

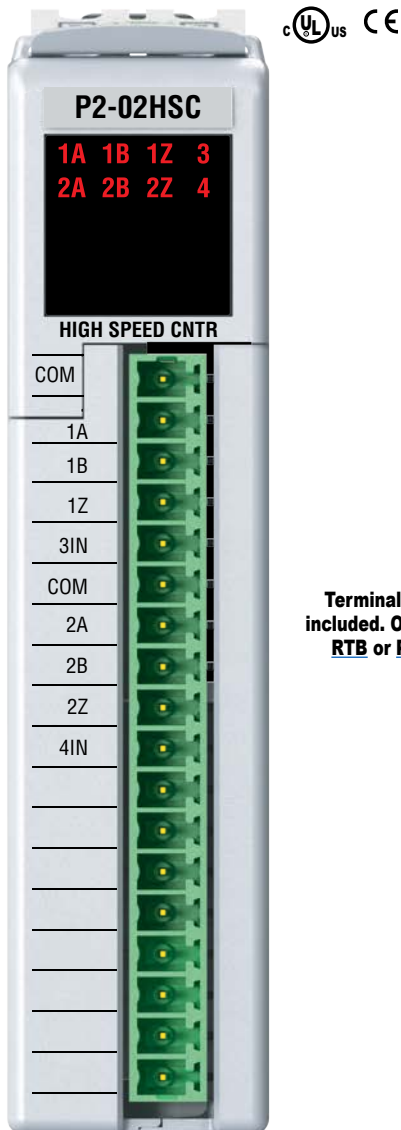
Specialty Modules

P2-02HSC

\$04n54:

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.



Input Specifications

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

Not Compatible with ZIPLink.
Warranty: Thirty-day money-back guarantee.
Two-year limited replacement. (See www.productivity2000.com for details).



NOTE: The most recent Productivity Suite software and firmware versions may be required to support new modules and new features.

Specialty Modules

P2-02HSC (cont'd)

General Specifications	
Operating Temperature	0° to 60°C (32° to 140°F)
I/O Points Used	None, mapped directly to tags in CPU
Storage Temperature	-20° to 70°C (-4° to 158°F)
Humidity	5 to 95% (non-condensing)
Altitude	2,000 meters max.
Pollution Degree	II
Environmental Air	No corrosive gases permitted
Vibration	IEC 60068-2-6 (Test Fc)
Shock	IEC 60068-2-27 (Test Ea)
Overvoltage Category	2
Field to Logic Side Isolation	1800VAC applied for 1 second
Insulation Resistance	>10MΩ @ 500VDC
Heat Dissipation	2400mW
Terminal Type (sold separately)	18-position removable terminal block Not supported by ZIPLink terminal modules.
Weight	93g (3.3 oz)
Agency Approvals	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
Number of positions	18 screw terminals	18 push release terminals
Wire Range	30–16 AWG (0.051–1.31 mm ²) 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 ²) Solid/stranded conductor 3/64 in (1.2 mm) insulation max. 19/64 in (7–8 mm) strip length
Conductors	USE COPPER CONDUCTORS, 75°C or equivalent.	
Screw Driver Width	0.1 in. (2.5 mm) maximum	NA
Screw Size	M2	N/A
Screw Torque	2.5 lb·in (0.28 N·m)	N/A

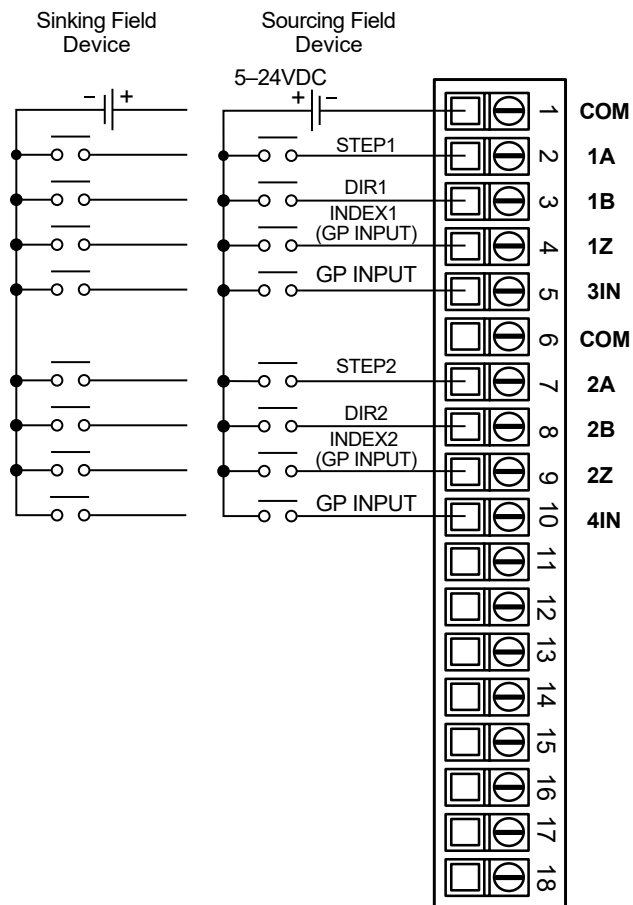
* Recommended screw driver: P/N [TW-SD-MSL-1](#)

Specialty Modules

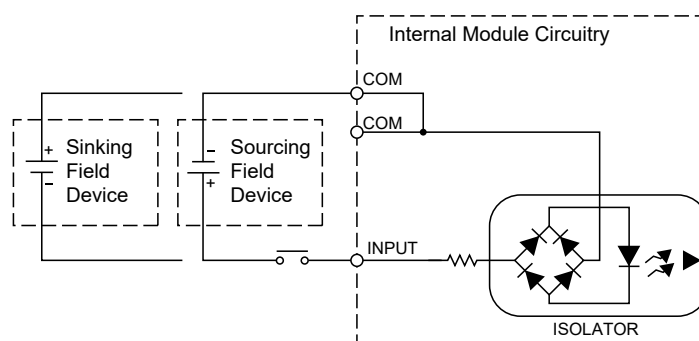
P2-02HSC (cont'd)

Wiring Diagrams

High Speed General Purpose Inputs



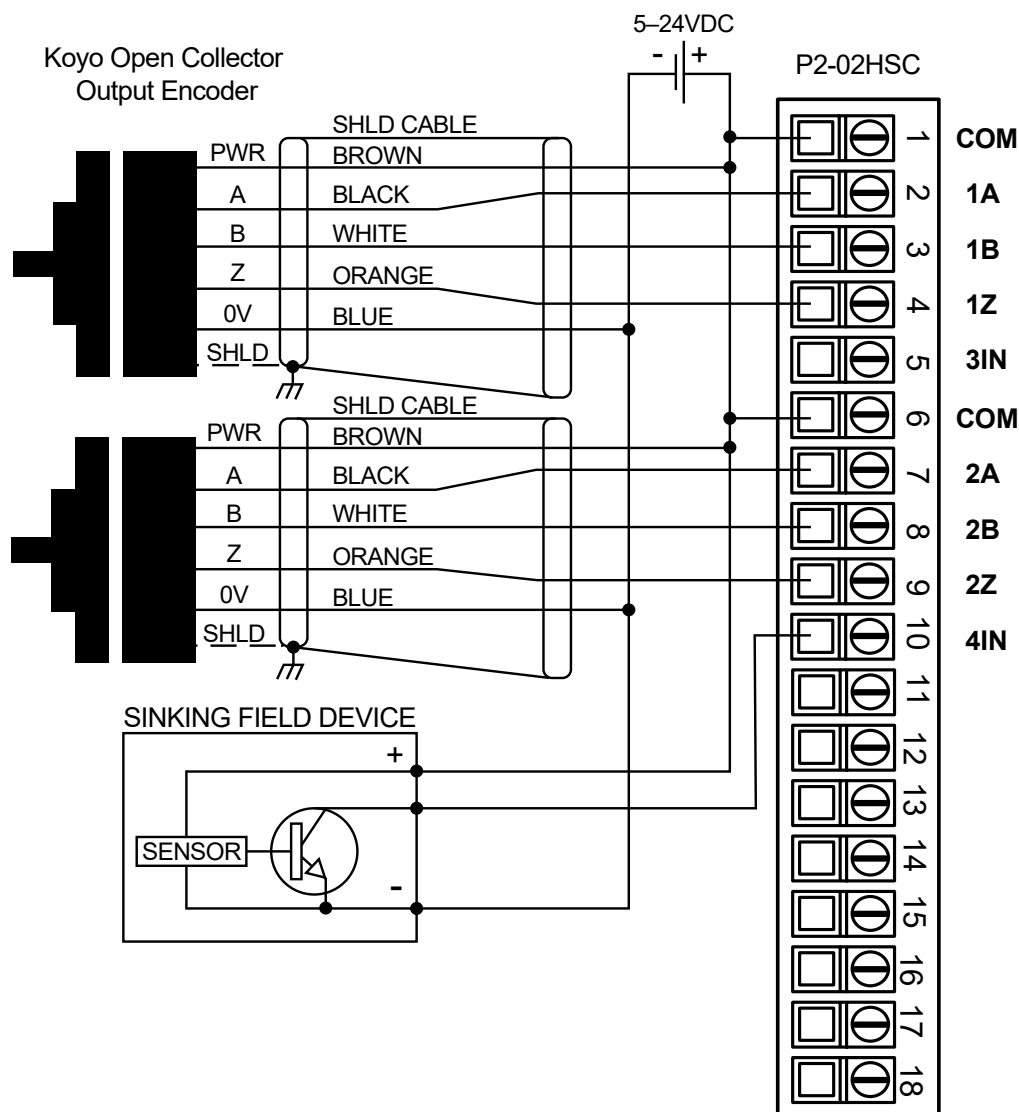
Equivalent Input Circuit



Specialty Modules

P2-02HSC (cont'd)

Wiring Example for Koyo Open Collector Output Encoder

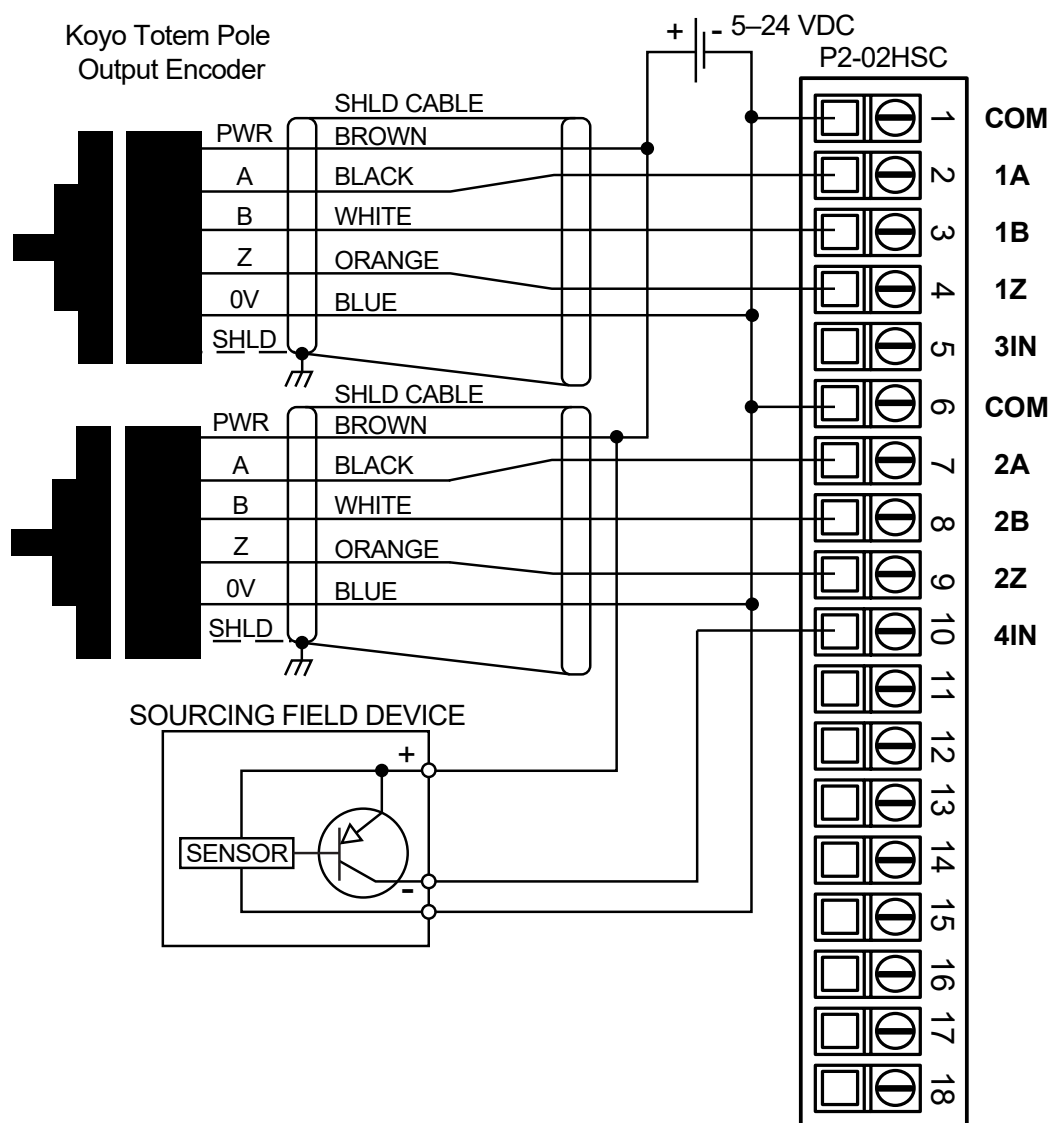


Line Driver Output Encoders Not Recommended for P2-02HSC

Specialty Modules

P2-02HSC (cont'd)

Wiring Example for Koyo Totem Pole Output Encoder



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	\$0?uc:
P2-08ND3-1	8	Sinking/Sourcing 12-24 VDC	\$1o98:
P2-16ND-TTL	16	Sinking/Sourcing	\$,-067!i:
P2-16ND3-1	16	Sinking/Sourcing 24V AC/DC	\$01o99:
P2-32ND3-1	32	Sinking/Sourcing 12-24 VDC	\$01o9a:
P2-08NE3	8	Sinking/Sourcing 24V AC/DC	\$0?v3:
P2-16NE3	16	Sinking/Sourcing 12-24 VDC	\$00?v4:
P2-32NE3	32	Sinking/Sourcing 24V AC/DC	\$,00,96:
P2-08NAS	8	AC Isolated 100-120 VAC	\$,012d[:
P2-16NA	16	AC 100-240 VAC	\$00?v5:

Specialty Modules

Productivity2000 Specialty Modules			
Part Number	Number of Channels	Description	Price
P2-HSI	2	High-Speed Input	\$00?vg:
P2-HSO**	2	High-Speed Output	\$00?vh:
P2-02HSC	2	High-Speed Counter	\$04n54:
P2-04PWM	4	Pulse-Width Modulation	\$04n55:
P2-SCM	4 ports	Serial Communications Module	\$00?uy:

** ZIPLink required.

Analog Output Modules

Productivity2000 Analog Output Modules			
Part Number	Number of Channels	Description	Price
P2-04DA	4	Analog Output (Voltage/Current)	\$00?u?:
P2-04DA-1	4	Analog Output (Current)	\$04n56:
P2-04DA-2	4	Analog Output (Voltage)	\$04n57:
P2-04DAL-1*	4	Analog Output (Current)	\$012e1:
P2-04DAL-2*	4	Analog Output (Voltage)	\$012e2:
P2-08DA-1	8	Analog Output (Current)	\$,00?u,:
P2-08DA-2	8	Analog Output (Voltage)	\$00?v0:
P2-08DAL-1*	8	Analog Output (Current)	\$,00,ep:
P2-08DAL-2*	8	Analog Output (Voltage)	\$,00,eq:
P2-16DA-1	16	Analog Output (Current)	\$00?v1:
P2-16DA-2	16	Analog Output (Voltage)	\$00?v2:
P2-16DAL-1*	16	Analog Output (Current)	\$,00,es:
P2-16DAL-2*	16	Analog Output (Voltage)	\$,;00,et:

* 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	\$12ga:
P2-08TD2S	8	Isolated Sourcing	\$12gb:
P2-15TD1	15	Sinking	\$12d#:
P2-15TD2	15	Sourcing	\$,12d!:
P2-08TD1P	8	Sinking Protected	\$0?v8:
P2-08TD2P	8	Sourcing Protected	\$0?v9:
P2-16TD-TTL	16	Sourcing	\$,067!h:
P2-16TD1P	16	Sinking Protected	\$00?va:
P2-16TD2P	16	Sourcing Protected	\$00?vb:
P2-32TD1P	32	Sinking Protected	\$012d?:
P2-32TD2P	32	Sourcing Protected	\$,012d,:
P2-08TAS	8	Isolated AC	\$012g9:
P2-16TA	16	100-240 VAC Output	\$00?vc:
P2-06TRS	6	Isolated Relay	\$,067!e:
P2-08TRS	8	Isolated Relay	\$0?vd:
P2-16TR	16	Relay	\$,00?vf:

Analog Input Modules

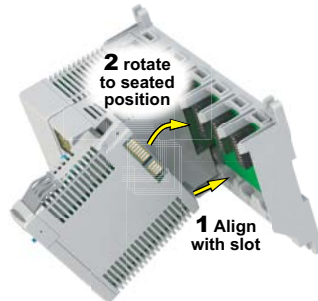
Productivity2000 Analog Input Modules			
Part Number	Number of Channels	Description	Price
P2-04AD	4	Analog Input (Voltage/Current)	\$00?uv:
P2-04AD-1	4	Analog Input (Current)	\$04n52:
P2-04AD-2	4	Analog Input (Voltage)	\$04n53:
P2-08AD-1	8	Analog Input (Current)	\$,00?u[:
P2-08AD-2	8	Analog Input (Voltage)	\$00?u,:
P2-08ADL-1*	8	Analog Input (Current)	\$,00,ek:
P2-08ADL-2*	8	Analog Input (Voltage)	\$,-00,el:
P2-16AD-1	16	Analog Input (Current)	\$00?u#:
P2-16AD-2	16	Analog Input (Voltage)	\$,00?u!:
P2-16ADL-1*	16	Analog Input (Current)	\$,00,en:
P2-16ADL-2*	16	Analog Input (Voltage)	\$,00,eo:
P2-06RTD	6	Analog RTD Input	\$00?v7:
P2-08NTC	8	Analog Thermocouple Input	\$,0118,:
P2-08THM	8	Analog Thermistor Input	\$00?v6:

Productivity2000 Analog Input/Output Modules			
Part Number	Number of Channels	Description	Price
P2-8AD4DA-1	8/4	Analog Input/Output (Current)	\$00?uz:
P2-8AD4DA-2	8/4	Analog Input/Output (Voltage)	\$,00?uj:

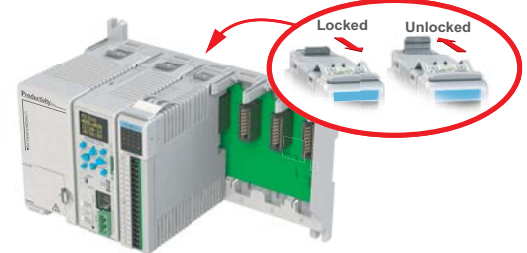
I/O Module Installation Procedure

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.