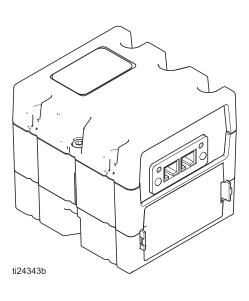# Modbus TCP Gateway Module

334183B

EN

For use with systems based on Graco Control Architecture to provide Modbus TCP communications capabilities.

Important Safety Instructions
Read all warnings and instructions in the system operation manual. Save these instructions.

ti24343b

RECOGNIZED COMPONENT

C **ETL** US
® **LISTED**

Conforms to
UL STD 508
Certified to CAN/CSA STD C22.2 No. 14

4003764

C E

PROVEN QUALITY. LEADING TECHNOLOGY.
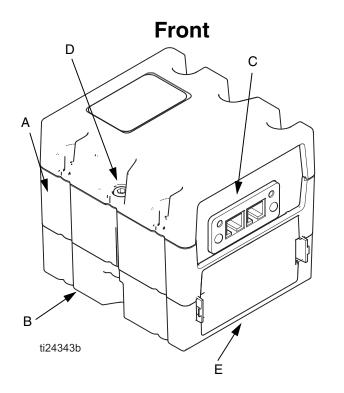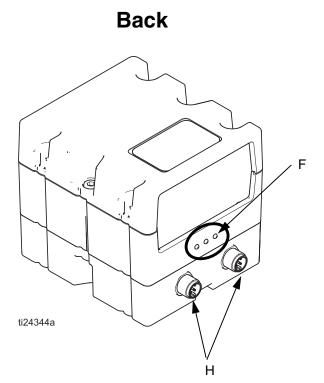
Contents

Models

Communications Gateway Module Part No.	Fieldbus
24W462	Modbus TCP

To order replacement parts, see **Parts** on page 10.

To order installation kits for a system based on Graco Control Architecture, see the system operation manual.

Component Identification

Front

Back

Front diagram labels: D, C, A, B, E, ti24343b

Back diagram labels: F, H, ti24344a

Fieldbus Connector (C)

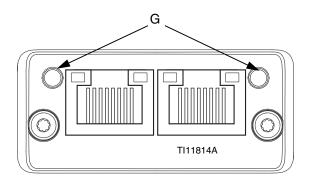**Modbus TCP**

Fieldbus diagram labels: G, TI11814A

FIG. 1:

Key:
A   Communications Gateway Module
B   Base
C   Fieldbus Connector
D   Module Connection Screws
E   Access Cover
F   Module Status LEDs
G   Fieldbus Status LEDs (see descriptions on page 7)
H   CAN Connectors

Overview

Module Description

The Modbus TCP (MBTCP) Gateway Module provides a control link between a Modbus TCP fieldbus and a system that uses Graco Control Architecture (GCA). This link provides the means for remote monitoring and control by an external automation system.

Data provided by the MBTCP Gateway Module to the fieldbus depends on the GCA-based system. Mapping of Modbus registers is loaded by the host GCA system and varies by system.

Data Exchange

Data is available by block transfer or by explicit access to individual attributes as defined by the fieldbus specification.

Module Status LED Signals

Signal	Description
Green on	The system is powered up.
Yellow	Internal communication is in progress.
Red Solid	MBTCP hardware failure
Red Flashing	The red LED (F) will flash a code, pause, then repeat. See **MBTCP Module Errors** on page 8 for details.
3 flashes	The host device of the mapped property is not responding.
4 flashes	No valid mapping is set by the host.
5 flashes	MBTCP is not connected or the system has an invalid network configuration.

NOTE:
If you get a "No Valid Map" error, disable and re-enable your gateway from the host device.

Module Requirements

Power Supply

The MBTCP Gateway Module requires a 12-30 VDC @ 0.2 A power supply. Refer to the system manual for system level power supply guidelines.

Environment Conditions

Refer to the system manual for guidelines regarding environment conditions for the MBTCP module.

Installation

The MBTCP Gateway Module is available for use with all GCA-based systems that have a compatible design. Each MBTCP module requires the following to operate in a system:

• Mounting hardware
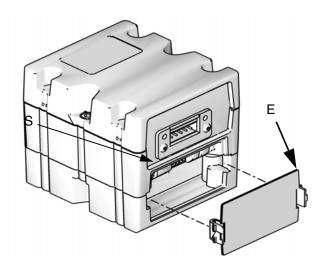• Compatible GCA system

Install the MBTCP module as explained in the system operation manual or in the installation kit manual.

If the MBTCP is offered only as an accessory for your system, see **Accessories** in the system operation manual for available MBTCP kits.

Install or Update Software

NOTE: The fieldbus connection is temporarily disabled during the installation or update of software.

1. Ensure system is inactive.

2. Remove access cover (E)

FIG. 2

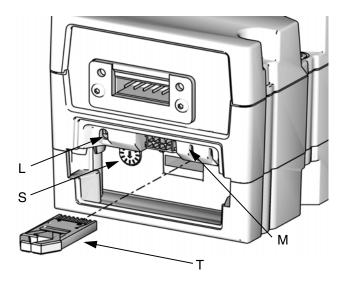3. Insert and press software token (T) firmly into slot.

FIG. 3

4. Press the reset push button (M) once. Wait for red light (L) to stop flashing. This may take up to 30 seconds

5. Remove Token (T). Store in a safe place.

6. Replace access cover (E).

Connect Cables

Connect cables as explained in the system operation manual.

NOTICE
Route cables to avoid interference with moving parts.

Rotary Switch

If your system has only one MBTCP module, keep the rotary switch (S) at its default position of 0.

If the system has multiple MBTCP modules, use a unique value (position) for each module. Remove the access cover (E) to set the rotary switch (S) for each module.
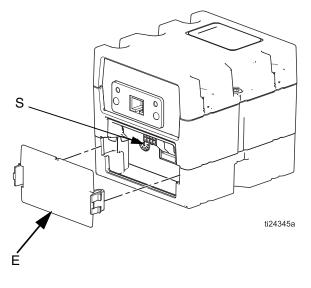

ti24345a

FIG. 4

Fieldbus Connectors

Ref.	Item
1	Network Status LED
2	Module Status LED
3	Link/Activity
4	Ethernet Interface

Network Status LED

LED State	Description
Off	No power or no IP address
Green	Connection established. Module is in the Process Active state or the Idle state.
Flashing Green	Waiting for connection
Red	Duplicate IP address or FATAL event
Flashing Red	Process Active timeout

Module Status LED

LED State	Description
Off	No power
Green	Normal operation
Red	Major fault. The module is in the state of EXCEPTION (or FATAL event).
Red Flashing	Minor fault in diagnostic object or IP conflict

Link/Activity LED

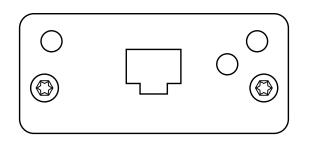| LED State	Description
Off	No Link, no communication present
Green	Link established, no communication present
Flashing Green	Link established, communication present

Ethernet Interface

The Ethernet interface supports 10/100 Mbit, full or half duplex operation.
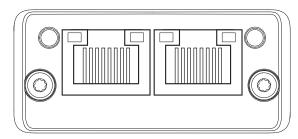
Troubleshooting

MBTCP Module Errors

Module errors are triggered by overall system operation. The module status LED blinks red at a frequency of 1 Hz. The red LED (F) will flash a code, pause, then repeat.

Module Status LED Signal	Diagnosis	Solution
3 red flashes	The host of the mapped property is not responding.	Check whether all system devices are powered on.
		Check cabling between all system devices.
4 red flashes	The host device (ADM) has not initiated property mapping.	Disable and then re-enable the gateway module from the host device (ADM).
5 red flashes	The MBTCP module is not connected.	Verify that the MBTCP module is connected.
	The system has an invalid network Configuration.	Verify the proper network Confiugration.
Solid Red	Gateway has been downloaded with unsupported software. NOTE: Does not apply to legacy single port hardware. (See Fig. 5)	Check your gateway to ensure it has software version 2.01.001 and up.
	Faulty Hardware	Replace Gateway

Single Port

Dual Port
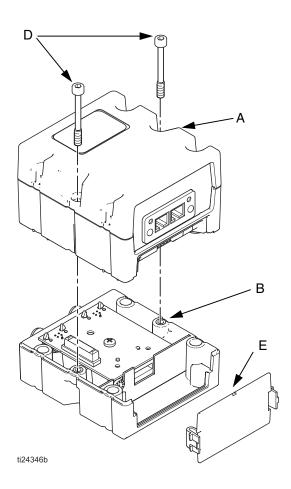
FIG. 5 Single Port & Dual Port

Modbus Errors

Modbus errors are typical protocol errors defined by fieldbus specification. The fieldbus error code shown is returned to the PLC when the error condition occurs.

Code	Name	Cause	Solution
1	Illegal Function	Request function is not supported.	Use supported Modbus functions: • Read Holding Register • Write Holding Register • Write Multiple Holding Registers
2	Illegal Data Address	Exceeded maximum register count of 121 registers.	Request 121 or fewer registers at a time.
		No valid property mapped to the requested Modbus register.	Verify that the device has valid mapping. See MBTCP Modbus Error for 4 red flashes.
		Write Holding Register(s) returns set property error.	Verify that the end device is online.
3	Illegal Data Value	Not implemented.	
4	Slave Device Fail	Not implemented.	
5	Acknowledge	Not implemented.	
6	Slave Device Busy	Not implemented.	
8	Memory Parity Error	Not implemented.	
10	Gatweay Path Unavailable	Not implemented.	
11	Gateway Target Fail	An active system error exists.	Refer to system errors table.
255	Unspecified		

Parts

Modbus TCP Gateway Module

ti24346b

Parts

Ref	Part No.	Description	Qty.
A	24W777	MODULE, Gateway, Modbus TCP	1
B	289697	Base	1
D	114135	SCREW, mounting, module connection	2
E	277674	COVER, access	1

Technical Data

Category	Data
Power requirements	12-30 VDC @ 0.2 A
Weight	12.8 oz.
Dimensions	4.3 in. x 3.8 in. x 3.8 in.

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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