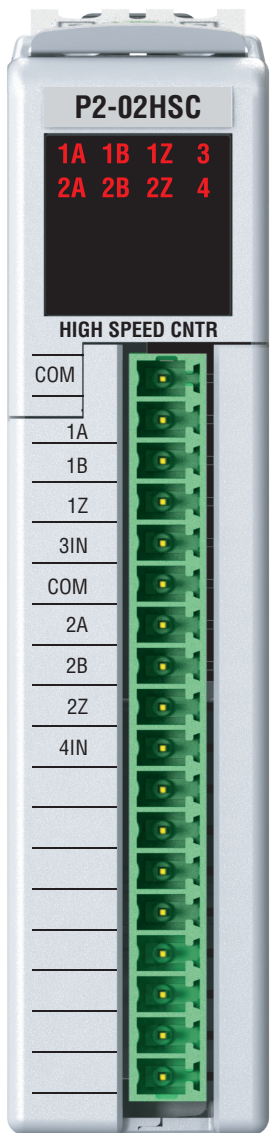


# Specialty Modules

## P2-02HSC

### High-Speed Counter Module

The P2-02HSC High-Speed Counter Module provides two independent single-ended 5–24 VDC inputs that accept up to 100kHz of pulse/direction and quadrature signals. Additionally, two 5–24 VDC general-purpose high-speed inputs are included for use with the Productivity® 2000 system.



Terminal block not included. Order P/N P2-RTB or P2-RTB-1

**Productivity Suite**  
Version 3.7.x.x or later.

Input Specifications	
<b>Inputs per Module</b>	Single ended Counter Inputs (6pts: 1A, 1B, 1Z, 2A, 2B, 2Z) General-purpose Inputs (3IN, 4IN)
<b>Rated Voltage</b>	5–24 VDC
<b>Operating Voltage Range</b>	4.25–27.6 VDC
<b>Input Current</b>	1.5 mA typical @ 4.25 VDC 11mA maximum @ 27.6 VDC
<b>Input Impedance</b>	2.5 kΩ
<b>Minimum ON Current</b>	1mA
<b>Maximum OFF Current</b>	0.4 mA
<b>Minimum ON Voltage</b>	4.5 VDC
<b>Maximum OFF Voltage</b>	2.2 VDC
<b>OFF to ON, ON to OFF Response</b>	2μs
<b>Minimum Direction Setup Time</b>	20μs
<b>Maximum Input Frequency</b>	100kHz
<b>Module Range</b>	Target position range ±2.147 billion (32-bit signed integer)
<b>Status Indicators Logic Side</b>	8 points
<b>Commons</b>	2 (4 points/common)

# Specialty Modules

## P2-02HSC (cont'd)

General Specifications	
<b>Operating Temperature</b>	0° to 60°C (32° to 140°F)
<b>I/O Points Used</b>	None, mapped directly to tags in CPU
<b>Storage Temperature</b>	-20° to 70°C (-4° to 158°F)
<b>Humidity</b>	5 to 95% (non-condensing)
<b>Environmental Air</b>	No corrosive gases permitted
<b>Vibration</b>	IEC 60068-2-6 (Test Fc)
<b>Shock</b>	IEC 60068-2-27 (Test Ea)
<b>Field to Logic Side Isolation</b>	1800VAC applied for 1 second
<b>Insulation Resistance</b>	>10MΩ @ 500VDC
<b>Heat Dissipation</b>	2400mW
<b>Terminal Type (sold separately)</b>	18-position removable terminal block
<b>Weight</b>	93g (3.3 oz)
<b>Agency Approvals</b>	UL 61010-1 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

\*Meets EMC and Safety Requirements. See the D.O.C. for details.

Removable Terminal Block Specifications		
Part Number	P2-RTB	P2-RTB-1
<b>Number of positions</b>	18 screw terminals	18 push release terminals
<b>Wire Range</b>	30–16 AWG (0.051–1.31 mm <sup>2</sup> ) Solid/stranded conductor 3/64 in (1.2 mm) insulation max. 1/4 in (6–7 mm) strip length	28–16 AWG (0.081–1.31 mm <sup>2</sup> ) Solid/stranded conductor 3/64 in (1.2 mm) insulation max. 19/64 in (7–8 mm) strip length
<b>Conductors</b>	USE COPPER CONDUCTORS, 75°C or equivalent.	
<b>Screw Driver Width</b>	0.1 in. (2.5 mm) maximum	NA
<b>Screw Size</b>	M2	N/A
<b>Screw Torque</b>	2.5 lb-in (0.28 N·m)	N/A

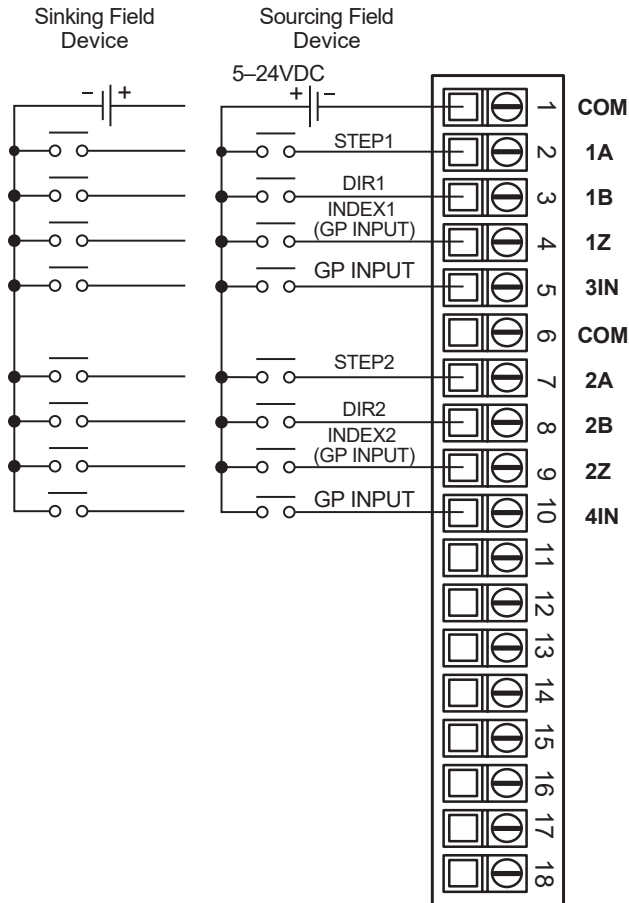
\* Recommended screw driver: P/N TW-SD-MSL-1.

# Specialty Modules

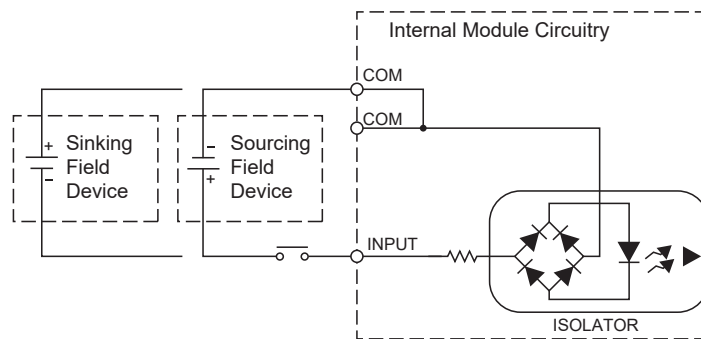
## P2-02HSC (cont'd)

### Wiring Diagrams

#### High Speed General Purpose Inputs



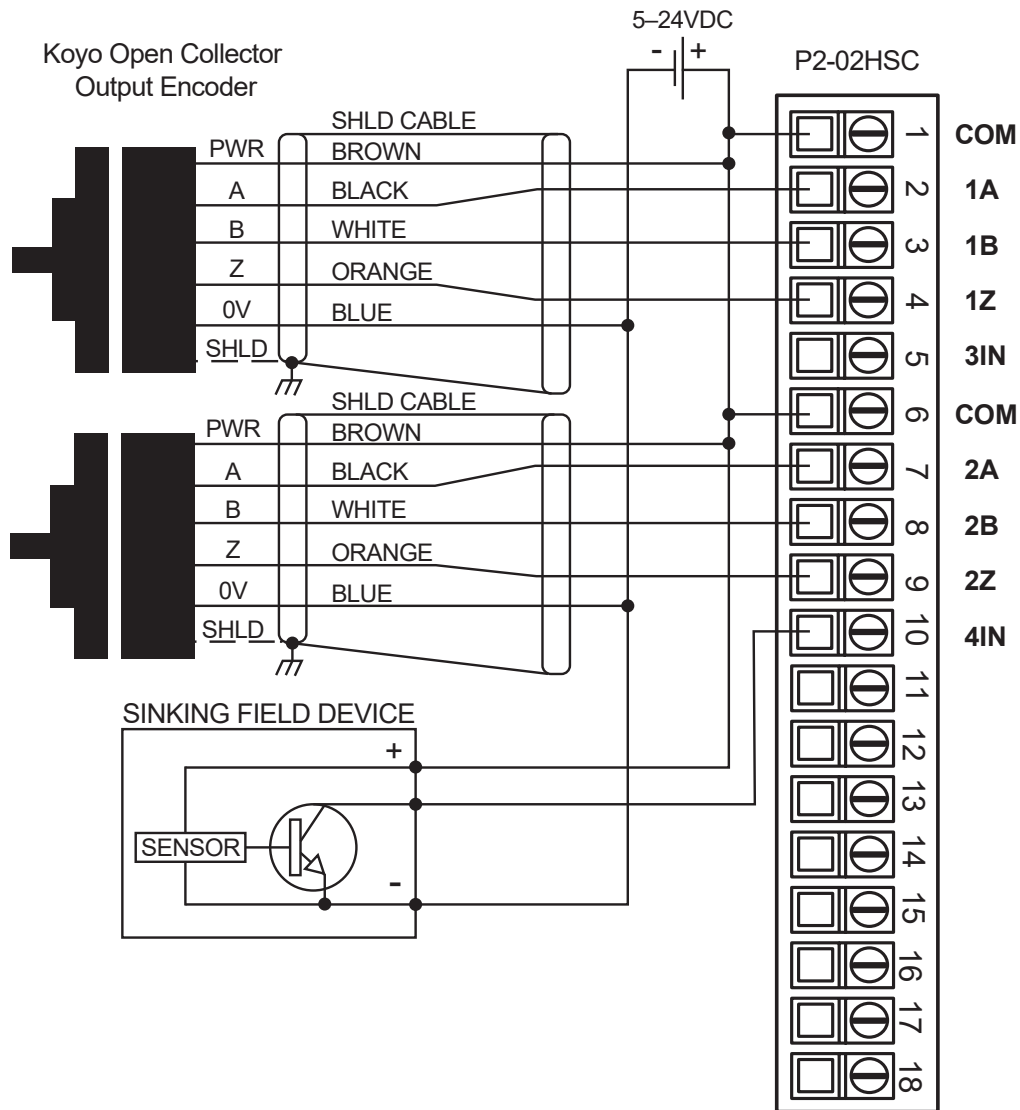
#### Equivalent Input Circuit



# Specialty Modules

## P2-02HSC (cont'd)

### Wiring Example for Koyo Open Collector Output Encoder

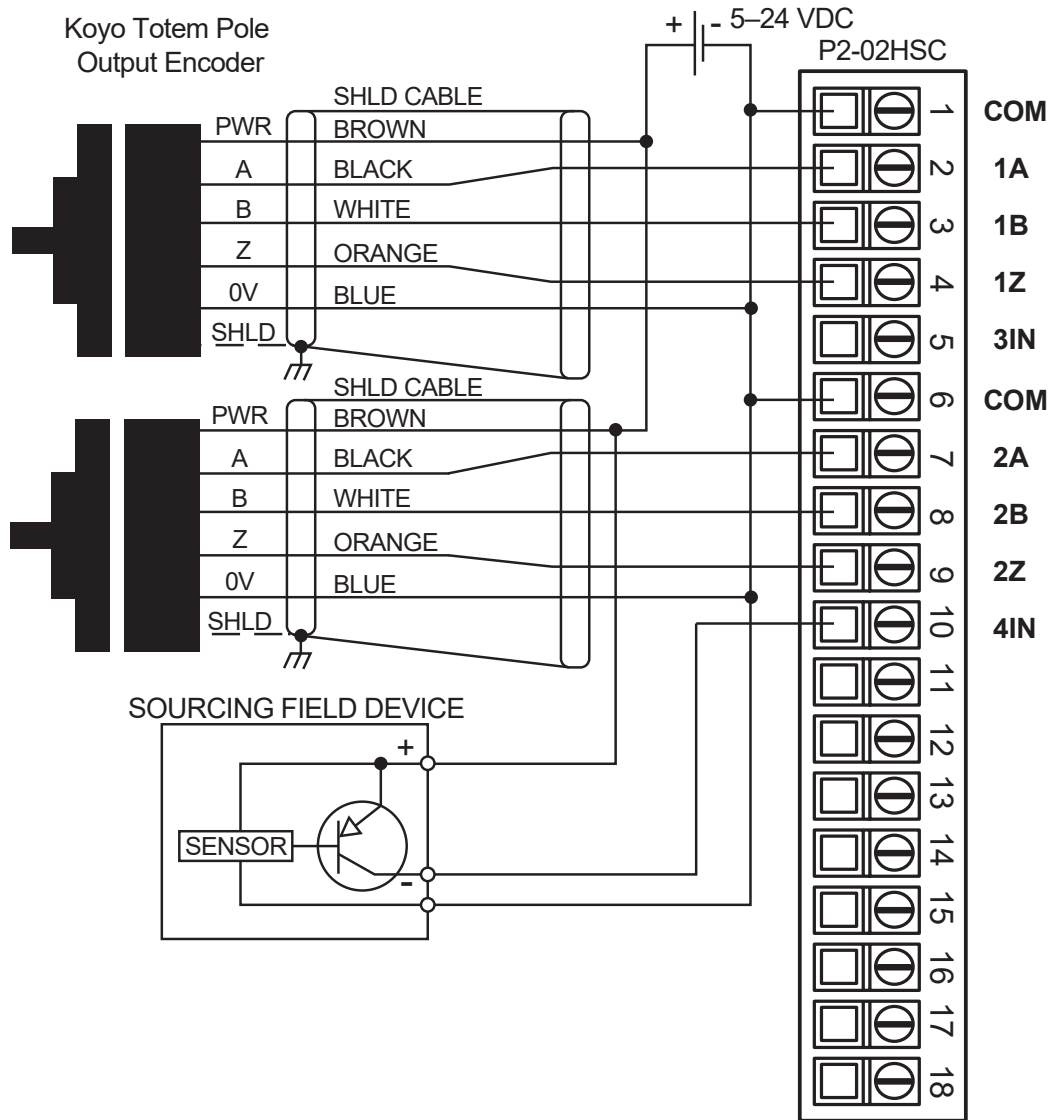


Line Driver Output Encoders Not Recommended for P2-02HSC

# Specialty Modules

## P2-02HSC (cont'd)

### Wiring Example for Koyo Totem Pole Output Encoder



Note: The P2-02HSC requires 7VDC minimum power to Totem Pole Encoders



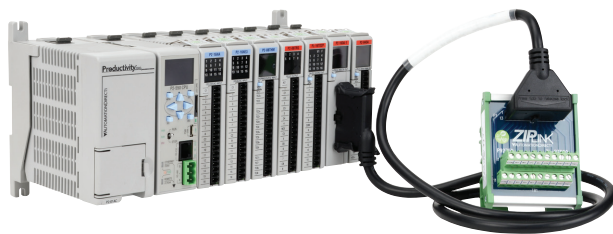
# CPU I/O Modules to ZIPLink Connector Modules - Productivity2000

## Discrete Input Modules

Productivity2000 Input Module ZIPLink Selector				
I/O Input Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
<b>P2-08ND3-1</b>	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
<b>P2-16ND3-1</b>		Sensor/LED	ZL-LTB16-24-1	
<b>P2-08NE3</b>		Feedthrough	ZL-RTB20 (-1)	
<b>P2-16NE3</b>				
<b>P2-32ND3-1</b>		40	Feedthrough	
		Sensor/LED	ZL-LTB32-24-1	
<b>P2-32NE3</b>	40	Feedthrough	ZL-RTB40 (-1)	
<b>P2-08NAS</b>	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
<b>P2-16NA</b>	18			

## Specialty Modules

Productivity2000 Specialty & Motion Modules ZIPLink Selector				
I/O Module	ZIPLink			
	# of Terms	Component	Part No.	Cable Part No.
<b>P2-HSI</b>	40	Feedthrough	ZL-RTB40 (-1)	ZL-CBL40-S
<b>P2-HSO</b>				ZL-CBL40-1S
<b>P2-02HSC</b>	See Note 1			
<b>P2-04PWM</b>	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *
<b>P2-08SIM</b>	See Note 1			
<b>P2-SCM</b>	See Note 1			



## Discrete Output Modules

Productivity2000 Output Module ZIPLink Selector					
I/O Output Module	ZIPLink				
	# of Terms	Component	Part No.	Cable Part No.	
<b>P2-08TD1S</b>	8	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *	
<b>P2-08TD2S</b>	8				
<b>P2-15TD1</b>	15				
<b>P2-15TD2</b>	15				
<b>P2-08TD1P</b>	18				
<b>P2-08TD2P</b>	18				
<b>P2-08TRS</b>	18				
<b>P2-08TAS</b>	18				
<b>P2-16TA</b>	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *	
		Fuse	ZL-RFU20 2		
<b>P2-16TD1P</b>	18	Feedthrough	ZL-RTB20 (-1)		
		Relay (Sinking)	ZL-RRL16-24-1 ZL-RRL16W-24-1 ZL-RRL16F-24-1 ZL-RRL16HDF-24-1		
<b>P2-16TD2P</b>	18	Feedthrough	ZL-RTB20 (-1)		
		Relay (Sourcing)	ZL-RRL16-24-2 ZL-RRL16W-24-2 ZL-RRL16F-24-2 ZL-RRL16HDF-24-2		
<b>P2-32TD1P</b>	32	Feedthrough	ZL-RTB40 (-1)		ZL-CBL40 *
<b>P2-32TD2P</b>	32				
<b>P2-16TR</b>	18	Feedthrough	ZL-RTB20 (-1)	ZL-P2-CBL18 *	
		Fuse	ZL-RFU20 2		

\* Select the cable length by replacing the \* with: Blank = 0.5 m, -1 = 1.0 m, or -2 = 2.0 m.

1. These modules are not supported by the ZIPLink wiring system

2. Note: Fuses (5 x 20 mm) are not included. See Edison Electronic Fuse section for (5 x 20 mm) fuse. S500 and GMA electronic circuit protection for fast-acting maximum protection. S506 and GMC electronic circuit protection for time-delay performance. Ideal for inductive circuits.

To ensure proper operation, do not exceed the voltage and current rating of ZIPLink module. ZL-RFU20 = 2A per circuit; ZL-RFU40 = 400 mA per circuit.

# I/O Modules

A variety of discrete, analog and specialty I/O modules are available for use in a Productivity2000 system. Specifications for each module are on the following pages.

A filler module is available for unused I/O module slots (part number P2-FILL).

## Discrete Input Modules

Productivity2000 Discrete Input Modules			
Part Number	Number of Inputs	Description	Price
P2-08SIM	8	Input Simulator Module	
P2-08ND3-1	8	Sinking/Sourcing 12-24 VDC	
P2-16ND3-1	8	Sinking/Sourcing 24V AC/DC	
P2-32ND3-1	16	Sinking/Sourcing 12-24 VDC	
P2-08NE3	16	Sinking/Sourcing 24V AC/DC	
P2-16NE3	32	Sinking/Sourcing 12-24 VDC	
P2-32NE3	32	Sinking/Sourcing 24V AC/DC	
P2-08NAS	8	AC Isolated 100-120 VAC	
P2-16NA	16	AC 100-240 VAC	

## Specialty Modules

Productivity2000 Specialty Modules			
Part Number	Number of Channels	Description	Price
P2-HSI	2	High-Speed Input	
P2-HSO**	2	High-Speed Output	
P2-02HSC	2	High-Speed Counter	
P2-04PWM	4	Pulse-Width Modulation	
P2-SCM	4 ports	Serial Communications Module	

\*\* ZIPLink required.

## Analog Output Modules

Productivity2000 Analog Output Modules			
Part Number	Number of Channels	Description	Price
P2-04DA	4	Analog Output (Voltage/Current)	
P2-04DA-1	4	Analog Output (Current)	
P2-04DA-2	4	Analog Output (Voltage)	
P2-04DAL-1*	4	Analog Output (Current)	
P2-04DAL-2*	4	Analog Output (Voltage)	
P2-08DA-1	8	Analog Output (Current)	
P2-08DA-2	8	Analog Output (Voltage)	
P2-08DAL-1*	8	Analog Output (Current)	
P2-08DAL-2*	8	Analog Output (Voltage)	
P2-16DA-1	16	Analog Output (Current)	
P2-16DA-2	16	Analog Output (Voltage)	
P2-16DAL-1*	16	Analog Output (Current)	
P2-16DAL-2*	16	Analog Output (Voltage)	

\* Low resolution analog modules without OLED display.

## Discrete Output Modules

Productivity2000 Discrete Output Modules			
Part Number	Number of Outputs	Description	Price
P2-08TD1S	8	Isolated Sinking	
P2-08TD2S	8	Isolated Sourcing	
P2-15TD1	15	Sinking	
P2-15TD2	15	Sourcing	
P2-08TD1P	8	Sinking Protected	
P2-08TD2P	8	Sourcing Protected	
P2-16TD1P	16	Sinking Protected	
P2-16TD2P	16	Sourcing Protected	
P2-32TD1P	32	Sinking Protected	
P2-32TD2P	32	Sourcing Protected	
P2-08TAS	8	Isolated AC	
P2-16TA	16	100-240 VAC Output	
P2-08TRS	8	Isolated Relay	
P2-16TR	16	Relay	

## Analog Input Modules

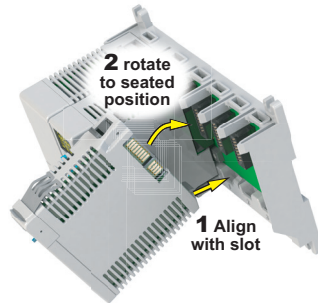
Productivity2000 Analog Input Modules			
Part Number	Number of Channels	Description	Price
P2-04AD	4	Analog Input (Voltage/Current)	
P2-04AD-1	4	Analog Input (Current)	
P2-04AD-2	4	Analog Input (Voltage)	
P2-08AD-1	8	Analog Input (Current)	
P2-08AD-2	8	Analog Input (Voltage)	
P2-08ADL-1*	8	Analog Input (Current)	
P2-08ADL-2*	8	Analog Input (Voltage)	
P2-16AD-1	16	Analog Input (Current)	
P2-16AD-2	16	Analog Input (Voltage)	
P2-16ADL-1*	16	Analog Input (Current)	
P2-16ADL-2*	16	Analog Input (Voltage)	
P2-06RTD	6	Analog RTD Input	
P2-08NTC	8	Analog Thermocouple Input	
P2-08THM	8	Analog Thermistor Input	

Productivity2000 Analog Input/Output Modules			
Part Number	Number of Channels	Description	Price
P2-8AD4DA-1	8/4	Analog Input/Output (Current)	
P2-8AD4DA-2	8/4	Analog Input/Output (Voltage)	

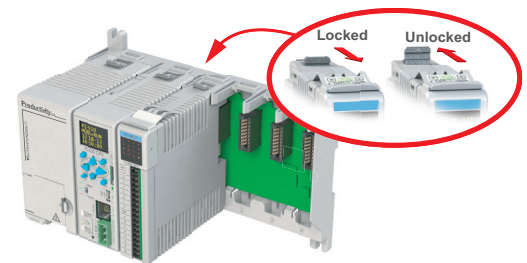
# I/O Module Installation Procedure

**WARNING:** DO NOT APPLY FIELD POWER UNTIL THE FOLLOWING STEPS ARE COMPLETED. SEE HOT-SWAP PROCEDURE FOR EXCEPTIONS.

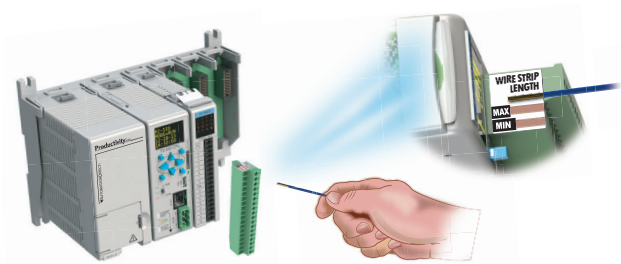
**Step One:** Align module catch with base slot and module into connector.



**Step Two:** Pull top locking tab toward module face. Click indicates lock is engaged.



**Step Three:** Attach field wiring using removable terminal block or ZIPLink wiring system.



**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 MODULES UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS.