



JANUARY 2001
ME3002A-F

Powered Line Driver Optical Isolator

**CUSTOMER
SUPPORT
INFORMATION**

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**FEDERAL COMMUNICATIONS COMMISSION
and CANADIAN DEPARTMENT OF COMMUNICATIONS
RADIO FREQUENCY INTERFERENCE STATEMENT**

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an experienced radio/TV technician for help.

Caution:

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

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du 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 solo 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 energía.
16. El cable de corriente deberá ser desconectado del equipo cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos 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
 - C: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - D: El aparato ha sido tirado o su cubierta ha sido dañada.

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1.0 General Description

The Model ME3002A-F requires metallic circuits with DC continuity end-to-end for proper operation. The circuits may be customer private lines or unconditioned telephone company metallic circuits. The ME3002A-F is used to extend the distance between two RS-232 based devices beyond the 50-foot limitation of the RS-232 specification. The unit will allow transmission over ten miles at 1200 baud and two miles at 9600 baud. The unit complies with Bell System Specification 43401.

Communications between modems can be full duplex (simultaneous two-way), half duplex over two twisted pairs, or Simplex (one way) over one twisted pair.

Caution: The unit is NOT intended to operate on home telephone lines and may damage home telephone equipment.

2.0 Specifications

Interface: Conforms to EIA RS-232c and CITT V.24 specifications. Pin 4 connected to Pin 5. Pins 6, 8 and 20 connected together. Pins 2 and 3 TRANSMIT/RECEIVE DATA switch selectable. Pin 7 Signal Ground.

Connectors:

RS-232: DB-25 female

Analog: Four screw terminals and an RJ-11 connector.

Transmission:

Asynchronous full duplex - two twisted pairs

Simplex – one twisted pair

Current Loop – +12 mA via optical coupler (conforms with Bell System Specifications 43401)

Operating Distance: The following table gives maximum distance, in miles, as a function of baud rate:

Baud Rate	19200	9600	4800	2400	1200	600	300
Distance	.8	2	3	5	10	10	10

Size: 3.5"L x 2.2"W x 1"H

Environment: 0° to 50° C. 0% to 95% relative humidity

Power: 115 VAC 60Hz (220 V 50Hz optional)

3.1 Digital Interface

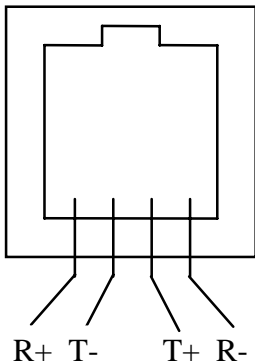
The unit may be attached directly to a computer terminal or printer, or it can be placed in series with a standard 25 conductor cable (on the EIA end).

3.2 Analog Interface

The analog interface allows the user to connect to either four-screw terminals marked T+, T-, R+ and R-, or the RJ-11. The 'T' terminals represent the transmit pair whereas the 'R' terminals represent the receive pair.

Cables should be high quality and at least 24-gauge stranded twisted pair and color-coded to facilitate installation and repair. Solid conductor wire should not be used on long distances at data rates over 1200 baud. When installation involves electrically noisy environments, an outside shield is recommended.

The required connections for the analog interface are shown on the next page.



Looking into the
RJ-11 socket.

The indicators on the unit can be used to determine the correct connections for the four-wire line. With both modems connected and no data flowing, the TD and RD indicators should be off. If either RD indicator is on, the respective two wires (R+ and R-) should be reversed or the DTE/DCE switch is in the wrong position.

4.0 Operation

The ME3002A-F is equipped with a switch that allows the reversing of Pins 2 and 3 of the RS-232 connector. When the switch is in the DTE position, Pin 2 of the RS-232 connector is an output (transmit-to-host device) and Pin 3 of the RS-232 connector is an input. When the switch is reversed to the DCE position, the connections are reversed (Pin 2 is an input while Pin 3 is an output). When interfacing to a CRT terminal, the switch should be set to DCE.

The Model ME3002A-F comes with a Loopback switch. When in the normal position, data from the local ME3002A-F can be sent to the remote ME3002A-F and vice versa. When in the loopback position T+ is connected to R+ and T- is connected to R- internally on the local ME3002A-F. In addition, the T+ wire from the remote ME3002A-F is looped back to R+ and T- is looped back to R-. This allows for the verification of the local ME3002A-F, the four-wire dedicated line and the remote ME3002A-F.

5.0 Troubleshooting

5.1 Modem Verification

Individual modem performance can be verified if one of the devices to which the modems are attached is capable of operation in full duplex mode. Most CRT terminals are capable of this type of operation. In this mode, the terminal generates data from its keyboard but data will not be displayed until it is received back at its input port.

A modem may now be tested by connecting it to the terminal via the RS-232 connector and then providing loopback connections as follows: Set to DCE

T+ to R+ and T- to R-

Note: For the ME3002A-F, simply place the loopback switch in the loopback position.

If the modem is functioning any data entered on the keyboard should appear on the screen. This procedure can be used to test all Short Haul Modems.

6.0 Connector Pin Assignments

EIA Interface			
Pin	EIA	CCITT	NAME
2	BA	103	*Transmit Data
3	BB	104	*Receive Data
4	CA	105	**Request to Send
5	CB	106	**Clear to Send
6	CC	107	***Data Set Ready
7	AB	102	Signal Ground
8	CF	109	***Data Carrier Detect
20	CD	108.2	***Data Terminal Ready

*These signals may be reversed using the selector switch

** Connected together

*** Connected together

7.0 Power

Operating power is generated by the combination of a wall-mounted transformer and circuitry internal to the unit. The transformer plugs into a 120-VAC receptacle. A multi-conductor eight-foot line cord delivers low voltage AC to the unit. The rectifier circuits internal to the unit convert this AC to approximately +/-12 VDC.



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