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NETWORK SERVICES

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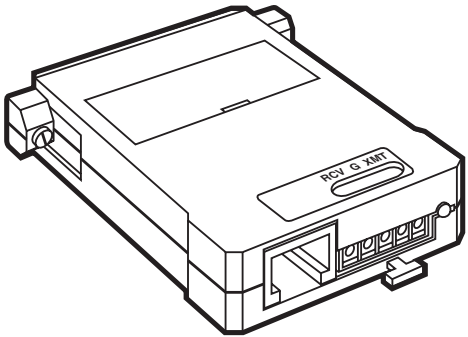
ME795A-F-RJ11 ME796A-F-RJ45
ME795A-M-RJ11 ME796A-M-RJ45

Miniature Short-Haul Modem NPR



CUSTOMER SUPPORT INFORMATION

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TRADEMARKS USED IN THIS MANUAL

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

Declaration of Conformity

This product conforms to the following standards or other normative documents:

EMC: EN 55022 (1987): Limits and methods of measurement of radio interference characteristics of information technology equipment.

EN 50082-1 (1992): Electromagnetic compatibility—Generic immunity standard for residential, commercial, and light industry.

Supplementary Information:

The product herewith complies with the requirements of the EMC Directive 89/336/EEC. The product was tested in a typical configuration.

1. Specifications

Data Rates — Up to 19.2 kbps

Transmission Format — Asynchronous

Transmission Line — 4-wire unconditioned line (two twisted pairs)

Transmission Mode — Full or half duplex 4-wire operation

Transmission Controls — DSR (Circuit 107), turns on immediately after DTE raises DTR (Circuit 108); DCD turns on after recognizing the receive signal from the line; CTS (Circuit 106) turns on 40 msec after DTE raises RTS (Circuit 105)

Carrier Control — The carrier is strap-selectable for either continuous operation or switched operation, controlled by RTS (Circuit 105) indicator

Transmission Level — 0 dBm

Transmission Range — Up to 4.2 miles (6.8 km) [see Table 1-1]

Table 1-1. Approximate Range

Data Rate (kbps)	19 AWG (0.9 mm)		24 AWG (0.5 mm)		26 AWG (0.4 mm)	
	km	miles	km	miles	km	miles
1.2–19.2	6.8	4.2	3	1.9	2.3	1.4

DTE Interface — EIA RS-232/ITU V.24, integral 25-pin connector, choice of male or female

Line Interface — 5-screw (4-wire and ground) terminal block, together with:

- RJ-11 jack
- RJ-45 jack

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

Humidity Tolerance — Up to 90%, noncondensing

Power — For proper operation, at least two of the following digital interface connector (DB25) pins must be active:

DCE mode: 2, 4, 20, 24
DTE mode: 3, 6, 8

The typical power that is drawn from DTE is 40 mW (at least +6V signal level)

Size — 0.7"H x 2.1"W x 2.6"D (1.8 x 5.3 x 6.6 cm)

Weight — 0.9 oz. (25.5 g)

2. Introduction

2.1 Description

The Mini Short-Haul Modem NPR is used for local data distribution, connecting full or half-duplex asynchronous DTEs to DTEs operating over unconditioned 4-wire lines (two twisted pairs). The SHM ensures integrity of data transmission for distances up to 4.2 miles (6.8 km), depending on wire gauge and data rate (see Table 1-1 in **Chapter 1**).

The SHM is equipped with an internal filter for high noise immunity. The internal filter overcomes both radiated and conducted interference, and is recommended for noisy environments, such as industrial locations.

The SHM features a switch-selectable DTE/DCE interface, and a switch-selectable printer-support mode. It also features strap-selection for carrier constantly on or controlled (see Figure 3-4).

When set to DCE, the modem carrier can be strapped to be constantly on, or controlled by the RTS signal (Circuit 105). When the carrier is controlled by RTS, the

SHM can be connected in a multipoint configuration. Controlled carrier can also be used in applications requiring passing of a control signal end-to-end (RTS on one SHM is passed to DCD on the other unit). The SHM also has an LED to indicate carrier detection.

When set to DTE, the SHM operates as a DTE for connection to another DCE (such as a multiplexor port), without the use of a cross-pinned cable.

When set to printer-support mode, the SHM supports printer flow control, by transmitting DTR on the printer side (busy signal) to CTS on the other side. As a result, CTS at the computer side will drop when the printer becomes busy.

Innovative circuitry allows the SHM to operate without connection to the mains supply, by using ultra-low power from the data and control signals. The modem will operate even if only TD (Circuit 103), RD (Circuit 104) and RTS (Circuit 105) are connected.

The low transmit level minimizes crosstalk onto adjacent circuits within the same cable. Data is transmitted and received using a balanced interface, ensuring high immunity to circuit noise.

The SHM is coupled to the line through isolation transformers, which, in conjunction with additional circuitry, protect against AC or DC overvoltages. As the transformers are rated at over 1,500V RMS, the modem is suitable for connection to local circuits provided by most national telephone administrations.

Two connectors are available for connection to the line: a five-screw terminal block and modular socket for either RJ-11 or RJ-45.

2.2 Features

- Asynchronous, full or half-duplex
- Data rates up to 19.2 kbps
- Point-to-point or multipoint
- Transmission range up to 4.2 miles (6.8 km)
- DCE/DTE mode
- Transformer isolated
- No AC power required
- Internal filter for high noise immunity and for surge protection
- LED indicator for carrier detection

3. Installation

CAUTION

This is a delicate instrument. Be careful when setting jumpers or performing any actions within the product so that you do not break or shake any components.

1. Snap out the Miniature Short-Haul Modem NPR nameplate on the plastic cover of the unit.

2. Connect the 4-wire line to the terminal block or to the RJ connector: transmit pair to **XMT** and receive pair to **RCV**.

   Observe the correct polarities:

   - +XMT on the local SHM must be connected to +RCV on the remote SHM.
   - -XMT on the local SHM must be connected to -RCV on the remote SHM.
   - +RCV on the local SHM must be connected to +XMT on the remote SHM.
   - -RCV on the local SHM must be connected to -XMT on the remote SHM.

When using RJ-11 or RJ-45 cables, make sure that the correct polarity (as indicated above) is maintained throughout the cabling system. (See Figures 3-1 and 3-2).

When operating in a noisy environment, use shielded cables and connect one end of the cable shield to "Ground." Ground is provided on the line connector (terminal block or RJ connector) for optional connection of the cable shield.

3. Set the DTE/DCE switch to either DTE or DCE. The SHM is factory set for DCE operation (see Figure 3-4).

4. Set the CARRIER strap to either ON (carrier on continuously) or CTRL (carrier controlled by RTS). The factory setting is carrier control ON (see Figure 3-4).

5. Set the Normal/Printer switch to either Normal or Printer operation. The factory setting is Normal operation (see Figure 3-4).

NOTE

The Printer switch in both modems should be set to the same setting. When set to Printer operation, the DCE/DTE switch must be set to DCE operation.

6. To close the unit, insert the two tabs of the Miniature SHM NPR nameplate and press the plate down.

7. Plug the modem directly into the 25-pin connector of the DTE or computer port. Fasten the screws on each side of the connector.

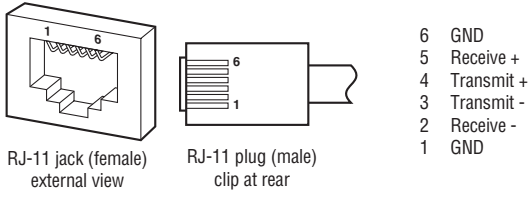

Figure 3-1. RJ-11 Pin Assignment.

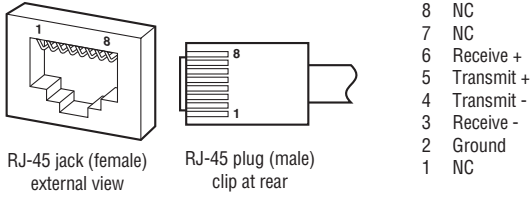

Figure 3-2. RJ-45 Pin Assignment.

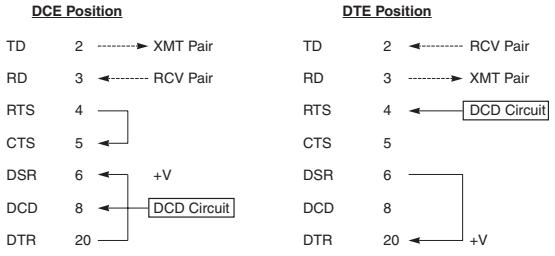

Figure 3-3. DCE/DTE Switch Configuration.

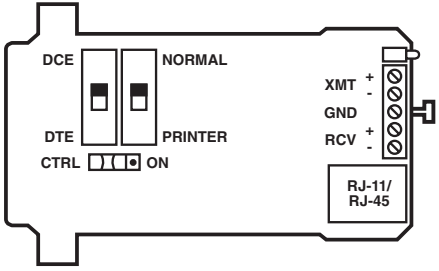

Figure 3-4. Strapping Diagram.

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