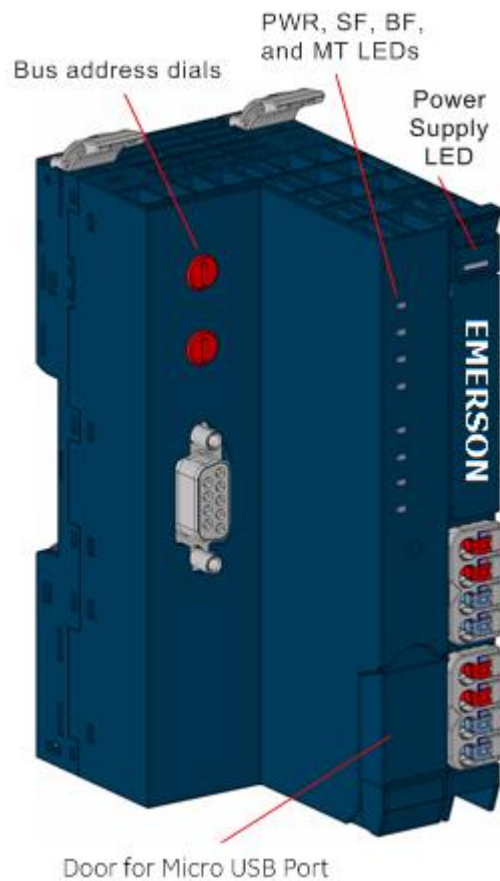


PACSystems™ RSTi-EP

PROFIBUS® NETWORK ADAPTER MODULE (EPXPBS001)



Warning 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.

Notes: 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 PAC Machine Edition(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 | |
| 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 |

| Specification | EPXPBS001 | |
|--|--|--|
| 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_{sys} | 100 mA | |
| Connection data | | |
| Type of connection | Spring style | |
| Conductor cross-section | Single-wired, fine-wired | 0.14 – 1.5 mm ² (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 https://www.emerson.com/Industrial-Automation-Controls/support 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. | |

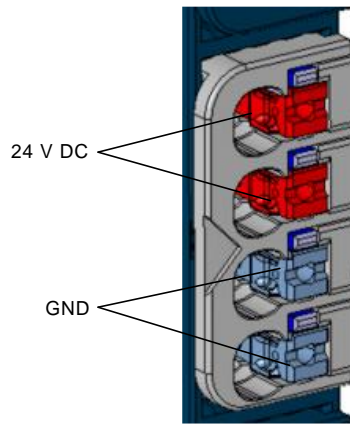
LED's



| LED | EPXPBS001 |
|--------------|--|
| Power Supply | Green: Supply voltage > 18 V DC Red: At least one current path < 18 V |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| 3.1 | Green: Input current path supply voltage > 18 V DC |
| 3.2 | Red: Input current path supply voltage < 18 V DC |
| 3.3 | |
| 3.4 | Red: Internal fuse defective |
| 4.1 | Green: Output current path supply voltage > 18 V DC |
| 4.2 | Red: Output current path supply voltage < 18 V DC |
| 4.3 | |
| 4.4 | Red: 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.



Connector Block

Connector Specifications:

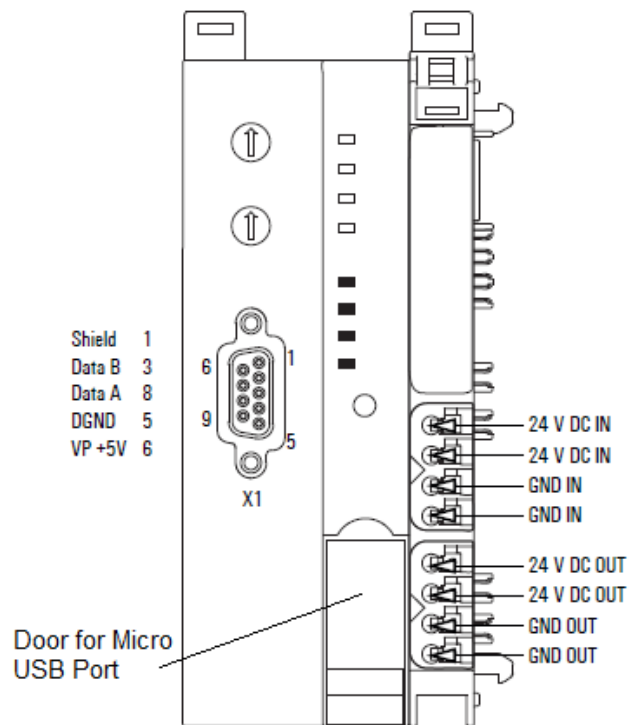
- Conductor cross-section 0.14 to 1.5 mm² (26 – 16 guage)
- Maximum ampacity: 10 A
- 4-pole

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.

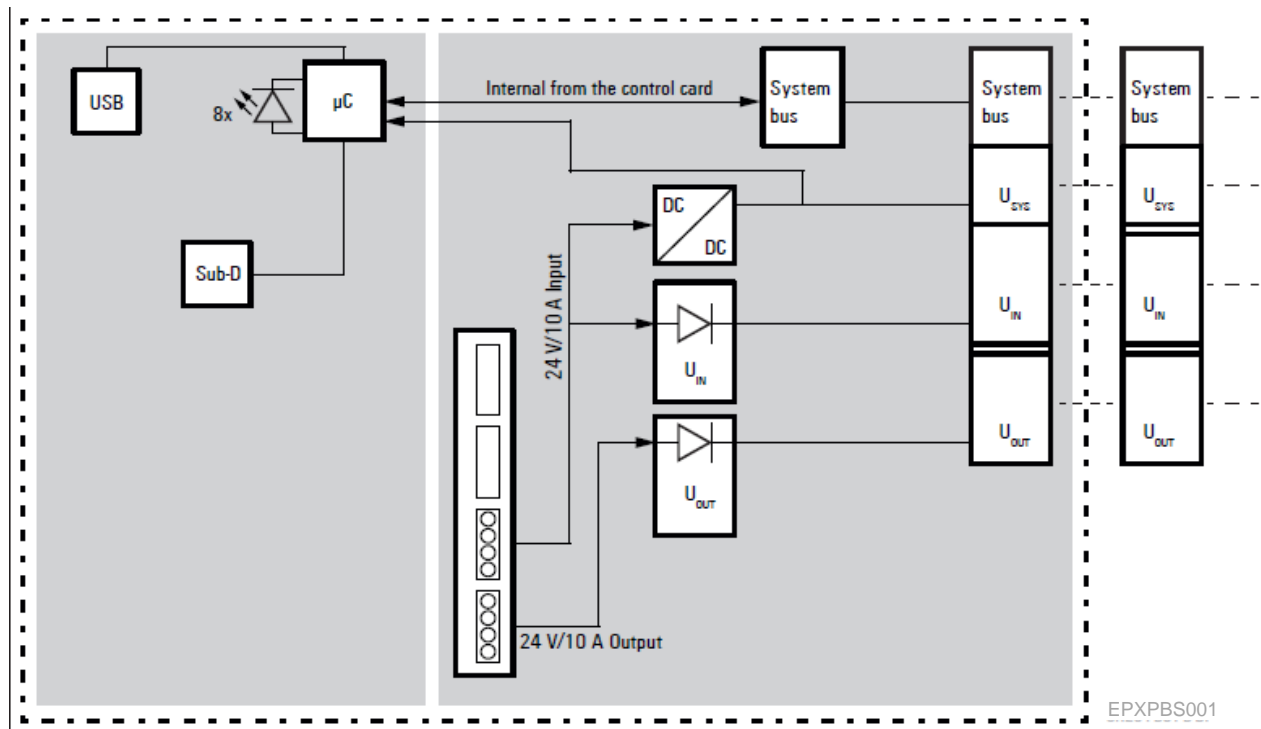
For technical assistance, go to <https://www.emerson.com/Industrial-Automation-Controls/support>.

Connection Diagrams



EPXPBS001

Connection Block Diagrams



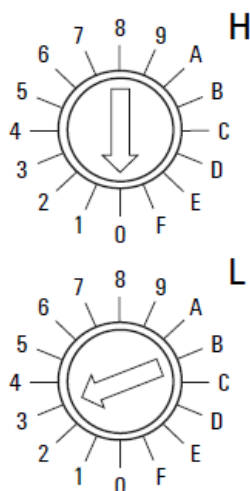
Addressing

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.

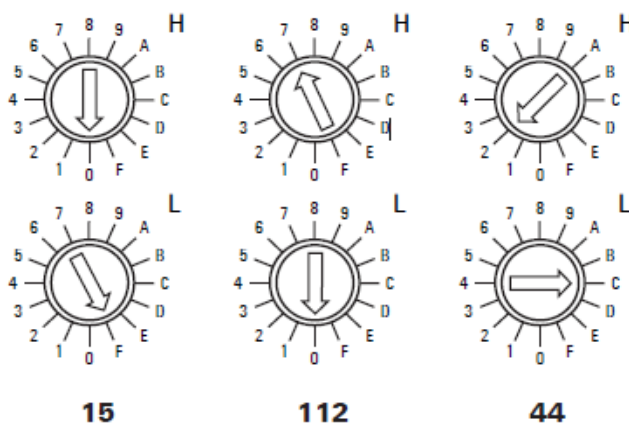
The most significant digit is set with rotary switch **H**, the least significant digit with rotary switch **L**. The switches are labelled in the hexadecimal numbering system (0 to 9, A=10, B=11, C=12, ... F = 15). A hexadecimal to decimal conversion table is provided in the annex.

Coding: Address = (H*16) + L



Default Setting EPXPBS001: Address = 3

Addressing examples:



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 10 A | 55°C (131 °F) : 2 x 6 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 |
|-------------------------------------|---|
| Digital Input Modules | |
| 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 |
| 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 |
| Digital Output Modules | |
| 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 |
| Digital Relay Output Modules | |
| EP-2714 | Digital Relay Output, 4 Points, Positive Logic, 24 - 220 VDC/VAC, 6A, 2 Wire |

| Catalog Number | Module Description |
|---|---|
| EP-2814 | Solid-state Relay Output Module |
| Analog Input Modules | |
| 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 |
| EP-1813 | Power Measurement Module, 8 Channels |
| Analog Output Modules | |
| 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 |
| Speciality Modules | |
| 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 |
| Power Feed Modules for Input Current Path | |
| EP-7631 | Power Module, 1 Channel 24VDC Input Flow 10A |
| Power Feed Modules for Output Current Path | |
| EP-7641 | Power Module, 1 Channel 24VDC Output Flow 10A |
| Safe Feed-input Modules | |
| 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 |
| Potential Distribution Modules | |
| 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 |

Release History

| Catalog Number | Hardware Version | Firmware Version | Date | Comments |
|----------------|------------------|------------------|--------|---|
| EPXPBS001-ACAE | 01.01.00 | 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 | 01.01.00 | 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"> - Ordering data is removed from General information section of Emerson branded products. - 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"> - Reset button appears automatically when changes in parameter settings require a restart to take effect - Added display of slot numbers to list of compatible modules after selecting a firmware file in multi-update view. - Added password policy and weak password check - default username and password will remain the same. - New languages for Web Server available [Korean, French, Spanish, Portuguese and Italian] - Support for EP-3664 <p>Issue Fixes :</p> <ul style="list-style-type: none"> - Fixed issue that live module unplug/replug sometimes corrupts I/O mapping <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"> - Support for three new modules, EP-1804, EP-5261, and EP-5311 <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

This is to include support for 2 newly introduced IO modules namely EP-1813 (Power Measurement module) and EP-5324 (IO-Link Communication Module). Note that the below upgrade kit is put on web with only change in IPI document. 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-ACAE | 02.03.00 | EPXPBS001-0007669-02_03_00-1.zip which consists of <ol style="list-style-type: none"> 1. EPXPBS001-0007669-02_03_00-1.bsc 2. EPXPBS001_V2_3_00.GSD 3. IPI -GFK-2964F 4. FW_upgrade_procedure |

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] |
| AA [01.00.00] | OK | OK | OK | OK | OK |
| AB [01.01.00] | NO | NO | NO | OK | OK |
| AC [01.01.00] | NO | NO | NO | OK | OK |
| OK: Compatible NO: Not Compatible | | | | | |

Problems Resolved by this Release

None - Documentation update only

New Features and Enhancements

| Subject | Description |
|--------------|--|
| Enhancements | Support for two newly introduced IO modules EP-1813 (Power Measurement module) and EP-5324 (IO-Link Communication Module). |

Known Restrictions and Open Issues

| Subject | Description |
|---|---|
| Channel diagnostics faults are reported during hot-swap of the modules | During hot-swap of an I/O module, the network adapter may report additional channel diagnostic messages in addition to the expected <i>Loss of Module</i> or <i>Addition of Module</i> fault. |
| 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. |
| Behavior during hot removal when similar modules are configured consecutively | Where similar modules are configured consecutively in the remote I/O node, a shift in input data occurs when one of the consecutive modules is removed from the node. For example, when there are 6 RTD modules EP-3704, configured consecutively in the node, slots 1 - 6, on hot-removal of the module from slot 4, data from modules 5 and 6 would be reflected on variables configured for slots 4 and 5, respectively, with <i>Loss of Module</i> reported for slot 6. |

Operational Notes

| Subject | Description |
|--------------------------------|---|
| Output behavior during hotswap | 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 of 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. |

Product Documentation

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

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

Technical Support & Contact Information:

Home link: <http://www.Emerson.com/Industrial-Automation-Controls>

Knowledge Base: <https://www.emerson.com/Industrial-Automation-Controls/support>

Note: If the product is purchased through an Authorized Channel Partner, please contact the seller directly for any support.

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