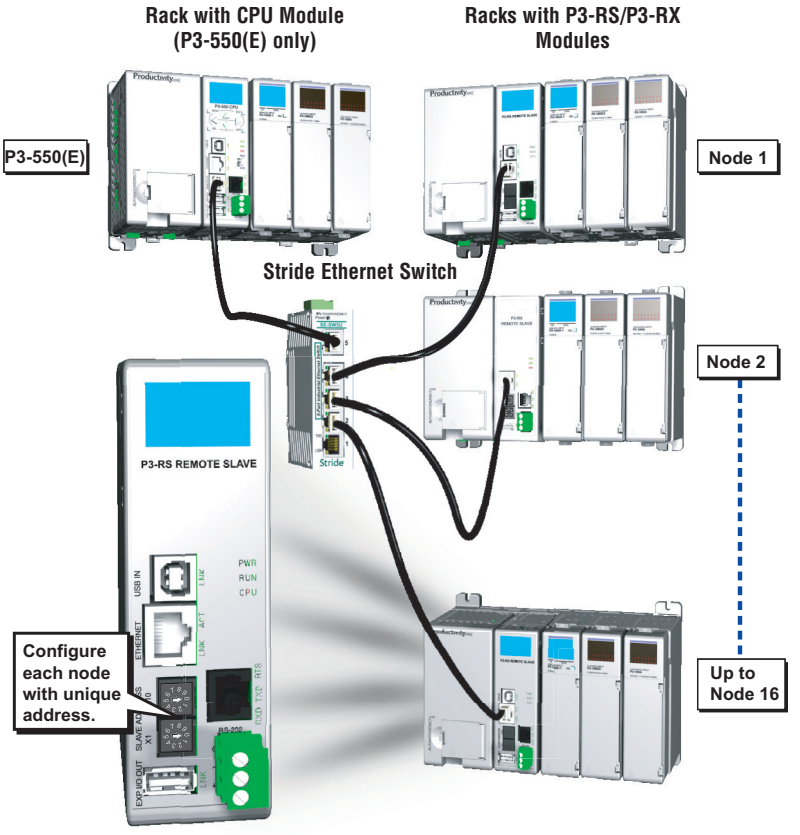
# Remote Slave Modules

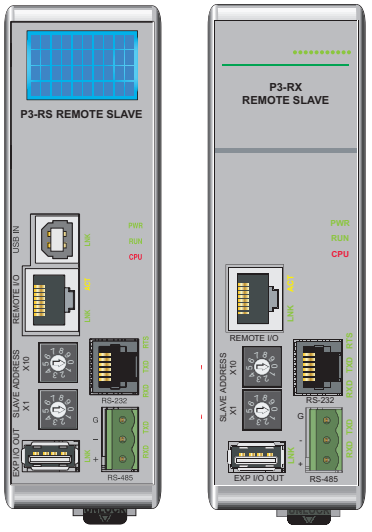
## P3-RS

## P3-RX

The P3-RS and P3-RX are high-performance Remote Slave modules (for use with P3-550 CPU-based systems only). Both modules have several communications ports which support USB Expansion I/O, Ethernet Remote I/O and serial devices. The P3-RS also includes a 4 line x 10 charactor LCD display and an additional USB IN (type B) port for remote CPU programming and monitoring.

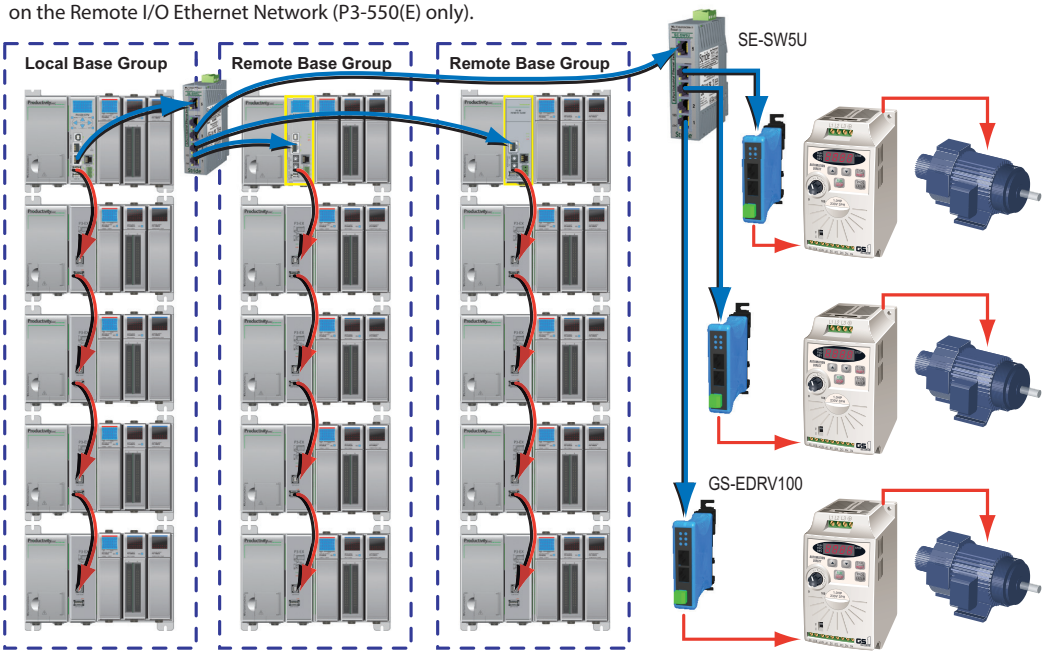
Up to 16 Remote Slaves can be connected to a single CPU for a remote I/O network.




Add up to 16 Remote Base Groups using P3-RS or P3-RX Remote Slave modules and up to 32 GS Drives on the Remote I/O Ethernet Network (P3-550(E) only).

**Add up to 4 bases to each group using P3-EX expansion modules with USB connections.**



# Remote Slave Modules

| Remote Slave Specifications (for P3-550(E)) | |
|---|---|
| Mounting Location | Controller slot |
| Display (P3-RS only) | LCD, 4x10 characters, backlit, LCD characters are 5x7 with a dot pitch of 0.45 mm; 2.25 mm x 3.15 mm |
| Communications | **USB IN:** (2.0, Type B) Programming, Monitoring, Debug (P3-RS Only)<br>**REMOTE I/O:** (10/100 Mbps Ethernet) 1 P3-550<br>**EXP I/O OUT:** (2.0, Type A, Proprietary) 4 P3-EX Local Expansion Bases<br>**RS-232:** (RJ12, 1200–115.2k bps) ASCII, Modbus<br>**RS-485:** (Removable Terminal Included, 1200–115.2k baud) ASCII, Modbus |
| Max. Number of Ethernet Remote I/O Bases | 16 |
| Max. Number of Expansion I/O Bases | 68 (4 per CPU, 4 per Remote Base) |
| Max. Number of I/O per CPU System | 59,840 (CPU Base with 4 Expansion Bases plus 16 Remote Bases with 4 Expansion Bases per Remote, with 11 64-point I/O modules per base) |

| P3-RS/P3-RX Product Comparison | | |
|---|---|---|
| **remote I/O module** | **P3-RS** | **P3-RX** |
| LCD Display | ✓ | |
| USB Prog/Mon Port | ✓ | |
| Remote Port (in) | ✓ | ✓ |
| USB Local Expansion Port | ✓ | ✓ |
| RS-232 RJ12 Port | ✓ | ✓ |
| RS-485 Port | ✓ | ✓ |

| General Specifications | |
|---|---|
| Operating Temperature | 0°C– 60°C (32°F–140°F) |
| Storage Temperature | -20ºC–70ºC (-4ºF–158ºF) |
| Humidity | 5 to 95% (non-condensing) |
| Environmental Air | No corrosive gases permitted |
| Vibration | IEC60068-2-6 (Test Fc) |
| Shock | IEC60068-2-27 (Test Ea) |
| Heat Dissipation | 4W |
| Enclosure Type | Open equipment |
| Module Location | Controller slot in a remote base in a Productivity3000 system |
| Weight | 260g (9 oz) |
| Agency Approvals | UL508 file E157382, Canada & USA<br>UL1604 file E200031, Canada & USA<br>CE (EN61131-2*)<br>This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only. |

*Meets EMC and Safety requirements. See the Declaration of Conformity for details.

**IMPORTANT!**

| Hot-Swapping Information |
|---|
| **Note: This device cannot be Hot Swapped.** |

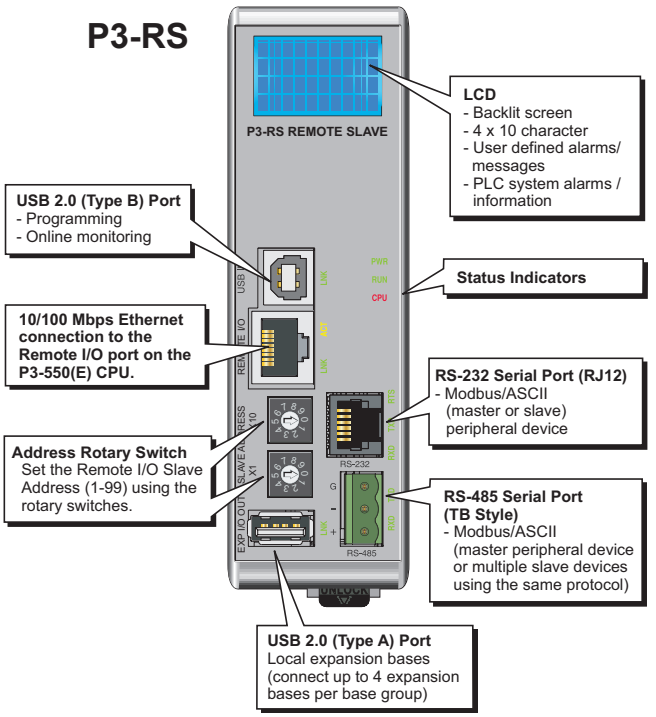
**WARNING: Explosion hazard – Substitution of components may impair suitability for Class I, Division 2.**

***NOTE:*** *When using the P3-RX, you must use Productivity3000® software version 1.0.7.XX and firmware version 1.1.13.XX or later.*

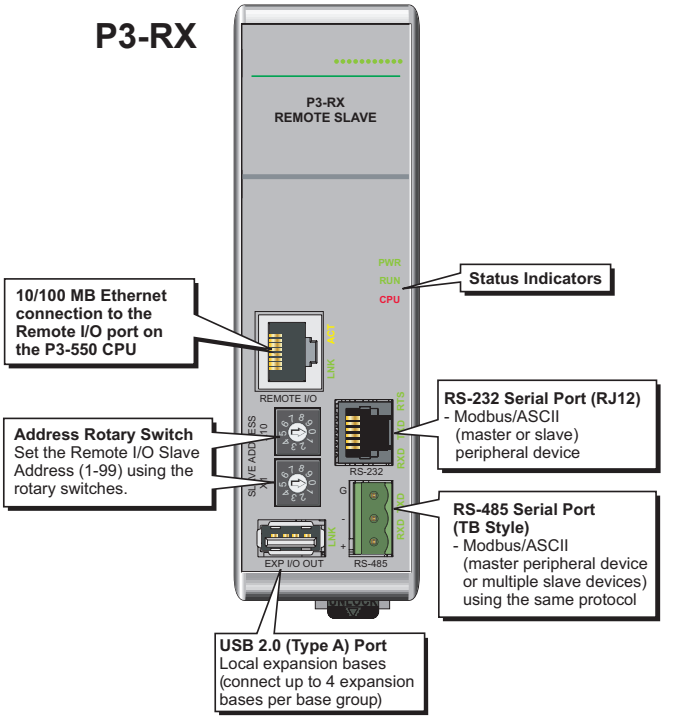
# Remote Slave Modules

## Front Panel

### P3-RS



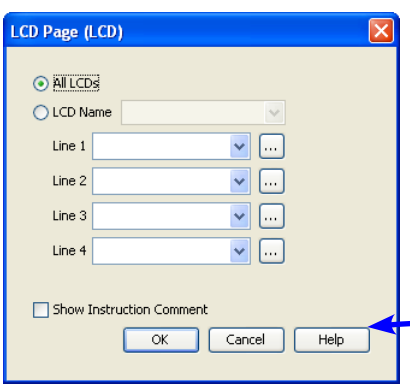

### P3-RX

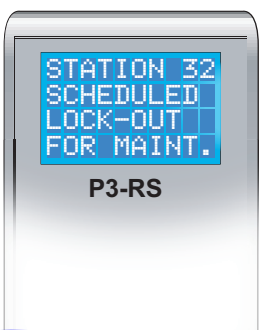



## LCD (P3-RS only)

The P3-RS incorporates a 4 line x 10 character LCD for system errors and information or for displaying user-defined messages.

LCD characters are 5x7 with a dot pitch of 0.45 mm; 2.25 mm x 3.15 mm.


For user-defined messages, the display is configured using the Productivity Suite Programming Software. An LCD Page instruction allows the user to program text into user-defined tags and display the messages based on the ladder execution.

See the Productivity Suite Programming Software Help Files for complete details.

## Status Indicators

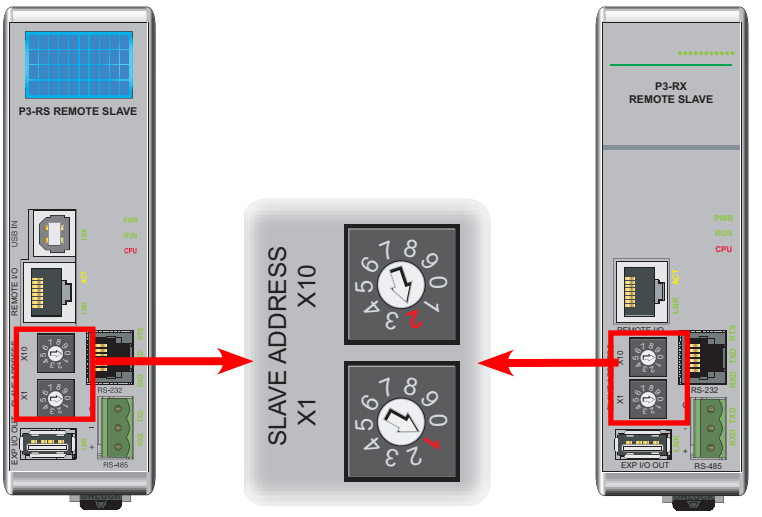
| RS Status Indicators | |
|---|---|
| PWR | Green LED is backlit when power is on |
| RUN | Green LED is backlit when CPU is in RUN mode |
| CPU | Red LED is backlit during power on reset, power down, or watch-dog time-out. |

# Remote Slave Modules

## Setting the Remote Slave Address

Each Remote Slave must have a unique address between 1 and 99. The address is set using the two rotary switches located on the face of the module, X10 for setting the tens units and X1 for setting the ones unit.

For example, to set a remote slave address to 21, turn the X10 arrow until it points at number 2 and the X1 arrow until it points at number 1.

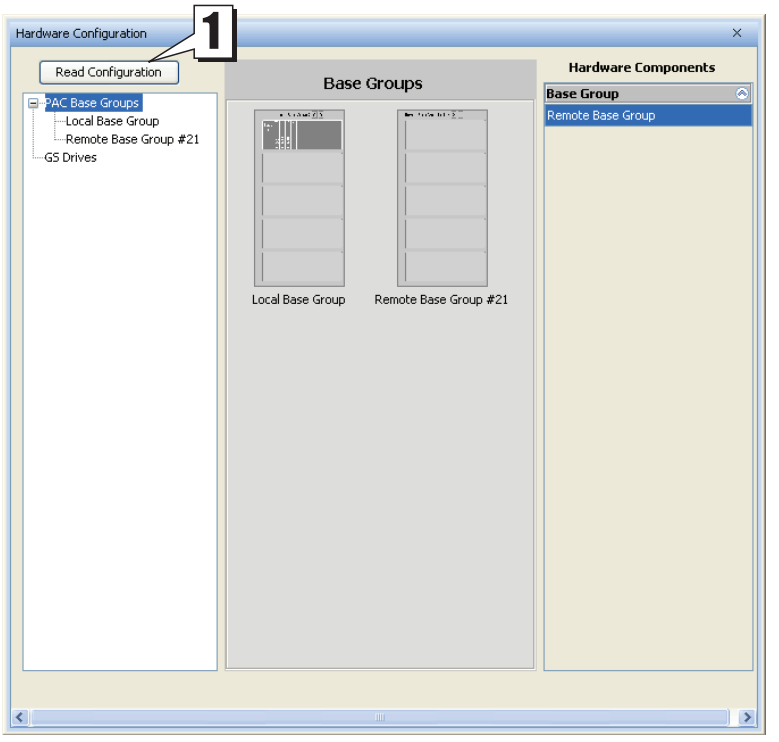



**IMPORTANT NOTES:**

- The factory setting of 00 is not a valid address.
- Address selection must be set prior to power-up.
- Slave addresses are only read on power-up.
- If there are duplicate slave addresses on the same network, a critical error will occur.

It is also necessary to configure the remote addresses using the Productivity Suite Programming Software.

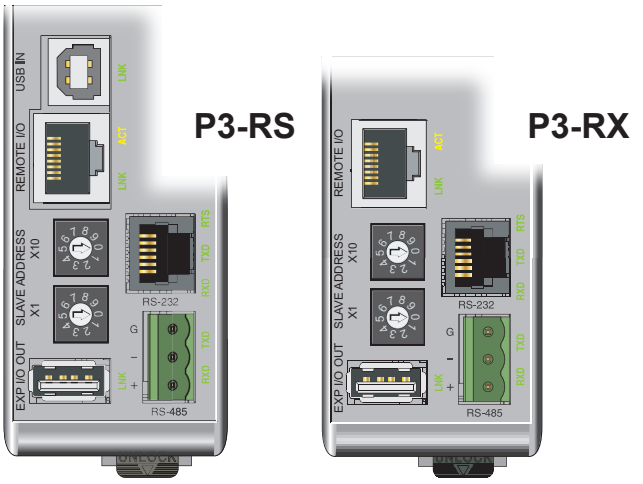
This can be done automatically by first going online with a Productivity3000 system that has slave modules installed, go to Hardware Configuration and select the Read Configuration (1) button. The CPU will automatically read the addresses of the remote slaves and add them to the configuration.



# Remote Slave Modules

## Port Specifications

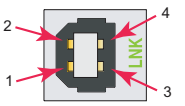
The P3-RS and P3-RX have several communications ports. The following pages have specifications and pin-out diagrams for these ports.




### USB IN Port (P3-RS only)

Standard USB 2.0 (Type B) Slave input for remote CPU programming and online monitoring, with built-in surge protection.

| USB IN Specifications | |
|---|---|
| Description | Standard USB 2.0 (Type B) Slave input for remote CPU programming and online monitoring, with built-in surge protection. Not compatible with older full speed USB devices. |
| Transfer Rate | 480 Mbps |
| Port Status LED | Green LED is illuminated when LINK is established to programming software. |
| Cables | USB Type A to USB Type B:<br>3ft cable part # USB-CBL-AB3<br>6ft cable part # USB-CBL-AB6<br>10ft cable part # USB-CBL-AB10<br>15ft cable part # USB-CBL-AB15 |



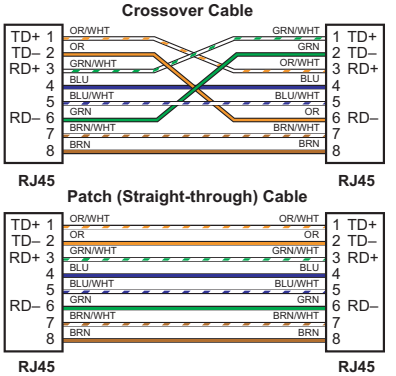

Mating face of USB type B female

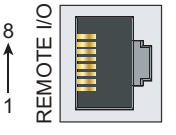
| Pin # | Signal |
|---|---|
| 1 | +5 |
| 2 | –Data |
| 3 | +Data |
| 4 | GND |

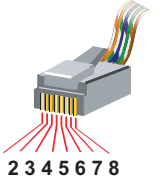
### Remote I/O Port

Isolated Ethernet Port with built-in surge protection for connection to P3-550 CPU Remote I/O Master port.

| Remote I/O Port Specifications | |
|---|---|
| Description | Proprietary transformer isolated Ethernet Port with built-in surge protection for connection to CPU Remote I/O Master port. |
| Transfer Rate | 10/100 Mbps |
| Port Status LEDs | Green LED is illuminated when network LINK is established. Yellow LED backlit when port is active (ACT). |
| Cables | Use a Patch (straight-through) cable when a switch or hub is used.<br>Use a Crossover cable when a switch or hub is not used.<br>(Cables available at automationdirect.com) |



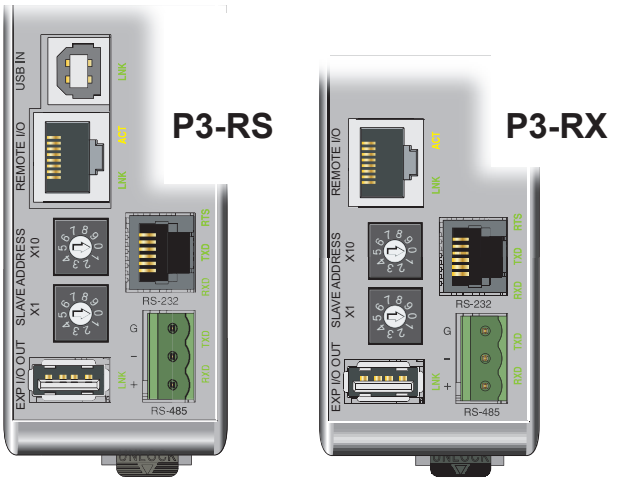




8-pin RJ45 Connector (8P8C)

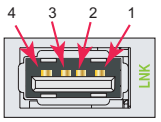
# Remote Slave Modules

## EXP I/O OUT Port

USB 2.0 (Type A) Master output for connection to up to four P3-EX local expansion bases, with built-in surge protection.




| EXP I/O OUT Specifications | |
|---|---|
| Description | Proprietary USB 2.0 (Type A) Master output for connection with up to four P3-EX local expansion bases, with built-in surge protection. |
| Transfer Rate | 480 Mbps |
| Port Status LED | Green LED is illuminated when LINK is established to connected device |
| Cables | USB Type A to USB Type B. The P3-EX Expansion Module includes a 6 foot USB cable, part number P3-EX-CBL6. |



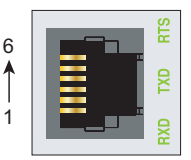

Mating face of USB type A female

| Pin # | Signal |
|---|---|
| 1 | Reset |
| 2 | – Data |
| 3 | + Data |
| 4 | GND |

## RS-232 Serial Port

Non-isolated RS-232 DTE port connects the P3-RS/P3-RX as a Modbus or ASCII master or slave to a peripheral device.

| RS-232 Specifications | |
|---|---|
| Description | Non-isolated RS-232 DTE port connects the P3-RS/P3-RX as a Modbus or ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection. |
| Data Rates | Selectable,1200, 2400, 9600, 19200, 33600, 38400, 57600, and 115200 baud. |
| +5V Cable Power Source | 210mA maximum at 5V, ±5%. Limited by self-resetting current limiting device. Reverse polarity protected. |
| TXD | RS-232 Transmit output |
| RXD | RS-232 Receive input |
| RTS | Handshaking output for modem control. |
| GND | Logic ground |
| Maximum Output Load (TXD/RTS) | 3kΩ, 1,000pf |
| Minimum Output Voltage Swing | ±5V |
| Output Short Circuit Protection | ±15mA |
| Port Status LED | Green LED is illuminated when active for TXD, RXD and RTS |
| Cable Options | FA-ISOCON for converting RS-232 to isolated RS-485 |



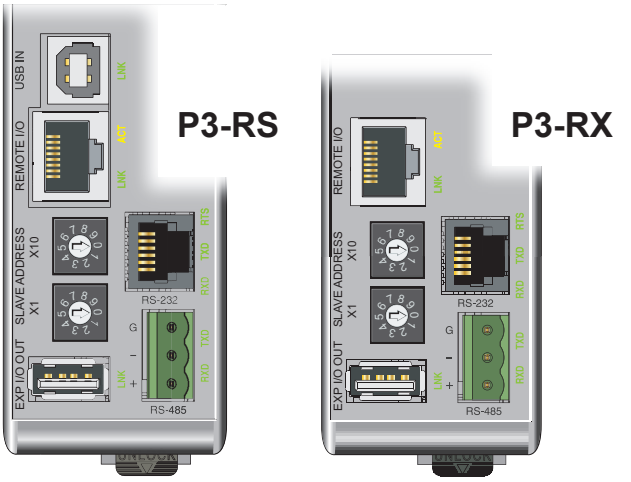

6-pin RJ12 Female Modular Connector

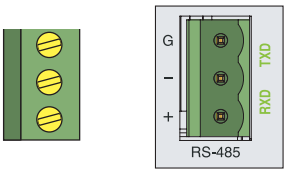
| Pin # | Signal | |
|---|---|---|
| 1 | GND | Logic Ground |
| 2 | +5V | 210 mA Maximum |
| 3 | RXD | RS-232 Input |
| 4 | TXD | RS-232 Output |
| 5 | RTS | Request to Send |
| 6 | GND | Logic Ground |

# Remote Slave Modules

### RS-485 Serial Port

Non-isolated RS-485 port connects the P3-RS or P3-RX as a Modbus or ASCII master or slave to a peripheral device. (Removable connector included.)




| Pin # | Signal |
|---|---|
| G | GND |
| – | TXD-/RXD- |
| + | TXD+/RXD+ |

*Removable connector included.

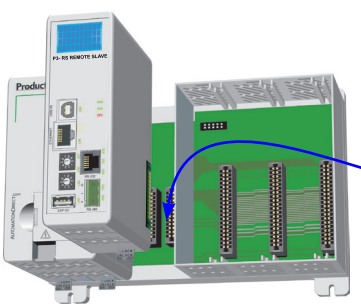
## RS-485 Specifications

| | |
|---|---|
| Description | Non-isolated RS-485 port connects the P3-RS/P3-RX as a Modbus or ASCII master or slave to a peripheral device. Includes ESD/EFT protection and automatic echo cancellation when transmitter is active. |
| Data Rates | Selectable, 1200, 2400, 9600, 19200, 33600, 38400, 57600, and 115200 bps. |
| TXD+/RXD+ | RS-485 transceiver high |
| TXD-/RXD- | RS-485 transceiver low |
| GND | Logic ground |
| Input Impedance | 19kΩ |
| Maximum load | 50 transceivers, 19kΩ each, 60Ω termination |
| Output Short Circuit Protection | ±250mA, thermal shut-down protection |
| Electrostatic Discharge Protection | ±8kV per IEC1000-4-2 |
| Electrical Fast Transient Protection | ±2kV per IEC1000-4-4. |
| Minimum Differential Output Voltage | 1.5 V with 60Ω load |
| Fail safe inputs | Logic high input state if inputs are unconnected |
| Maximum Common Mode Voltage | -7.5 V to 12.5 V. |
| Port Status LED | Green LED is illuminated when active for TXD and RXD |
| Cable Options | L19827-100<br>L19827-500<br>L19827-1000<br>Belden 9841 equivalent |

## Terminal Block Specifications

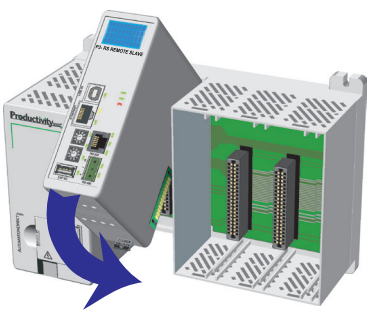
| | |
|---|---|
| Number of Positions | 3 |
| Pitch | 5mm |
| Wire Range | 28–12 AWG Solid Conductor<br>30–12 AWG Stranded Conductor |
| Screw Driver Width | 1/8 inch (3.175 mm) maximum |
| Screw Size | M2.5 |
| Screw Torque | 4.5 lb·in (0.51 N·m) |

## Installation Procedure



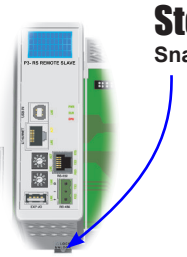
### Step One:

**Locate the two sockets next to the power supply; the module will be inserted into this location.**



### Step Two:

**Insert at a 45° angle into the notch located at the top of the base and rotate down until seated.**



### Step Three:

**Snap retaining tab into the locked position.**

**WARNING: Explosion hazard – Do not connect or disconnect connectors or operate switches while circuit is live unless the area is known to be non-hazardous. Do not hot swap.**