



Model OTDL-FOM-01 RS-232/422/485

Serial Fiber Optic Modem



OPERATING MANUAL

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SAFETY

Safety Precautions

The optical emissions from the units are laser-based and may present eye hazards if improperly used. **NEVER USE ANY KIND OF OPTICAL INSTRUMENT TO VIEW THE OPTICAL OUTPUT OF THE UNIT.** Be careful when working with optical fibers. Fibers can cause painful injury if they penetrate the skin.

Laser Safety Procedure

ALWAYS read the product data sheet and the laser safety label before powering the product. Note the operation wavelength, optical output power and safety classifications.

If safety goggles or other eye protection is used, be certain that the protection is effective at the wavelength emitted by the device under test **BEFORE** applying power.

ALWAYS connect a fiber to the output of the device **BEFORE** power is applied. Power should never be applied without an attached fiber. If the device has a connector output, a connector should be attached that is connected to a fiber. This will ensure that all light is confined within the fiber waveguide, virtually eliminating all potential hazard.

NEVER look at the end of the fiber to see if light is coming out. **NEVER!** Most fiber optic laser wavelengths (1310nm and 1550nm) are totally invisible to the unaided eye and will cause permanent damage. Shorter wavelengths lasers (e.g., 780nm) are visible and are very damaging. Always use instruments, such as an optical power meter, to verify light output.

NEVER, NEVER, NEVER look into the end of a fiber on a powered device with **ANY** sort of magnifying device. This includes microscopes, eye loupes and magnifying glasses. This **WILL** cause a permanent and irreversible burn on your retina. Always double check that power is disconnected before using such devices. If possible, completely disconnect the unit from any power source.

If you have questions about laser safety procedures, please call Olson Technology before powering your product.

INTRODUCTION

The OLSON TECHNOLOGY, INC. Model OTDL-FOM-01 RS-232/422/485 Serial Fiber Optic Modem is ideal to connect RTU to HOST or SCADA controllers via optical fiber. The equipment is resistant to the effects of lightning strikes, power surges, and other electromagnetic interference, providing a reliable data network. The Model OTDL-FOM-01 meets IEA/RS-232 transmission standards at data rates up to 115.2kb/s and RS-422 and RS-485 transmission standards at data rates up to 500kb/s. The transmission distance is 20km using dual single-mode fibers.

Features include:

- Asynchronous point-to-point data rate of up to 115.2kb/s (RS-232) and 500kb/s (RS-422 and RS-485).
- RS-422/485 port supports 32 nodes with options for up to 128 nodes.
- 1310nm wavelength single-mode transmission up to 20km on two fibers.
- Auto test signal rate and zero delay auto transmit capability.
- Surge protection up to 1500W with 15kV static protection.
- DC power from +9 to +25 Volts.
- Industrial temperature range from -25°C to $+70^{\circ}\text{C}$.

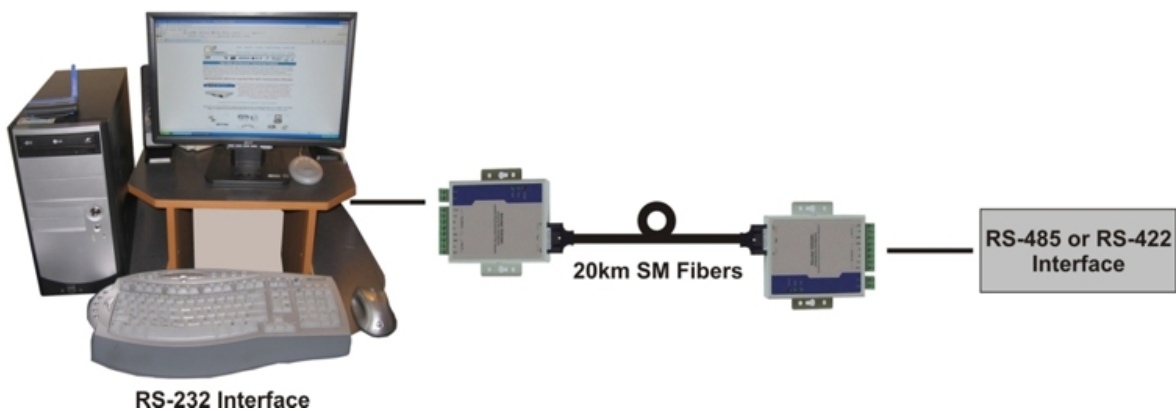


Figure 1 — Typical Application Diagram

PIN CONNECTIONS AND LED INDICATORS



Figure 2 — PIN Locations and LED's

PIN Designation	Meaning
Power Interface	
GND	Ground
DC In	9-25Volt Input
Optical Fiber Interface	
IN	Optical fiber input.
OUT	Optical fiber output.
RS-422/485 Port	
T+/D+	RS-422 Send + / RS-485 +
T-/D-	RS-422 Send - / RS-485 -
R+	RS-422 Received +
R-	RS-422 Received -
GND	Ground
RS-232 Port	
IN	RS-232 Input
OUT	RS-232 Output
GND	Ground
LED Designation	Meaning
Power	Unit is powered.
RxD	Optical interface is receiving data.
TxD	Optical interface is transmitting data.

TECHNICAL SPECIFICATIONS

Parameter	Specification
Standards	RS-232, RS-422, RS-485
RS-232 Data Rate	115.2kb/s max.
RS-422/RS-485 Data Rate	500kb/s max.
Transmission Distances	RS-232 Port (Copper) - 15m RS-485/422 Port (Copper) - 1500m SM Optical Fiber - 20km
Optical Interface	SC/UPC Connectors
Data Interface	8-bit Terminal Block
DC Input Voltage	+9V _{DC} (Min), +12V _{DC} (Typ), +25V _{DC} (Max)
Current Draw @ +12V _{DC}	80mA
Power Dissipation	1W (Typ), 2W (Max)
Operating Temperature Range	-25 to +70°C
Weight	8.1oz. (230g)
Dimensions (L x W x H)	3.942" x 2.72" x 0.86" (100mm x 69mm x 22mm)

INSTALLATION

1. Connect the RS-232 or the RS422 or RS-485 interface to the Model OTDL-FOM-01 at the transmit end. Only one format may be used at a time.
2. Connect the RS-232 or the RS422 or RS-485 interface to the Model OTDL-FOM-01 at the receive end. Only one format may be used at a time.
3. Connect the optical fibers to the optical interface on both the transmit and receive ends.
4. Apply power to the unit and check that the Power LED lights up. The RxD and TxD LED's will light when all the cable connections are satisfactory.