BLACK BOX®
NETWORK SERVICES

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ME1791A-F ME1794A-F

Ultra-Miniature Asynchronous Short Range Modems

CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
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ME1791A-F, ME1794A-F

1. Features

Ultra-miniature asynchronous short range modems:

- Ultra-miniature modems using hybrid technology
- Asynchronous transmission up to 19.2 kbps
- Transmission range up to 21 km (13 miles)
- No AC power required
- 9-pin RS-232/V.24 connector
- Can be used with both STP and UTP
- Compact, lightweight, easy to install.

Versions

The following versions of the modem are available:

- ME1791A-F – modem with female DCE connector and terminal block line connector
- ME1794A-F – modem with female DCE connector and RJ-45 line connector.

Application

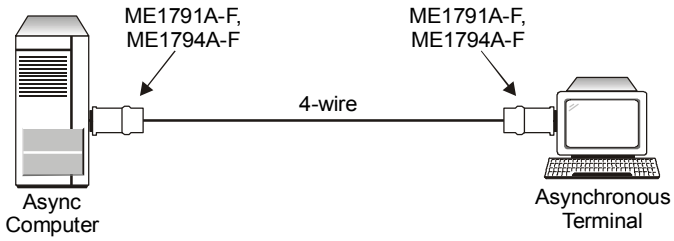

Figure 1. Typical Application

2. Description

ME1791A-F and ME1794A-F, ultra-miniature asynchronous short range modems, are used for local data distribution, connecting full duplex asynchronous DTEs to computers.
The modems ensure integrity of data transmission, using unconditioned 4-wire dedicated lines at data rates up to 19.2 kbps. It operates over distances up to 21 km (13 miles) depending on wire gauge and data rate (see *Table 1*).

Table 1. Typical Transmission Ranges

Data Rate	19 AWG		24 AWG		26 AWG	
[kbps]	[km]	[miles]	[km]	[miles]	[km]	[miles]
19.2	14	9	6	4	4	3
9.6	14	9	6	4	5	3
4.8	14	9	7	4	5	3
2.4	16	10	8	5	7	4
1.2	21	13	11	7	8	5

The modems incorporate innovative circuitry design, which enables the units to operate without connection to the mains supply, by using ultra low power from the standard RS-232/V.24 data and control signal voltages. The modem operates fully even if only Transmit Data is connected (i.e. without the DTE sending Request to Send or Data Terminal Ready signals). Both positive and negative signals are generated in compliance with RS-232/V.24 standards, regardless of constantly low or constantly high Transmit Data. *Table 2* provides the DCE connector pinout.

Table 2. DCE Connector Pinout

Pin	Designation	Function
1	DCD	Data Carrier Detect (output)
2	RD	Receive Data (output)
3	TD	Transmit Data (input)
4	DTR	Data Terminal Ready (input)
5	GND	Ground
6	DSR	Data Set Ready (output)
7	RTS	Request To Send (input)
8	CTS	Clear To Send (output)
9	RI	(+V)

The low transmit level minimizes cross-talk onto adjacent circuits within the same cable. Data is transmitted and received at a balanced impedance, ensuring excellent immunity to circuit noise.

The line side of the modems offers connection to the RS-232 plug ground. This may be connected to the shield of the STP wiring to provide end-to-end ground continuity. *Table 3* provides the pinout of the RJ-45 line connector.

Table 3. Line Connector Pinout (RJ-45)

Pin	Function
1	Not connected
2	Ground
3	RCV-
4	XMT-
5	XMT+
6	RCV+
7	Not connected
8	Not connected

3. Technical Specifications

Line Interface	*Line Type*	4-wire unconditioned dedicated line (two twisted pairs)
	Transmission Mode	Asynchronous, full duplex
	Transmission Level	-6 dBm
	Range	See *Table 1*
	Connector	• ME1791A-F: 4-screw terminal block • ME1794A-F: RJ-45
DCE Interface	*Type*	RS-232/V.24
	Data Rate	Up to 19.2 kbps
	Control Signals	**DSR** (Circuit 107) and **DCD** (Circuit 109) turn on immediately after the terminal raises DTR (Circuit 108.2); **CTS** (Circuit 106) turns on immediately after the DTE raises RTS (Circuit 105)
	Connector	D-type, 9-pin, female
Power		No external power supply is required; the modems use ultra low power from the RS-232/V.24 data and control signals
Physical	*Height*	19.8 mm / 0.8 in
	Width	31 mm / 1.2 in
	Depth	61 mm / 2.4 in
	Weight	26g / 0.9 oz
Environment	*Temperature*	0–50°C (32–122°F)
	Humidity	Up to 90%, non-condensing

4. Installation

Installation of the modems is simple and straightforward, just follow these steps:

1. Connect the 4-wire dedicated line to the line connector; transmit pair to 'XMT' and receive pair to 'RCV'.

   Observe the following pin polarity between the local and remote units:

   - Local XMT+ connected to remote RCV+
   - Local XMT- connected to remote RCV-
   - Local RCV+ connected to remote XMT+
   - Local RCV- connected to remote XMT-.

2. Connect the modems directly to the 9-pin connector of the DTE or the computer and fasten with the two screws – one on each side of the modem connector.