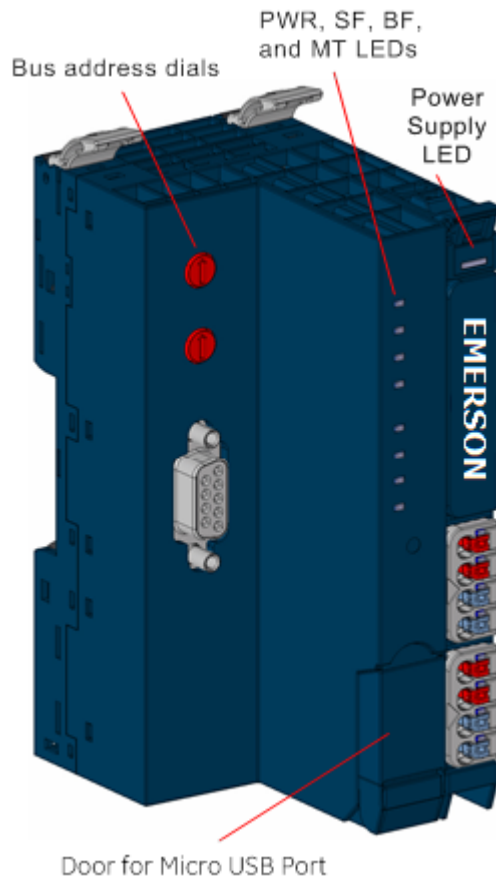


# PACSystems™ RSTi-EP

## PROFIBUS® NETWORK ADAPTER MODULE (EPXPBS001)





## 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

The EPXPBS001 network adapter is a PROFIBUS-DP device certified by the PROFIBUS user organization. The network adapter is the head module for the RSTi-EP communication bus, to which up to 64 active RSTi-EP modules can be connected. The PROFIBUS-DP network adapter has a Sub-D socket and supports all services in accordance with the DP-V1 specification.

The network adapter can be accessed with a system-independent web server application via the USB service interface. Thus, all information, such as diagnostics, status values and parameters, can be read and all connected modules can be simulated or forced.

The station's main power supply is integrated in the network adapter. Power is supplied via two 4-pole connectors, separated into the input and output current paths.

Caution, the RSTi-EP station is usually installed on a horizontally positioned DIN rail. Installation on vertically positioned DIN rails is also possible. However, the heat dissipation is reduced such that the derating values change (refer to the section, Thermal Derating).

Modules should to be allowed to de-energize for a minimum 10 seconds after power down, prior to starting any maintenance activity. The network adapter cannot be hot-swapped.

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 PME V9.00, for detailed power-feed requirements.

## Module Features

- Supports up to 64 active RSTi-EP modules
- Spring-style technology for ease of wiring
- DIN rail mounted
- Double-click installation for positive indication of correct installation
- Built-in Web server for diagnostic information and firmware update through Ethernet and micro USB port

# Ordering Information

Module	Description
EPXPBS001	RSTi-EP Slice I/O Profibus Network Adapter

# Specifications

Specification	EPXPBS001
System data	
Connection	9-pole SUB-D socket
Fieldbus protocol	PROFIBUS-DP V1

Specification		EPXPBS001	
Process image	Input data width	max. 244 bytes	
	Output data width	max. 244 bytes	
	Parameter data	max. 244 bytes	
	Diagnostic data	max. 244 bytes	
Number of modules	max. 64 active		
Configuration interface	Micro USB 2.0		
Transfer rate	Fieldbus	Max. 12 Mbps	
	RTSi-EP system bus	Max. 48 Mbps	
Supply			
Supply voltage for system and inputs	20.4V – 28.8V		
Supply voltage for outputs	20.4V – 28.8V		
Max. feed-in current for input modules	10 A		
Max. feed-in current for output modules	10 A		
Current consumption from system current path I <sub>sys</sub>	100 mA		
Connection data			
Type of connection	Spring style		
Conductor cross-section	Single-wired, fine-wired	0.14 – 1.5 mm <sup>2</sup> (AWG 26 – 16)	
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 DIN EN 61131-2		
Width	52 mm (2.05 in)		
Depth	76 mm (2.99 in)		
Height	120 mm (4.72 in)		
Weight	223 g (7.87 oz)		
Configuration	The GSD file is available on the Support website <a href="https://www.emerson.com/Industrial-Automation-Controls/support">https://www.emerson.com/Industrial-Automation-Controls/support</a> for download and import into PAC Machine Edition. The GSD supporting a firmware release is part of the firmware upgrade kit available on the Support website.		

LEDs



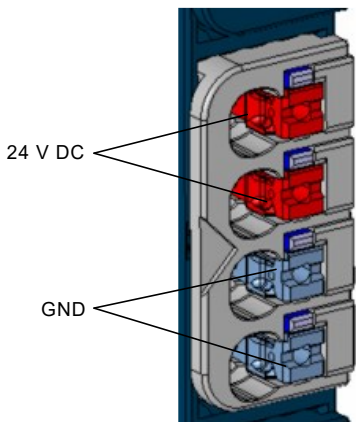
LED	EPXPBS001
Power Supply	<b>Green:</b> Supply voltage > 18 V DC <b>Red:</b> At least one current path < 18 V

3.1	<b>Green:</b> Input current path supply voltage > 18 V DC
3.2	<b>Red:</b> Input current path supply voltage < 18 V DC
3.3	
3.4	<b>Red:</b> Internal fuse defective
4.1	<b>Green:</b> Output current path supply voltage > 18 V DC
4.2	<b>Red:</b> Output current path supply voltage < 18 V DC
4.3	
4.4	<b>Red:</b> Internal fuse defective

Field Wiring

The connection frame has one connector, 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 guage), 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.

Figure 1: Connector Block



## Connector Specifications

- Conductor cross-section 0.14 to 1.5 mm<sup>2</sup> (26 – 16 guage)
- Maximum ampacity: 10 A
- 4-pole

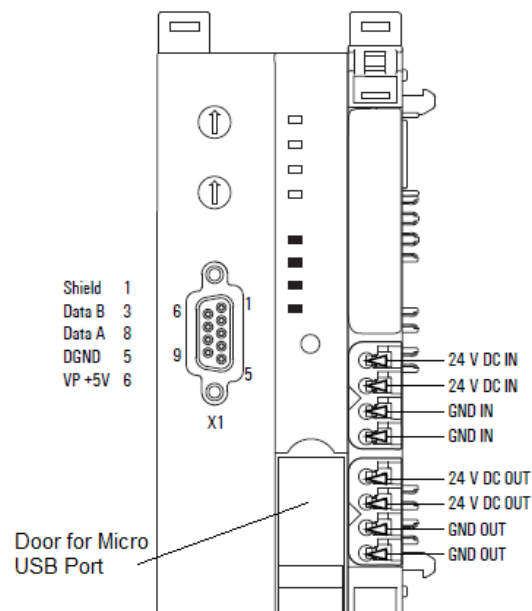
The modules do not have a fused sensor/activator power supply. All cables to the connected sensors/actuators must be fused corresponding to their conductor cross-sections (as per Standard DIN EN 60204-1, section 12).

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

For technical assistance, go to <https://www.emerson.com/iac-support>.

## Connection Diagrams

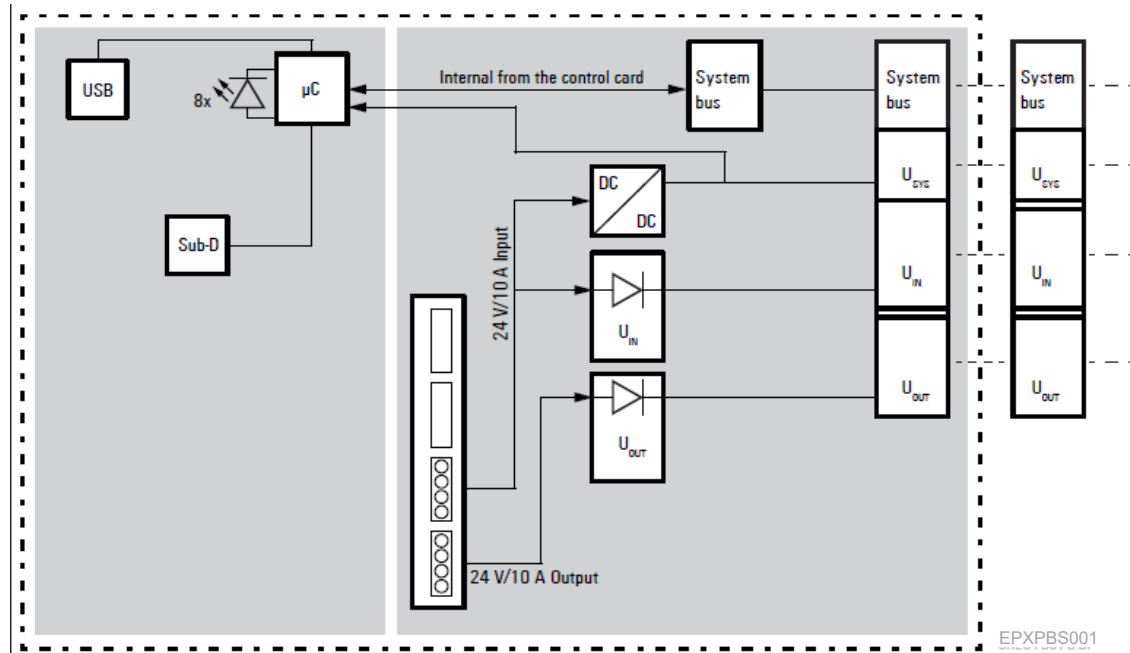
**Figure 2: EPXPBS001**





## Connection Block Diagrams

**Figure 3: EPXPBS001**



## Addressing

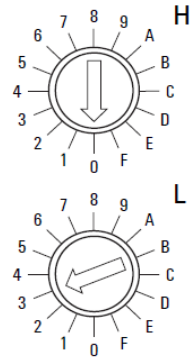
The network adapter on the PROFIBUS-DP is addressed via the two rotary switches.

**Note:** A maximum of 125 addresses (1 to 125) can be assigned. Each address may be assigned only once in the overall bus structure. Addresses 1 and 2 are generally used by the control systems. Bus addresses 000 plus 126 and higher may not be used.

The most significant digit is set with rotary switch **H**, the least significant digit with rotary switch **L**. The switches are labelled in the hexadecimal numbering system (0 to 9, A=10, B=11, C=12, ... F = 15). A hexadecimal to decimal conversion table is provided in the annex.

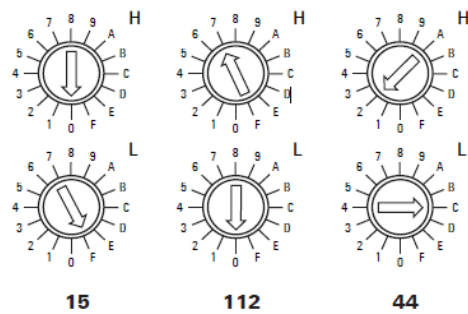
## Coding: Address = (H\*16) + L

Figure 4: Default Setting EPXPBS001: Address = 3



## Addressing examples

Figure 5: Examples for Addressing the EPXPBS001



PROFIBUS address **15**: H = 0, L = F

PROFIBUS address **112**: H = 7, L = 0

PROFIBUS address **44**: H = 2, L = C

## 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
- EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 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 NONHAZARDOUS.

## ATEX Marking

 II 3 G Ex nA IIC T4 Gc

Ta: -20°C to +60°C (-4° F to +140 °F)

## Thermal Derating

The power supply is restricted according to the temperature. The following values apply for the horizontal and vertical positioning of the RSTi-EP station:

### Temperature-dependent Values for the Power Supply

Power Source	Horizontal	Vertical
Network adapter power supply	60°C (140 °F) : 2 x 8 A	55°C (131 °F) : 2 x 6 A
	55°C (131 °F) : 2 x 10 A	50°C (122 °F) : 2 x 8 A
Power-feed module power supply	60°C (140 °F) : 1 x 10 A	55°C (131 °F) : 1 x 8 A

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

## Supported Modules and Power Supplies

The following modules can be used with this release of the RSTi-EP Profibus Network Adaptor :

Catalog Number	Module Description
<b>Digital Input Modules</b>	
EP-1214	Digital Input, 4 Points, Positive Logic 24VDC, 2,3, or 4 Wire
EP-1218	Digital Input, 8 Points, Positive Logic, 24VDC 2 Wire
EP-1318	Digital Input, 8 Points, Positive Logic, 24VDC 3 Wire
EP-125F	Digital Input, 16 Points, Positive Logic, 24VDC, 1 Wire

Catalog Number	Module Description
EP-153F	Digital Input, 16 Points, Negative Logic, 24VDC, 1 Wire
EP-12F4	Digital Input, 4 Points, Positive Logic 24VDC, 2,3, or 4 Wire, Time stamp
EP-1804	Digital Input, 4 Points 110/230 VAC (65 – 277 VAC), 2 Wire, Isolated
<b>Digital Output Modules</b>	
EP-2214	Digital Output, 4 Points, Positive Logic 24VDC, 0.5A, 2,3, or 4 Wire
EP-2614	Digital Output, 4 Points, Positive Logic 24VDC, 2.0A, 2,3, or 4 Wire
EP-2634	Digital Output, 4 Points, Positive/Negative Logic 24VDC, 2.0A, 2,3, or 4 Wire
EP-2218	Digital Output, 8 Points, Positive Logic, 24VDC, 0.5A, 2 Wire
EP-225F	Digital Output, 16 Points, Positive Logic, 24VDC, 0.5A, 1 Wire
EP-291F	Digital Output, 16 Points, Negative Logic, 24VDC, 0.5A, 1 Wire
<b>Digital Relay Output Modules</b>	
EP-2714	Digital Relay Output, 4 Points, Positive Logic, 24 - 220 VDC/VAC, 6A, 2 Wire
EP-2814	Solid-state Relay Output Module
EP-1813	Power Measurement Module, 8 Channels
<b>Analog Input Modules</b>	
EP- 3164	Analog Input, 4 Channels Voltage/Current 16 Bits 2, 3, or 4 Wire
EP- 3264	Analog Input, 4 Channels Voltage/Current 16 Bits with Diagnostics 2, 3, or 4 Wire
EP- 3124	Analog Input, 4 Channels Voltage/Current 12 Bits 2, 3, or 4 Wire
EP-3368	Analog Input, 8 Channels Current 16 Bits 2, 3, or 4 Wire
EP-3468	Analog Input, 8 Channels Current 16 Bits 2, 3, or 4 Wire, Channel Diagnostic
EP-3664	Analog Input, 4 Channels Voltage/Current 16 Bits with Diagnostics 2, 3, or 4 Wire, Differential Input
EP-3704	Analog Input, 4 Channels RTD 16 Bits with Diagnostics 2, 3, or 4 Wire
EP-3804	Analog Input, 4 Channels TC 16 Bits with Diagnostics 2, 3, or 4 Wire
<b>Analog Output Modules</b>	
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
<b>Speciality Modules</b>	
EP-5111	1 Channel High Speed Counter, AB 100 kHz 1 DO 24VDC, 0.5A
EP-5112	2 Channel High Speed Counter, AB 100 kHz
EP-5212	2 Channel Frequency Measurement, 100 kHz
EP-5261	1 Channel Serial Communications, 232, 422, 485
EP-5311	1 Channel SSI Encoder, BCD or Gray-Code Format, 5/24 VDC
EP-5422	2 Channels PWM Output, Positive Logic, 24VDC, 2.0 A
EP-5442	2 Channels PWM Output, Positive Logic, 24VDC, 0.5 A
EP-5324	IO-Link Communication Module, 4 Channels

Catalog Number	Module Description
<b>Power Feed Modules for Input Current Path</b>	
EP-7631	Power Module, 1 Channel 24VDC Input Flow 10A
<b>Power Feed Modules for Output Current Path</b>	
EP-7641	Power Module, 1 Channel 24VDC Output Flow 10A
<b>Safe Feed-input Modules</b>	
EP-1901	1 Safe Feed-Input, 24 VDC
EP-1902	2 Safe Feed-Inputs, 24 VDC, Programmable Delay
EP-1922	2 Safe Feed-Inputs, 24 VDC
<b>Potential Distribution Modules</b>	
EP-711F	Power Module, 16 Channels 24VDC Potential Distribution +24 VDC from Input Current Path
EP-751F	Power Module, 16 Channels 24VDC Potential Distribution +24 VDC from Output Current Path
EP-700F	Power Module, 16 Channels 24VDC Potential Distribution Functional Earth
EP-710F	Power Module, 16 Channels 24VDC Potential Distribution +0VDC from Input Current Path
EP-750F	Power Module, 16 Channels 24VDC Potential Distribution +0VDC from Output Current Path
<b>Hot swap Modules</b>	
EP-7990	Bump-less Output Hot Swap Module

## Release History

Catalog Number	Hardware Version	Firmware Version	Date	Comments
EPXPBS001-ADAF	02.00.00	02.04.02	Jan 24	<ul style="list-style-type: none"> <li>- Firmware release 02.04.02</li> <li>- Support for EP-7990 is added to enable bump-less hot-swap operation</li> </ul>
EPXPBS001-ACAE	02.00.00	02.03.00	Dec 19	Support for two newly introduced IO modules EP-1813 (Power Measurement module) and EP-5324 ( IO-Link Communication Module) with only IPI update.
EPXPBS001-ACAE	02.00.00	02.03.00	Sep-19	<p>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.</p> <p>Updates to webserver:</p> <ul style="list-style-type: none"> <li>- Ordering data is removed from General information section of Emerson branded products.</li> </ul>

Catalog Number	Hardware Version	Firmware Version	Date	Comments
				- Brand labeling Web Application to EMERSON.
EPXPBS001-ABAD	01.01.00	02.02.00	Oct-18	<p>Enhancements and updates to Web Application :</p> <ul style="list-style-type: none"> <li>- Reset button appears automatically when changes in parameter settings require a restart to take effect</li> <li>- Added display of slot numbers to list of compatible modules after selecting a firmware file in multi-update view.</li> <li>- Added password policy and weak password check - default username and password will remain the same.</li> <li>- New languages for Web Server available [Korean, French, Spanish, Portuguese and Italian]</li> <li>- Support for EP-3664</li> </ul> <p>Issue Fixes :</p> <ul style="list-style-type: none"> <li>- Fixed issue that live module unplug/replug sometimes corrupts I/O mapping</li> </ul> <p>Fixed issue that re-installation attempt of language files sometimes causes an error message</p>
EPXPBS001-AAAC	01.00.00	02.01.00	Nov-17	Enhancements and updates to Web Application
EPXPBS001-AAAB	01.00.00	01.00.04	Sep-16	<ul style="list-style-type: none"> <li>- Support for three new modules, EP-1804, EP-5261, and EP-5311</li> </ul> <p>Resolves a problem, see section <i>Problems Resolved by this Release</i> for more information</p>
EPXPBS001	01.00.00	-	Dec-15	Documentation update only, added known issues
EPXPBS001	01.00.00	-	Nov-15	Initial Release

# Important Product Information for this Release

## Updates

The product has undergone firmware updates for enhancements :- EPXPBS001-ADAF The product may be upgraded in the field using the Web firmware upgrade kit, which can be downloaded from <https://www.emerson.com/Industrial-Automation-Controls/support>.

Modules	Firmware Version	Upgrade Kit
EPXPBS001-ADAF	02.04.02	EPXPBS001-0007675-02_04_02-9.zip which consists of <ol style="list-style-type: none"> <li>1. EPXPBS001-0007675-02_04_02-9.bsc</li> <li>2. EPXPBS001_V2_4_2.gsd</li> <li>3. FW_upgrade_procedure</li> </ol>

## Functional Compatibility

HW Index [Ver]	FW Index [Ver]					
	AA [01.00.03]	AB [01.00.04]	AC [02.01.00]	AD [02.02.00]	AE [02.03.00]	AF [02.04.02]
AA [01.00.00]	OK	OK	OK	OK	OK	NO
AB [01.01.00]	NO	NO	NO	OK	OK	NO
AC [02.00.00]	NO	NO	NO	OK	OK	OK
AD [02.00.00]	NO	NO	NO	OK	OK	OK
OK: Compatible						
NO: Not Compatible						

## Problems Resolved by this Release

Subject	Description
Output behavior during hot-swapping	During hot insertion or removal of IO modules, a transient Loss of Power up to 500 ms may occur on the network adapter and IO modules, during which all the outputs may drop to zero. This system behavior should be verified against the application requirements before hot insertion or removal of the IO module is done.
Channel diagnostics faults are reported during hot-swapping of the modules.	During hot-swap of an I/O module, the network adapter may report additional channel diagnostics messages in addition to the expected <i>Loss of Module</i> or <i>Addition of Module</i> fault.

## New Features and Enhancements

None

## Known Restrictions and Open Issues

Subject	Description
DPV1 when enabled on the PROFIBUS network adapter, fails to communicate with the Master module.	When DPV1 is enabled on the EPXPBS001 module and tries to communicate with the Rx3i IC695PMB300 and PPRF master module, the PROFIBUS network adapter does not communicate with the master module.

## Operational Notes

Subject	Description
N/A	No operational notes

## Product Documentation

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

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



# General Contact Information

Home link: <http://www.emerson.com/industrial-automation-controls>

Knowledge Base: <https://www.emerson.com/iac-support>

## Technical Support

### Americas

Phone: 1-888-565-4155  
1-434-214-8532 (If toll free option is unavailable)

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+39-0362-228-5555 (from Italy - if toll-free 800 option is unavailable or dialing from a mobile telephone)

Customer Care (Quotes/Orders>Returns): [customercare.emea.mas@emerson.com](mailto:customercare.emea.mas@emerson.com)  
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+65-3157-9591 (All other Countries)

Customer Care (Quotes/Orders>Returns): [customercare.cn.mas@emerson.com](mailto:customercare.cn.mas@emerson.com)  
Technical Support: [support.mas.apac@emerson.com](mailto:support.mas.apac@emerson.com)

Any escalation request should be sent to [mas.sfdcescalation@emerson.com](mailto:mas.sfdcescalation@emerson.com)

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