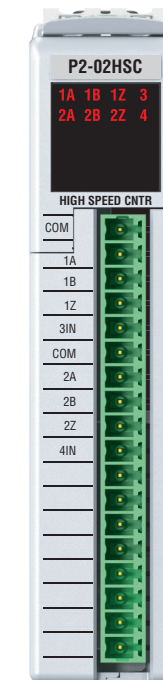


**WARNING:** To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

*Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.*

If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call Technical Support at 770-844-4200.

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## P2-02HSC High-Speed Counter

The P2-02HSC High-Speed Counter Module provides two independent single ended 5–24 VDC inputs, sinking/sourcing, 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 Productivity2000 system.

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## Removable Terminal Block Specifications

Part Number	P2-RTB	P2-RTB-1
Number of positions	18 Screw Terminals	18 Spring Clamp Terminals
Wire Range	30–16 AWG (0.051–1.31 mm <sup>2</sup> )	28–16 AWG (0.081–1.31 mm <sup>2</sup> )
	Solid / Stranded Conductor	Solid / Stranded Conductor
	3/64 in. (1.2 mm) Insulation Maximum 1/4 in (6–7 mm) Strip Length	3/64 in (1.2 mm) Insulation Maximum 19/64 in (7–8 mm) Strip Length
Conductors	*USE COPPER CONDUCTORS, 75°C* or equivalent.	
Screw Driver Width	1/8 in (3.8 mm) Maximum	
Screw Size	M2	N/A
Screw Torque	2.5 lb-in (0.28 N-m)	N/A

Document Name	Edition/Revision	Date
P2-02HSC-DS	1st Ed., Rev A	5/14/2020

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**Terminal Block sold separately, (see wiring options on page 5).**  
 Warranty: Thirty-day money-back guarantee. Two-year limited replacement. (See www.productivity2000.com for details).

## General Specifications

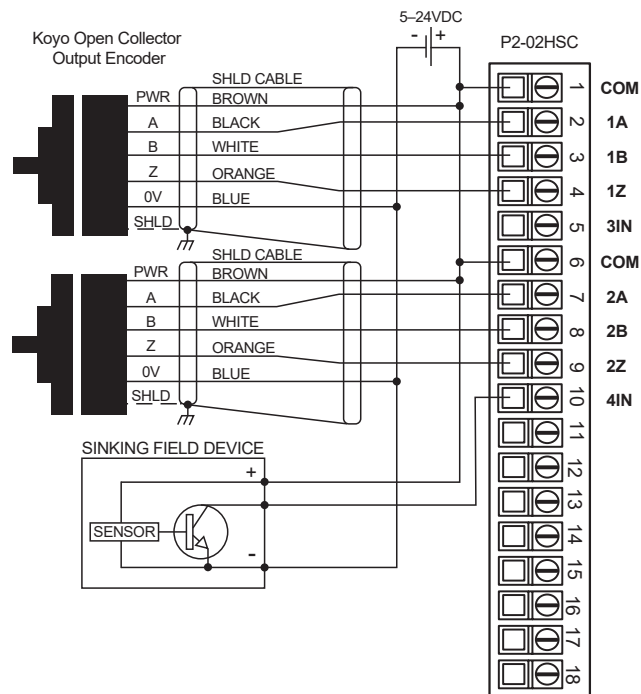
<b>Operating Temperature</b>	0° to 60°C (32° to 140°F)
<b>I/O Points Used</b>	None, mapped directly to tags in CPU
<b>Storage Temperature</b>	-20° to 70°C (-4° to 158°F)
<b>Humidity</b>	5 to 95% (non-condensing)
<b>Environmental Air</b>	No corrosive gases permitted
<b>Vibration</b>	IEC60068-2-6 (Test Fc)
<b>Shock</b>	IEC60068-2-27 (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>Connector Type (not included)</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.

## Input Specifications

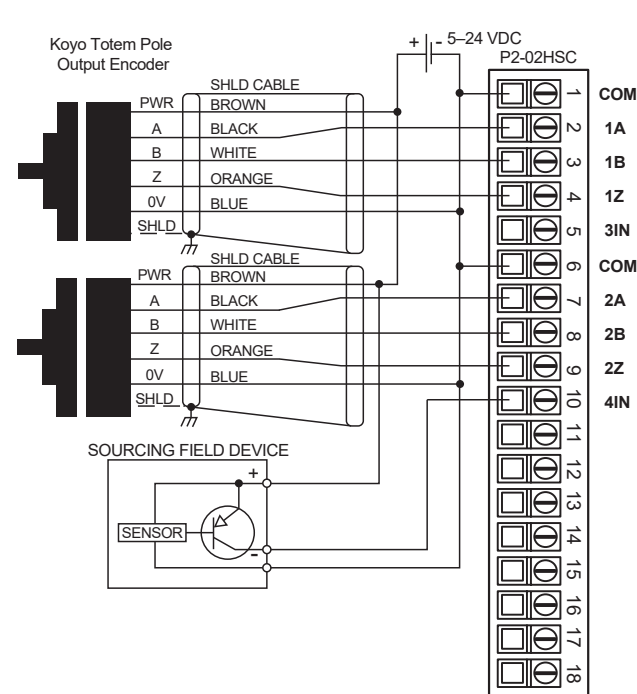
<b>Inputs per Module</b>	Single ended Counter Inputs (6pts: 1A, 1B, 1Z, 2A, 2B, 2Z) General Purpose Inputs (3IN, 4IN)
<b>Rated Voltage</b>	5–24 VDC
<b>Operating Voltage Range</b>	4.25–27.6 VDC
<b>Input Current</b>	1.5 mA typical @ 4.25VDC 11mA maximum @ 27.6 VDC
<b>Input Impedance</b>	2.5 KΩ
<b>Minimum 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 Time</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)

# Open Collector Encoder Wiring



Line Driver Output Encoders Not Recommended for P2-02HSC

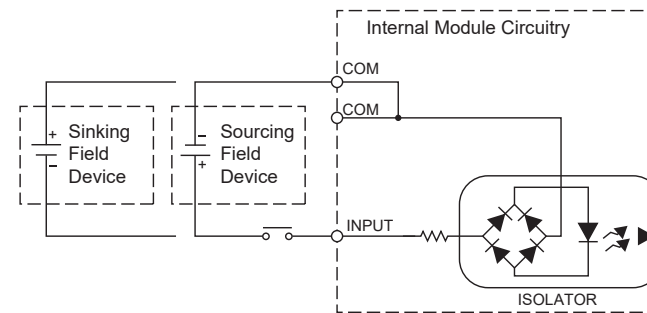
# Totem Pole Output Encoder Wiring



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

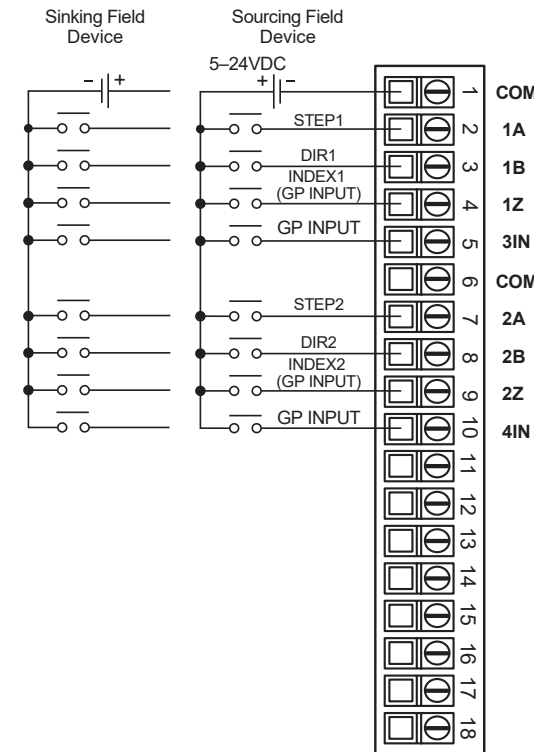
# Wiring Diagram

## Equivalent Input Circuit



# Schematic

## High Speed General Purpose Inputs

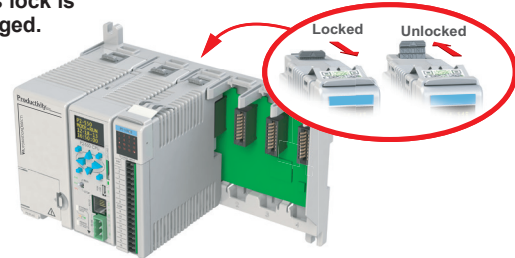
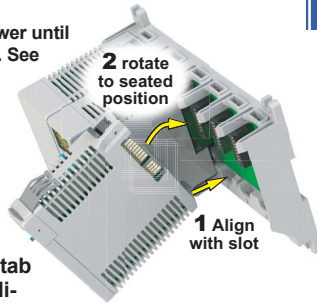


## Module Installation

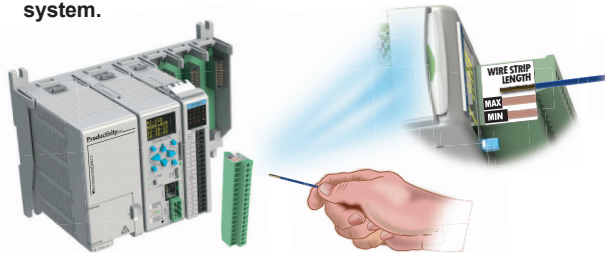
**WARNING:** Do not apply field power until the following steps are completed. See hot-swapping procedure for exceptions.

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

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



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



## QR Code



Use any QR Code reader application to display the module's product insert.

**Caution:** If possible, remove field power prior to proceeding. If not, then **EXTREME** care **MUST** be taken to prevent damage to the module, or even personal injury due to a short circuit from the live terminal block.

### Important Hot-Swap Information

The Productivity2000 System supports hot-swap! Individual modules can be taken offline, removed, and replaced while the rest of the system continues controlling your process. Before attempting to use the hot-swap feature, be sure to read the hot-swap topic in the programming software's help file or our online documentation at AutomationDirect.com for details on how to plan your installation for use of this powerful feature.

## Wiring Options

<b>1 Screw Terminal Block only</b> 	P2-RTB (Quantity 1)
<b>2 Spring Clamp Terminal Block only</b> 	P2-RTB-1 (Quantity 1)
<b>3 Accessories<sup>1</sup></b> 	ZL-RTB-COM  TW-SD-SL-1  TW-SD-MSL-1

1. ZL-RTB-COM provides a common connection point for power or ground

## Module Configuration

Using the Hardware Configuration tool in the Productivity Suite programming software, drag and drop the P2-02HSC module into the base configuration.

Select *Automatic Module Verification* or *No Verification and Enable Hot Swap*. If desired, assign a *User Tagname* to each input point (channel) selected and to each *Status Bit Item*.

