

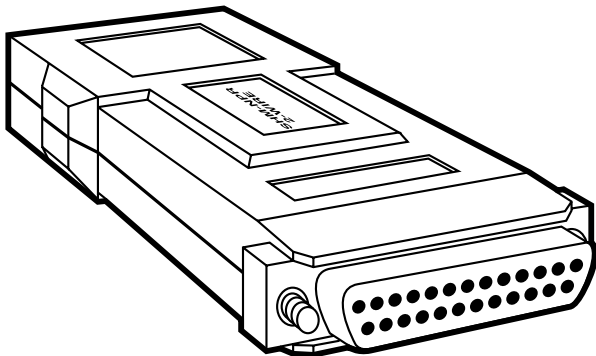


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Nonpowered Short-Haul Modem—2-Wire (SHM-NPR 2-Wire)



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**

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**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 J 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 líneas 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 objetos 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: Objetos 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

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1. Specifications

Maximum Distance—3 mi. (4.8 km)

Operation—2-wire full-duplex

Protocol—Asynchronous

Speed—Up to 38.4 kbps

Interface—RS-232 (DCE)

Connectors—ME738A-F: (1) DB25 female,
(1) 2-screw terminal block;
ME738A-M: (1) DB25 male, (1) 2-screw terminal
block

Operating Temperature—32 to 140°F (0 to 60°C)

Maximum Altitude—10,000 ft. (3048 m)

Humidity—Up to 95%, noncondensing

Power—8 VDC from the interface; Pin 4 or 20

Size—0.9"H x 2.1"W x 4.3"D (2.3 x 5.3 x 10.9 cm)

Weight—0.6 lb. (0.3 kg)

2. Introduction

2.1 Description

The Nonpowered Short Haul Modem—2-Wire (SHM-NPR for short) connects asynchronous terminals to computers for local data distribution. What makes this model unique is its ability to operate in full-duplex mode over a *single* pair of wires. In many cases, you should be able to use the 2-wire telephone line already installed in your building.

You can plug the SHM-NPR directly into the back of your terminal—there's no need for an extra cable. Two models are available:

- ME738A-F (DB25 female connector)
- ME738A-M (DB25 male connector)

Both models also have a 2-screw terminal block.

You don't need any power supply for the SHM-NPR, either. Its innovative circuitry takes ultra-low power from the standard RS-232 data and control lines. Even if only the Transmit Data (Pin 2), Receive Data (Pin 3), and

SHM-NPR 2-WIRE

Signal Ground (Pin 7) lines are connected, the SHM-NPR will still work. Control signals are not required.

In compliance with RS-232C and V.24 standards, the SHM-NPR generates both positive and negative signals—no matter what the state of Transmit Data, which can be constantly high or constantly low.

Table 2-1 shows the transmission ranges you can expect with the SHM-NPR 2-Wire. The figures are only approximate; the conditions in your own installation will determine how far you can actually transmit.

Table 2-1. Approximate transmission distances

Gauge	19 AWG	22 AWG	24 AWG	RG-62 Coax
Distance	1.4 miles (2.3 km)	0.8 miles (1.4 km)	0.6 miles (1 km)	1 mile (1.6 km)

Figure 2-1 shows how to connect two SHM-NPRs.



Figure 2-1. A 2-wire connection.

2.2 Features

- Asynchronous transmission up to 38,400 bps.
- Full-duplex operation over coax or single twisted pair.
- Transmission range up to 1.4 mi (2.25 km).
- Plugs directly into the RS-232-C/V.24 connector.
- Operates without AC power.
- Compact and lightweight.
- Easy to install.

2.3 Applications

Figures 2-2 and 2-3 show typical applications.

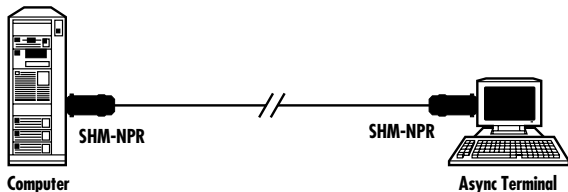


Figure 2-2. Typical application #1.

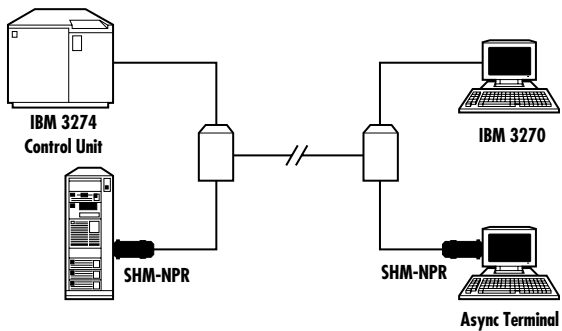


Figure 2-3. Typical application #2.

3. Installation

Installing the SHM-NPR is simple and straightforward. Just follow these instructions.

1. Separate the two parts of the plastic cover by pressing the marked places on the sides, starting at the cable end.
2. Connect the two wires of the line to the terminal block into the two LINE screws, observing correct polarity. (The CENTER of one modem should be connected to the CENTER of the other modem, and GND should be connected to GND.)

For coax applications, connect the coax line into the CENTER screw and connect the shielding to the GND screw.

3. To close the unit, simply press the two halves of the cover together.
4. Plug the modem directly into the 25-pin connector of the terminal or computer port, and fasten with the screws at each side of the modem connector.