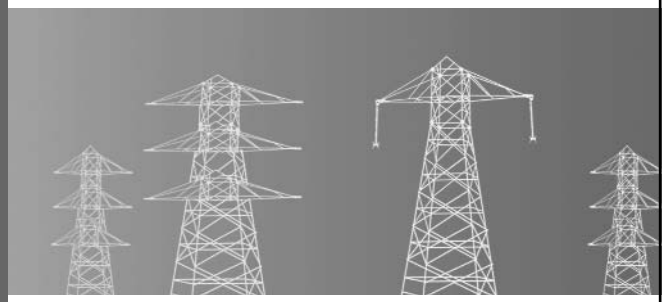
User Manual

UNICOM 2500

- Installation
- Operation
- Programming



➠ Universal Communication Converter

UNICOM 2500

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ELECTRO INDUSTRIES

GAUGETECH

UNICOM-2500

UNIVERSAL COMMUNICATION COVERTER

USER'S INSTALLATION & OPERATION MANUAL

Version 1.3/ 11-2014

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Customer Support & Repair Service

Customer support is available 9:00 A.M. to 4:30 P.M., Eastern Time, Monday through Friday. Please have the model, serial number and a detailed problem description available. If the problem concerns a particular reading, please have **all** meter readings available. When returning any merchandise to E.I.G., a return authorization number is required.

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UNICOM-2500

SPECIFICATIONS:

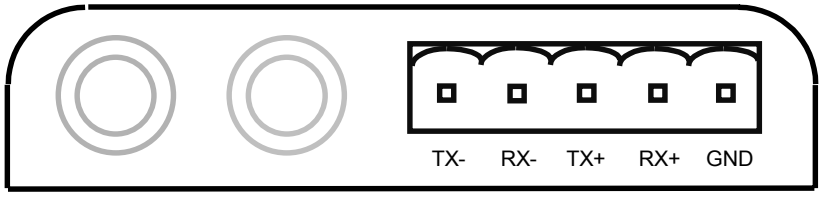
Power Voltage: Requirements	9Vdc - 30Vdc or 7Vac-20Vac
Maximum Power: Consumption	3VA
Isolation Voltage:	2500Vrms (RS232 to RS485)
Data rate:	1200 - 115,000 baud
Switches:	DTE-DCE selection HALF-FULL duplex selection (HD/FD) 232/FO-232/485-485/FO selection. Only with fiber optic option
Indicator Lights:	TX transmit (RS232 or Fiber Optic) RX receive (RS232 or Fiber Optic) CTRL control (RS485) ERR error (RS232 or Fiber Optic)
Connectors:	DB-9(RS-232) 5 screw terminal (RS-485) ST® receive and transmit (Fiber Optic), optional
Enclosure:	Rugged aluminum resistant to Electro Magnetic Interference
Outside Dimensions:	L=4 $^{7}/_{8}$" (124mm), W=2 $^{9}/_{16}$"(65mm), H= 1"(25mm)
Mounting:	Stand alone or wall mounted with mounting plate supplied
Operating Temperature:	-20C^{0} to +70C^{0}
Port Configuration:	RS232 - 9 Pin Female RS485 - 4 wire and 2 wire connector Fiber Port - 50/125µm, 62.5/125µm and 100/140µm fiber sizes using ST terminated cables. Wavelength=820nm

CONNECTORS:

RS-232 Port: Switch Position

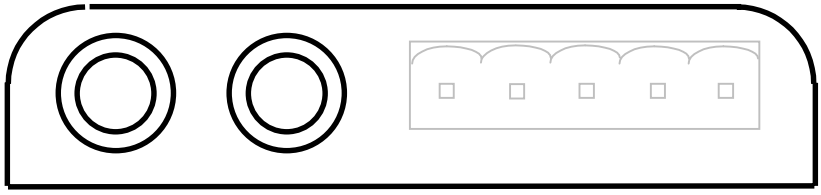
DCE		DTE	
pin	name	pin	name
2	TX	2	RX
3	RX	3	TX
5	GND	5	GND

RS-485 Port: Pin assignment is also indicated on the enclosure



Rear view of enclosure

FIBER OPTIC PORTS (optional) : The Fiber Optic ports accept ST® terminated fibers (50/125µm, 62.5/125µm, 100/140µm)

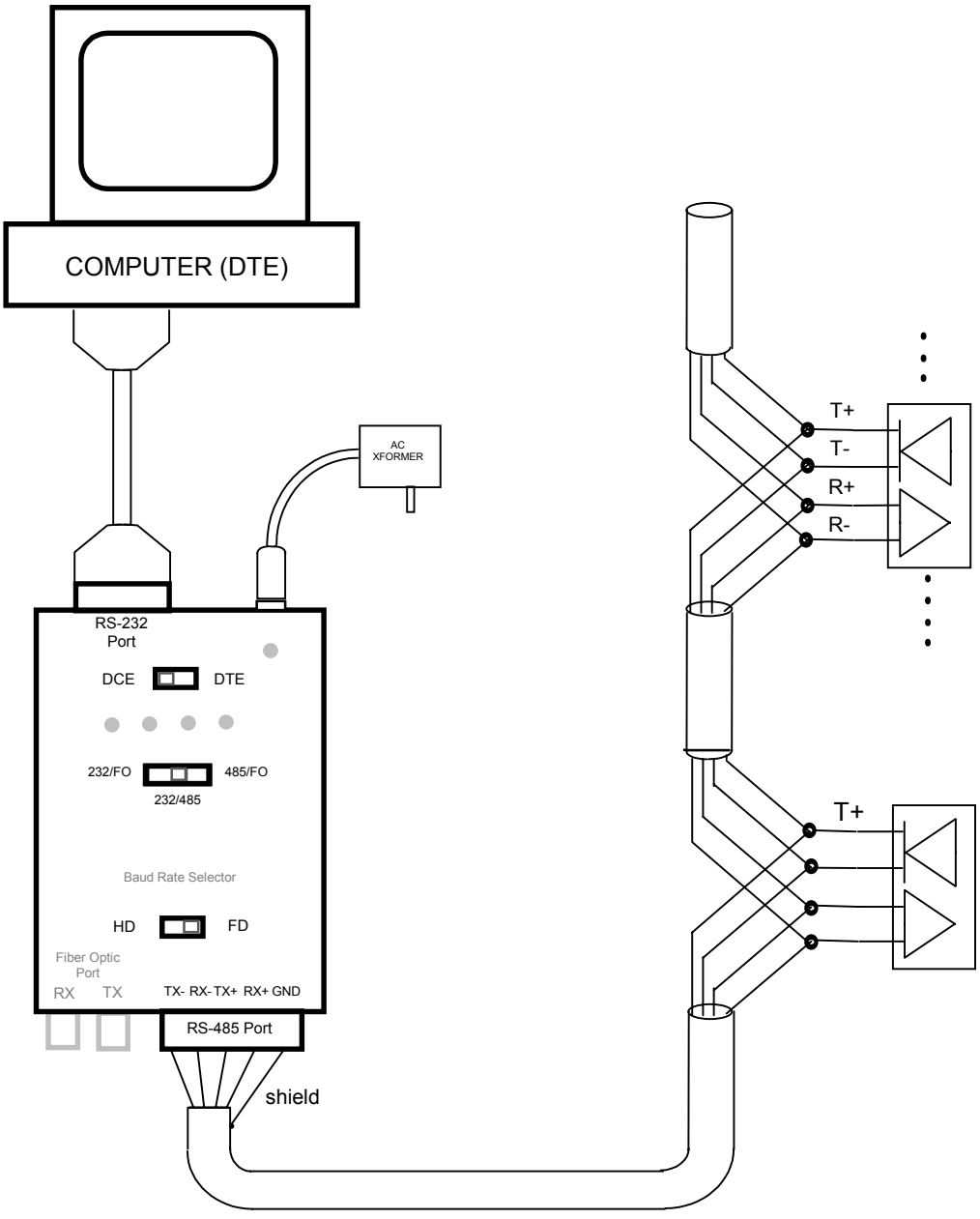


Rear view of enclosure

Power Connection: DC Jack barrel type (not polarized)
Outside diameter: 5.5mm
Inside diameter: 2.5mm

HOOKUP DIAGRAMS:

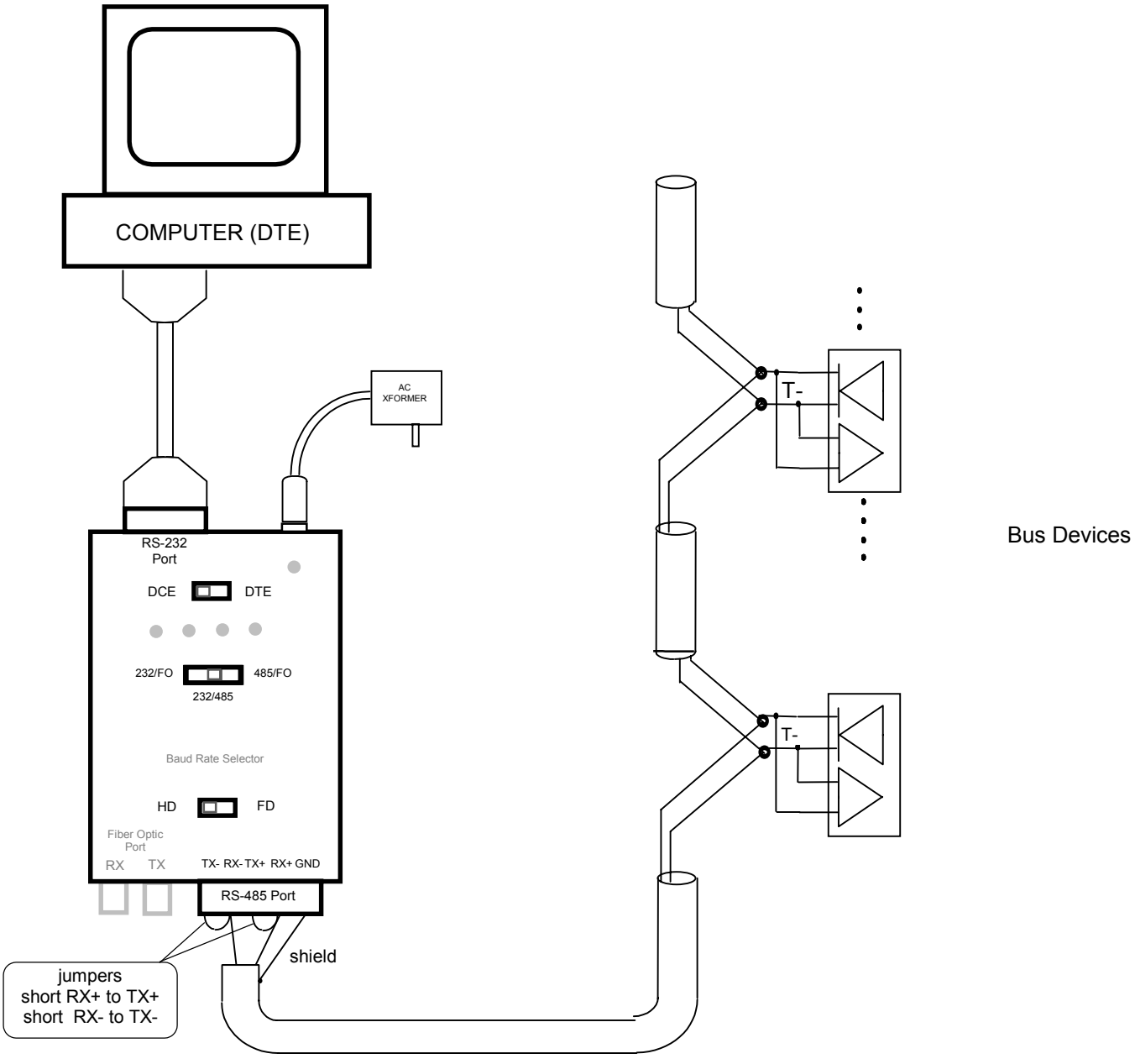
RS-232/RS-485 CONVERSION:
4 Wire (Full Duplex installation)



Twisted
pair shielded cable

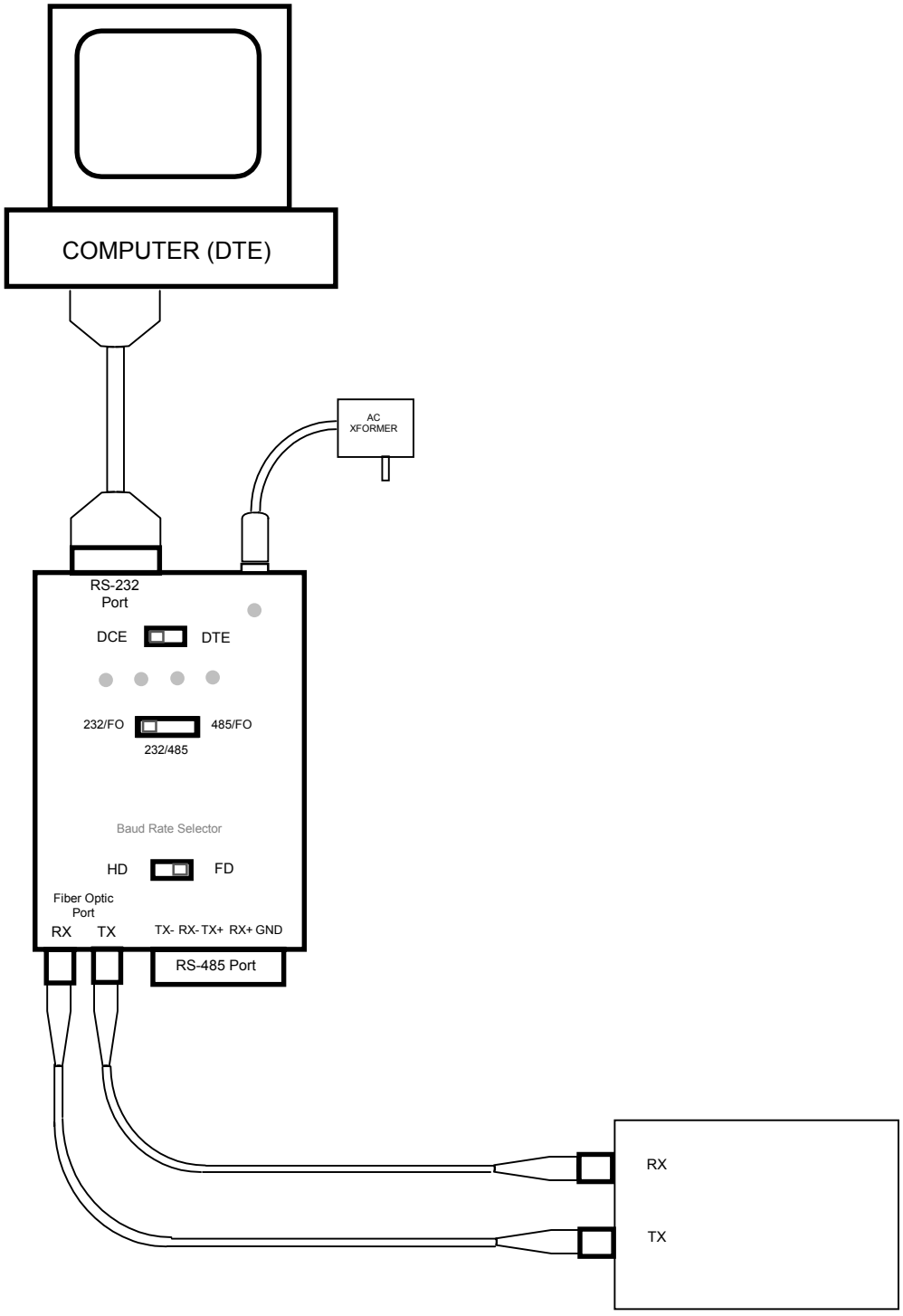
HOOKUP DIAGRAMS:

RS-232/RS-485 CONVERSION:
2 Wire (Half Duplex installation)



HOOKUP DIAGRAMS:

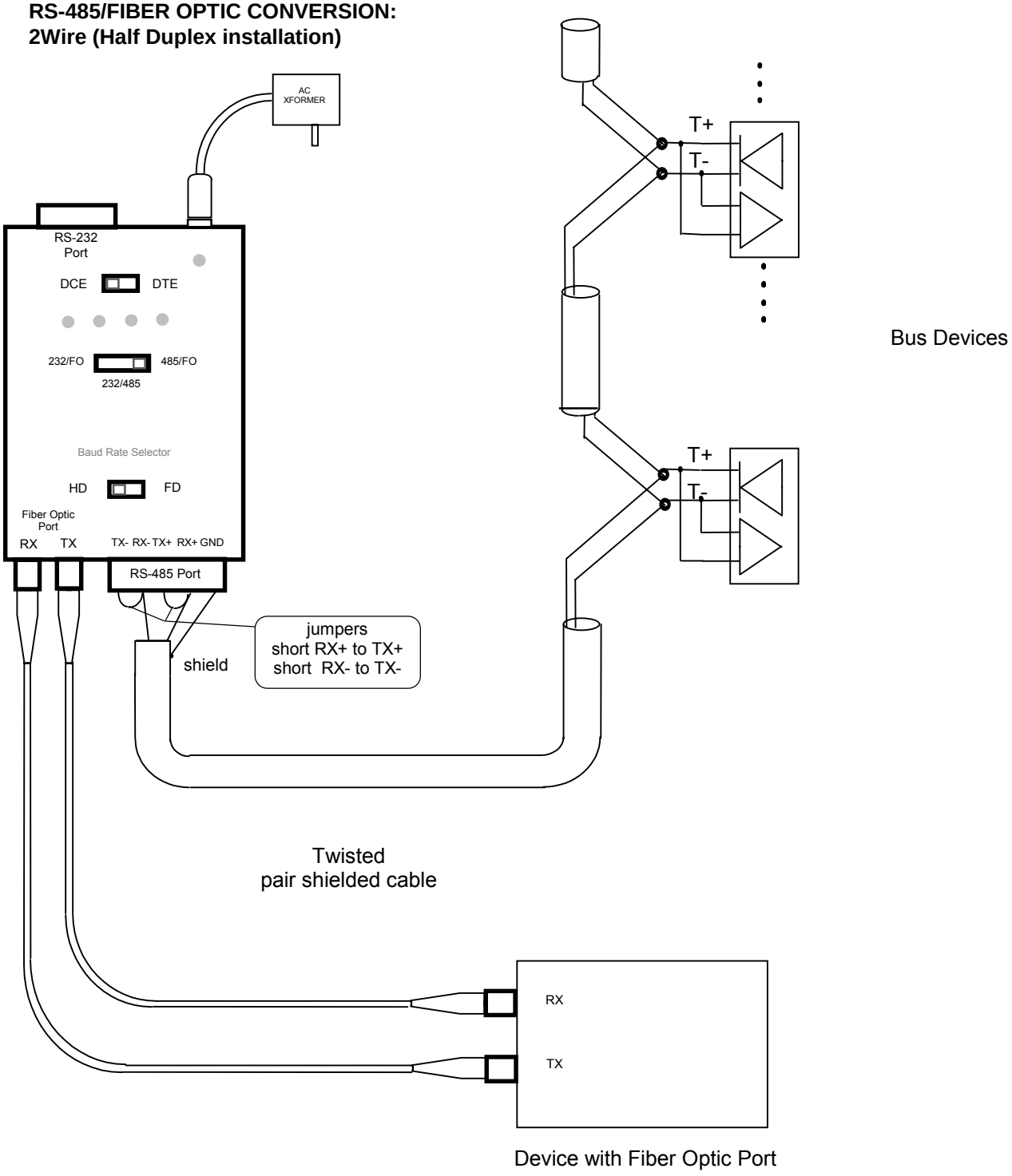
RS-232/FIBER OPTIC CONVERSION:



Device with Fiber Optic Port

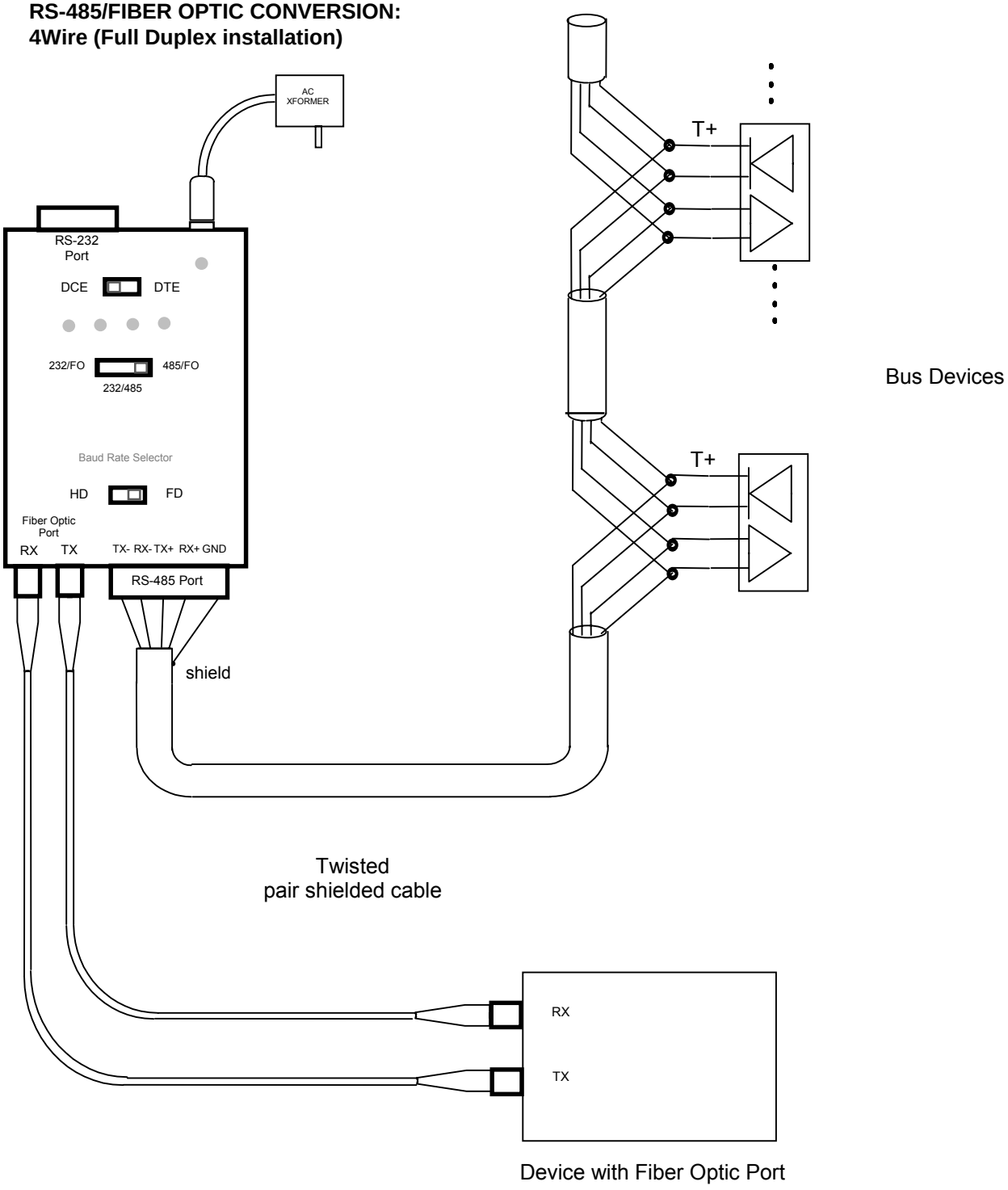
HOOKUP DIAGRAMS:

RS-485/FIBER OPTIC CONVERSION:
2Wire (Half Duplex installation)



HOOKUP DIAGRAMS:

RS-485/FIBER OPTIC CONVERSION:
4Wire (Full Duplex installation)



DESCRIPTION OF FEATURES

SWITCHES:

DTE-DCE : Configures the wiring of the RS-232 port. When DCE (Data Communication Equipment) is selected the Unicom-2500 receives data on Pin3 and transmits on Pin2 (DB-9 connector). When DTE (Data Terminal Equipment) is selected, Pin3 is the transmit and Pin2 is the receive. For example if the Unicom-2500 is connected to a computer, DCE should be selected. If it is connected to a modem or another Unicom-2500(with DCE selected) DTE should be selected.

CONFIGUARATION SWITCH (RS232/FO - RS232/RS485 - RS485/FO), only for units with Fiber Optic Option:

Determines the path for the throughput.

FD-HD(Full Duplex/Half Duplex),(RS-485): Used to setup the Unicom-2500 for Full Duplex or Half Duplex mode. Full duplex requires a 4 wire hookup on the RS-485 Bus to enable simultaneous receive and transmit. In this mode, the Baud Rate Selector Switch is not enabled since there is no need to control the RS-485 transmit driver (Receive is constantly enabled). Half Duplex mode requires only two wires to be hooked up on the RS-485 Bus. In this mode, transmit and receive signals are on the same pair of wires. When the unit is transmitting, the receive device is disabled, when the transmission is complete the unit is then in the receive mode (receive enabled). The Unicom-2500 automatically controls this operation. It only needs the Baud Rate to determine the turnaround time from transmit to receive, therefore the *Baud Rate selection switch must be in the right position!*

See also software/firmware considerations in Half Duplex mode (Pg. 11).

Halfl Duplex installation requires these modifications on the RS-485 connection port! :

TX+ Pin connected to RX+ Pin (use jumper wire)

TX- Pin connected to RX- Pin (use jumper wire)

Baud Rate Selector Switch (For Half Duplex, two wire setup only):

Sets up the current communication Baud Rate. Range : 1200 to 115000 Baud.

STATUS LIGHTS:

Power: Indicates the unit is on

RX: Indicates the RS-232 or Fiber Optic port is receiving

TX: Indicates the RS-232 or Fiber Optic port is receiving

ERR: Indicates an illegal condition on the RS-232 or Fiber Optic port.
A start bit is detected on the RS-232 or Fiber Optic receive line, but there is no data. This condition would enable the transmit driver on the RS-485 port forever which would load down the RS-485 Communication Bus. When the *ERR* light comes on, Unicom-2500 automatically disables the transmit driver to prevent this unwanted situation. Such a condition is usually caused by software/firmware lockup.
A new start bit will reset the unit.

CTRL: indicates the RS-485 port data direction, and is used only in Half Duplex mode. The On state indicates transmit, the Off state indicates receive.

RS485 WIRING

For long distances or higher baud rates use high quality twisted pair shielded cable. Termination of the transmission line is also recommended. The termination resistor is usually 100Ω 1/2W and not less than 90Ω. Termination resistors should be hooked up at the first device and the last device on the transmission line.

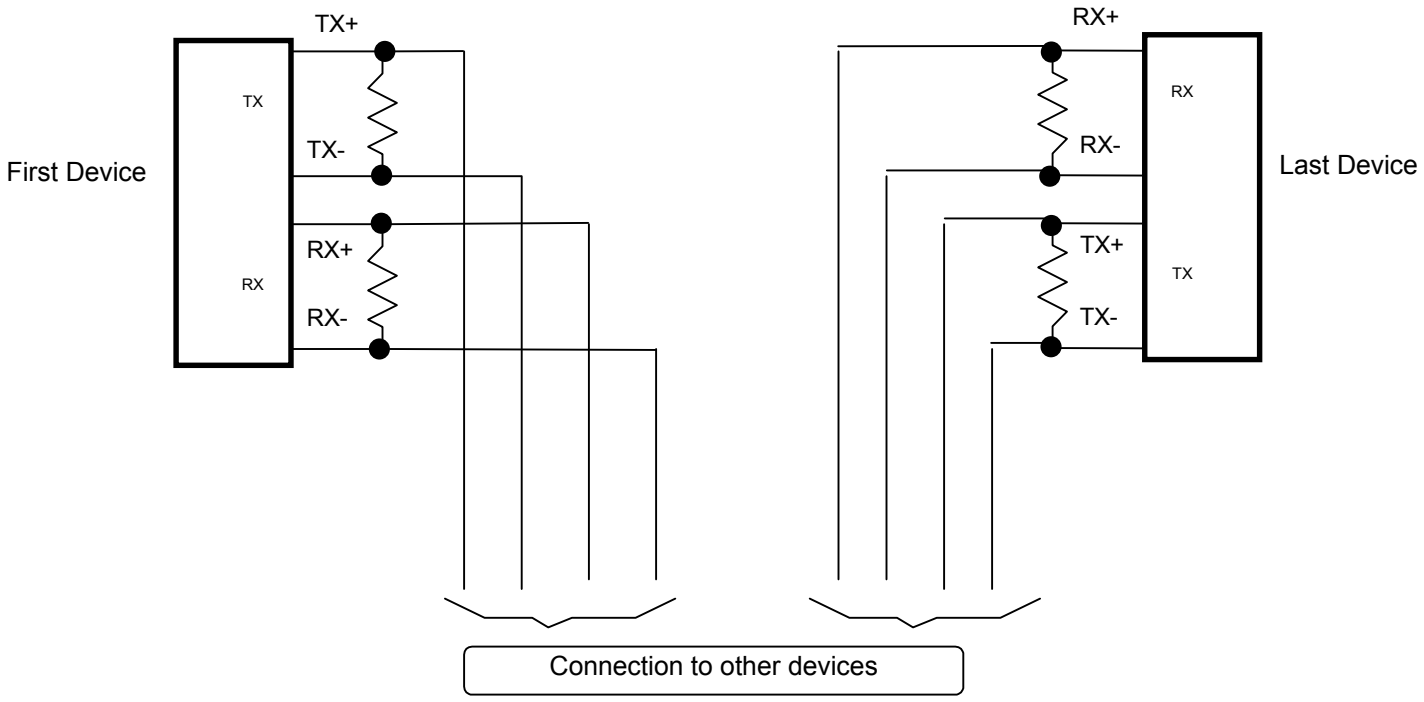


Fig.1 Full Duplex installation with terminating resistors.
In Half Duplex (two wire) installation there are only two terminating resistors to hook up.

Software/Firmware considerations when using RS-485 Half Duplex(two wire) installation:

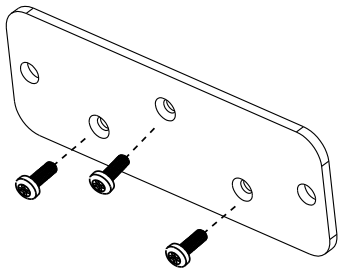
In Half Duplex mode care must be taken in order to achieve successful operation. The automatic control of the Unicom-2500 detects the transitions on the incoming RS-232 or Fiber Optic(optional) receive line. When a transition occurs it enables the transmit driver of the RS-485 port. After the last transition is detected, the unit holds transmit enable for 13 bit-times, disables the transmit driver, and then enables the receive device of the RS-485 port. In order to avoid collisions on the transmission line, a time delay of at least 13 bits must be inserted before transmitting back to Unicom-2500.

DIN Rail Mounting Procedure

The Unicom 2500 comes with a Mounting Plate kit, consisting of a mounting plate and three screws for attaching it to the back of the Unicom 2500, and a DIN Rail Clip kit, consisting of 2 DIN rail mounting clips with an 8mm screw and lock washer for each clip. The mounting plate kit is in the plastic bag attached to the Unicom 2500, and the DIN Rail Clip kit is in a plastic bag in the Unicom 2500 box.

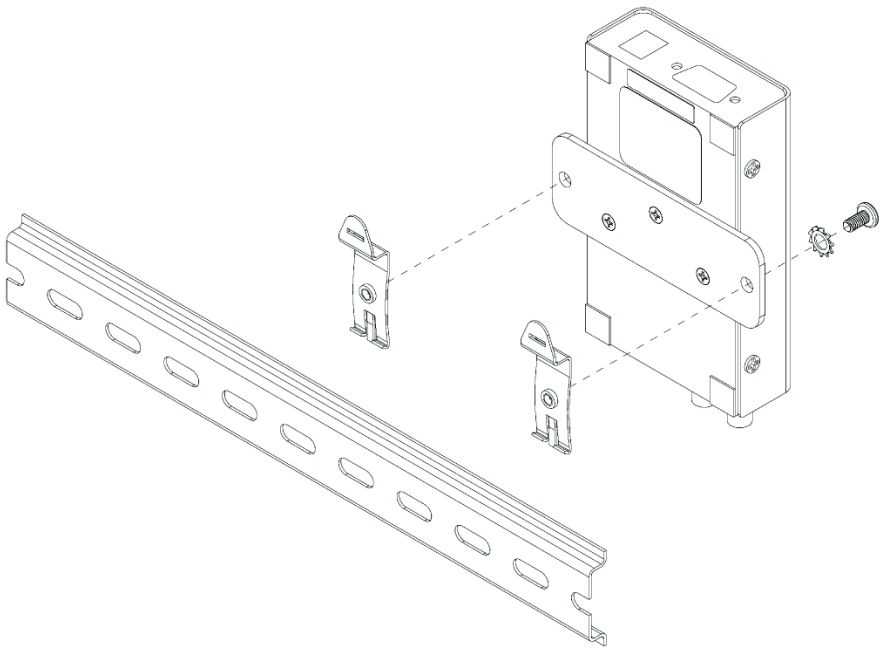
The mounting plate and clips let you easily attach the unit to a DIN Rail. To use the DIN rail mounting clips, follow this procedure:

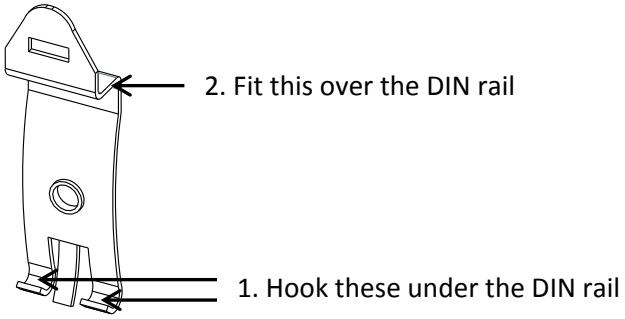
1. Attach the mounting plate to the back of the Unicom using the three screws packaged with it.



Screw mounting plate onto back of the Unicom 2500

2. Using the screws provided in the DIN Rail Clip kit, attach the clips to the back of the mounting plate, using the two side holes, as shown in the drawing below.



a. From the front of either bracket, insert the screw into the lock washer and through the hole, and screw it into the clip using an appropriate screwdriver. Note that the clip should be positioned as shown above, with the indented side facing the back.
b. Repeat step a for the second bracket.

3. To attach the clips to the DIN rail, hook the bottom of the clips around the bottom of the DIN rail and then push the top of the clips forward so that they fit over the top of the DIN rail. See the figure below.