

1. INTRODUCTION

The Fiber Optic Network Extender (FONE) is designed to transmit and receive light pulses over fiber optic cable in response to INCOM® communications signals. With FONE units, one INCOM master can control an INCOM network that spans a much greater distance than an ordinary network.

2. FEATURES

- Extends INCOM networks using 1200 bps ASK
- Standard INCOM network interface
- Transmit and Receive indicators
- Fiber links up to 10,000 ft. (3 km)

3. FONE DESCRIPTION

3.1. Power Requirements

3.1.1 Low Voltage Model

Range: 48 Vdc
 Burden: 2.8 W @ 48 Vdc

3.1.2 High Voltage Model

Range: 125 to 250 Vdc, 120 Vac
 Burden: 3 W @ 125 Vdc
 3.6 W @ 250 Vdc
 3.1 W @ 120 Vac

3.2. Fiber Optic Communications Specifications

Data Rate: dc-200 kbps
 Total Network Pulse Distortion: < 1 μsec
 Wavelength: 850 nm
 Transmitter Power (62.5/125 fiber) 25 μW (-16 dBm)
 Receiver Sensitivity: 1 μW (-30 dBm)
 Optical Power Budget:
 62.5/125 Fiber: 14 dB
 50/125 Fiber: 10 dB
 Maximum distance: 10,000 ft. (3 km)

3.3. Temperature Range

For operation: 0° C to +70° C
 For storage: -20° C to +80° C

3.4. Physical Dimensions

Dimensions and Weight of Chassis:

Height	4.768"	(121.11 mm)
Width	7.386"	(187.60 mm)
Depth	2.434"	(61.82 mm)
Weight	2.6 lbs.	(1.18 kg)

External Wiring: 14-22 AWG stranded for power supply and network cable.

3.5. Front Panel Layout

The front panel shows the layout of the LED indicators and the connections and is shown in Figure 1.

Each of these is explained in more detail in the **Operations** section of this I.L.

4. INSTALLATION

Installing the FONE is simple since it contains no switches or jumpers and requires no adjustments. It is only necessary to connect power, the INCOM network, and fiber optic cables.

The method of mounting the FONE is open. Use the mounting information from Figure 1. The location should be clean and dry, and free from excessive vibration, corrosive fumes, and heat.

4.1. D GND \bar{D} , Pins 1-3

Connect the INCOM network twisted pair to the D GND \bar{D} connector. One lead goes to pin 1 and the other goes to pin 3 - the polarity does not matter. Do not connect any wiring to pin 2. The shields of the INCOM network twisted pairs should be connected together but not connected to FONE, earth ground, or any slave device.

4.2. POWER IN ac/dc, Pins 1-2

Connect the battery (or optionally 120 Vac if using

the high voltage model) to the POWER IN AC/DC connector. The polarity does not matter, however, the voltage range must be observed. Be sure to have the correct voltage for the model of FONE being used.

4.3. DATA TRANS/DATA REC Connectors

Select a good quality duplex, multimode (e.g. 50/125 or 62.5/125 fiber) fiber optic cable. For the greatest range, use 62.5/125 fiber. With this fiber, FONEs can be separated up to 10,000 feet (3 km). Attach ST style fiber optic connectors, identifiable by the bayonet appearance of the connector housing, using the connector manufacturer's recommended procedures.

Connect the incoming cable to the DATA REC connector and the outgoing cable to the DATA TRANS connector.

Make sure that the individual cable legs are reversed at the other end of the link, so that an optical transmitter "talks" to an optical receiver.

5. OPERATION

If you previously had two individual networks, be sure that all devices on the new, larger network have unique network addresses, and that there is only one master, IMAC or a MINT, connected to this network.

Once the FONE is installed between two working INCOM daisy chains, *you should be able to communicate with devices on both sides of the fiber optic link as if you have only one INCOM network.*

Three LEDs are located near the fiber optic connectors which indicate the status of the FONE. The red LED is outside of the connectors and the yellow and green LEDs are located between the connectors.

The red LED will glow when voltage is applied to FONE.

The green LED indicates when the FONE is transmitting light pulses on the fiber.

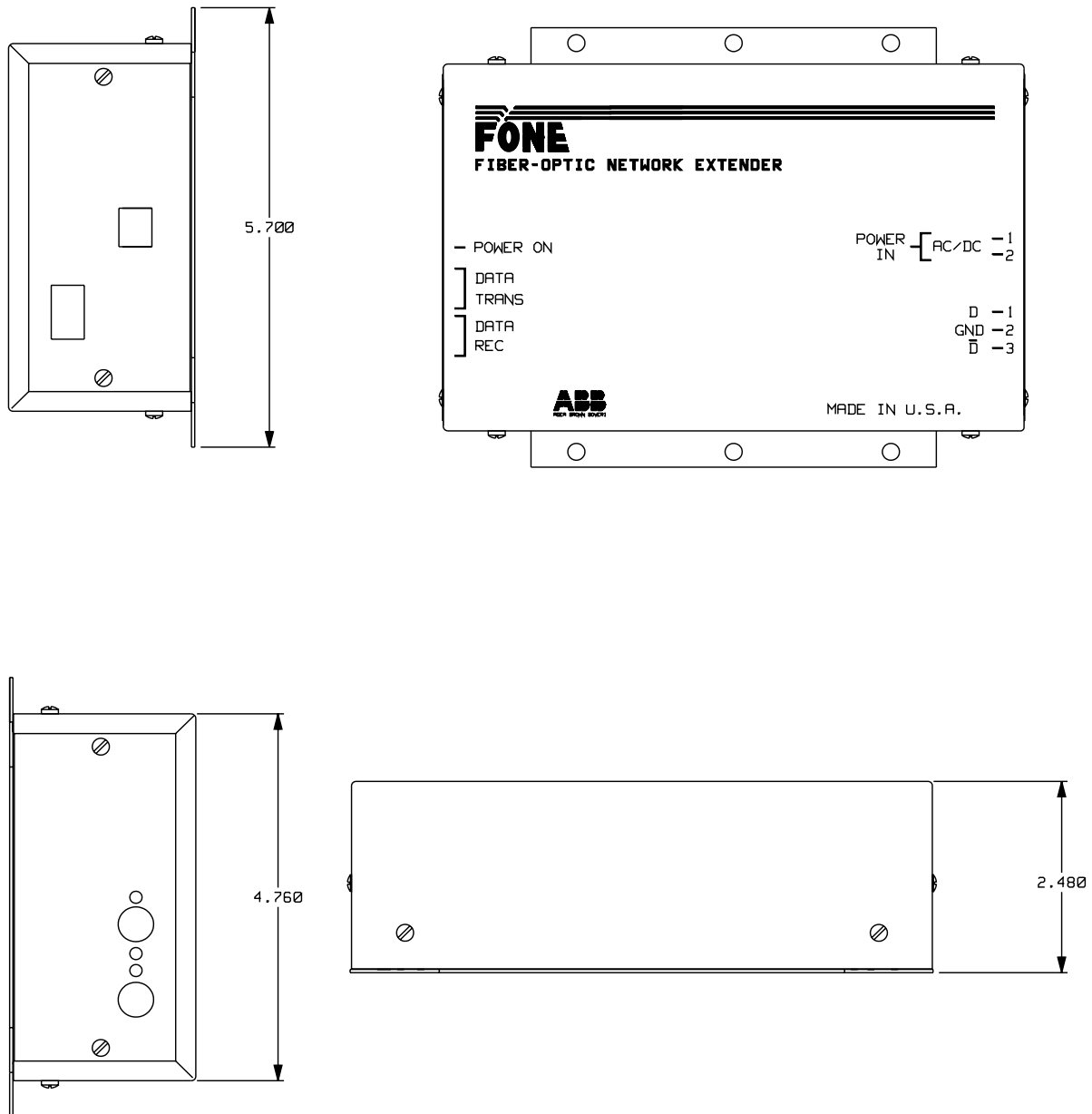
The yellow LED indicates when the FONE receiver is accepting incoming light pulse from the other fiber.

5.1. ABB Bulletin Board (BBS)

The ABB Relay Division Bulletin Board (BBS) is now on line. To obtain the latest version of IMAC or RCP software, please call the ABB BBS via modem at:

(800) 388-0581 or (954) 755-3250

Using configuration settings 300 -14,400 bits/second, 8 data bits, 1 stop bit, no parity and full duplex. Once the connection is established and login is completed, choose L - Library of files from the TOP menu. Next, select D - Down Load File, from the Library of files, RCPxxx.EXE (where xxx is the most recent version number e.g., 180 for version 1.80). RCPxxx.EXE is a compressed, self extracting file which is expanded and installed by simply typing RCPxxx and following the instructions.



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Figure 1. FONE Mechanical Outline Drawing

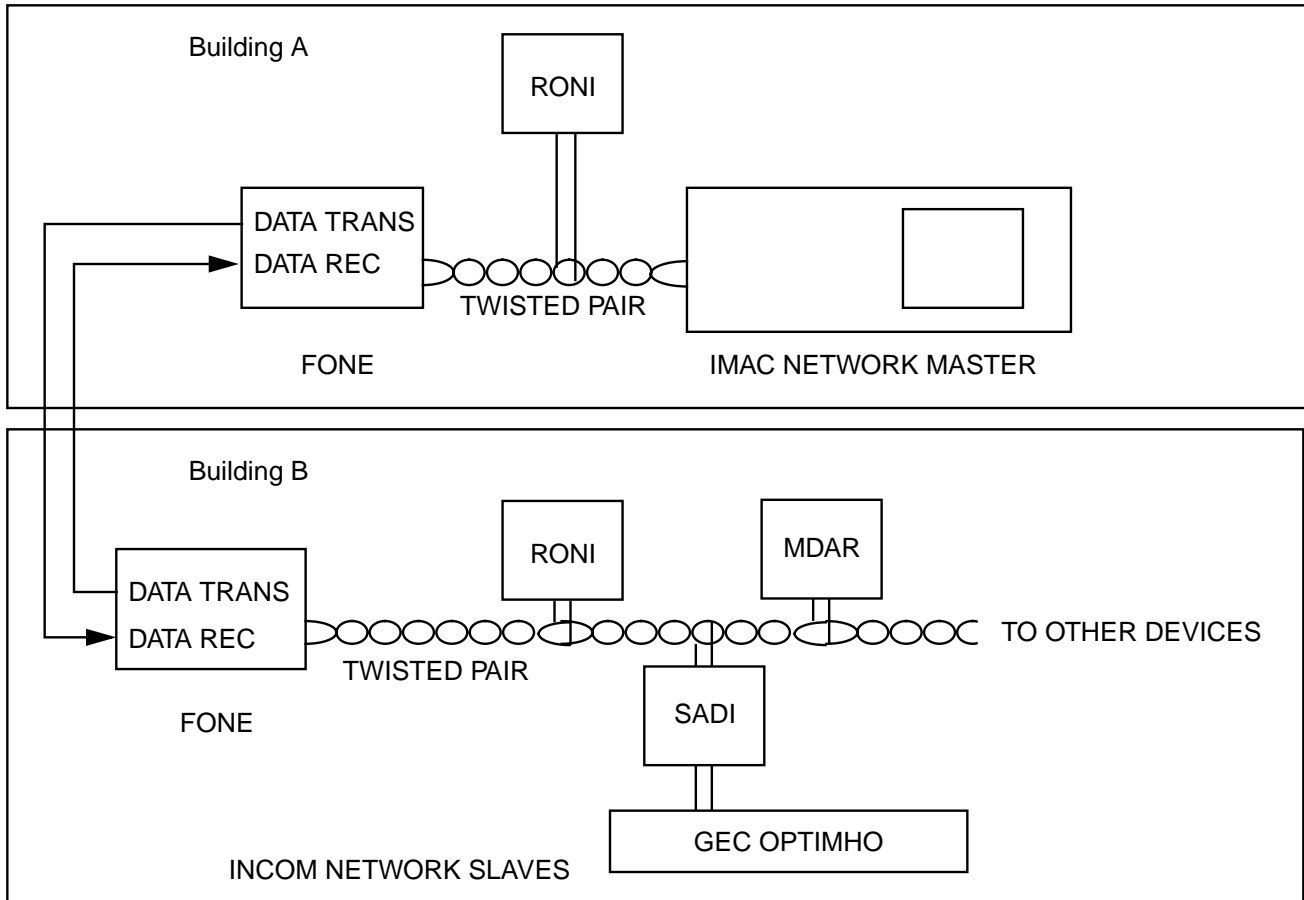
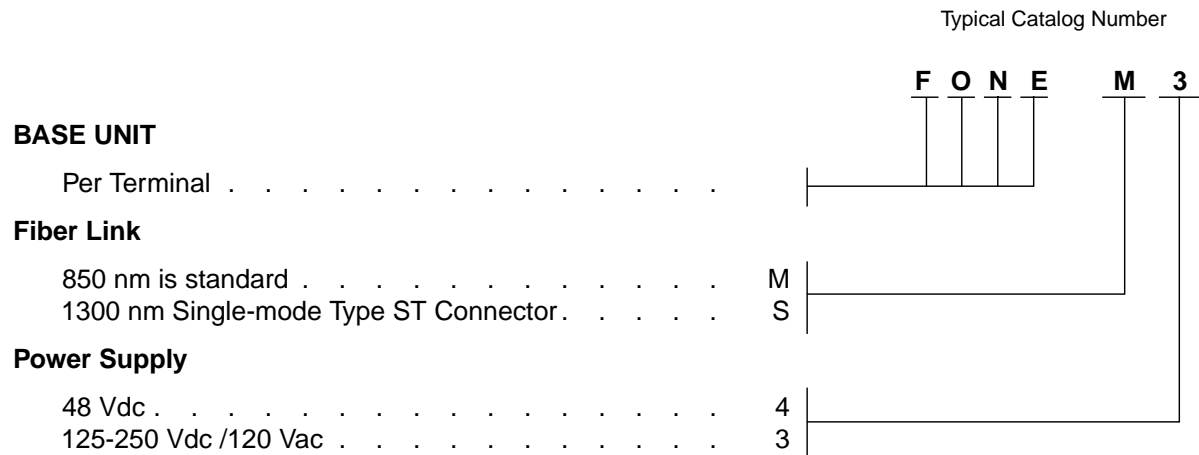


Figure 2. Typical FONE Connection Between Networks

FONE Ordering/Style Description

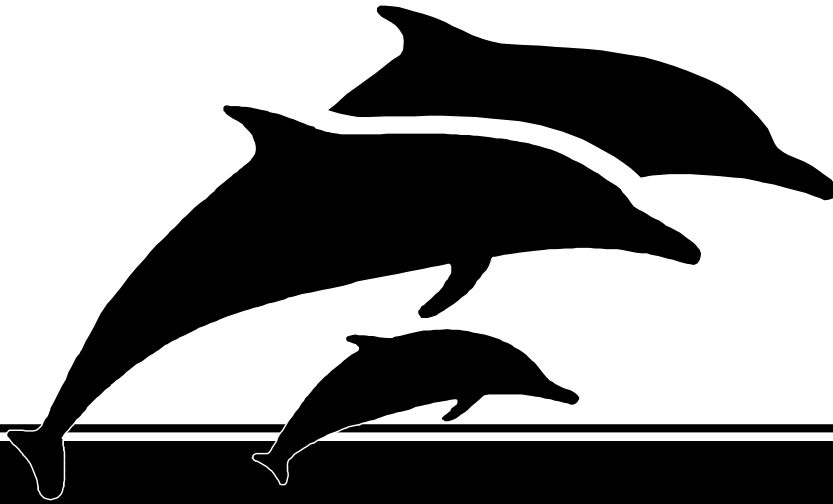
FIBER-OPTIC NETWORK EXTENDER



USER'S GUIDE

FONE

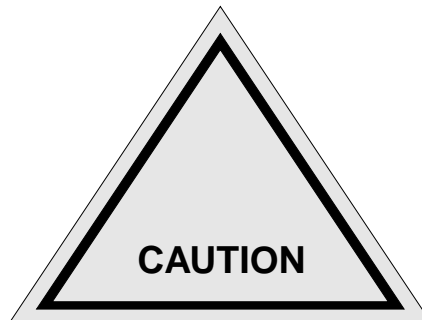
Fiber Optic
Network Extender



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Substation Control and Communications

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Relay Division
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We recommend that the user of this equipment become acquainted with the information in this instruction leaflet before energizing the system. Failure to do so may result in injury to personnel or damage to the equipment, and may affect the equipment warranty.

All integrated circuits used on the modules are sensitive to and can be damaged by the discharge of static electricity. Electrostatic discharge (ESD) precautions should be observed when handling modules or individual components.

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