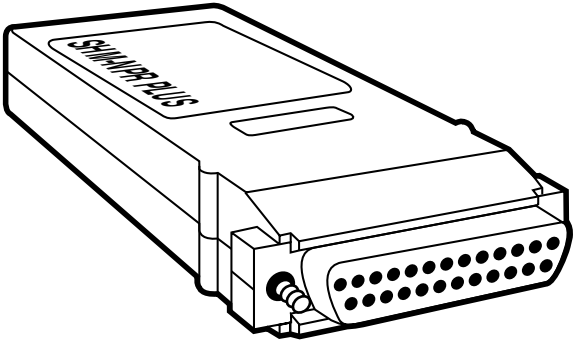
BLACK BOX®
NETWORK SERVICES

MAY 1997
ME739A-F-R2
ME739A-M-R2

SHM-NPR Plus



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate 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 communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

    A: El cable de poder o el contacto ha sido dañado; u

    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

    C: El aparato ha sido expuesto a la lluvia; o

    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

1. Specifications

Interface — EIA RS-232/CCITT V.24, DCE

Protocol — Asynchronous

Data Format — Transparent to data format

Operation — 2-wire full-duplex

Data Rate — Up to 19,200 bps

Maximum Distance (Transmission Range) — See chart on next page

Transmission Line — 2-wire unconditioned telco-type line or single coaxial cable

Transmission Level — 0 dBm

Transmission Controls — DCD always on;
DTR can control carrier;
DSR turns on immediately after carrier detection;
CTS turns on immediately after computer or terminal raises RTS

Carrier Control — Carrier can be continuously held high or controlled by DTR (user-selectable)

User Control — (1) Internal strap (jumper) for carrier control

Connectors — DTE side: Side-mounted DB25 male (ME739A-M-R2) or female (ME739A-F-R2); Line side: Internal 3-screw terminal block (for one ground wire and two data wires) with cable-strain relief

Temperature Tolerance — 32 to 122°F (0 to 50°C)

Humidity Tolerance — Up to 95% noncondensing

Enclosure — High-impact plastic

Power — +6 VDC, 25 milliwatts from Pin 2, 4, or 20 of the RS-232 interface

Size — 0.9"H x 2.1"W x 4.3"L (2.2 x 5.3 x 11 cm)

Weight — 0.2 lb. (0.1 kg)

Approximate Transmission Range

WIRE GAUGE							
RG62 COAX		19		22		24	
M	FEET	M	FEET	M	FEET	M	FEET
500	1650	1000	3300	600	2000	400	1300

2. Introduction

The SHM-NPR Plus (Short-Haul Modem [Nonpowered] Plus) is intended to be used for local data distribution: Two of them carry asynchronous communication between computers and terminals. The SHM-NPR Plus operates full-duplex over two twisted pairs or a single coax line. Figure 2-1 below shows a typical application.

You can strap the SHM-NPR Plus's transmit carrier to be constantly on or to follow (be controlled by) the DTR signal. In controlled operation, the local SHM-NPR Plus raises carrier as soon as it sees DTR from the local DTE; when the remote SHM-NPR Plus sees carrier, it raises DSR

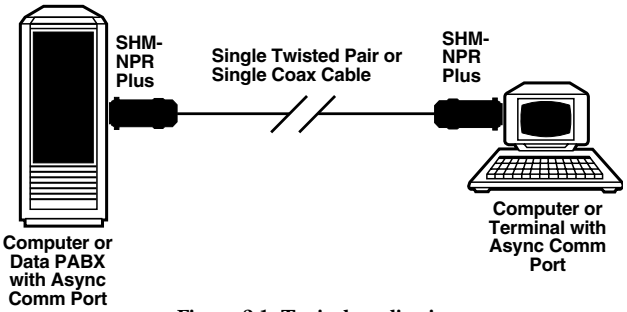


Figure 2-1. Typical application.

to the remote DTE. In this way, one control signal can be passed end-to-end across the link. (DCD is always on regardless of how transmit carrier is strapped.)

The SHM-NPR Plus operates without a power-supply transformer. To operate properly, it must at least be connected to a DTE's Transmit Data (TD, Pin 2), Receive Data (RD, Pin 3), and Signal Ground (SGND, Pin 7) lines. In compliance with the RS-232/V.24 standard, the SHM-NPR Plus generates positive and negative signals regardless of the state of Transmit Data; that is, the line may be constantly high or constantly low.

3. Installation

To install the SHM-NPR Plus, take these steps:

1. Separate the two halves of the unit's plastic cover by pressing the marked areas on the sides of the cover. (Start at the cable end.)

2. *For a coax connection:*
   Connect the coax cable's shielding and center wire to the pair of connectors marked LINE on the SHM-NPR Plus's screw-terminal block. (The SHM-NPR Plus isn't polarity-sensitive: It doesn't matter which of the LINE terminals you attach shield to and which one you attach the center wire to.) Don't attach anything to the SHM-NPR Plus's GND terminal.

   For a twisted-pair connection:
   Connect the twisted-pair cable's two wires to the pair of connectors marked LINE on the SHM-NPR Plus's screw-terminal block. (The SHM-NPR Plus isn't polarity-sensitive: It doesn't matter which of the LINE terminals you attach which wire to.) If the twisted-pair cable is shielded, attach the shield to the SHM-NPR Plus's GND terminal.

3. Referring to Figure 3-1 below, set the Driver's transmit-carrier strap (jumper) to suit your application: ON for carrier constantly on, CNTR for carrier controlled by RTS.

4. Press the two halves of the cover back together.

5. Plug the SHM-NPR Plus directly into the DTE's RS-232 serial port.

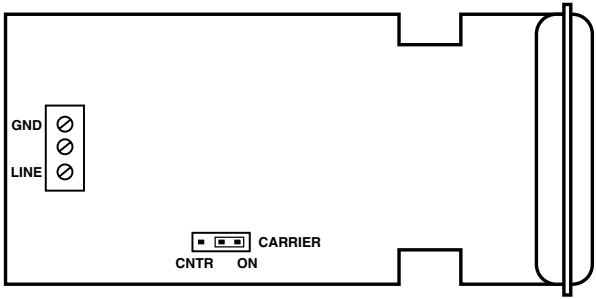


Figure 3-1. Location of the transmit-carrier strap (jumper).

4. Troubleshooting

4.1 Calling Black Box

If your SHM-NPR Plus seems to be malfunctioning, *do not attempt to alter or repair the unit.* Call Black Box Technical Support at 724-746-5500; the problem might be solvable over the phone.

Before you call, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components (vehicle, devices, etc.) involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

4.2 Shipping and Packaging Information

If you need to transport or ship your SHM-NPR Plus:

- Carefully package it. We recommend that you use the original container.
- If you are shipping the unit for return or repair, contact Black Box to get a Return Authorization (RA) number.

1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746