

**PRO-2200  
RS-485 Multiplexer  
Installation Manual  
Part Number: PRO22MX8**



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## Warnings and Cautions

### WARNING



Before installation, **TURN OFF** the external circuit breaker which supplies power to the system.

Before connecting the device to the power supply, verify that the output voltage is within specifications of the power supply.

Do not apply power to the system until **after** the installation has been completed.

Personal injury or death could occur, and the equipment could be damaged beyond repair, if these WARNINGS are not observed!

### WARNING



#### Fire Safety and Liability Notice

Never connect card readers to any critical entry, exit door, barrier, elevator or gate without providing **an alternative exit** in accordance with all fire and life safety codes pertinent to the installation. These fire and safety codes vary from city to city and you must get approval from local fire officials whenever using an electronic product to control a door or other barrier. Use of egress buttons, for example, may be illegal in some cities. In most applications, single action exit without prior knowledge of what to do is a life safety requirement. Always make certain that any required approvals are obtained in writing. **DO NOT ACCEPT VERBAL APPROVALS, THEY ARE NOT VALID.**

Engineered Systems never recommends using the PRO-2200 Series or related products for use as a primary warning or monitoring system. Primary warning or monitoring systems should always meet local fire and safety code requirements. The installer must also test the system on a regular basis by instructing the end user in appropriate daily testing procedures. Failure to test a system regularly could make installer liable for damages to the end user if a problem occurs.

### WARNING



EARTH ground all enclosures, for proper installation.

### WARNING



Use suppressors on all door strikes. Use S-4 suppressors for installation. Engineered Systems recommends only DC strikes.

## CAUTION

IF ANY DAMAGE TO THE SHIPMENT IS NOTICED, A CLAIM MUST BE FILED WITH THE COMMERCIAL CARRIER RESPONSIBLE.

## CAUTION



Electro-static discharge can damage CMOS integrated circuits and modules.

To prevent damage always follow these procedures:

Use static shield packaging and containers to transport all electronic components, including completed reader assemblies.

Handle all ESD sensitive components at an approved static controlled workstation. These workstations consist of a desk mat, floor mat and an ESD wrist strap. Workstations are available from various vendors.

## NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules when wired using metal conduit for the cabling external to the enclosure. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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## Unpacking Procedure

### CAUTION

If any damage to the shipment is noticed before unpacking, a claim must be filed with the commercial carrier.

All containers should be opened and unpacked carefully in order to prevent damage to the contents.

The following steps are used to unpack equipment in preparation for installation:

1. Open the container and remove the unit(s) and all packing material. Retain the container and all packing materials. It may be used again for reshipment of equipment, if needed.
2. Inspect the contents for shortage. If items are missing items, contact the order entry department at 800-323-4576.
3. Visually check contents. If damage is discovered, perform the following:
  - If shipping caused damage to the unit, a claim must be filed with the commercial carrier.
  - If any other defect is apparent, call 800-323-4576 for a return authorization.

## Shipping Instructions

To ship equipment back to Engineered Systems:

1. Contact the customer service department at 800-323-4576 before returning equipment.

When calling, please have available:

- Description of the problem or reason for returning the equipment.
  - Original purchase order number, invoice number and if the unit is still under warranty.
  - A new purchase order number if not under warranty.
2. Obtain the Return Authorization Number (RMA) from the customer service department at 800323-4576.
  3. Show the RMA number on all packages shipped. Packages, which are not marked with an RMA number will be refused at the factory and returned COD.
  4. Carefully pack the equipment for shipment. Use the original packing material whenever possible.

## Limited Warranty

All Products sold or licensed by Engineered systems include a warranty registration card which must be completed and returned to Engineered Systems by or on behalf of the end user in order for Engineered Systems to provide warranty service, repair, credit or exchange. All warranty work shall be handled through Customer which shall notify Engineered Systems and apply for a Return Merchandise Authorization (RMA) number prior to returning any Product for service, repair, credit or exchange. Engineered Systems warrants that its Products shall be free from defects in materials and workmanship for a period of two years from date of shipment of the Product to Customer. The warranty on Terminals, Printers, Communications Products and Upgrade kits is 90 days from date of shipment. Satisfaction of this warranty shall be limited to repair or replacement of Products which are defective or defective under normal use. Engineered Systems' warranty shall not extend to any Product which, upon examination, is determined to be defective as a result of misuse, improper storage, incorrect installation, operation or maintenance, alteration, modification, accident or unusual deterioration of the Product due to physical environments in excess of the limits set forth in Product manuals.

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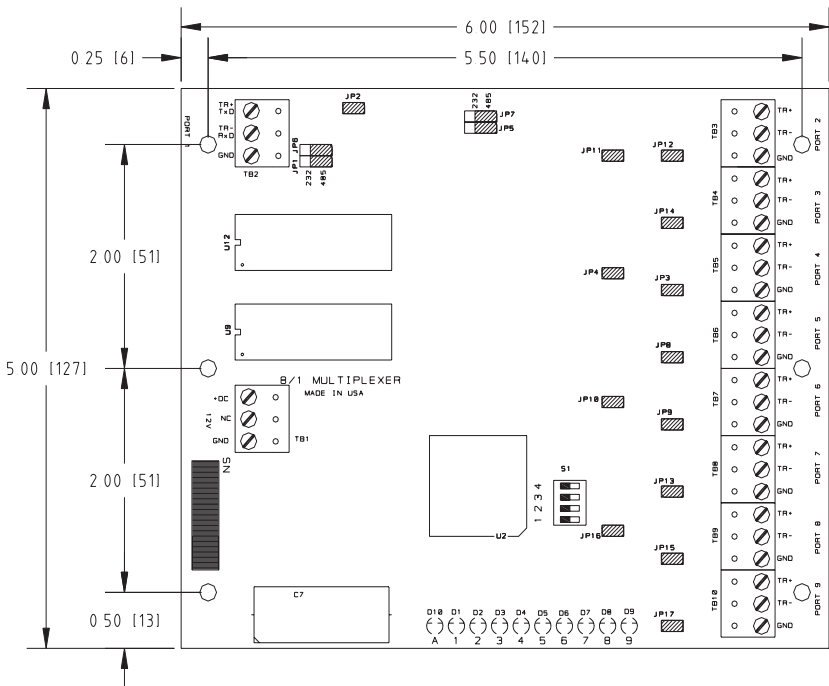


## RS-485 MULTIPLEXER (PRO22MX8)

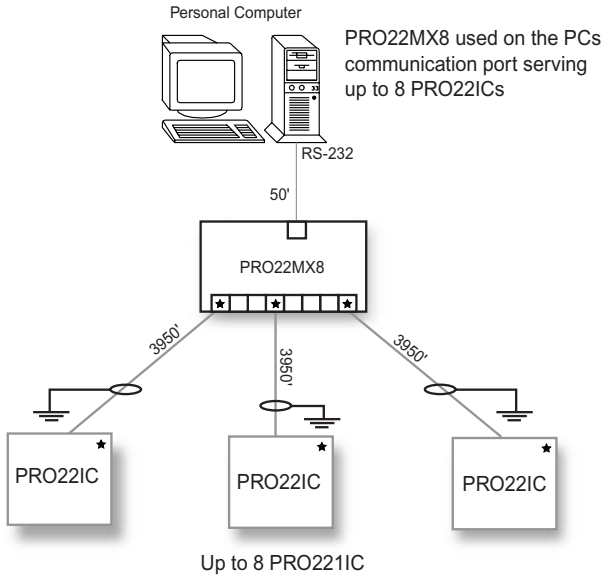
The Multiplexer allows a controller to expand a single communication port to eight RS-485 channels, thus making it convenient to implement star wiring topology. All nine channels on the multiplexer are universal with regard to master/slave devices.

The electrical interface for port 1 is jumper selectable as RS-232 or RS-485.

Baud rate dependent turn around delay is set by DIP switches. The typical turn around time is set to approximately 10 bit time (e.g. for 300 bps, it is  $10 \times (1/300) = 33.3$  mS.) To avoid collision, a device must wait for this time before it can begin a new transmission. Set the dip switches appropriately according to the Baud rate.

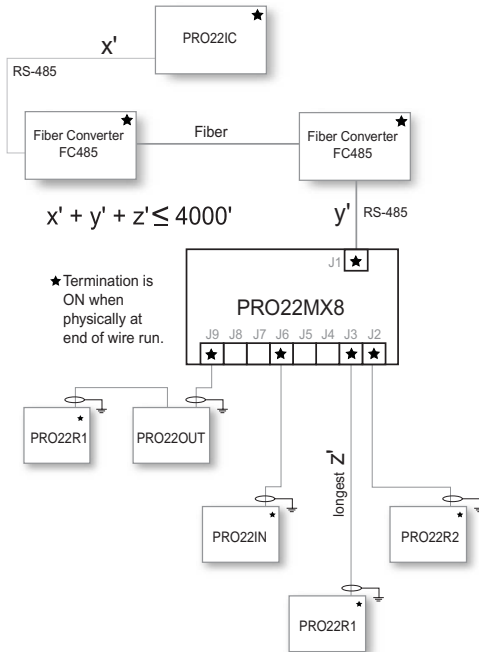






★ Termination is ON when physically at end of wire run.

Using Fiber Converters between the PRO221C and the PRO22MX8



### JUMPER AND SWITCH USAGE

See the following tables for jumper and DIP switch setting.

#### JUMPER TABLE

| JUMPERS            | SET AT | SELECTED                  |
|--------------------|--------|---------------------------|
| JP1, JP5, JP6, JP7 | 232    | PORT 1 is RS-232          |
|                    | 485    | PORT 1 is RS-485          |
| JP11               | OFF    | Reserved                  |
|                    | ON     | PORT 2 is 2-WIRE RS-485   |
| JP4                | OFF    | Reserved                  |
|                    | ON     | PORT 4 is 2-WIRE RS-485   |
| JP10               | OFF    | Reserved                  |
|                    | ON     | PORT 6 is 2-WIRE RS-485   |
| JP16               | OFF    | Reserved                  |
|                    | ON     | PORT 8 is 2-WIRE RS-485   |
| JP2                | ON/OFF | PORT 1 RS-485 TERMINATION |
| JP12               | ON/OFF | PORT 2 RS-485 TERMINATION |
| JP14               | ON/OFF | PORT 3 RS-485 TERMINATION |
| JP3                | ON/OFF | PORT 4 RS-485 TERMINATION |
| JP8                | ON/OFF | PORT 5 RS-485 TERMINATION |
| JP9                | ON/OFF | PORT 6 RS-485 TERMINATION |
| JP13               | ON/OFF | PORT 7 RS-485 TERMINATION |
| JP15               | ON/OFF | PORT 8 RS-485 TERMINATION |
| JP17               | ON/OFF | PORT 9 RS-485 TERMINATION |

#### DIP SWITCH TABLE ( Sets the turn around time )

| S4  | S3  | S4  | S1  | SELECTION            |
|-----|-----|-----|-----|----------------------|
| OFF | OFF | OFF | OFF | 300 BPS              |
| OFF | OFF | OFF | ON  | 1200 BPS             |
| OFF | OFF | ON  | OFF | 2400 BPS             |
| OFF | OFF | ON  | ON  | 4800 BPS             |
| OFF | ON  | OFF | OFF | 9600 BPS             |
| OFF | ON  | OFF | ON  | 19200 BPS/384000 BPS |
| OFF | ON  | ON  | OFF | Reserved             |
| OFF | ON  | ON  | ON  | Reserved             |

**SPECIFICATION**

The multiplexer is for use in low voltage, class 2 circuit only.

**Primary Power**

**DC input:** 12Vdc $\pm$ 15%, 250mA

**Interfaces**

**Port 1:** RS-232/RS-485, selectable

**Port 2-9:** RS-485, Transmit/Receive

**Wire Requirement**

**Power:** 1 twisted pair, 18 AWG

**RS-485:** 120 ohm impedance, 12.8 pF capacity,  
two twisted pair foil shield, 4000' max use  
NCP2442-TN for Plenum applications or  
NC2442-TN for Non-Plenum applications

**RS-232:** 24AWG, 50ft (15m) max.

**Environmental**

**Temperature:** Operating 32° F to 122° F (0° C to 50° C)  
Storage -67° F to 185° F (-55° C to +85° C)

**Humidity:** 0 to 95% RHNC

**Mechanical**

**Dimension:** 5" L x 6" W x 1" H  
(127 mm L x 152 mm W x 25 mm H)

**Weight:** 4 oz (180 g) nominal



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