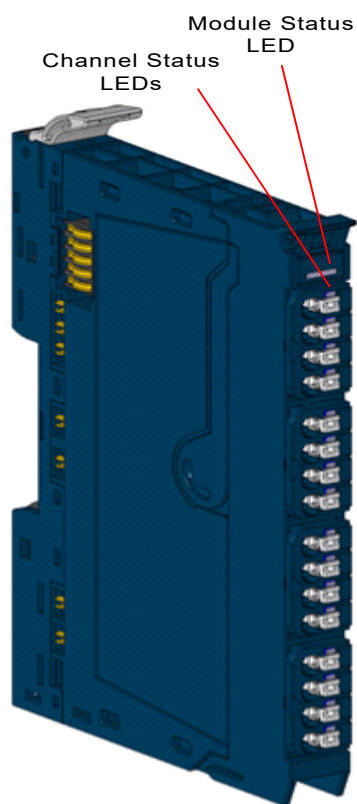


PACSystems™ RSTi-EP

ANALOG OUTPUT MODULES

(EP-4164, EP-4264 & EP-42A2)



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.

These instructions do not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met during installation, operation, and maintenance. The information is supplied for informational purposes only, and Emerson makes no warranty as to the accuracy of the information included herein. Changes, modifications, and/or improvements to equipment and specifications are made periodically and these changes may or may not be reflected herein. It is understood that Emerson may make changes, modifications, or improvements to the equipment referenced herein or to the document itself at any time. This document is intended for trained personnel familiar with the Emerson products referenced herein.

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Introduction

Emerson provides RSTi-EP analog output modules with up to 4 analog outputs at +/-10 V, +/-5 V, 0-10 V, 0-5 V, 2-10 V, 1-5 V, 0-20 mA or 4-20 mA. The resolution is 16 bit per channel. An output can be connected to each connector, the internal switching is carried out automatically. The output range is defined using parameterization. A status LED is assigned to each channel. The outputs are supplied with power from the output current path (IOUT).

The EP-4264 module provides individual channel diagnosis with channel related error messages.

The EP-42A2 modules can control up to 4 analog actuators and outputs are isolated from each other and from the system supply.

Each module features a type plate, which includes identification information, the key technical specifications, and a block diagram. In addition, a QR code allows for direct online access to the associated documentation. The software for reading the QR code must support inverted QR codes.

Markers are available as accessories for labelling equipment. Each I/O module can be labelled using the markers to ensure clear identification when replacing individual modules or electronic units.

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

The outputs as well as the sense-lines of the AO modules must not be used as power outputs.

Modules should be allowed to deenergize 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 (PME) V9.00, for detailed power-feed requirements.

Module Features

- Control up to four analog outputs
- Module diagnosis
- Spring style technology for ease of wiring
- DIN rail mounted
- Double-click installation for positive indication of correct installation
- Supports indirect firmware update through the network monitor
- Supports hot insertion and extraction

Ordering Information

Module	Description
EP-4164	Analog Output, 4 Channels Voltage/Current 16 Bits 2, 3, or 4-Wire
EP-4264	Analog Output, 4 Channels Voltage/Current 16 Bits with Diagnostics 2, 3, or 4-Wire
EP-42A2	Analog Output ,2 Channels Voltage/ Currents 16 Bits Diagnostics 2-Wires, Isolated

Specifications

Specification	EP-4164	EP-4264	EP-42A2
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		
Potential isolation	Channel/system bus = yes		Channel/system bus = yes Channel/channel = yes
Outputs			
Number	4		2
Output levels	1. Voltage (0 – 5 V, ±5 V, 0 – 10 V, ±10 V, 1 – 5 V, 2 – 10 V) 2. Current (0 – 20 mA, 4 – 20 mA)		
Response time	1 ms for 4 channels		1 ms for 2 channels
Resolution	16 bits		
Accuracy	0.1 % FSR max., 0.05 % FSR typ.		
Temperature coefficient	20 ppm voltage / 31 ppm current measurement / K		30 ppm/K
Max. error between Tmin and Tmax	±220 ppm FSR		±0.24 % FSR
Monotony	Yes		
Crosstalk between the channels	±0.001 % FSR max.		
Repeat accuracy	< ±1 mV eff.		< ±1 mV / 2 µA
Output ripple	max. 0.001 %		
Voltage load resistance	≥ 1 kΩ (at > 50°C (122 °F) max ambient temperature, total sensor current of 10 mA per channel but 25 mA per module)		
Current load resistance	≤ 600 Ω including field cable resistance		
Actuator connection	2-wire (current and voltage; automatic detection), 4-wire (voltage)		
Short-circuit-proof	Yes		
Module diagnosis	Yes		
Individual channel diagnosis	No	Yes	Yes
Substitute value	Yes		
Can be used with EP-19xx module	Yes		
Supply			
Supply voltage	20.4V – 28.8V		
Current consumption from system current path ISYS	8 mA		
Current consumption from output current path IOUT	85 mA		80 mA
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)	98 g (3.47 oz)	85 g (2.99 oz)

Current Demand for Analog Output Modules

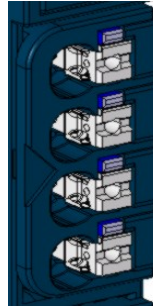
Product	I _{sys}	I _{IN}	I _{OUT}	I _s	I _L
EP-4164	8 mA	--	85 mA	--	--
EP-4264	8 mA	--	85 mA	--	--
EP-42A2	8 mA	--	80 mA	--	--
<p>I_{sys} Current consumption from the system current path</p> <p>I_{IN} Power consumption from input current path</p> <p>I_{OUT} Power consumption from output current path</p> <p>I_s Current demand of the connected sensors</p> <p>I_L Current demand of the connected actuators</p> <p>x Must be included when calculating the power supply</p>					

LEDs

LED	EP-4164	EP-4264	EP-42A2
Module Status	Green: Communication over the system bus Red: Module System Fault or Diagnostic Fault	Green: Communication over the system bus Red: Module System Fault or Diagnostic Fault	Green: Communication over the system bus Red: Error
1.1	Red: Channel 0 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	Red: Channel 0 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	Red: Channel 0 at voltage output: overload or short circuit, at current output: shunt resistance too high or line break detected
1.2	--	--	
1.3	--	--	
1.4	--	--	
2.1	Red: Channel 1 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	Red: Channel 1 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	
2.2	--	--	
2.3	--	--	
2.4	--	--	
3.1	Red: Channel 2 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	Red: Channel 2 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	Red: Channel 1 at voltage output: overload or short circuit, at current output: shunt resistance too high or line break detected
3.2	--	--	
3.3	--	--	
3.4	--	--	
4.1	Red: Channel 3 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	Red: Channel 3 at voltage output: overload short-circuit, at current output: shunt resistance too high or line break detected	
4.2	--	--	
4.3	--	--	
4.4	--	--	

Field Wiring

The connection frame can take up to four connectors, and four wires can be connected to each connector. Those four connectors are shown in the following figure. The *Spring style* technology allows either finely stranded or solid wire conductors 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>.

Installation in Hazardous Areas

⚠ WARNING

- EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C & D, DIV. 2 HAZARDOUS AREAS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D OR NON-HAZARDOUS AREAS ONLY
- WARNING-EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2;
- WARNING-EXPLOSION HAZARD - WHEN IN HAZARDOUS AREAS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES; AND
- WARNING-EXPLOSION HAZARD - DO NOT CONNECT OR DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS.

ATEX Marking

⚡ II 3 G Ex nA IIC T4 Gc

⚡ Ta: -20°C to +60°C (-4° F to +140 °F)

Connection Diagram

Figure 1: EP-4164

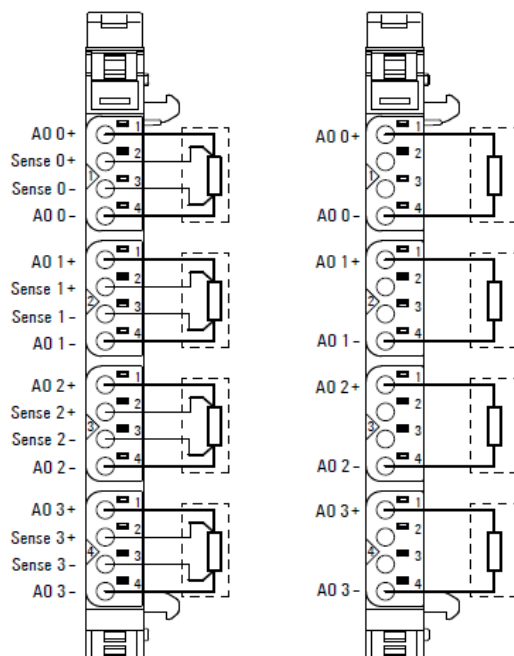


Figure 2: EP-4264

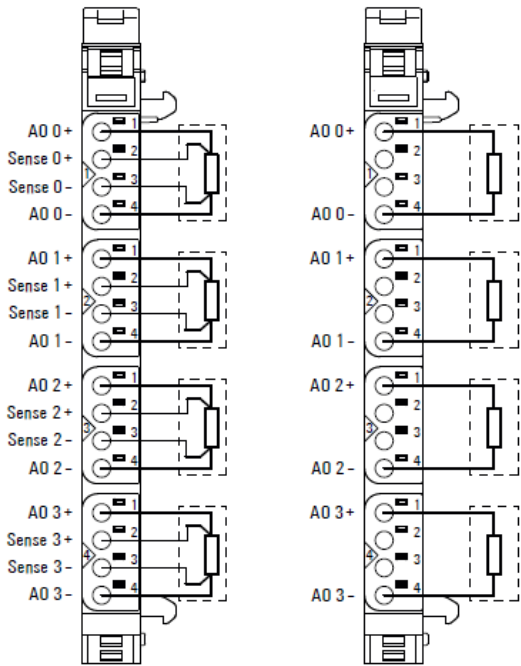


Figure 3: EP-42A2

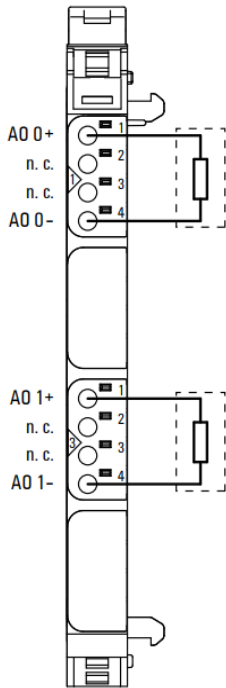


Figure 4: EP-42A2

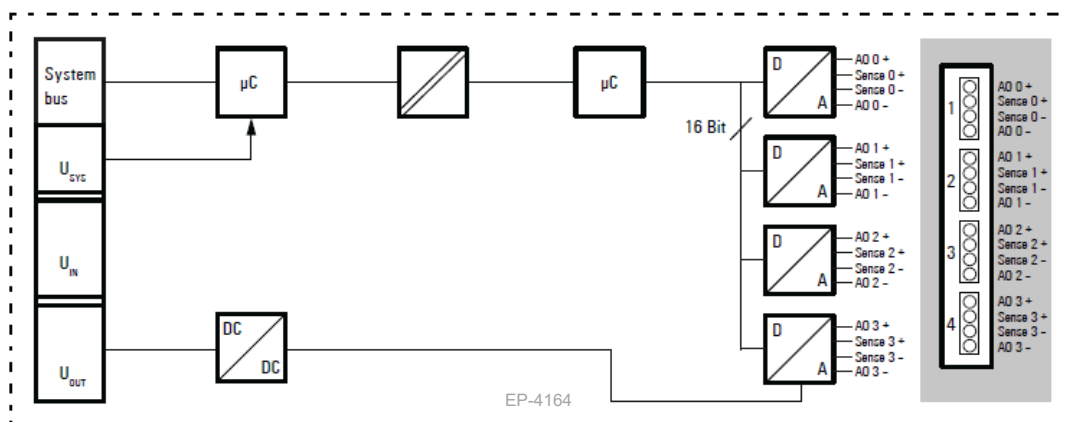


Figure 5: EP-4264

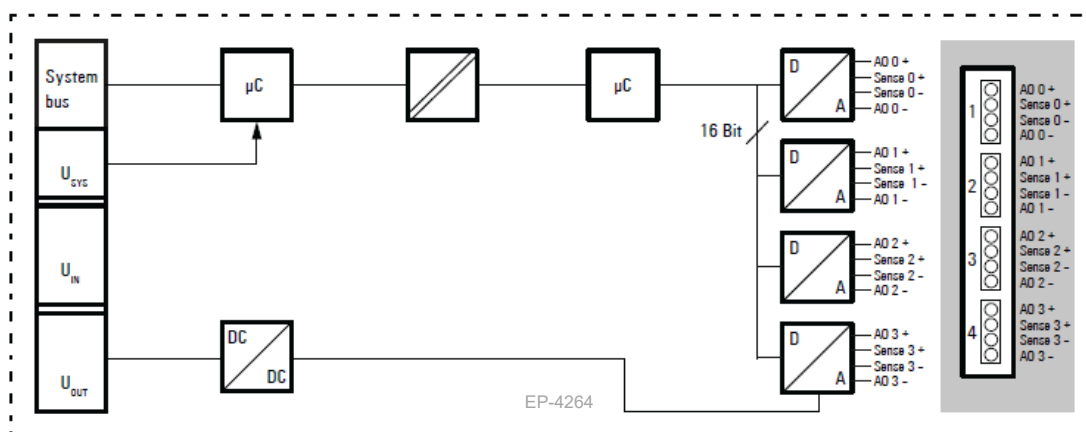
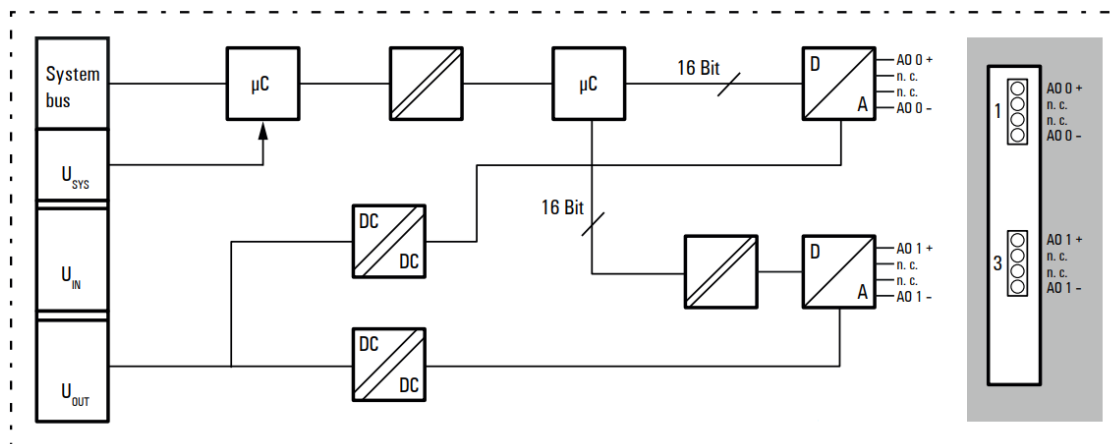


Figure 6: EP-42A2



Release History

Catalog Number	Firmware Version	Date	Comments
EP-42A2-AA	01.00.00	Feb 2025	Added new module
EP-4164-ED EP-4264-ED	01.03.03	Jan 2024	Updated product markings to include UKCA, CCC & Morocco.
EP-4164-DD EP-4264-DD	01.03.03	Dec 2021	Firmware Updates During power up, inrush current drawn by the output device may disable the output. Firmware is modified to keep the output enabled during startup.
EP-4164-DC EP-4264-DC	01.02.01	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-4164-CC EP-4264-CC	01.02.01	Sep-2018	Minor Firmware updates – No change to functionality
EP-4164-CB EP-4264-CB	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-4164 EP-4264	01.01	Dec-2015	Documentation update only
EP-4164 EP-4264	01.01	Nov-2015	Initial Release

Important Product Information for this Release Updates

Not Applicable

Functional Compatibility

Not Applicable

Problems Resolved by this Release

Not Applicable

New Features and Enhancements

Modules	Description
EP-42A2	New Analog Output (2 channel Isolated), 16-bit EP-42A2 added to RSTi-EP IO 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)

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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