below.

Serial Port Pinout (RJ-45)

1 = N/C
2 = HSKi (Handshake In)
3 = HSKo (Handshake Out)
4 = Ground
5 = RD- (Receive Data-)
6 = TD- (Transmit Data-)
7 = N/C
8 = N/C

Mini Din 8 to RJ-45 Cable

Din 8	RJ-45	Signal
1	3	HSKo (Handshake Out)
2	2	HSKi (Handshake In)
3	6	TD- (Transmit Data-)
4	4	Gnd (Ground)
5	5	RD- (Receive Data-)
6	4	TD+† (Transmit Data)
7	N/C	GPi
8	N/C	RD+ (Receive Data)

†TD+ is connected to ground

3.3 OPERATING THE MODEL 1017

Once the Model 1017 is properly installed, it should operate transparently—as if it were a standard cable connection. Operating power is derived from the Mac's data and control signals; there is no "ON/OFF" switch.

APPENDIX A
SPECIFICATIONS

Transmission Format: Asynchronous

Data Rate: 300 to 19,200 bps

Data Protection: High speed surge protection and transformer isolation (Model 1017S only)

Distance: See table below

Surge Protection: 600W power dissipation at 1 mS and response time of 1.0 pS (Model 1017S only)

Control Signal: The single Mac control line, Handshake In, turns on when the modem is connected

Transmit Line: 4-wire, unconditioned line (2 twisted pairs)

Transmit Mode: Full duplex

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