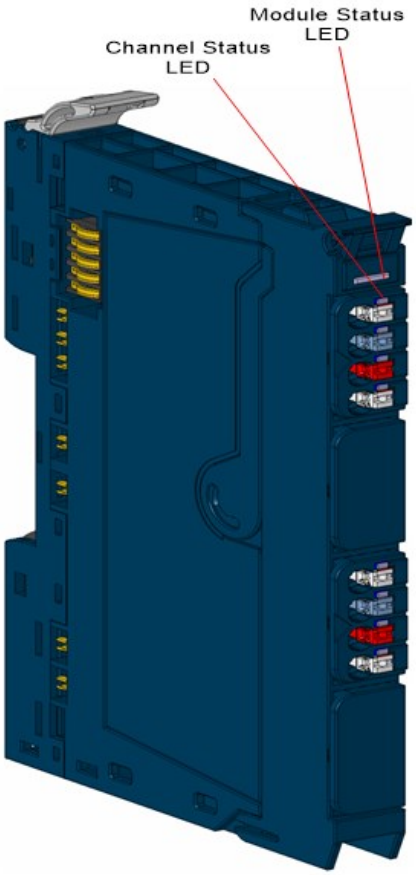
PACSystems™ RSTi-EP

SPECIALITY MODULES
(EP-5111, EP-5112, EP-5121, EP-5212, EP-5261, EP-5311, EP-5422, EP-5442, EP-5324, EP-5714, EP-5612 & EP-5501)



Warnings and Caution Notes as Used in this Publication

⚠ WARNING

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use.

In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

⚠ CAUTION

Caution notices are used where equipment might be damaged if care is not taken.

Note: Notes merely call attention to information that is especially significant to understanding and operating the equipment.

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Introduction

Emerson provides several RSTi-EP specialty modules, which can be used to meet specific needs in your system. Each module has a Module Status LED and each channel has a LED for visual indication of connectivity.

The counter module EP-5111 can read one square-wave signal (1 channel) (for example, from an incremental encoder) with a maximum input frequency of 100 kHz. The 32-bit counter can count up or down within a predetermined range of values.

The digital counter module EP-5112 can read two square-wave signals (2 channels) (for example, from an incremental encoder) with a maximum input frequency of 100 kHz. Depending on the operating mode, both 32-bit counters can count up or down independent of each other in a preset range of values. The counters can be controlled via software by setting the appropriate control word.

The Digital Counter module EP-5121 can read one square wave signal (1 channels) with a maximum frequency of 500 kHz. The 32-bit counter can count up or down in a preset range of values. The counter ‘s basic functions are controlled by the coupler. Via a reset the counting value can be set to zero.

The digital counter module EP-5212 can read frequency of one square-wave signal (1 channel) from one or two external sensors with a maximum input frequency of 100 kHz. Frequencies to be counted are applied to channel CH0 and/or channel CH1, the measurement will be started via control word 1 and 2 respectively. Measuring cycles can be defined in µs. The longer the measuring cycle the more exactly the measurement.

The digital pulse width modulation modules EP-5422 and EP-5442 are used for the control of small motors with current requirements of 0.5 A up to 2 A which can also be used for the control of valve flaps. The switching frequencies are adjustable up to 40 kHz and, in addition to this, the push/pull output levels can be used for motor activation; for example: change of rotation direction. As with all modules of the RSTi-EP system, the characteristics are outstanding – from the modular design and the interchangeable electronics to the removable plug-in terminal strip.

The EP-5311 SSI Encoder Interface module can read differential signals (RS422) from a SSI encoder. It can be connected as a master directly to the encoder providing the clock. To synchronize two SSI encoders, a second SSI module running in Listening mode can be placed between the encoder and a master module from which it receives the clock.

The EP-5261 Serial communication module can be used to exchange data between the PLC and a data terminal device. The device (such as a barcode scanner, printer) can be connected through an interface type RS232, RS485 or RS422. The data transfer rate can be parameterized between 300 and 115200 bps.

The EP-5324 module is an IO Link Communication module according to the IO-Link specification V1.1.2. The IO-Link devices must conform to port class A. Port class B is also possible if additionally, potential distribution modules are used. The four communication channels can be used as digital inputs or outputs together with standard field devices. IO-Link Configurator Software tool (win 10 supported) can be used to support IO-Link configuration and parametrization of IO-Link end devices (sensors or actuators) through the Network Adapter. This IO-Link configurator tool is a standalone tool which is used to create and export IO-Link device configurations, Parameterize IO-Link devices during ongoing operation and read out identification data, process data and diagnoses of IO-Link devices.

The Analog HART input module EP-5714 can read up to 4 analogue sensors. The resolution is 16 bit per channel. Sensors can be connected to each connector in a 2-wire, 3-wire or 4-wire connection. The module can be used as a HART master with a dedicated HART modem per channel. DTM Support is available for Modbus Network adapter. HART devices can be connected to any channel in single connection (point-to-point, P2P) or multiple connection (multidrop). Up to five HART devices can be connected in multidrop mode (short address 1-5). No device in the multidrop chain is allowed to operate in P2P mode (short address 0).

The Strain gauge module EP-5612 is an analog input module designed to connect force sensors working with strain gauges. Thus weights, torques or vibrations can be exactly measured. Via parameterizing the module can be

calibrated. Using the web server the module can be calibrated password protected, the calibration setting will then be documented. The tare function can be triggered individually for each channel either via a digital input or via software. Several sensors can be connected in parallel to each of the two channels in 4-wire or 6-wire technique as long as their input impedance is within the permissible sensor load. The resolution is 24 bit per channel with a 0.01% accuracy of the full scale.

The Stepper motor module EP-5501 with integrated power amplifier can control a 2-phase stepper motor directly. Additionally, the module can detect up to 6 binary control signals and control up to 2 actuators each with a maximum of 0.5 A. The inputs DI 4 and DI 5 are capable of processing encoder signals (AB mode).

The RSTi-EP station is usually installed on a horizontally positioned DIN rail. Installation on vertically positioned DIN rails is also possible.

Modules should be allowed to de-energize for a minimum 10 seconds after power down, prior to starting any maintenance activity.

Refer to the RSTi-EP Slice I/O User Manual (GFK-2958) for additional information. Refer to the RSTi-EP Power Supply Reference Guide, a software utility available on PAC Machine edition V9.50, for detailed power-feed requirements.

Module Features

- Spring style technology for ease of wiring
- DIN rail mounted
- Double-click installation for positive indication of correct installation
- Compatible for 2 and 3 wire connection
- Built-in Web server for diagnostic information and firmware update through RSTi-EP Network Adapters.

Ordering Information

Module	Description
EP-5111	1 Channel High Speed Counter, AB 100 kHz 1 DO 24 VDC, 0.5A
EP-5112	2 Channel High Speed Counter, AB 100 kHz
EP-5121	1 Channel High Speed Counter, AB 500 kHz
EP-5212	2 Channel Frequency Measurement, 100 kHz
EP-5422	2 Channels PWM Output, Positive Logic, 24 VDC, 0.5 A
EP-5442	2 Channels PWM Output, Positive Logic, 24 VDC, 2.0 A
EP-5261	1 Channel Serial Communications, 232, 422, 485
EP-5311	SSI Encoder, BCD or Gray-Code Format, 5/24 VDC
EP-5324	IO-Link Communication Module, 4 Channels
EP-5714	4 channels Analog HART Input, Current 16 Bits with Diagnostics 2, 3, or 4 Wire
EP-5612	2 channels Strain gauge 24 Bits with Diagnostics 4 or 6 wire
EP-5501	1 Channel Stepper Motor, 2 phase.

Specifications

Specifications	EP-5111	EP-5112	EP-5121	EP-5212
System Data				
Data	Process, parameter, and diagnostic data depend on the network adapter used.			
Interface	RSTi-EP System bus			
System bus transfer rate	48 Mbps			
Galvanic isolation	-	500 V DC between the current paths		
Inputs				
Number of counter inputs	1	2	1	2
Type	Incremental encoders and other input characteristics for sensor types 1 and 3 are in accordance with EN 61131-2		for Type 1 and Type 3 sensors as per IEC 61131-2	-
Input filter	Filter time adjustable from 0,01 to 1 ms		Filter time adjustable from 1.3 µs to 1 ms	Adjustable between 3Hz and 187kHz (333ms and 5µs)
Low input voltage		< 5 V		
High input voltage		> 11 V		
Max. input current per channel		3.5 mA		
Sensor supply	Yes	Yes	500 mA max. (feed-in 24 V); 400 mA max. (feed-in 5 V)	Yes
Sensor connection		2-wire and 3-wire		
Counter width		32 bits	32 bits	
Maximum input frequency	100 kHz	100 kHz	500 kHz	100 kHz
Latch, gate, reset input	Yes	--		--
Mode of operation	Pulse and direction / AB mode with 1-, 2-, 4-times sampling	Pulse and direction / AB mode with 1-, 2-, 4-times sampling	Pulse and direction / AB mode with 1-, 2-, 4-times sampling	Pulse rising edge
Status, alarm, diagnostics				
Status indicator	Yes			
Process alarm	Yes, parametrizable	Yes, parametrizable	Yes, parametrizable	--
Diagnostic alarm	Yes	Yes	Yes	--
Outputs				
Number	1	--	1	--
Output Current	0.5 A	--	--	--
Reverse polarity protection	Yes	--	Yes	--
Module diagnosis	Yes	Yes	Yes	Yes
Individual channel diagnosis	Yes	Yes	No	No
Supply				

Specifications	EP-5111	EP-5112	EP-5121	EP-5212
Supply voltage	20.4V – 28.8V			
Current consumption from system current path I_{SYS}	8 mA			
Current consumption from output current path Iin	35 mA plus output current for the digital output	35 mA	20 mA	35 mA plus sensor supply current
General Data				
Operating temperature	-20 °C to +60 °C (-4 °F to +140 °F)			
Storage temperature	-40 °C to +85 °C (-40 °F to +185 °F)			
Air humidity (operation/transport)	5% to 95%, noncondensing as per IEC 61131-2			
Width	11.5 mm (0.45 in)			
Depth	76 mm (2.99 in)			
Height	120 mm (4.72 in)			
Weight	83 g (2.93 oz)	72 g (2.54 oz)	72 g (2.54 oz)	83 g (2.93 oz)

Specifications

Specifications	EP-5261
System data	
Data	Process, parameter and diagnostic data depend on the network Adapter used (refer to the table in the section, Order and arrangement of modules)
Interface	RSTi-EP I/O communication bus
System bus transfer rate	48 Mbps
Serial Interface	
Number	1
Type	RS-232, RS-485, RS-422, parameterizable
Transfer rate	300 – 115200 Bps, parameterizable
Supply voltage	5VDC or 24VDC
Current of power supply output	max. 500 mA
Standards RS232	DIN 66020, DIN 66259, EIA-RS232C, CCITT V.24/V.28
Standards RS485/RS422	120 Ω, parameterisable
Short-cicuit proof	Yes
Module diagnosis	Yes
Individual channel diagnosis	Yes
Supply	
Supply voltage	20.4V – 28.8V
Current consumption from system current path I_{SYS},	8 mA
Current consumption from input current path Iin	16 mA + load
General Data	

Specifications	EP-5261
Weight	92 g (3.25 oz)
For additional general data, refer to the section, General Technical Data for I/O Modules	

Specifications	EP-5311
System Data	
Data	Process, parameter and diagnostic data depend on the network Adapter used (refer to the table in the section, order & arrangement of modules)
Interface	RSTi-EP I/O communication bus
System bus transfer rate	48 Mbps
Number of channels	1
Type	SSI (Differential RS-422)
SSI transfer rate	125 kHz – 2 MHz
Delay time	1 µs – 64 µs
Data width	8 – 32 Bit
Data format	Binary / Gray-Code
SSI mode	Listening / Master
Sensor supply	500 mA (24 V DC) / 400 mA (5 V DC)
Reverse polarity protection	Yes
Module diagnosis	Yes
Individual channel diagnosis	No
Cable length	max. 320 m (1049.(ft) at 125 kHz; shielded
Supply	
Supply voltage	20.4V – 28.8V
Current consumption from system current path I_{SYS},	8 mA
Current consumption from input current path I_{in}	25 mA + sensor supply current
General Data	
Weight	87 g (3.07 oz)
For additional general data, refer to the section, General Technical Data for I/O Modules	

Specifications	EP-5422	EP-5442
System Data		
Data	Process, parameter, and diagnostic data depend on the network adapter used.	
Interface	RSTi-EP system bus	
System bus transfer rate	48 Mbps	48 Mbps
Outputs		
Number	2	2
Type	PN output stage	PN output stage
Response time	< 0.1 µs	< 0.1 µs
Period duration	25 µs t o 175 ms (40 kHz to 6 Hz)	

Specifications	EP-5422		EP-5442	
Max. output current	per channel	0.5 A	per channel	2 A
	per module	1 A	per module	4 A
Switching frequency	Resistive load (min. 47 Ω)	static, 6 Hz to 40 kHz	Resistive load (min. 12 Ω)	6 Hz to 40 kHz
	Inductive load (DC 13)	static, 6 Hz to 40 kHz	Inductive load (DC 13)	6 Hz to 40 kHz
	Lamp load (12 W)	static, 6 Hz to 40 kHz	Lamp load (48 W)	6 Hz to 40 kHz
Actuator connection	2-wire, 3-wire, 3-wire + FE			
Actuator supply	max. 2 A per plug, total max. 4 A		max. 2 A per plug, total max. 8 A	
Pulse/period ratio	0–100 % PN-switching or P-switching, adjustable			
Short-circuit-proof	Yes			
Response time of the protective circuit	< 100 µs			
Module diagnosis	Yes			
Individual channel diagnosis	No			
Reactionless	Yes			
Supply				
Supply voltage	20.4V – 28.8V			
Current consumption from system current path I_{SYS}	8 mA			
Current consumption from output current path I_{OUT}	40 mA + Load			
General Data				
Operating temperature	-20°C to +60°C (-4 °F to +140 °F)			
Storage temperature	-40°C to +85°C (-40 °F to +185 °F)			
Air humidity (operation/transport)	5% to 95%, noncondensing as per IEC 61131-2			
Dimensions				
Width	11.5 mm (0.45 in)			
Depth	76 mm (2.99 in)			
Height	120 mm (4.72 in)			
Weight	77 g (2.72 oz)		82 g (2.89 oz)	

Specifications	EP-5324
System data	
Data	Process, parameter and diagnostic data depend on the network Adapter used (refer to the table in the section, order & arrangement of modules)
Interface	RSTi-EP I/O communication bus
System bus transfer rate	48 Mbps
Digital Inputs	
Number	4
Sensor types	Type 1 and Type 3 as per IEC 61131-2

Low input voltage	< 5V
High input voltage	> 11V
IO-Link Interfaces	
Number	4
Type	IO-Link as per IEC 61131-9
Transfer rate	4.8 kBaud / 38.4 kBaud / 230.4 kBaud, depending on the connected IO Link device
Output current C/Q (in DO mode)	0.1 A
Input type C/Q (in DI mode)[1)]	Type 1 and Type 3 as per IEC 61131-2
Output current L+	0.5 A per channel, Total max. 2 A
Line Break Detection	yes
Short-circuit-proof	yes
Module diagnosis	yes
Individual channel diagnosis	yes
Supply	
Supply voltage	20.4V – 28.8V
Current consumption from system current path I_{SYS}, typ.	8 mA
Current consumption from input current path I_{IN}	25 mA + sensor supply
General data	
Weight	88 g (3.10 oz)
Width	11.5 mm (0.45 in)
Depth	76 mm (2.99 in)
Height	120 mm (4.72 in)
For additional general data, refer to the section, General Technical Data for I/O Modules.	

1) If C/Q is used as digital input, the connected device shall only be supplied via L+ and L- connection of the respective channel.
2) For parametrization of the IO Link Sensor, EMERSON IO-link configurator can be used which is a standalone tool & directly connects to IO-Link Communication module through Network Adapters. Download the latest version of IO-link configurator utility from support site.

Specifications	**EP-5714**
System data	
Data	Process, parameter and diagnostic data depend on the network Adapter used.
Interface	RSTi-EP I/O communication bus
System bus transfer rate	48 Mbps
Inputs	
Number	4
Input Value	Current (0 … 20 mA, 4 ... 20 mA, 4 ... 20 mA HART)

HART Communication Protocol	Revision 5 to Revision 7
Resolution	16 bits
Accuracy	max. 0,1 % FSR ±50 ppm/K max. at 25 °C Temperature coefficient
Sensor Supply	max. 0,5 A per plug
Sensor Connection	2-wire, 3-wire, 4-wire
Conversion time	max. 1 ms all 4 channels per cycle, asynchronously sampled
Limiting frequency	Normal mode: 500 Hz HART mode: 25 Hz
Internal Resistance	250 Ω
Reverse Polarity Protection	Yes
Module diagnosis	Yes
Individual channel diagnosis	Yes
Supply	
Supply voltage	20.4V – 28.8V
Current consumption from system current path I_{SYS}, typ.	8 mA
Current consumption from input current path I_{IN}	27 mA + sensor supply
General data	
Weight	90 g (3.17 oz)
Width	11.5 mm (0.45 in)
Depth	76 mm (2.99 in)
Height	120 mm (4.72 in)

Note: DTM Support available for EPXMBE001/101 only, refer to the RSTi-EP Slice I/O User Manual (GFK-2958).

Specifications	EP-5612
System data	
Data	Process, parameter and diagnostic data depend on the network Adapter used.
Interface	RSTi-EP I/O communication bus
System bus transfer rate	48 Mbps
Analog Inputs	
Number	2
Sensor connection	4-wire, 6-wire, parameterizable
Input Value	differentially, to evaluate a strain gauge full bridge
Conversion time	5 … 800 ms, parameterizable
Conversion rate	1.25 ... 200 samples per second
Conversion method	Sigma-Delta

Operation mode	Continuous conversion
Bandwidth input filter	> 500 Hz (3 dB)
Resolution	24 Bit per channel
Data type Output	32 Bit signed integer
Measurement range	± 150 mV
Supported sensor sensitivity	0.5 … 30 mV/V, parameterizable
Overload	> 5 %
Output on overload	0x7FFFFFFF
Input impedance signal	> 100MΩ
Input impedance sense	> 200 kΩ
Accuracy (customer calibration)[1)]	±0.01 % FSR (100 ppm)
Accuracy (factory calibration)[1)]	±0.05 % FSR (500 ppm)
Accuracy (-20 °C … 60 °C)[1)]	
Accuracy during interference	±1 % FSR
Temperature coefficient	< 5 ppm/K
Nonlinearity	< 50 ppm
Repeat accuracy (after 2 h of operation)	< 20 ppm
Common mode rejection ratio (CMRR) at 2,5 V dc ±1,5 V/ 50 Hz1)	> 120 dB
Crosstalk attenuation	> 120 dB
Insulation rated voltage between power path and bus	50 V DC
Insulation rated voltage between power path and signal	50 V DC
Sensor excitation voltage	5 V DC ± 0.2 V
Permissible sensor load	85 … 5000 Ω
Short-circuit proof	Yes
Module diagnosis	Yes
Individual channel diagnosis	Yes, line break detection, short circuit detection, overload
Common potential between channels	EXC 0– and EXC 1–
Calibration interval	max. 1 year
Calibration capability	yes
1) With conversion time ≥ 80ms and sensor sensitivity >2 mV/V	
Digital Inputs	
Number	2
Input type	Type 1 and type 3 according to IEC 61131-2
Input filter	10 ms fixed
Input voltage low	< 5 V

Input voltage high	> 11 V
Permissible load of auxiliary voltage	< 10 mA
Supply	
Supply voltage	20.4V – 28.8V
Current consumption from system current path I_{SYS}, typ.	8 mA
Current consumption from input current path I_{IN}	35 mA+ (75 mA at nominal load)
General data	
Weight	90 g (3.17 oz)
Width	11.5 mm (0.45 in)
Depth	76 mm (2.99 in)
Height	120 mm (4.72 in)

Note: For calibration of EP-5612 and retrieving the calibration sheet, refer to the RSTi-EP Slice I/O User Manual (GFK-2958)

Specifications	EP-5501
System data	
Data	Process, parameter and diagnostic data depend on the network Adapter used.
Interface	RSTi-EP I/O communication bus
System bus transfer rate	48 Mbps
Module diagnosis	Yes
Galvanic isolation	500 V DC between current paths
Stepper Motor connections A+, A-, B+, B-	
Number	1 channel, 2 phases
Supply, amplifier	external power supply entry, external protection necessary
Power	max. 50W
Max. Current load	Refer to the RSTi-EP Slice I/O User Manual (GFK-2958)
Over load protection	yes
Short circuit proof	yes
Individual channel diagnosis	yes
Connection	4-wire
Cable length	< 30 m, shielded
Inputs DI 0 ... DI 3	
Number	4
Input type	P-switching, for type 1 and 3 type 3 sensors as per IEC 61131-2
Input filter	Input delay adjustable to 0 or 5 ms

Low input voltage	< + 5 V	
High input voltage	> + 11 V	
Low input current	≤ 1.5 mA	
High input current	≥ 2.5 mA (2-wire sensor)	
Sensor supply	max. 1 A per plug	
Sensor connection	2-wire, 3-wire	
Reverse polarity protections	yes	
Cable length	< 30 m, shielded	
Individual channel diagnosis	no	
Inputs DI 4 ... DI 5		
Number	2	
Input type	Input characteristics for sensor types 1 and 3 are in accordance with EN 61131-2, suitable incremental encoders, P-switching	
Input filter	Filter time adjustable to 0 or 5 ms	
Maximum input frequency	100 kHz	
Mode of operation	AB mode with 4-times sampling	
Low input voltage	< + 5 V	
High input volatge	> + 11 V	
Low input current	≤ 1.5 mA	
High input current	≥ 2.5 mA (2-wire sensor)	
Sensor supply	max. 1 A per plug	
Sensor connection	2-wire, 3-wire	
Reverse polarity protection	yes	
Cable length	< 30 m, shielded	
Individual channel diagnosis	no	
Outputs DO 0 ... DO 1		
Number	2	
Output type	P-switching, as per IEC 61131-2	
Type of load	ohmic, inductive, lamp load	
Responce time	low » high max. 100 µs; high » low max. 250 µs	
Max output current	per channel	0.5 A
	per module	1 A
Breaking energy (Reactive)	150 mJ per channel	
Switching frequency	Ohmic load (min. 47 Ω)	1 kHz
	Inductive load (DC 13)	0.2 Hz without free-wheeling diode 1kHz with suitable free-wheeling diode
	Lamp load (12 W)	1kHz
Actuator connection	2-wire	

High input volatge	min. Uout - 1 V
Low output current	≤ 0,5 mA
High output current	nominal 500 mA
Short circuit proof	yes
Protective circuit	Constant current with thermal switch-off and automatic restart
Responce time of the current limiting circuit	< 100 µs
Individual channel diagnosis	no
Can be used with EP-19xx	yes
MTTF	53.74 years
Supply	
Supply voltage U_{SYS}	3.6 V DC ... 6.5 V DC
Supply voltage U_{IN}	24 V DC +20 %/-15 %
Supply voltage U_{OUT}	24 V DC +20 %/-15 %
External supply voltage	12 V DC ... 50 V DC
Current consumption from system current path I_{SYS}	8 mA
Current consumption from input current path I_{IN}	27 mA+ (Sensor supply current)
Current consumption from Output current path I_{OUT}	10mA + load
Current consumption from external power supply	35 mA + load (at 24 V DC)
General Data	
Weight	173 g (5.99 oz)
Width	23.0 mm (0.9 in)
Depth	76.0 mm (2.99 in)
Height	120.0 mm (4.72 in)

LED Status

LED	EP-5111	EP-5112	EP-5121	EP-5212	EP-5261	EP-5311
Module Status	**Green:** Communication over the system bus **Red:** Module System Fault or Diagnostic Fault/Error					
1.1	**Yellow:** A/pulse controlled	**Yellow:** CH0 A pulse controlled	Yellow: CH0 A active		**Yellow:** RS-232 parameterized **Yellow flashing:** Data are being received	**Yellow:** Data In active
1.2					**Yellow:** RS-232 parameterized **Yellow flashing:** Data are being transmitted	
1.3						

LED	EP-5111	EP-5112	EP-5121	EP-5212	EP-5261	EP-5311
1.4	**Yellow:** B/direction controlled	**Yellow:** CH0 B direction controlled		**Yellow:** CH0 active (1-level)		
2.1	**Yellow:** output set		Yellow: CH0 B active			**Yellow:** Clock In active
2.2						
2.3						
2.4	**Yellow:** reset input controlled					
3.1	**Yellow:** latch input controlled	**Yellow:** CH1 A pulse controlled	Yellow: Reset In active		3.1 – 3.4 **Yellow:** RS-422 parameterized 3.1 + 3.2 Off, 3.3 + 3.4 **Yellow:** RS-485 parameterized 3.3 **Yellow flashing:** Data are being received 3.4 Yellow flashing: Data are being transmitted	**Yellow:** Clock Out active
3.2						
3.3						
3.4	**Yellow:** gate input (HW gate) controlled			**Yellow:** CH0 active (1-level)		
4.1		**Yellow:** CH1 B direction controlled	Green: sensor supply + 5 V		**Green:** Supply voltage +5VDC	**Green:** Power supply sensor +5VDC
4.2						
4.3			Green: sensor supply + 24 V		**Green:** Supply voltage +24VDC	**Green:** Power supply sensor +24VDC

LED	EP-5422	EP-5442
Module Status	**Green**: Communication over the system bus **Red**: Module System Fault or Diagnostic Fault	
1.1	**Yellow:** PWM output 0 – 100%, P-switching **Yellow** flashing at 2 Hz: PWM output 0 is > 0 and < 100%, PN-switching or P-switching	**Yellow**: PWM output 0 – 100%, P-switching Yellow flashing at 2 Hz: PWM output 0 is > 0 and < 100%, PN-switching or P-switching
1.2		
1.3		
1.4		
2.1		
2.2		
2.3		
2.4		
3.1	**Yellow**: PWM output	**Yellow**: PWM output

LED	EP-5422	EP-5442
	1 – 100%, P-switching Yellow flashing at 2 Hz: PWM output 0 is > 0 and < 100%, PN-switching or P-switching	1 – 100%, P-switching Yellow flashing at 2 Hz: PWM output 0 is > 0 and < 100%, PN-switching or P-switching
3.2		
3.3		
3.4		
4.1		
4.2		
4.3		
4.4		

LED	EP-5324
Module Status	**Green**: Communication over the system bus **Red**: Module System Fault or Diagnostic Fault
1.1	**Yellow**: Status COM 1
1.2	**Red:** Error IO Link port 1
1.3	
1.4	**Yellow:** Status DI 1
2.1	**Yellow**: Status COM 2
2.2	**Red:** Error IO Link port 2
2.3	
2.4	**Yellow:** Status DI 2
3.1	**Yellow**: Status COM 3
3.2	**Red:** Error IO Link port 3
3.3	
3.4	**Yellow:** Status DI 3
4.1	**Yellow**: Status COM 4
4.2	**Red:** Error IO Link port 4
4.3	
4.4	**Yellow:** Status DI 4

LED	EP-5714	EP-5612
Module Status	**Green**: Communication over the system bus **Red**: Error	
1.1	Red: channel error, Yellow: HART communication	Red: diagnosis at input 0
1.2		
1.3	Red: +24 V short circuit or line break AI (with current < 1.2 mA)	
1.4		
2.1	Red: channel error, Yellow: HART communication	
2.2		
2.3	Red: +24 V short circuit or line break AI (with current < 1.2 mA)	Yellow: digital input 0 active
2.4		
3.1	Red: channel error, Yellow: HART communication	Red: diagnosis at input 1
3.2		
3.3	Red: +24 V short circuit or line break AI (with current < 1.2 mA)	
3.4		
4.1	Red: channel error, Yellow: HART communication	
4.2		
4.3	Red: +24 V short circuit or line break AI (with current < 1.2 mA)	Yellow: digital input 1 active
4.4		

LED	EP-5501
Module Status	**Green**: Communication over the system bus **Red**: Error
1.1	Yellow: Input 0 active
1.2	
1.3	
1.4	Yellow: Input 1 active
2.1	Yellow: Input 2 active
2.2	
2.3	
2.4	Yellow: Input 3 active
3.1	Yellow: Input 4 active
3.2	
3.3	
3.4	Yellow: Input 5 active
4.1	Yellow: Output 0 active
4.2	
4.3	
4.4	Yellow: Output 1 active
7.1	Yellow: Phase A active
7.2	Red: Phase A error
7.3	Yellow: Phase B active
7.4	Red: Phase B error
8.1	Green: external power supply OK
8.2	Red: external power supply error

Field Wiring

The connection frame has one connector block, and two 24 V DC wires can be connected to each connector, along with two ground connections. Those four connectors are used as shown in the following figure. The *Spring style* technology allows either finely stranded or solid wire with crimped wire-end ferrules or ultrasonically welded wires, each with a maximum cross-section of 1.5 mm² (16 gauge), to be inserted easily through the opening in the clamping terminal without having to use tools. To insert fine stranded wires without wire-end ferrules, the pusher must be pressed in with a screwdriver and released to latch the wire.

Connector Blocks

Connector Specifications

- Conductor cross-section 0.14 to 1.5 mm² (26 – 16 gauge)
- Maximum ampacity: 10 A
- 4-pole

The pushers are color-coded for the following connections:

- White Signal
- Blue GND
- Red 24 V DC
- Green Functional earth (FE)

The modules do not have a fused sensor/activator power supply. All cables to the connected sensors/actuators must be fused corresponding to their conductor cross-sections (as per Standard DIN EN 60204-1, section 12).

Refer to the RSTi-EP Slice I/O User Manual (GFK-2958) for additional information.

For technical assistance, go to https://www.emerson.com/Industrial-Automation-Controls/support.

Connection Diagrams

Figure 1: EP-5111

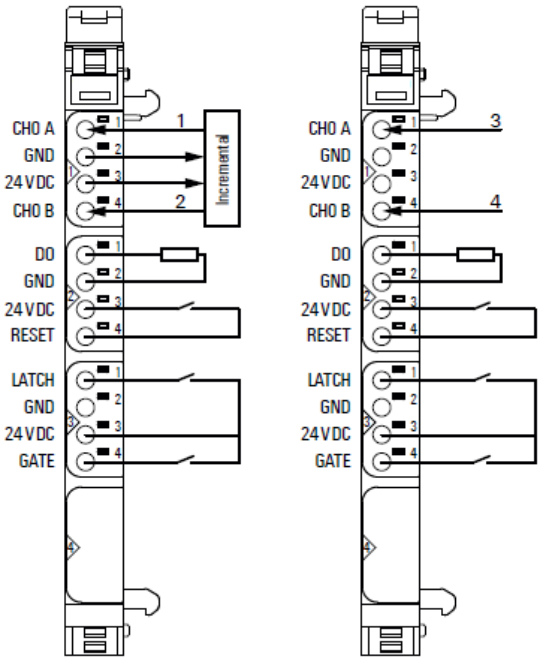


Figure 2: EP-5112

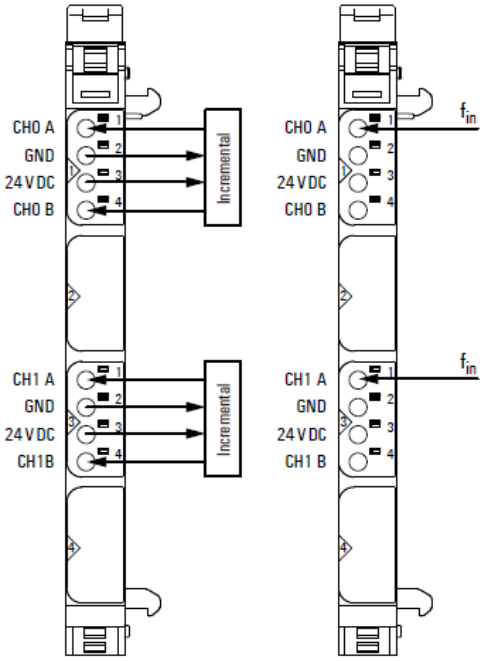


Figure 3: EP-5121

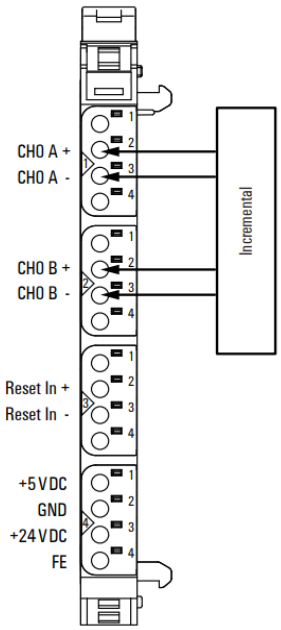


Figure 4: EP-5122

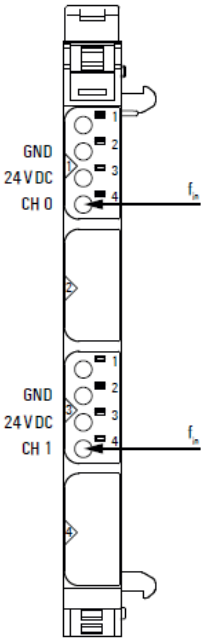


Figure 5: EP-5422

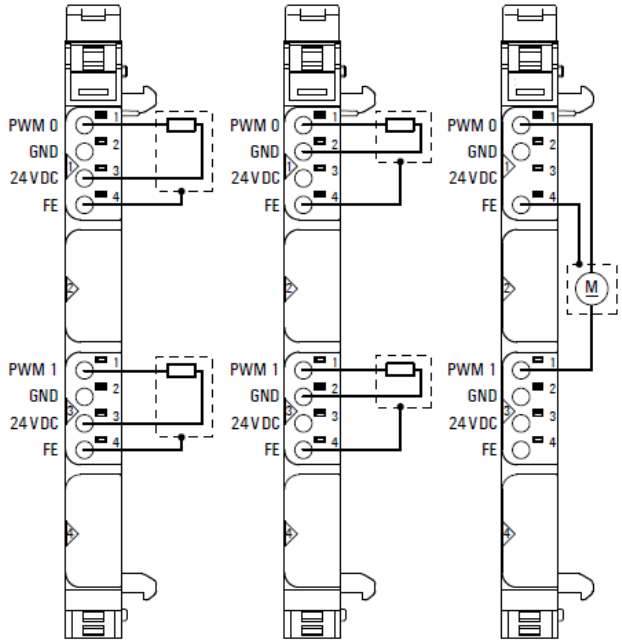


Figure 6: EP-5261

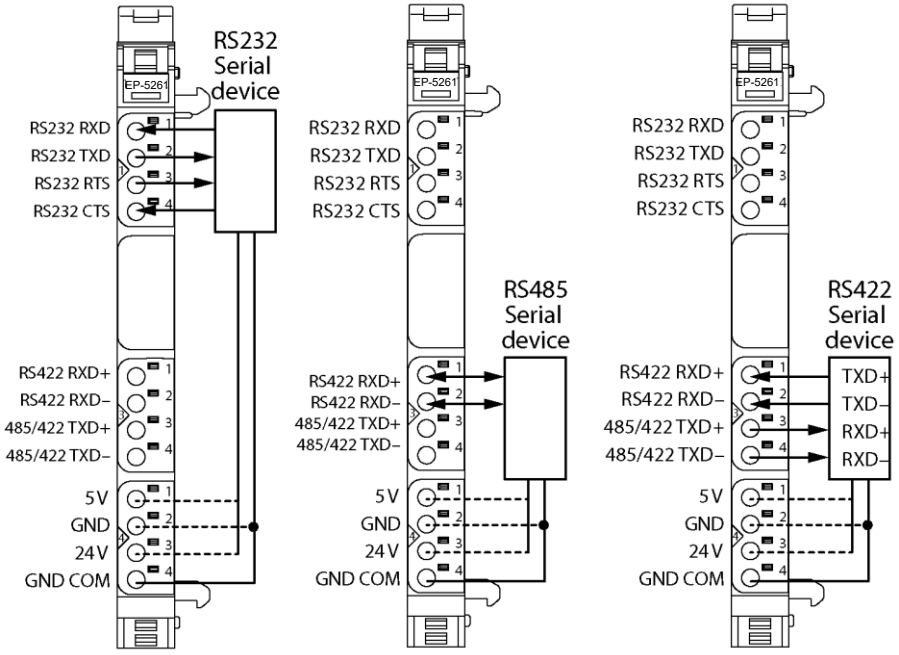


Figure 7: EP-5311

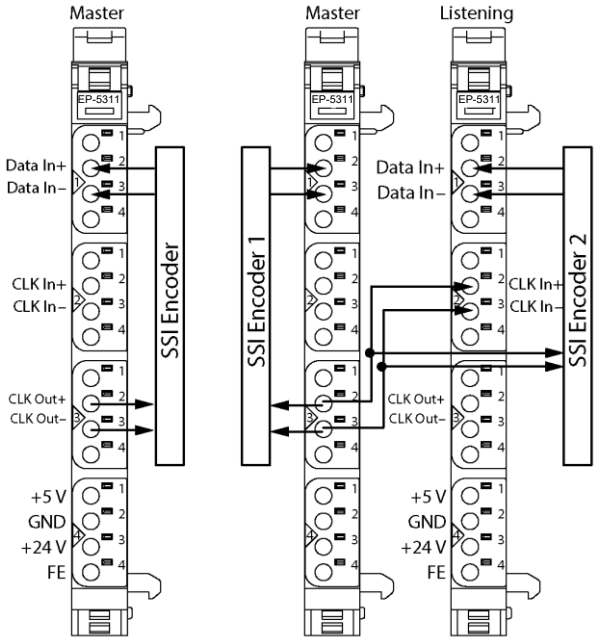


Figure 8: EP-5442

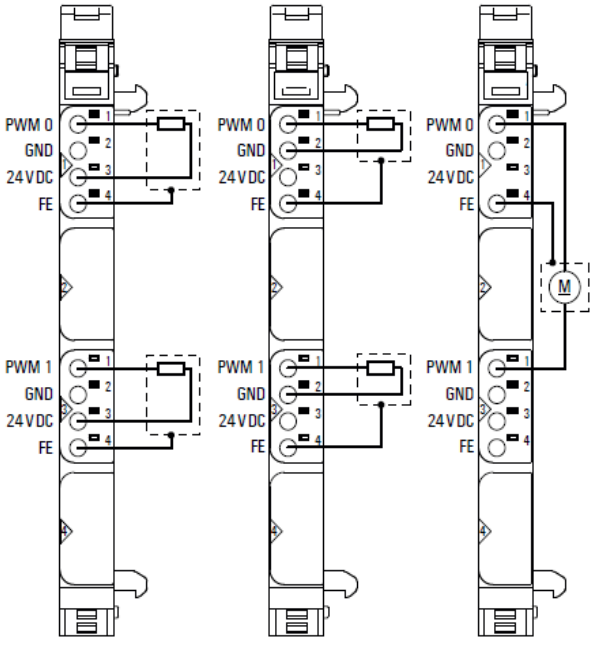


Figure 9: EP-5324

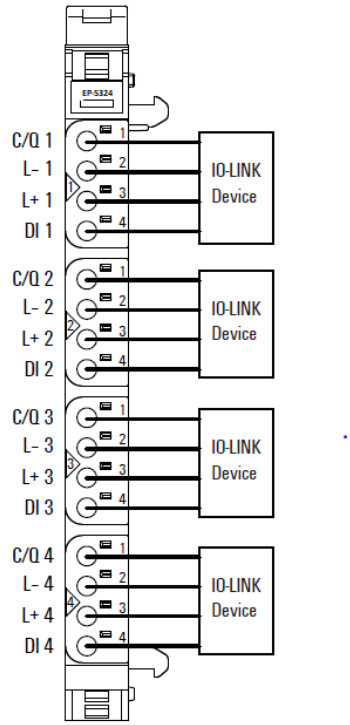


Figure 10: EP-5714

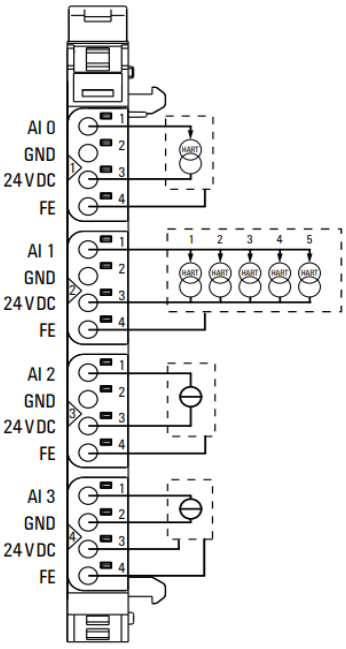


Figure 11: EP-5612

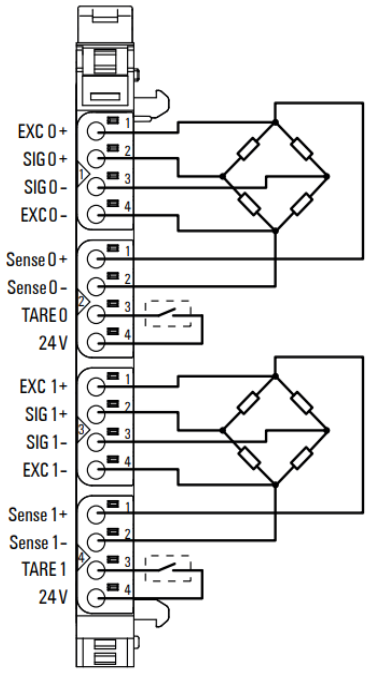
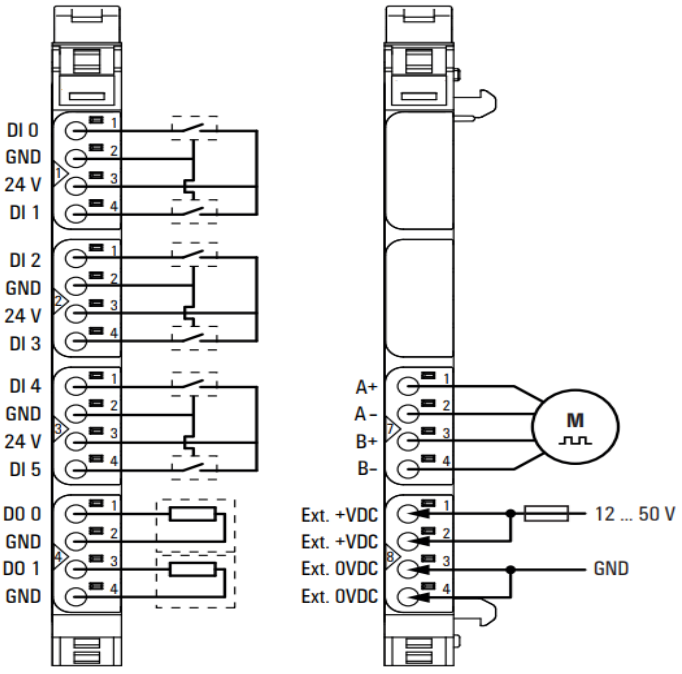


Figure 12: EP-5501



Connection Block Diagrams

Figure 13: EP-5111

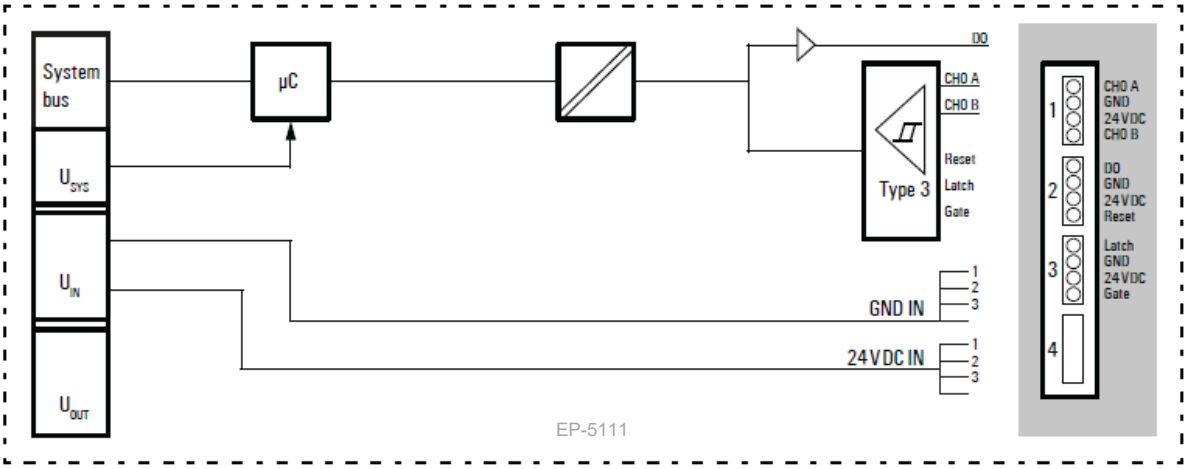


Figure 14: EP-5112

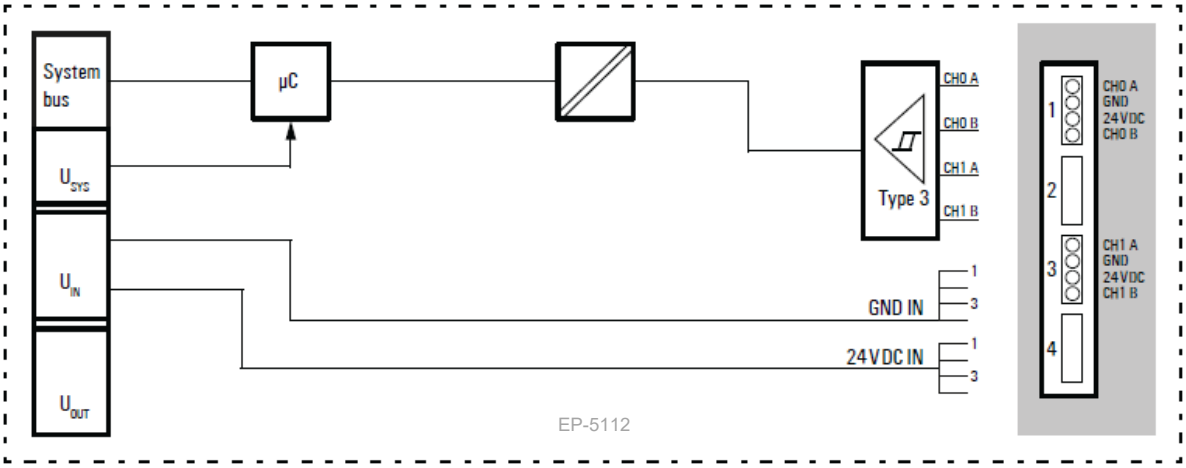


Figure 15: EP-5121

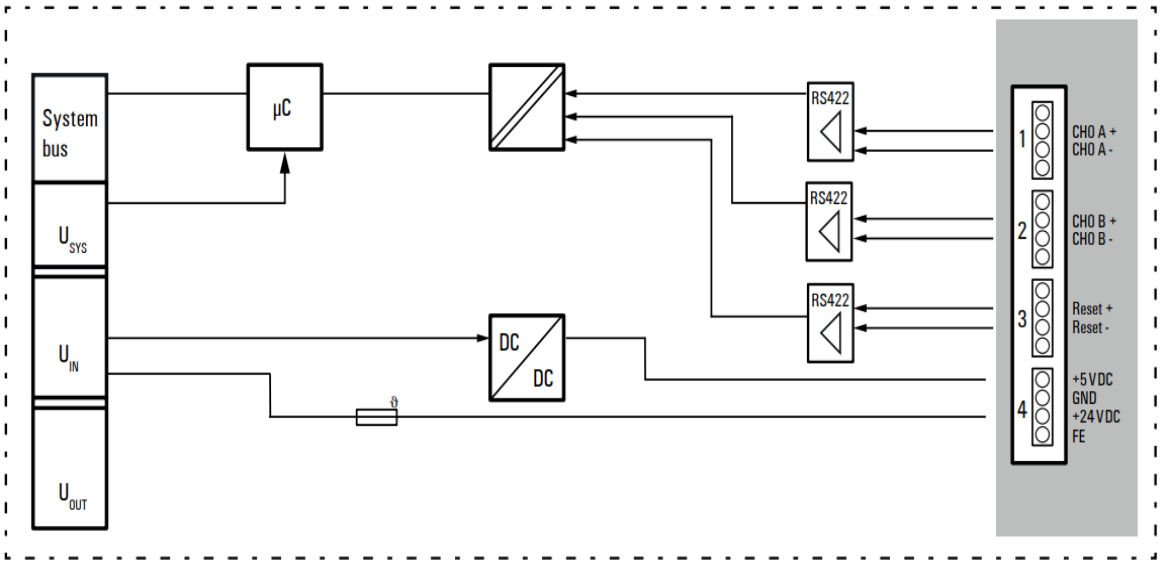


Figure 16: EP-5212

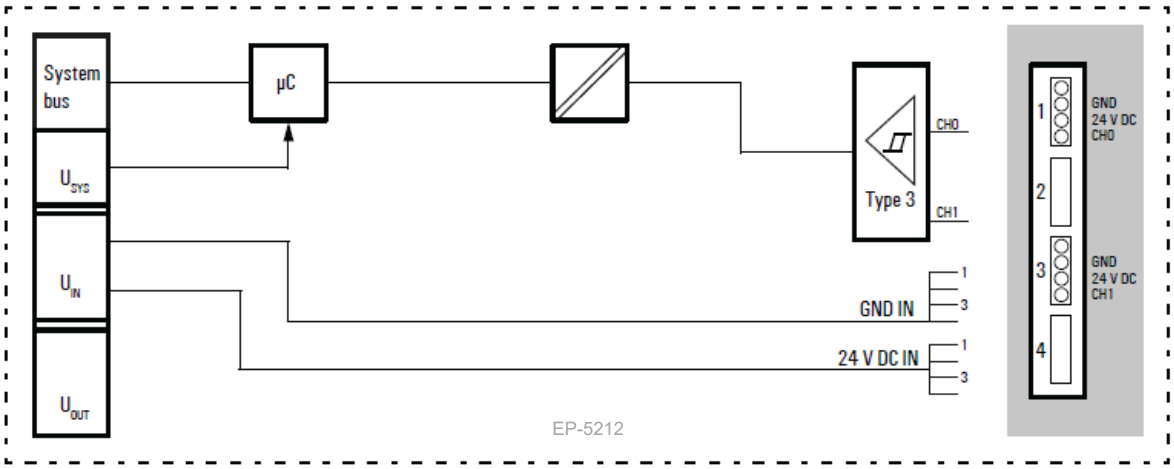


Figure 17: EP-5261

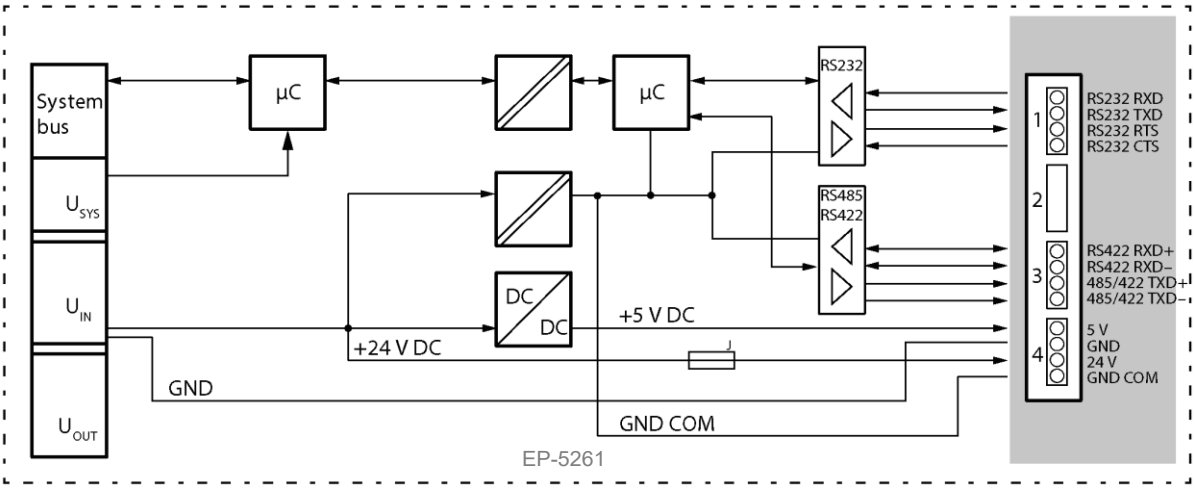


Figure 18: EP-5311

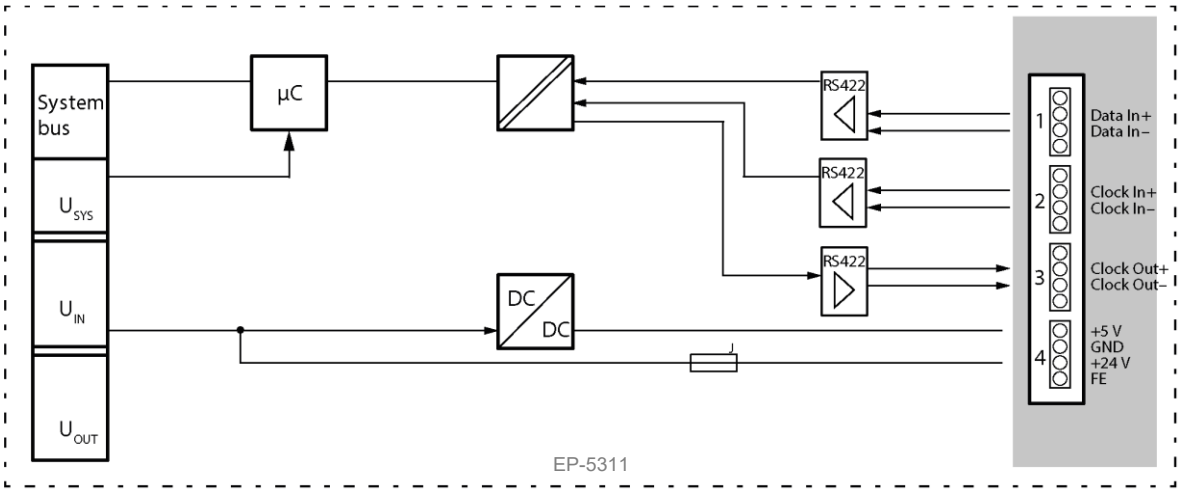


Figure 19: EP-5422

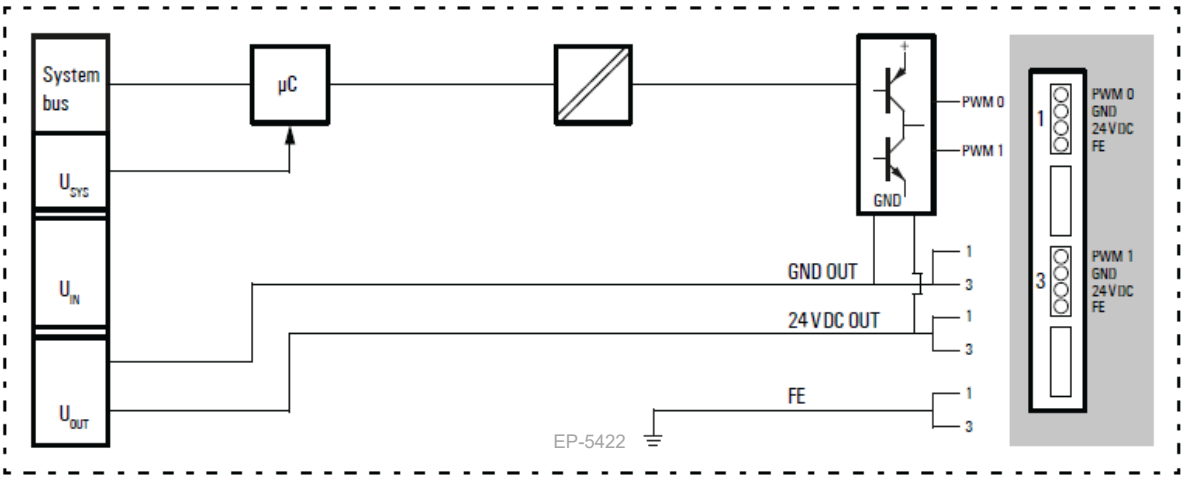


Figure 20: EP-5442

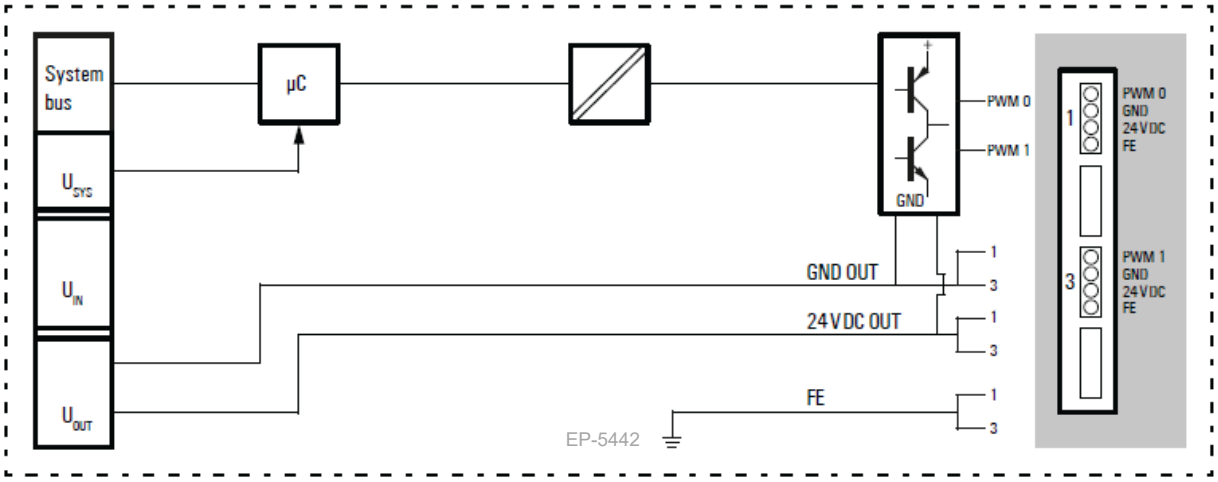


Figure 21: EP-5324

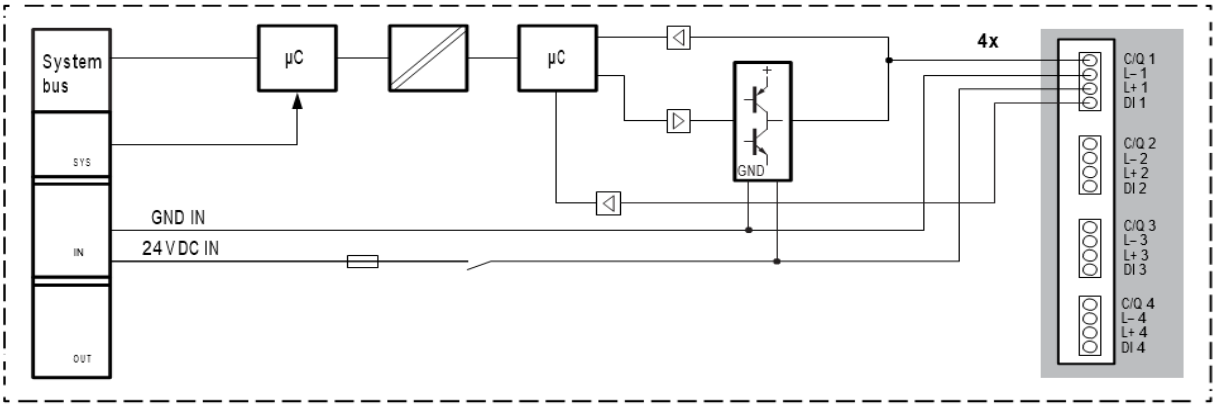


Figure 22: EP-5714

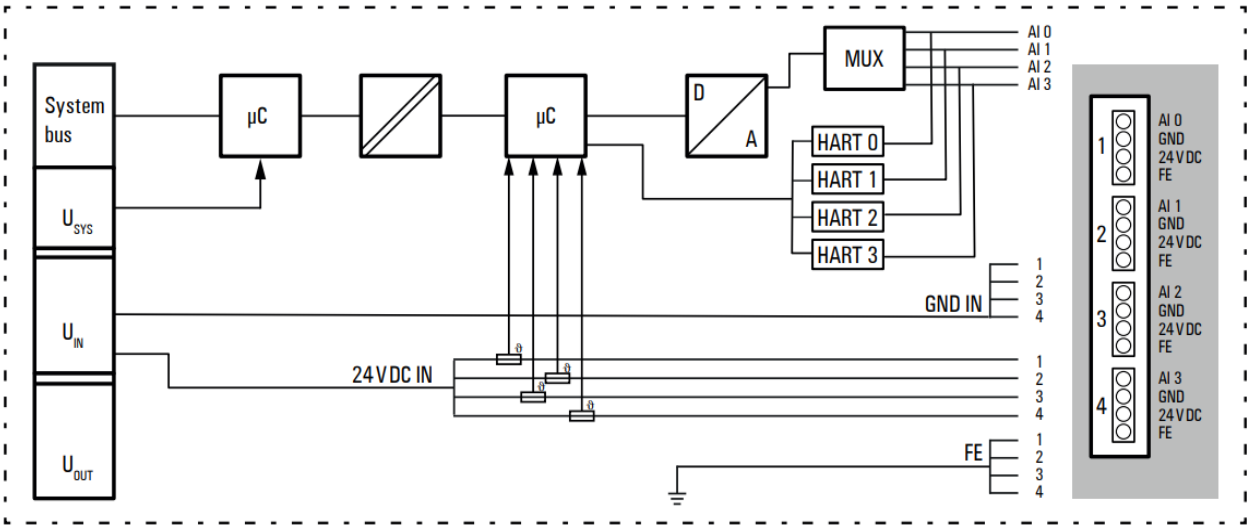


Figure 23: EP-5612

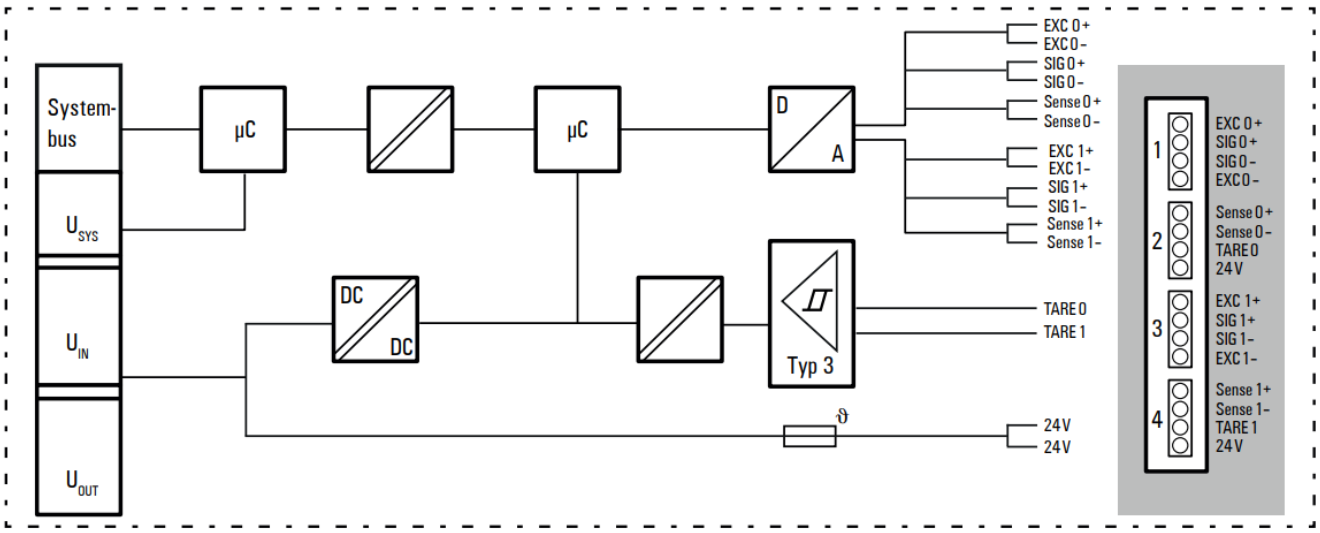
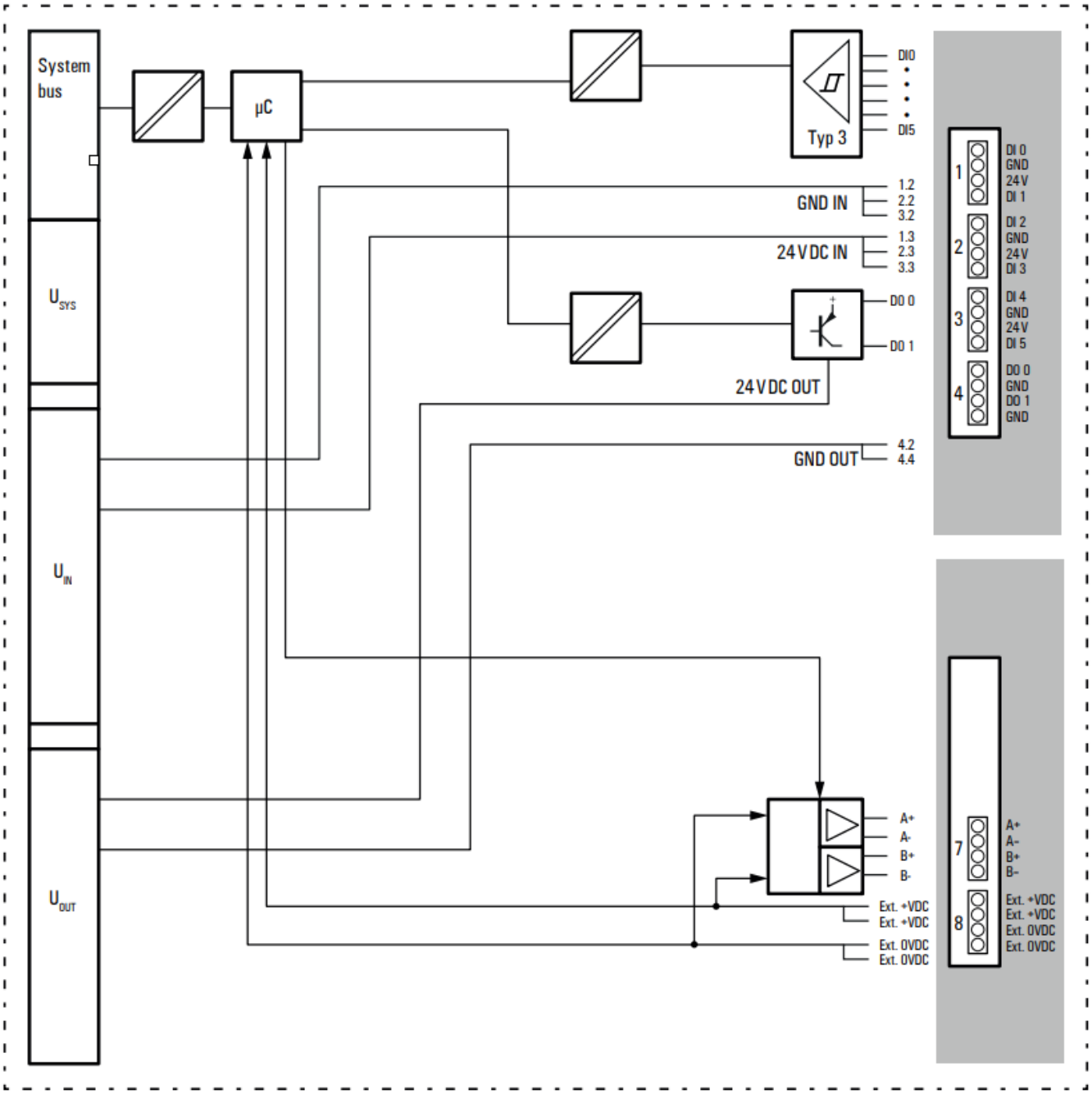


Figure 24: EP-5501



Installation in Hazardous Areas

⚠ WARNING

- EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR ZONE 2;
- EXPLOSION HAZARD - WHEN IN HAZARDOUS AREAS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES; AND
- EXPLOSION HAZARD - DO NOT CONNECT OR DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

ATEX Markings

Ⓔx II 3 G Ex nA IIC T4 Gc

Ta: -20°C to +60°C (-4° F to +140 °F)

Release History

Catalog Number	Firmware Version	Date	Comments
EP-5121-A EP-5714-AA EP-5612-AA EP-5501-AA	N/A 01.00.02 01.01.01 02.00.02	Feb 2025	Added new module.
EP-5324-BC	01.05.01	Sept 2024	Firmware updated to address compatibility issues with Network adapters and latest IO Link configurator tool 1.5.1
EP-5324 – IO Link Configurator Tool	1.5.1	Sept 2024	Software updated to address compatibility issues with few IO link devices and Network adapters. New added features: • Additional file format i. Exporting IO-Link device configurations – “Binary configuration file” (BSC). ii. Support of CSV export of diagnosis data. • Editing IO Link device parameter • Access of raw data • Improved visualization
EP-5111-D EP-5112-D EP-5212-D EP-5261-CD EP-5311-D EP-5422-C EP-5442-C EP-5324-BB	N/A	Jan 2024	Updated product markings to include UKCA, CCC & Morocco.
EP-5324 – IO Link Configurator Tool	1.4.1	Dec 2023	Software updated to address compatibility issues with few IO link devices

Catalog Number	Firmware Version	Date	Comments
EP-5261-PLC communication blocks	FB_MBM_RTU_Master: 01.02	Oct 2021	Reset of serial communications after losing profinet or serial communications.
N/A	N/A	Jul 2021	Correction issued to the module description in section Ordering Info of this IPI.
EP-5324-AB	01.04.00	Jun 2020	Increased startup timeout to support IO-Link devices having longer startup times.
EP-5324-AA	01.03.00	Dec 2019	IO-Link Communication Module, 4 Channels :-Initial Release
EP-5324 - IO-Link Configurator Tool	01.02.00	Dec 2019	Software Installation Package (win 10) for IO-Link Configurator Tool – Initial Release.
EP-5261-BD	01.00.16	Sep 2019	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No changes to material, process, form, fit or functionality. Firmware updates done to fix. - Increased size of RX buffer to 4kByte Module freezes when the force modus is used or after doing a software reset of the network adapter.
EP-5111-C EP-5112-C EP-5212-C EP-5422-B EP-5442-B	N/A	Sep 2019	Following Emerson's acquisition of this product, changes have been made to apply appropriate branding and registration of the product with required certification agencies. No changes to material, process, form, fit or functionality.
EP-5261-AC	01.00.13	Sep 2018	Minor Firmware updates – No change to functionality
EP-5111-B EP-5112-B EP-5212-B EP-5311-B	N/A	Apr 2018	These product revisions are updated to be usable in Marine application and pass Marine certification tests. Refer GFK-2958 for certification details.
EP-5261-AB	01.00.12	Oct 2017	Release for firmware enhancements and addressing issue in PLC Stop handling.
EP-5261 EP-5311	N/A	Aug 2016	Added Phase-2 modules
EP-5111 EP-5112, EP-5212 EP-5422 EP-5442	N/A	Dec 2015	Documentation update only
EP-5111 EP-5112 EP-5212 EP-5422 EP-5442	N/A	Nov 2015	Initial Release

Important Product Information for this Release

Updates

Functional Compatibility

Refer to the Network Adapter IPIs for this information.

Problems Resolved by this Release

New Features and Enhancements

Modules	Description
EP-5121	New High-Speed Counter (1 channel 500 kHz) EP-5121 added to RSTi-EP Product line.
EP-5714	New Analog HART Input, 16- bits EP-5714 added to RSTi-EP Product line.
EP-5612	New Strain gauge, Weight/Torque/Vibrations Measurement, 24 -bits EP-5612 added to RSTi-EP Product line.
EP-5501	New 1 Channel Stepper Motor, 2 phases, Control 6 binary signal, 2 actuators, Encoder EP-5501 added to RSTi-EP Product line.

Known Restrictions and Open Issues

None

Operational Notes

None

Product Documentation

RSTi-EP Slice I/O Module User Manual (GFK-2958)

RSTi-EP Slice I/O Functional Safety Module User Manual (GFK-2956)

RSTi-EP Serial Communication Module IPI (GFK-2992)

Contact Information and Support Guide

Questions? We are here to help.

Before starting a case or making a call, try searching our Knowledge Base on the Customer Center website—it might have the answer you need right away.

If you have a question, try the following steps:

Search our Knowledge Base	Open a Support Ticket	Register for a Customer Account
pacsystems.co/knowledge	pacsystems.co/support	pacsystems.co/signup

Other Helpful Links

Customer Center Home Page	Commercial Website	Contact Information
pacsystems.co/customercenter	pacsystems.co/commercial	pacsystems.co/contactus

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