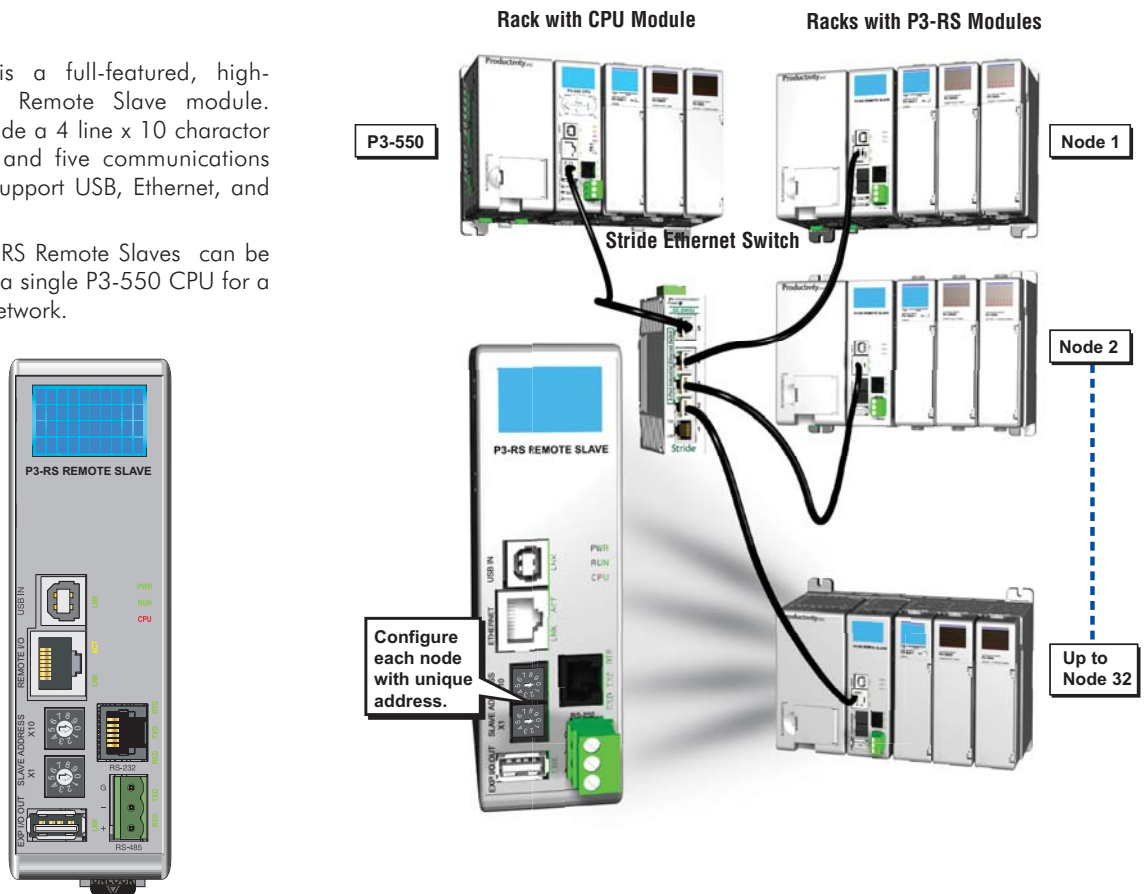# P3-RS Remote Slave Module
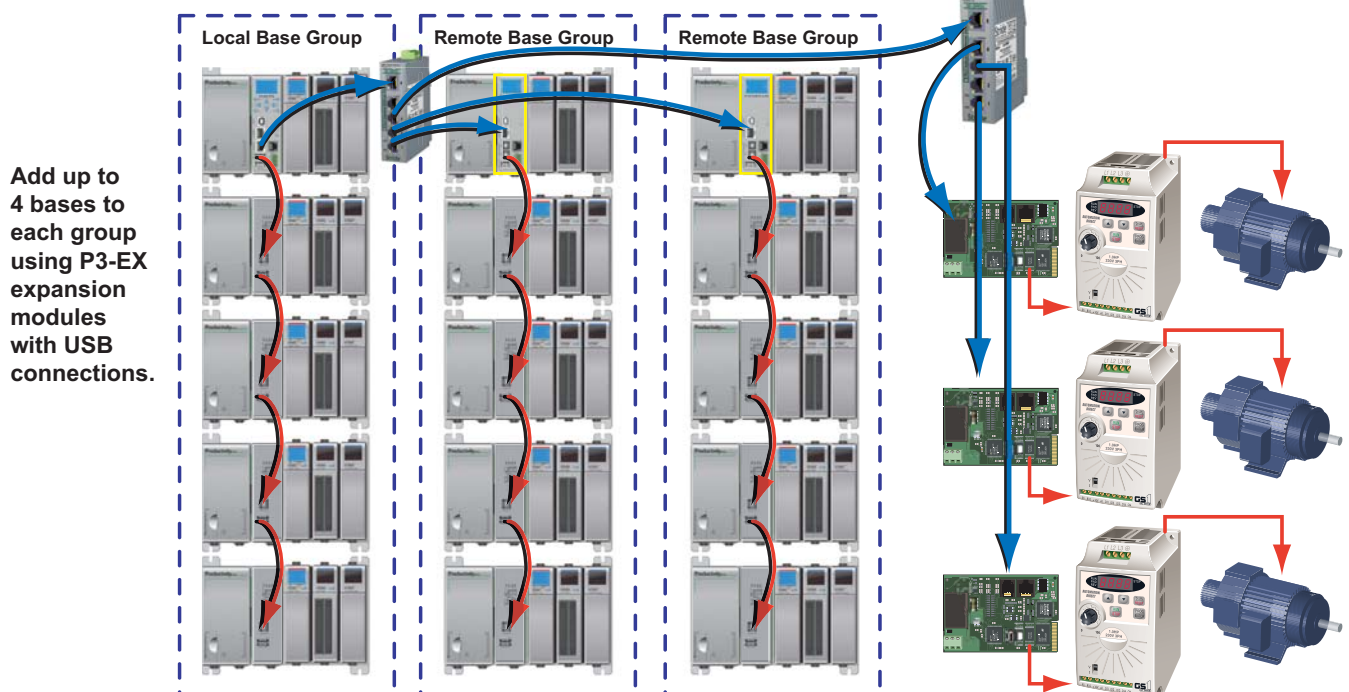
P3-RS

The P3-RS is a full-featured, high-performance, Remote Slave module. Features include a 4 line x 10 charactor LCD display and five communications ports which support USB, Ethernet, and serial devices.

Up to 32 P3-RS Remote Slaves can be connected to a single P3-550 CPU for a remote I/O network.

Rack with CPU Module

Racks with P3-RS Modules

P3-550

Node 1

Stride Ethernet Switch

Node 2

Configure each node with unique address.

Up to Node 32

Add up to 32 Remote Base Groups using P3-RS Remote Slave modules and up to 64 GS Drives on the Remote I/O Ethernet Network.

Local Base Group

Remote Base Group

Remote Base Group

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

P3-RS Remote Slave Module

Remote Slave Specifications

Mounting Location	Controller slot
Display	LCD, 4x10 characters, backlit, 8 control buttons; LCD characters are 5x7 with a dot pitch of 0.45mm; 2.25mm x 3.15mm
Communications - 5 Integrated Ports	**USB IN:** (2.0, Type B) Programming, Monitoring, Debug **REMOTE I/O:** (10/100Mbps Ethernet) 1 P3-550 **EXP I/O OUT:** (2.0, Type A, Proprietary) 4 P3-EX Local Expansion Bases **RS-232:** (RJ12, 1200-115.2k Baud) ASCII, Modbus **RS-485:** (Removable Terminal Included, 1200-115.2k Baud) ASCII, Modbus
Max. Number of Ethernet Remote I/O Bases	32
Max. Number of Expansion I/O Bases	132 (4 per CPU, 4 per Remote Base)
Max. Number of I/O per CPU System	116,160 (CPU Base with 4 Expansion Bases plus 32 Remote Bases with 4 Expansion Bases per Remote, with 11 64-point I/O modules per base)

General Specifications

Operating Temperature	0° to 60°C (32° to 140°F)
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Environmental Air	No corrosive gases permitted
Vibration	MIL STD 810C 514.2
Shock	MIL STD 810C 516.2
Heat Dissipation	4W
Enclosure Type	Open Equipment
Agency Approvals	UL508 file E157382, Canada & USA UL1604 file E200031, Canada & USA CE (EN61131-2*) This equipment is suitable for use in Class 1, Division 2, Groups A, B, C and D or non-hazardous locations only.
Module Location	Controller slot in a remote base in a Productivity3000 System
EU Directive	See the "EU Directive" topic in the Productivity3000 Help File. Information can also be obtained at: www.productivitypac.com
Weight	260g (9 oz)

*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.

P3-RS Remote Slave Module

Front Panel

P3-RS REMOTE SLAVE

LCD
- Backlit screen
- 4 x 10 character
- User defined alarms/ messages
- PLC system alarms / information

USB 2.0 (Type B) Port
- Programming
- Online monitoring

Status Indicators

10/100 MB Ethernet connection to the Remote I/O port on the P3-550 CPU.

RS-232 Serial Port (RJ12)
- Modbus/ASCII (master or slave) peripheral device

Address Rotary Switch
Set the Remote I/O Slave Address (1-99) using the rotary switches.

RS-485 Serial Port (TB Style)
- Modbus/ASCII (master peripheral device or multiple slave devices using the same protocol)

USB 2.0 (Type A) Port
Local expansion bases (connect up to 4 expansion bases per base group)

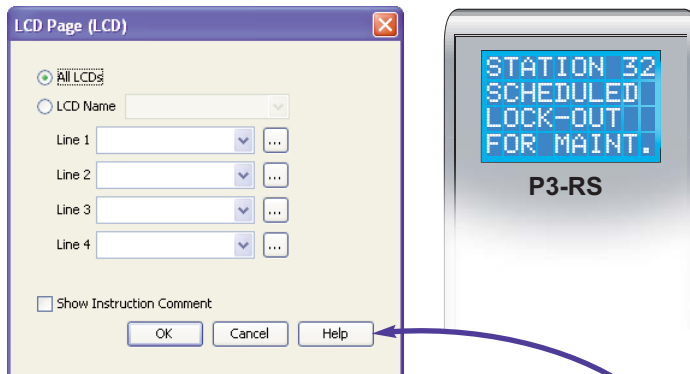## Status Indicators

PWR
RUN
CPU

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.

LCD

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 0.45mm; 2.25mm x 3.15mm.

```
P3-RS   G01
01-10-05
11:28:02
```

LCD Page (LCD)

All LCDs
LCD Name
Line 1
Line 2
Line 3
Line 4
Show Instruction Comment
OK   Cancel   Help

```
STATION 32
SCHEDULED
LOCK-OUT
FOR MAINT.
```

P3-RS
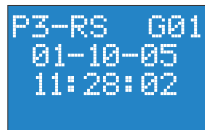
For user-defined messages, the display is configured using the Productivity Suite Programming Software. An LCD Page instruction allows the user to program text into user-defined tags and display the messages based on the ladder execution.

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

P3-RS Remote Slave Module

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.
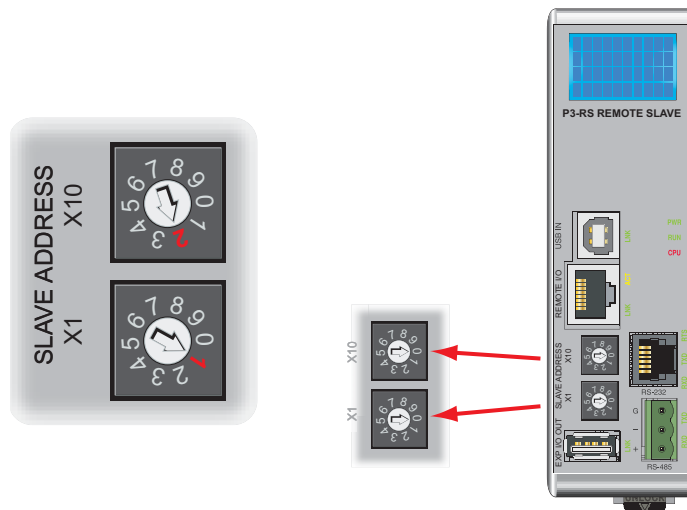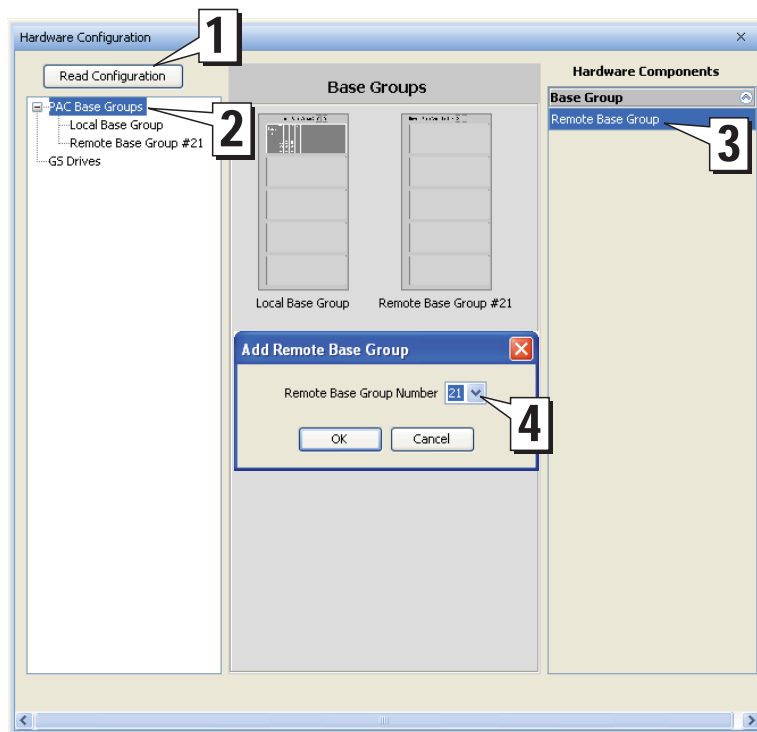
IMPORTANT NOTES:
- The factory setting of 00 is not a valid address.
- Address selection must be set prior to power-up.
- Slave addresses are only read on power-up.
- If there are duplicate P3-RS slave addresses on the same network, a critical error will be displayed on the CPU.

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

For example, if connected online to a P3000 system with slaves 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.

Company Info.

PLCs

Field I/O

Software

C-more & other HMI

AC Drives

AC Motors

Power Transmiss.

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

Pressure Sensors

Temp. Sensors

Pushbuttons/ Lights

Process

Relays/ Timers

Comm.

Terminal Blocks & Wiring

Power

Circuit Protection

Enclosures

Tools

Appendix

Part Index

P3-RS Remote Slave Module
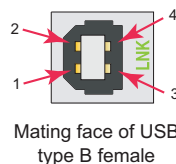
Port Specifications

The P3-RS has five communications ports. The following pages have specifications and pin-out diagrams for these ports.
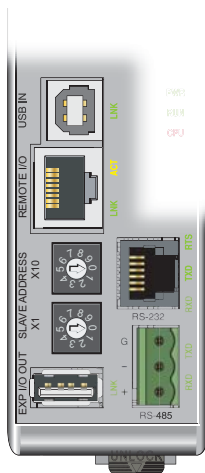
USB IN Port

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

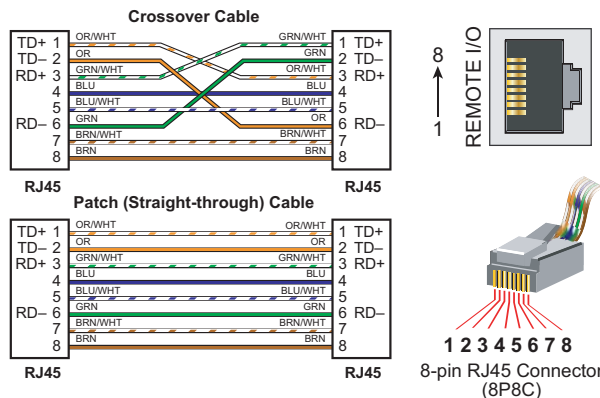| USB IN Specifications	
Description	Standard USB 2.0 (Type B) Slave input for remote CPU programming and online monitoring, with built-in surge protection. Not compatible with older full speed USB devices.
Transfer Rate	480 Mbps
Port Status LED	Green LED is illuminated when LINK is established to programming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

Crossover Cable

	RJ45			RJ45	
TD+	1	OR/WHT	GRN/WHT	1	TD+
TD–	2	OR	GRN	2	TD–
RD+	3	GRN/WHT	OR/WHT	3	RD+
	4	BLU	BLU	4	
	5	BLU/WHT	BLU/WHT	5	
RD–	6	GRN	OR	6	RD–
	7	BRN/WHT	BRN/WHT	7	
	8	BRN	BRN	8	

Patch (Straight-through) Cable

	RJ45			RJ45	
TD+	1	OR/WHT	OR/WHT	1	TD+
TD–	2	OR	OR	2	TD–
RD+	3	GRN/WHT	GRN/WHT	3	RD+
	4	BLU	BLU	4	
	5	BLU/WHT	BLU/WHT	5	
RD–	6	GRN	GRN	6	RD–
	7	BRN/WHT	BRN/WHT	7	
	8	BRN	BRN	8	

REMOTE I/O

8-pin RJ45 Connector (8P8C)

0 1 7 3 7   8 2 4 6 0 0

# P3-RS Remote Slave Module

Port Specifications

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.

4 3 2 1

Mating face of USB type A female
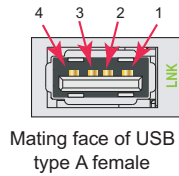
Pin #	Signal
1	Reset
2	– Data
3	+ Data
4	GND

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.
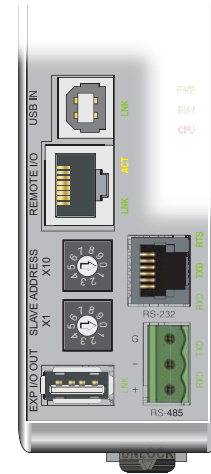
RS-232 Serial Port

Non-isolated RS-232 DTE port connects the P3-RS as a Modbus or ASCII master or slave to a peripheral device.
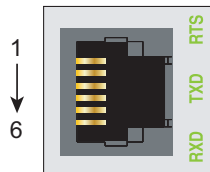
6-pin RJ12 Female Modular Connector

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

RS-232 Specifications

Description	Non-isolated RS-232 DTE port connects the P3-RS 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.
+5V Cable Power Source	210mA maximum at 5V, +/- 5%. Limited by resettable fuse. 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)	3K Ω, 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	D2-DSCBL
	USB-RS232 with D2-DSCBL
	FA-CABKIT
	FA-ISOCON for converting RS-232 to isolated RS-485

Company Info.

PLCs

Field I/O

Software

C-more & other HMI

AC Drives

AC Motors

Power Transmiss.

Steppers/ Servos

Motor Controls

Proximity Sensors

Photo Sensors

Limit Switches

Encoders

Current Sensors

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Comm.

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Enclosures

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Appendix
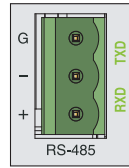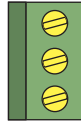
Part Index

P3-RS Remote Slave Module

Port Specifications

RS-485 Serial Port

Non-isolated RS-485 port connects the P3-RS as a Modbus or ASCII master or slave to a peripheral device.

Removable connector included. Spare connectors available (part no. P3-RS485CON).

Removable connector included

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

RS-485 Specifications	
Description	Non-isolated RS-485 port connects the P3-RS 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.
TXD+/RXD+	RS-485 transceiver high
TXD-/RXD-	RS-485 transceiver low
GND	Logic ground
Input Impedance	19K Ω
Maximum load	50 transceivers, 19K Ω each, 60 Ω 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	1.5V with 60 Ω load
Fail safe inputs	Logic high input state if inputs are unconnected
Maximum Common Mode Voltage	-7.5V to 12.5V.
Port Status LED	Green LED is illuminated when active for TXD and RXD
Cable Options	Recommend Beldon #9841 or equivalent
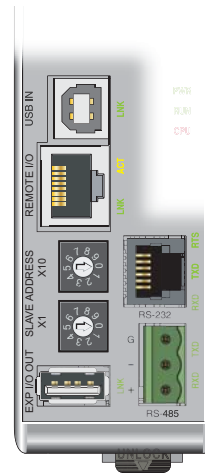
Installation Procedure
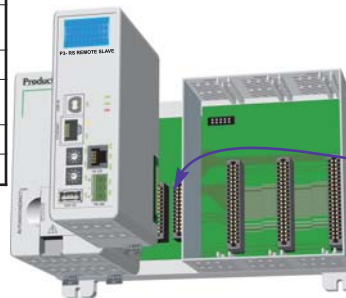
Step One:
Locate the two sockets next to the power supply; the P3-RS will be inserted into this location.

Step Two:
Insert P3-RS 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.