



**JULY 2003**

**ME1862A-F      ME1862A-M**

**ME1863A-F      ME1863A-M**

# **Miniature Asynchronous 4-Wire High Speed Modems**

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# ME1862A-F, ME1862A-M, ME1863A-F, ME1863A-M

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## 1. Features

Miniature asynchronous 4-wire high-speed modems:

- Data rate up to 115.2 kbps
- Full duplex operation over 4-wire lines
- Range of up to 5 km (3 miles) at 19.2 kbps over 24 AWG lines
- Transformer isolated from line hazards
- DCE/DTE switch for easy direct connection
- No AC power required.

## Versions

The following versions of the modem are available:

- ME1862A-F – modem with female DTE connector and terminal block line connector
- ME1862A-M – modem with male DTE connector and terminal block line connector
- ME1863A-F – modem with female DTE connector and RJ-45 line connector
- ME1863A-M – modem with male DTE connector and RJ-45 line connector.

## Application

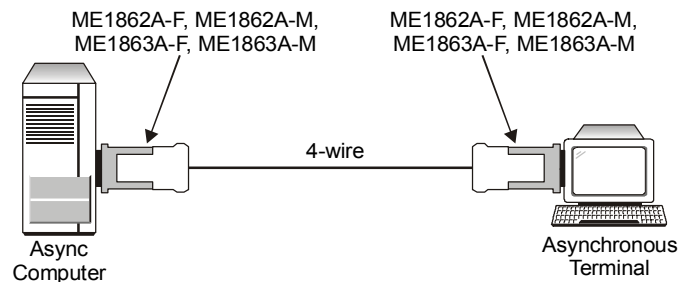


Figure 1. Typical Application

## 2. Description

The miniature high speed, short-range modem connect full duplex asynchronous DTEs over two twisted pairs. [Table 1](#) lists typical ranges achieved by the modems over different wire types.

*Table 1. Typical Transmission Ranges*

Data Rate [kbps]	19 AWG		22 AWG		24 AWG		26 AWG	
	[km]	[miles]	[km]	[miles]	[km]	[miles]	[km]	[miles]
1.2–19.2	10.5	6.5	6.5	4.0	5.0	3.0	3.5	2.0
28.8	10.5	6.5	6.0	3.5	4.5	2.5	3.0	2.0
38.4	10.0	6.0	5.5	3.5	4.0	2.5	2.5	1.5
57.6	5.8	5.0	5.0	3.0	3.5	2.0	2.2	1.2
115.2	6.0	3.5	4.0	2.5	3.0	2.0	2.0	1.0

The modems support any asynchronous character length, parity setting and combination of start and stop bits with no need to set straps or jumpers.

A DTE/DCE switch allows to operate as a DTE in order to connect to another DCE, without requiring a cross cable.

The low transmit level minimizes crosstalk onto adjacent circuits within the same cable.

Connection to the line is through an isolation transformer, for protection against AC or DC overvoltages.

The modems operate without connection to an AC supply, using ultra-low power from the data and control signals.

The modems are available with a male or female integral 25-pin connector for the DTE interface and a five-screw (4-wire and ground) terminal block connector for the line. Optionally, the line connection can be RJ-45. [Table 2](#) provides the pinout of the RJ-45 line connector. [Figure 2](#) illustrates the terminal block connector.

*Table 2. 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

<b>Line Interface</b>	<i>Line Type</i>	4-wire unconditioned dedicated line (two twisted pairs)
	<i>Transmission Mode</i>	Asynchronous, full duplex
	<i>Transmission Level</i>	0 dBm
	<i>Range</i>	See <a href="#">Table 1</a>
	<i>Connector</i>	<ul style="list-style-type: none"> <li>• ME1862A-F, ME1862A-M: 4-screw terminal block</li> <li>• ME1863A-F, ME1863A-M: RJ-45</li> </ul>
<b>DTE Interface</b>	<i>Type</i>	RS-232/V.24
	<i>Control Signals</i>	<p><b>DSR</b> (circuit 107) turns on immediately after terminal raises DTR (circuit 108)</p> <p><b>CTS</b> (circuit 106) turns on immediately after terminal raises RTS (circuit 105)</p> <p><b>DCD</b> turns on immediately after terminal raises RTS</p>
	<i>Data Rate</i>	Up to 115.2
	<i>Connector</i>	<ul style="list-style-type: none"> <li>• ME1862A-F, ME1863A-F: D-type, 25-pin, female</li> <li>• ME1862A-M, ME1863A-M: D-type, 25-pin, male</li> </ul>
<b>Power</b>		None required; uses ultra-low power from the RS-232 interface data and control signals or via pin 9 of the DB-25 connector
<b>Physical</b>	<i>Height</i>	22 mm / 0.9 in
	<i>Width</i>	52 mm / 2.1 in
	<i>Depth</i>	110 mm / 4.3 in
	<i>Weight</i>	85g / 3.0 oz
<b>Environment</b>	<i>Temperature</i>	0–50°C (32–122°F)
	<i>Humidity</i>	Up to 90%, non-condensing

## 4. 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.

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

1. Separate the two parts of the plastic cover by firmly pressing the marked places on the sides – start at the line end.
2. Configure the modem to operate as DCE or DTE by setting the internal SW1 switch to appropriate position. Refer to [Figure 2](#) to locate the switch. Refer to [Figure 3](#) for control signal direction in DCE and DTE modes.

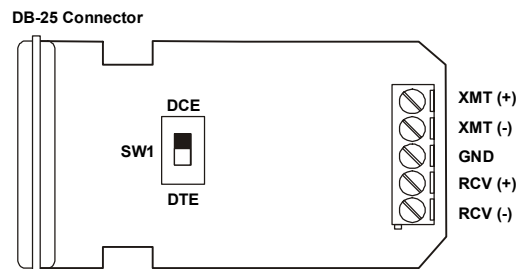


Figure 2. SW1 Switch Location











DCE Position		DTE Position	
TD	2 modem input	TD	2 modem output
RD	3 modem output	RD	3 modem input
RTS	4 	RTS	4 
CTS	5 	CTS	5 
DCD	8 	DCD	8 
DSR	6 	DSR	6 
DTR	20 	DTR	20 

Figure 3. DCE/DTE Switch Configuration

3. Close the unit by pressing the two halves of the cover together.
4. Connect the 4-wire line to the terminal block connector. 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 (-).

**Note** When operating in a noisy environment, use shielded cables, and connect the cable shield to the GND terminal (see [Figure 2](#)).

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