

PACSystems™ RSTi

MODBUS RS485 NETWORK ADAPTER
(STXMBS002)



Warning & 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.

Notes: 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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Before using the units:

To use the units safely and effectively, please read this document and refer to GFK-2745 & GFK-2746 user manuals for further details. The most recent user documents are available on the Support website <https://www.emerson.com/Industrial-Automation-Controls/support>. Also refer “Installation in Hazardous Areas” for instructions on safe usage in hazardous locations.

⚠ WARNING

- Installing or removing modules or wiring with power applied to the system or field wiring can cause an electrical arc. This can result in unexpected and potentially dangerous action by field devices. Arcing is an explosion risk in hazardous locations. Be sure that the area is non-hazardous or remove power appropriately before installing or removing modules or wiring.
- Potentially dangerous voltages are present on a module’s terminals, even when system power is turned off. Field power must be turned off when installing or removing a Terminal Block assembly.
- Personnel who install, operate and maintain automation systems that contain these products must be trained and qualified to perform those functions.
- Overloading power modules or Network adapter can result into electric arc & damage to modules.

⚠ CAUTION

- Check the rated voltage and terminal array before wiring.
- Ensure that specified environmental conditions are not exceeded. Avoid placing the module in direct sunlight.
- Review module specifications carefully, and ensure that input and output connections are made in accordance with the specifications.
- Use specified cables for wiring.
- Field Power Isolators must be used according to the requirements of the 5VDC/24VDC/48VDC or AC Voltage modules used in the system.
- If system power consumption exceeds the power limits, use system power expansion modules.
- System power and field power must be supplied from separate sources.
- Use Product under pollution degree 2 environment.
- These Devices are open type devices which have to be installed in an enclosure with door or cover which is tool accessible only.

Specifications: STXMBS002*

Item	Specification
Surrounding Air Temp. / Ambient Temp.	0°C to 55°C for UL applications. 0°C to 60°C for Non-UL applications
Relative Humidity	5% ~ 90%, without condensation
Durable-vib./impact	IEC 60068-2-6:1995
Mount Position	First module of RSTi system
Atmosphere	No excessive dust ; No corrosive gases
Field Supp.Volt.	Class II*** 24VDC 24VDC (11VDC ~ 28.8VDC)
Field Supply Current	Max. 10A
I/O bus 5Vdc current	Max. 1.5A @ 5VDC
Mount	DIN-Rail
Isolation	System power to internal logic : No-isolation System power to I/O driver : Isolation
Size	45mm x 99mm x 70mm

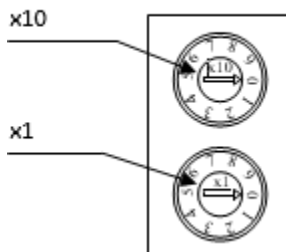
Item	Specification
Weight	150g
Certification	cULus Ord and HAZLOC, CE, ATEX,PROFINET
Torque/signal wire	0.8Nm(7lb-in)/1.0mm ² - 2.5mm ² (18-14 AWG)
Network Type	ModBus-RS485
Cable	Serial Twist cable
Cable Length(m)	1200m
IO Modules	Max. 32 module
Max. node	64 nodes
Max. Digital I/O	Input : 2016point / Output : 2016point
Max. Analog I/O	Input : 126Ch / Output : 126Ch
Max. Byte size	Input : 252Bytes / Output : 252Bytes
Operating Mode	RTU and ASCII
Node No. Setting	Rotary Switch (x10, x1)
Power Dissipation	70mA typical @24Vdc

* Specifications and designs may change without advance notice.

**Class II, adjacent to voltage rating (30Vmax.)

Communication & Power Cable Wiring

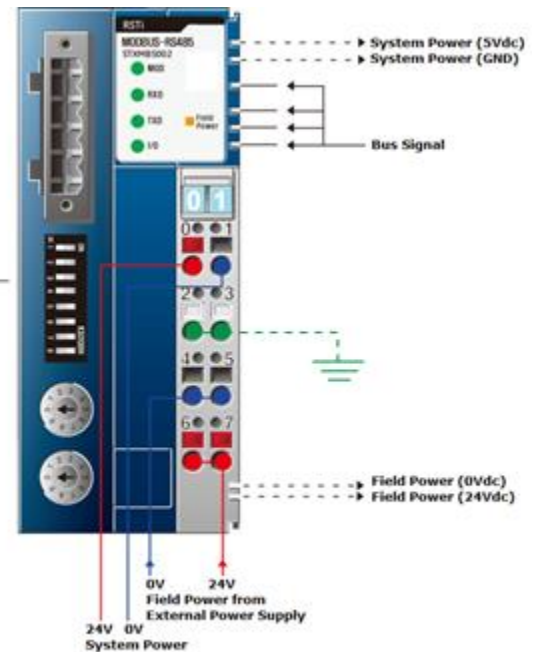
Station No. Setting S/W



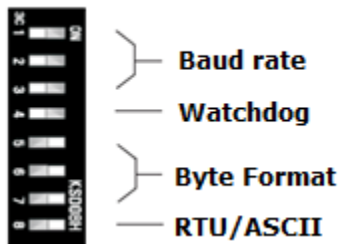
RS485 Connector



Dsub 5-Pin (Female)	Signal Name	Description
1	RS485+	In/Out, Transceiver Data High
2	RS485-	In/Out, Transceiver Data low
3	GND	Signal Common
4	Shield	Shield
5	FG	Frame Ground. Internally shorted with Shield



MODBUS DIP Switch Setting



Directions for MAC ID (Station No.) Setting

- Station number setting out of the range will cause communication error.
- Duplicating Station No. will cause communication error.

DIP Switch Setting Description

Item	Item setup	DIP Switch							
		#1	#2	#3	#4	#5	#6	#7	#8
Baud rate	1200 bps	OFF	OFF	OFF					
	2400 bps	ON	OFF	OFF					
	4800 bps	OFF	ON	OFF					
	9600 bps	ON	ON	OFF					
	19200 bps	OFF	OFF	ON					
	38400 bps	ON	OFF	ON					
	57600 bps	OFF	ON	ON					
	115200 bps	ON	ON	ON					
Watchdog	Disable Watchdog				OFF				
	Enable Watchdog				ON				
Byte Format	8 bit, No Parity, 1 Stop					OFF	OFF	OFF	
	8 bit, Even Parity, 1 Stop					ON	OFF	OFF	
	8 bit, Odd Parity, 1 Stop					OFF	ON	OFF	
	8 bit, No Parity, 2 Stop					ON	ON	OFF	
	7 bit, No Parity, 2 Stop*					OFF	OFF	ON	
	7 bit, Even Parity, 1 Stop*					ON	OFF	ON	
	7 bit, Odd Parity, 1 Stop*					OFF	ON	ON	
	7 bit, No Parity, 1 Stop*					ON	ON	ON	
RTU/ASC II Mode	RTU Mode								OFF
	ASCII Mode								ON

Installation in Hazardous Area

UL Class 1 Division 2 & ATEX Zone 2 Hazardous Area Warnings

- EQUIPMENT LABELED WITH REFERENCE TO CLASS I, GROUPS A, B, C & D, DIV. 2 OR ZONE 2 HAZARDOUS LOCATIONS IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A, B, C, D, ZONE 2 OR NON-HAZARDOUS LOCATIONS ONLY.

⚠ WARNING

- EXPLOSION HAZARD—SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2 & ATEX ZONE 2.
- EXPLOSION HAZARD – TURN OFF POWER BEFORE REPLACING OR WIRING MODULES. DO NOT CONNECT OR DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

ATEX Information



Ambient Range:

0°C ≤ Tamb ≤ 55°C

Certification string:

Ex nA IIC T4 Gc (Modules without Relay) & Ex nA nC IIC T4 Gc (Modules with Relay)

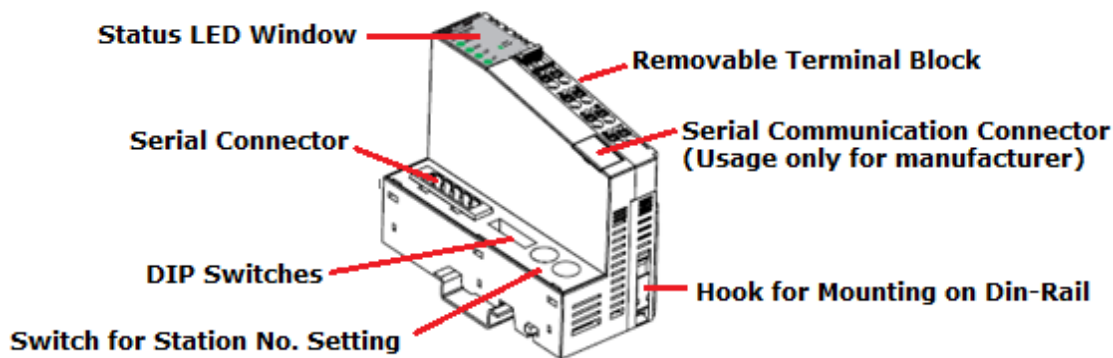
Standards Covered:

EN 60079-0:2012, EN 60079-15:2010

Special Conditions for Safe Usage:

- The device shall be mounted in an ATEX certified enclosure with a minimum ingress protection rating of at least IP54 as defined in IEC/EN 60529 and used in an area of not more than pollution degree 2 as defined by IEC60664-1. Enclosure must utilize a tool removable cover or door.
- Provisions shall be made to prevent the rated voltage being exceeded by the transient disturbances of more than 140%.
- Earthing is accomplished through mounting of modules in rail.
- Subject devices are for operation in Ambient Temperature Range: 0 °C to +55 °C.

Module Interface & LED Status Display



Item	LED is	State	To Indicate
MOD LED	Off	No Power	No power is supplied to the unit.
	Solid Green	Device Operational	The unit is operating in normal condition.
	Flashing Green	Device in Standby	The device needs commissioning due to configuration missing, incomplete or incorrect.
	Green/Red Toggle	MODBUS Error	MODBUS error such as watchdog error, CRC/LRC error, Setup dip switch, error, etc.
	Flashing Red	Minor Fault	Recoverable Fault - EEPROM sum check error.
	Solid Red	Unrecoverable Fault	The device has an unrecoverable fault. - Memory error or CPU watchdog error.
RXD	Off	Not Powered	Device is not on-line or may not be powered
	Flashing Green	Adapter received correct message frame	Adapter (Slave) received correct frame which address to the slave or broadcast. About 20msec flashing.
TXD	Off	Not Powered	Device is not on-line or may not be powered
	Flashing Green	Adapter transmit frame	Adapter (Slave) transmit frame. About 20msec flashing.
IO LED	Off	Not Powered No I/O Module	Device has no IO module or may not be powered
	Flashing Green	I/O bus On-line, Do not Exchanging I/O	I/O bus is normal but does not exchanging I/O data (Passed the IO module configuration).
	Solid Green	I/O bus Connection, Run Exchanging I/O	Exchanging I/O data

Item	LED is	State	To Indicate
	Solid Red	I/O bus connection fault during exchanging I/O	One or more IO module in fault state. - Changed IO module configuration. - I/O bus communication failure.
	Flashing Red	IO Configuration Failed	Failed to initialize IO module - Detected invalid IO module ID. - Overflowed Input / Output Size - Too many IO module - Initial protocol failure - Vendor code mismatch
Field Power LED	Off	Not Supplied Field Power	Not supplied 24V dc field power
	Solid Green	Supplied Field Power	Supplied 24V dc field power

Release Information

Part Number	Hardware Version	Firmware Version	Date	Remarks
STXMBS002-DB	20.02	20.001	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.
STXMBS002-CB	20.02	20.001	Sep 2017	
STXMBS002-CA	20.02	20.000	Feb 2016	
STXMBS002-BA	20.01	20.000	Nov 2013	
STXMBS002-AA	20.00	20.000	Jul 2012	Initial Release

Restrictions and Open Issues

Subject	Description
ASCII mode & Communication settings – 7 bit/No Parity/1 stop bit.	<p>If Network adapter is set to 7 bit/No Parity/1 Stop bit in ASCII mode, it will not communicate with the master.</p> <p>Configure the Byte Format for Network Adapter in modes other than '7 bit, No Party, 1 Stop' listed in section "4. DIP S/W Setting Description".</p>
Slice IO node system power up sequence issue.	<p>If the Network Adapter and ST-7xxx Power modules on the same Slice IO node are power cycled at different times, the Network Adapter may power up in fault mode.</p> <p>To recover from the fault, power cycle the node such that Network Adapter and Power modules are power cycled together or the node is powered up following the sequence such that the power module farthest from the Network Adapter is powered up first.</p> <p>For example in a node having modules as below: STXMBS002+IO Modules ... +ST-7511+IO Modules ... +ST-7511+IO Modules</p> <p>In the above system power cycle the STXMBS002 and the two ST-7511 modules together or power OFF the entire node and then power ON the second ST-7511 and then the first ST-7511 and then the STXMBS002.</p>

Upgrades with this release

None

Problems Resolved in this Release

None

New Features and Enhancements in this Release

None. Only documentation update.

Operational Notes

None

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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