USER MANUAL

MODEL 460 SERIES

G.703 Coax to Twisted Pair Adapter (Balun)

PATTON Electronics Co.

ISO 9001 CERTIFIED

An ISO-9001 Certified Company

Part# 07M460
Doc# 019021U Rev. G
Revised 9/15/04

SALES OFFICE
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CONTENTS

1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 460 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 SERVICE AND SUPPORT

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**; **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 460. Technical Service hours: **8 am** to **5 pm EST** (**1300** to **2200 UTC**), Monday through Friday.

1.2 CE NOTICE

The CE symbol on your Patton Electronics equipment indicates that it is in compliance with the Electromagnetic Compatibility (EMC) directive of the European Union (EU). A Certificate of Compliance is available by contacting Patton Technical Support.

2.0 PRODUCT DESCRIPTION

The **Patton Model 460 Series** enables 75-ohm coax hardware to communicate with 120-ohm twisted-pair equipment. The Model 460 Series specifically address the ONP requirement that European PTTs offer 120-ohm twisted-pair terminations to their customers. Some PTTs and private carriers are standardized on 75-ohm coax, or have customers whose CPE has only 75-ohm coax connections. The Model 460 Series provide a ready solution to this termination mismatch by allowing a bi-directional conversion of coax (75 ohm) to a twisted-pair (120-ohm), supporting data rates to E1 (2.048 Mbps). The signals output by them are scaled to match the pulse shape requirements specified by the CCITT G.703 standard.

The Model 460 is available in the following versions:

- 460F
  - A shielded RJ-45 jack.
  - Two female coaxial connectors
- 460M
  - A shielded RJ-45 jack.
  - Two male coaxial connectors
- 460F-TBP
  - A 4-position terminal block.
  - Two female coaxial connectors
- 460M-TBP
  - A 4-position terminal block.
  - Two male coaxial connectors
- 460MC
  - A shielded RJ-45 jack.
  - Two 6-in. coaxial cables with male connectors

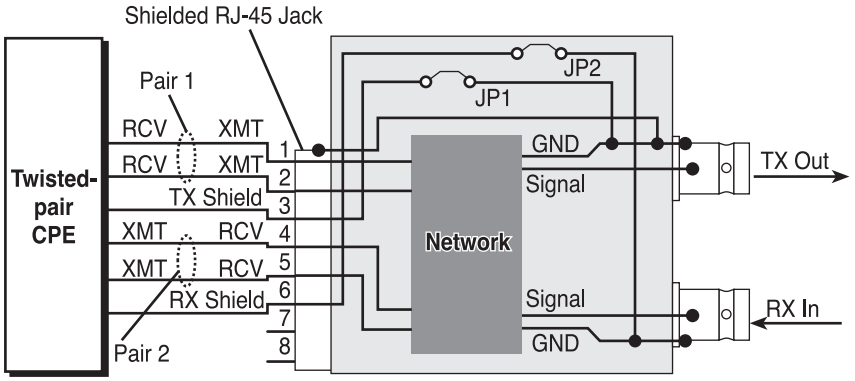

Figure 1. Model 460 functional diagram

2.1 RJ-45 JACK AND TERMINAL BLOCK DESCRIPTIONS

Shielded RJ-45 Jack:

- Pins 1 and 2 (see Figure 1) are the balanced inputs. The balanced signals are converted to an unbalanced signal on the center conductor of the TX Out coax connector.
- The unbalanced signal from the RX In coax connector is converted to balanced signals on pins of the RJ-45.
- The shield of the RX In connector may be connected to RJ-45 pin 6 by jumper JP2 (on).
- The shield of the TX Out connector is always connected to the shield around the RJ-45 connector. This connection may also be connected to RJ-45 pin 3 via JP1 (on).

Terminal Block:

- Has a 4 pin terminal block for a twisted pair connection.
- The 460-TBP has coaxial connectors.

3.0 CONFIGURATION

Note If you have a Model 460-TBP, it does not require configuration; refer to section 4.0, “Installation” on page 8.

The following section describes configuring the Model 460. The Model 460 Series are preset to work in most applications without additional configuration. The only parameter that is user-configurable is whether there is a shield connection between the 75-ohm coax and 120-ohm interfaces. Figure 1 on page 5 shows how the shield is connected between the modular jack and dual BNCs. Removing the jumper breaks the shield connection.

The Model 460 is most often used to bi-directionally convert CPE twisted-pair terminations to CPE coaxial terminations.

RJ-45 (120 ohm)	Jumper	Coax BNC (75 ohm)
Pin 3 (TX Shield)	JP1	TX Out Shield
Pin 6 (RX Shield)	JP2	RX In Shield

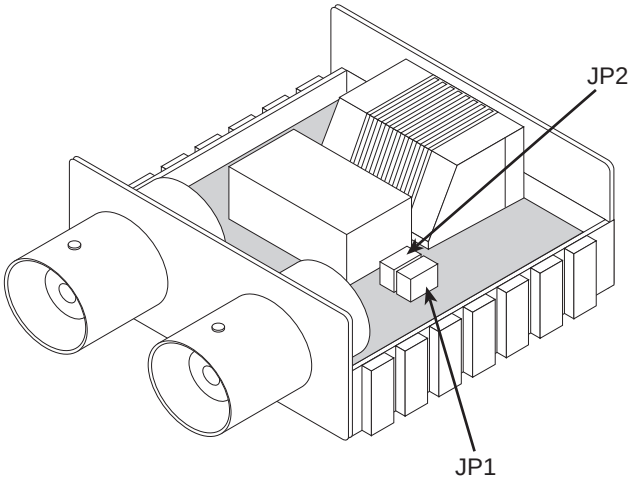

Figure 2. JP1 and JP2 locations for 460F and 460MC

The factory setting leaves jumpers JP1 and JP2 (see Figure 2 above and Figure 3 on page 7) in place, thus passing both shield connections through. To change one or both of the shield connections, do the following:

1. Insert a flat-blade screwdriver into the slot on the side of the Model 460 case and twist. The case will pop open, exposing the printed circuit board.

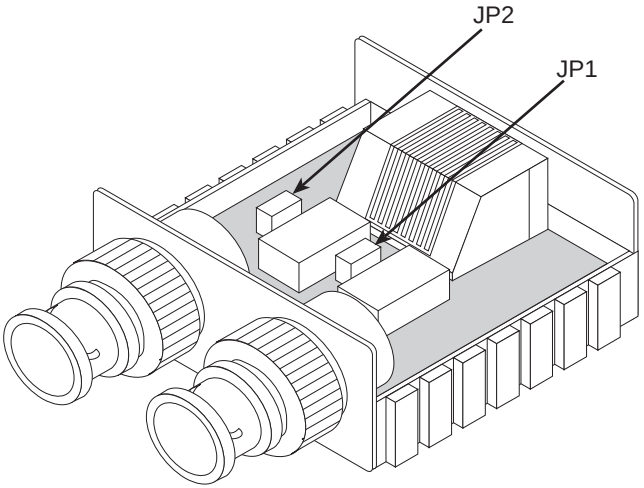

Figure 3. JP1 and JP2 locations for 460M

2. Using Figure 2 as a reference, remove the desired jumper(s) to break one or both shield connections.

   Note Do not lose the jumper(s).

3. Align the case halves and end inserts and snap the case halves back together.

4.0 INSTALLATION

The sections on the next page describe installing the following:

- Model 460 (see section 4.1, “Installing the Model 460” on page 8)
- Model 460-TBP (see section 4.2, “Installing the Model 460-TBP” on page 8)

Refer to the appropriate section to install your unit.

4.1 INSTALLING THE MODEL 460

Do the following:

1. Refer to the pin configuration below when assembling the cable that will connect to the RJ-45 jack.
2. Plug the modular cable connector into the RJ-45 jack.

RJ-45 Pin(s)	Function
1 and 2	TX pair
3	TX shield
4 and 5	RX pair
6	RX shield

3. Connect the coaxial cables to the TX Out and RX In connectors.

Congratulations, you have finished installing the Model 460!

4.2 INSTALLING THE MODEL 460-TBP

Do the following:

1. Strip the outer jacket insulation from the twisted pairs about 1 inch.
2. Strip back the insulation on each of the wires about 0.25 inches.

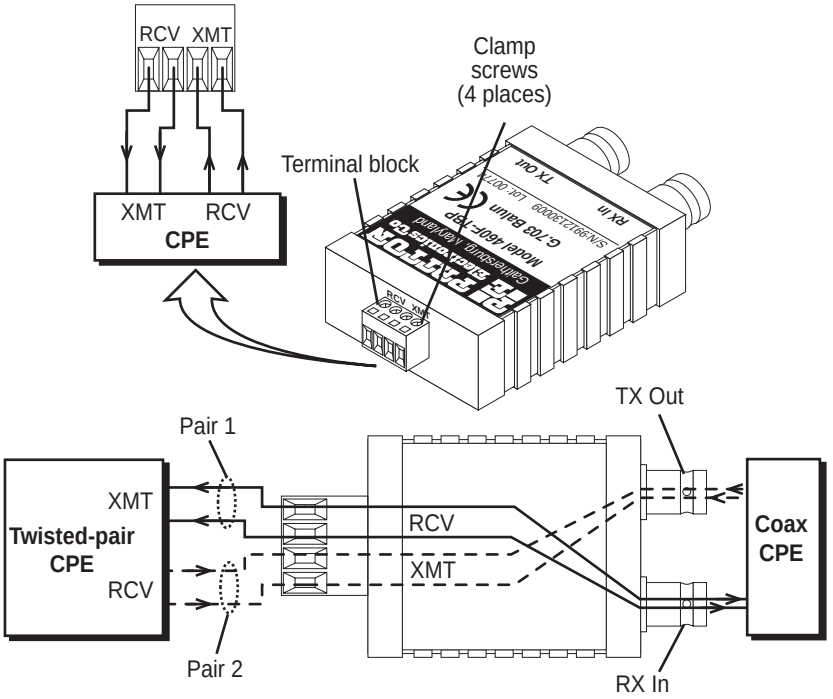

Figure 4. Model 460-TBP terminal block interface wiring diagram

3. Connect one pair of wires to the two XMT (transmit) positions on the terminal block. The Model 460-TBP is not polarity sensitive so either wire may connect to either pole. See Figure 4.

4. Connect the other pair of wires to the two RCV (receive) positions on the terminal block.

5. Connect the coaxial cables to the TX Out and RX In connectors.

Congratulations, you have finished installing the Model 460-TBP!

APPENDIX A
SPECIFICATIONS

A.1 TRANSMISSION LINE

ITU/CCITT G.703 (unstructured)

A.2 DATA RATE

2.048 Mbps maximum

A.3 UNBALANCED COAXIAL CONNECTION

- Dual coax female BNC connectors (RG 59 or 2002 coax)
- Nominal line impedance: 75 ohms

A.4 BALANCED TWISTED PAIR CONNECTION

- Single 8-pin RJ-45 jack, shielded (two twisted-pair)
- Nominal line impedance: 120 ohms
- 4-position, removable terminal block

A.5 POWER SUPPLY

None required, passive device

A.6 OPERATING TEMPERATURE

32–122°F (0–50°C)

A.7 COAXIAL TWISTED PAIR ISOLATION

1500 Vrms

A.8 COMPLIANCE

CE approved

A.9 DIMENSIONS

0.8H x 1.7W x 2.7D in. (6.86H x 4.32W x 2.03D cm.)

Notes

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