Instructions

Communications Gateway Module for XM™ Sprayers

3A5278B

EN

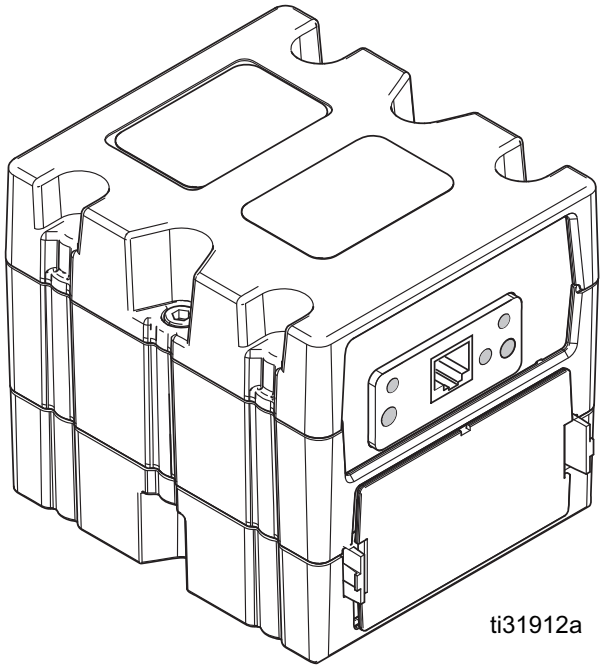
For use with XM Plural-Component Sprayers to provide enhanced fieldbus communications abilities. For professional use only.

Not approved for use in explosive atmospheres or hazardous locations.

See page 2 for part and XM model information.

Important Safety Instructions

Read all warnings and instructions in this manual and in the XM Plural-Component Sprayers Operation manual. Save all instructions.



ti31912a

CGM with EtherNet/IP connector shown

Contents

Related Manuals

Manual	Description
312864	Communications Gateway Module, Instructions-Parts
312359	XM Operation
3A1244	Graco Control Architecture™ Module Programming

XM Model Options

The Communications Gateway Module can be used with the following XM models. These are not for use in explosive atmospheres or hazardous locations. See the XM Operation manual (MM 312359) for details of these models.

- XMxAxx
- XMxBxx
- XMxCxx

CGM Upgrade Kit

The following kits contain the hardware and software needed to add a Communications Gateway Module (CGM) to an XM system.

Part Number	Fieldbus
26A530	DeviceNet
26A531	EtherNet/IP
26A532	PROFIBUS
26A533	PROFINET

Overview

System Overview

The XM plural component sprayer supports a Communications Gateway Module (CGM) that provides a control link between the XM system and a selected fieldbus.

CGM Overview

The Communications Gateway Module (CGM) provides a control link between the XM system and a selected fieldbus. This provides the means for remote monitoring and control by external automation systems.

See **CGM I/O Data Map**, page 11, for a list of internal data from the XM system that can be viewed or modified by your fieldbus master.

NOTE: The following system network configuration files are available at www.graco.com.

- EDS file: DeviceNet or EtherNet/IP fieldbus networks
- GSD file: PROFIBUS fieldbus networks
- GSDML: PROFINET fieldbus networks

Installation

WARNING

ELECTRIC SHOCK HAZARD

To prevent electric shock:

- Turn off and disconnect power at XM system main switch before installing the Communications Gateway Module, disconnecting any cables, or servicing equipment.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.

The Communications Gateway Module must be installed in the XM system. The XM system does not provide a mounting position for this module. It will need a cable connection to the display module and can be mounted either close by or at a distance of up to 50 ft (50 m).

After installing the CGM as desired, connect the CAN cable adapter (3) to the open connection on the display module. Connect the CAN cable (2) to the adapter. Connect the other end of the CAN cable to either of the two connectors on the CGM. Alternate lengths of the CAN cable are available and listed in **Parts**, page 22.

Install Upgrade Tokens

NOTE: The XM system requires updated software to use the CGM. See **Parts**, page 22, for details.

To install software upgrades:

1. Use software token (4). See the Graco Control Architecture™ (GCA) Module Programming manual for instructions.

NOTE: Upgrade all modules in the system to the software version on the token. Different software versions may not be compatible.

All data in the module (system settings, USB logs maintenance counters) may be reset to factory default settings. Download all settings and user preferences to a USB before the upgrade, for ease of restoring them following the upgrade.

The software version history for each system can be viewed in the technical support section at www.graco.com.

Install or Update Data Map

NOTE: The fieldbus connection is temporarily disabled during the installation or update of a map token.

1. Ensure the system is inactive.
2. Remove access cover (A).

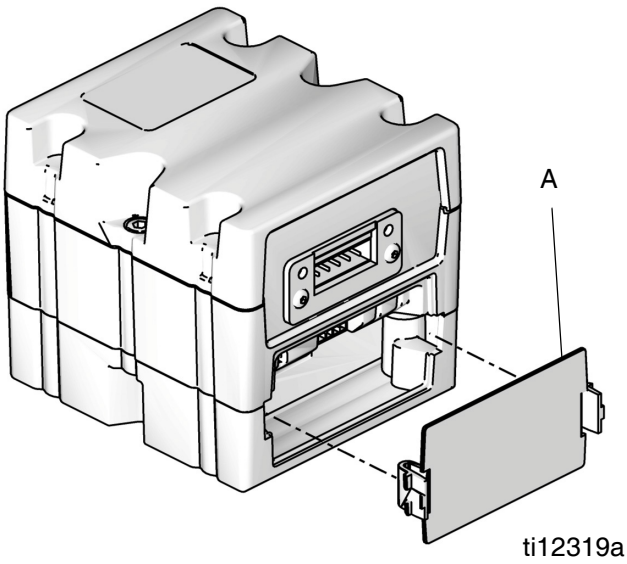


FIG. 1: Remove Access Cover

3. Insert and press map token (5) firmly into slot.

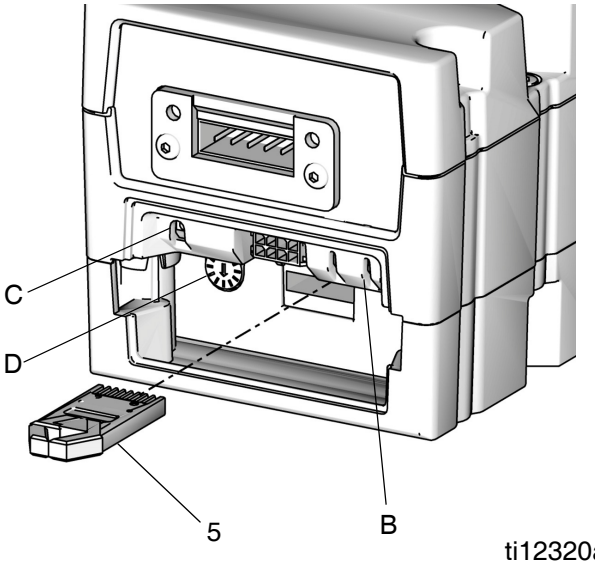


FIG. 2: Insert Map Token

4. Press and hold the map upload push button (B) for three seconds. The red LED (C) will flash twice, pause, and repeat once after the data map is successfully uploaded. This may take up to 10 seconds.

NOTE: The rotary switch (D) has no function for the CGM.

5. Remove token (5). Store in a safe place.
6. Replace access cover (A).

Setup

Fieldbus Configuration Screens

The fieldbus screens are shown only if a CGM is connected to your system. Find your fieldbus type in the following table to identify parameters you can view or edit.

1. Access the fieldbus screens from the setup mode screens.
2. Turn setup key to enter Setup Mode.
3. Press  to go to system setup screens.
4. Press  multiple times as needed to go to fieldbus screens.

NOTE: The fieldbus screen will not display if CAN cables are not connected. Ensure that all CGM CAN cables are connected.

Fieldbus Screens	Page
PROFIBUS	6
PROFINET	7
DeviceNet	9
EtherNet/IP	10

PROFIBUS Fieldbus Screens

Screen 1

This screen enables you to set the hardware revision, system serial number, device address, and installation date.

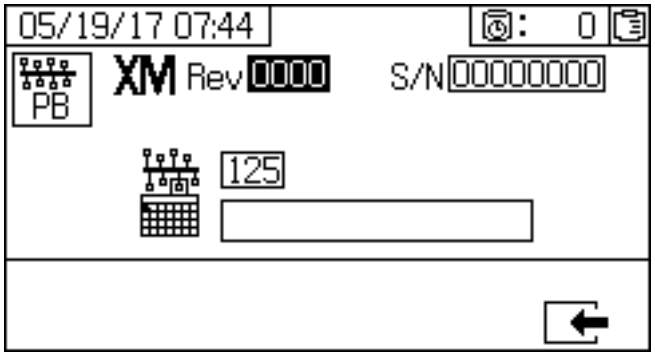


FIG. 3: PROFIBUS Fieldbus Screen 1

Parameter	Range
Hardware Revision XM Rev	0-9999
System Serial # S/N	00000000-99999999
Device Address	000-126
Install Date	Set as required. Use format shown in figure above. Validate date and time before saving.

Screen 2

Enter identification information for the CGM used in your system.

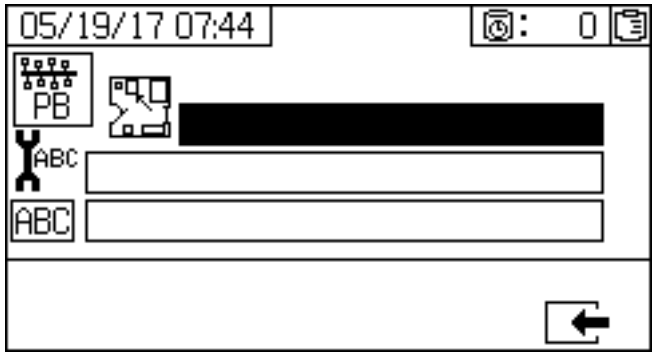


FIG. 4: PROFIBUS Fieldbus Screen 2

Parameter	Range
Location Tag	22 characters available
Function Tag	32 characters available
Description	54 characters available

Screen 3

This screen lists identification information for the Datamap that has been loaded into the CGM.

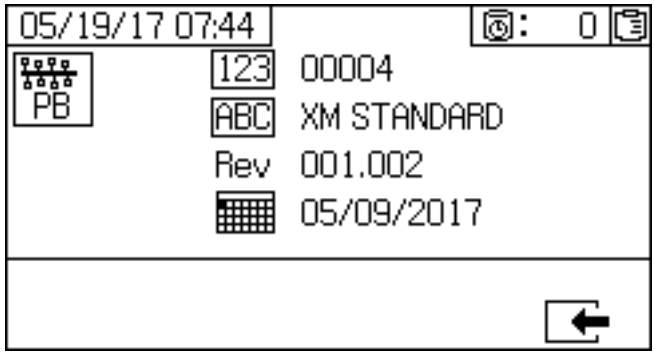


FIG. 5: PROFIBUS Fieldbus Screen 3

PROFINET Fieldbus Screens

Screen 1

This screens enables you to set the hardware revision, system serial number, IP address, station name, and installation date.

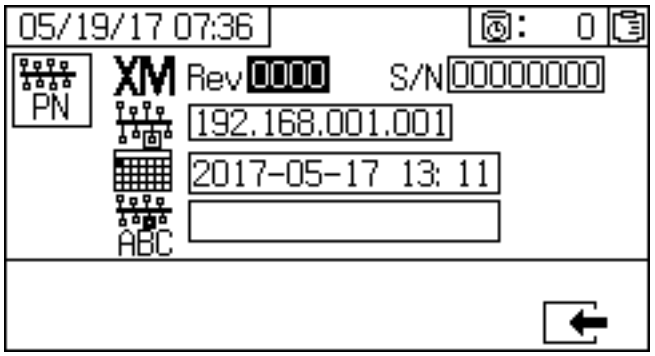


FIG. 6: PROFINET Fieldbus Screen 1

Parameter	Range
Hardware Revision	
System Serial #	
IP Address	Set as required
Install Date	Set as required. Use format shown in figure above. Validate date and time before saving.
Station Name	Required at installation. 32 characters available.

Screen 2

This screen enables you to change settings for DHCP, Subnet Mask, Gateway, DNS 1, and DNS 2.

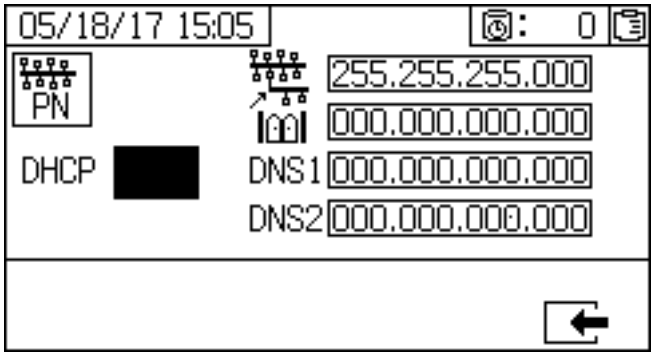


FIG. 7: PROFINET Fieldbus Screen 2

Parameter	Range
DHCP	Yes ☑ or No ☐
Subnet Mask	Set as required
Gateway	Set as required
DNS1	Set as required
DNS2	Set as required

Screen 3

Enter identification information for the CGM used in your system.

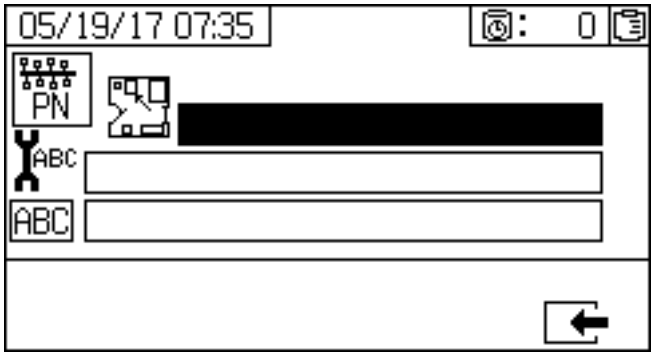


FIG. 8: PROFINET Fieldbus Screen 3

Parameter	Range
Location Tag	22 characters available
Function Tag	32 characters available
Description	54 characters available

Screen 4

This screen lists identification information for the Datamap that has been loaded into the CGM.

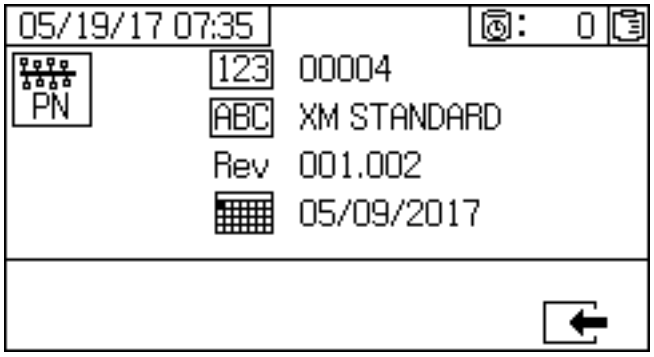


FIG. 9: PROFINET Fieldbus Screen 4

DeviceNet Fieldbus Screens

Screen 1

This screen enables you to set the hardware revision, system serial number, device address, and baud rate.

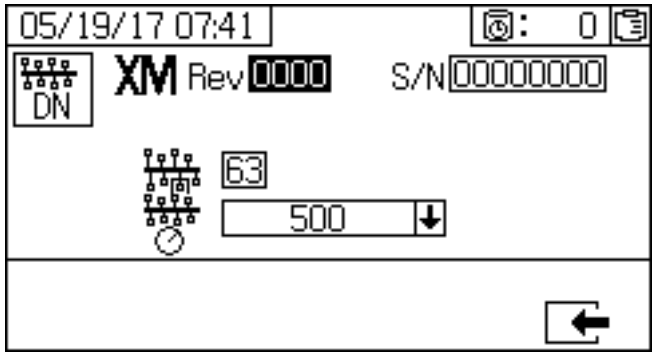


FIG. 10: DeviceNet Fieldbus Screen 1

Parameter	Range
Hardware Revision XM Rev	
System Serial # S/N	
Device Address	00-63
Baud Rate	125, 250, or 500

Screen 2

This screen lists identification information for the Datamap that has been loaded into the CGM.

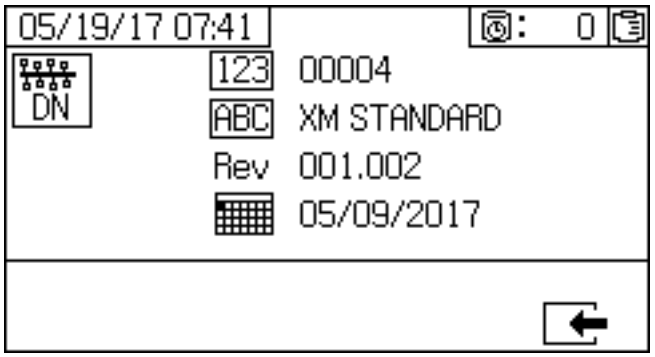


FIG. 11: DeviceNet Fieldbus Screen 2

EtherNet/IP Fieldbus Screens

Screen 1

This screen enables you to set the hardware revision, system serial number, and the IP address.

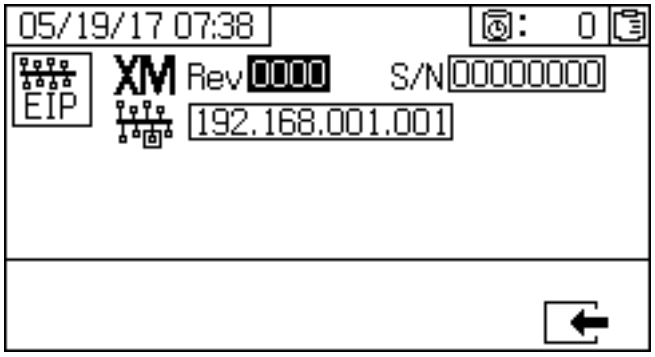


FIG. 12: EtherNet/IP Fieldbus Screen 1

Parameter	Range
Hardware Revision XM Rev	
System Serial # S/N	
IP Address	Required at installation

Screen 2

This screen enables you to change settings for DHCP, Subnet Mask, Gateway, DNS 1, and DNS 2.

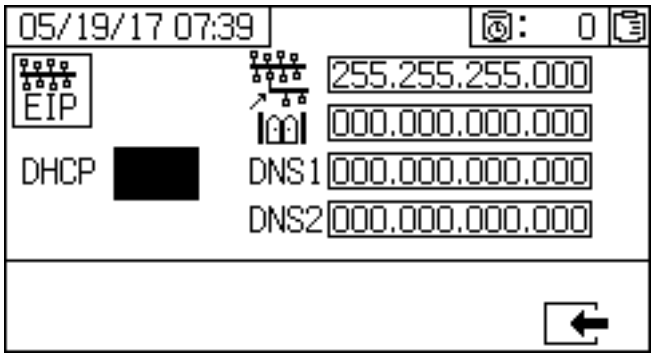


FIG. 13: EtherNet/IP Fieldbus Screen 2

Parameter	Range
DHCP	Yes ✓ or No ☐
Subnet Mask	Set as desired
Gateway	Set as desired
DNS 1	Set as desired
DNS 2	Set as desired

Screen 3

This screen lists identification information for the Datamap that has been loaded into the CGM.

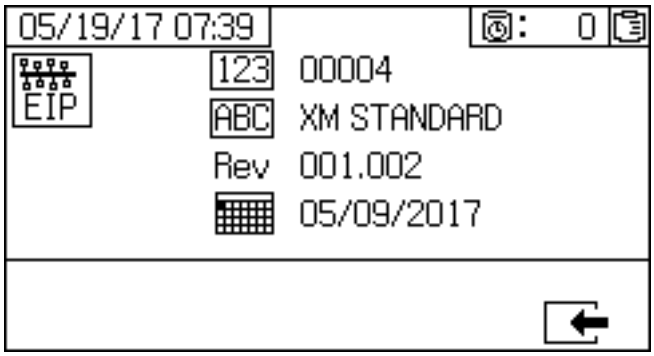


FIG. 14: EtherNet/IP Fieldbus Screen 3

CGM I/O Data Map

Outputs from PLC; Inputs to Graco XM

Signal	Data Type	BYTE
Pump On Off Control	Integer	BYTES 0-1
Operation Mode Control	Integer	BYTES 2-3
Volume Ratio Target Ctrl	Integer	BYTES 4-5
Reset Alarms	Integer	BYTES 6-7
Reset Batch Totalizers	Integer	BYTES 8-9
Reset Potlife Time	Integer	BYTES 10-11
Set Job Number	Integer	BYTES 12-13
Spare Output 1	Integer	BYTES 14-15
Spare Output 2	Integer	BYTES 16-17
Spare Output 3	Integer	BYTES 18-19

Inputs to PLC; Outputs from Graco XM

Signal	Data Type	BYTE
Pump On Off	Integer	BYTES 0-1
Operation Mode	Integer	BYTES 2-3
Target Ratio	Integer	BYTES 4-5
Actual Ratio	Integer	BYTES 6-7
Event Code	Integer	BYTES 8-11
Temperature A	Integer	BYTES 12-13
Temperature B	Integer	BYTES 14-15
Pressure A	Integer	BYTES 16-17
Pressure B	Integer	BYTES 18-19
Flow Rate A	Integer	BYTES 20-21
Flow Rate B	Integer	BYTES 22-23
Batch Total A	Integer	BYTES 24-25
Batch Total B	Integer	BYTES 26-27
System in Weight Mode	Integer	BYTES 28-29
Temperature Units	Integer	BYTES 30-31
Pressure Units	Integer	BYTES 32-33
Volume Units	Integer	BYTES 34-35
Weight Units	Integer	BYTES 36-37
Potlife Timer Enable	Integer	BYTES 38-39
Potlife Timer	Integer	BYTES 40-41
Job Number	Integer	BYTES 42-43
Voltage System DC	Integer	BYTES 44-45
Spare Input 1	Integer	BYTES 46-47
Spare Input 2	Integer	BYTES 48-49
Spare Input 3	Integer	BYTES 50-51
Spare Input 4	Integer	BYTES 52-53
Spare Input 5	Integer	BYTES 54-55
Spare Input 6	Integer	BYTES 56-57
Spare Input 7	Integer	BYTES 58-59

Screens

See XM Operations manual (MM 312359) for details of system operation. The following shows the XM display and the gateway signal information available for each screen.

Run (Fluid Control)

Pump On/Enter Mode

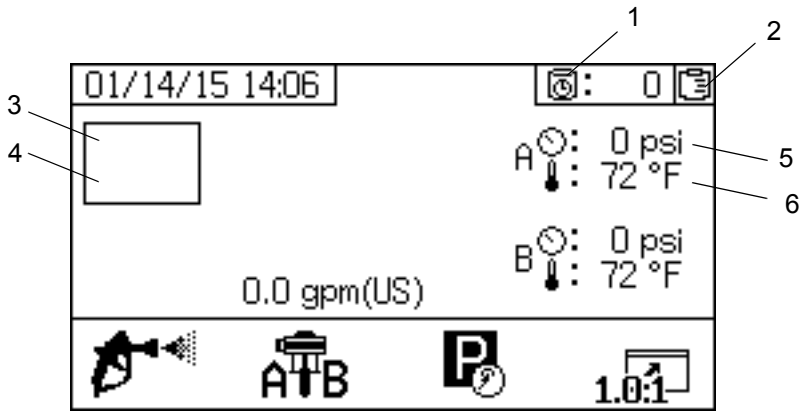


FIG. 15: Pump On/Enter Mode

Spray Mode

Shown with pump turned on.

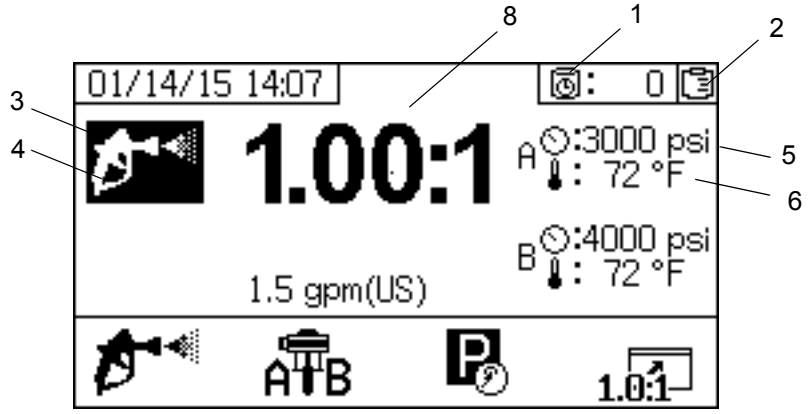


FIG. 16: Spray Mode

Pump Mode

Shown in Run Pump AB with pumps turned off and turned on.

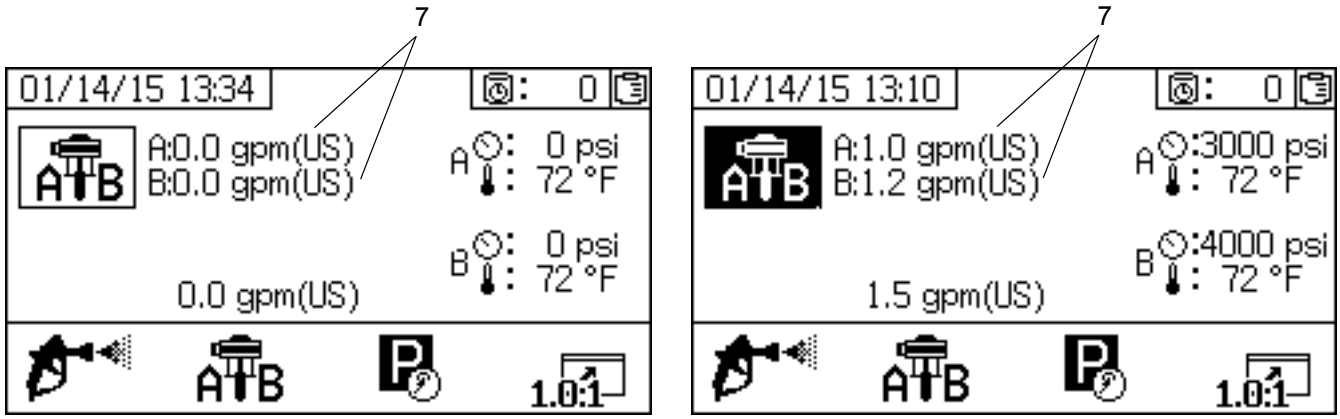


FIG. 17: Run Pump AB Off (Left) and On (Right)

Shown with pump turned on.

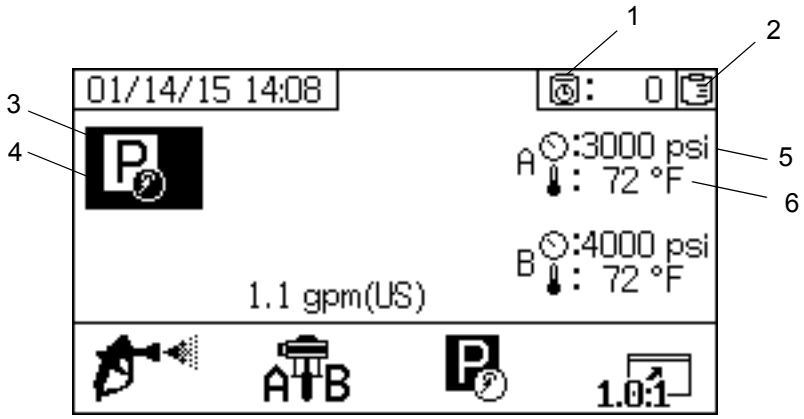


FIG. 18: Pump Mode On

NOTE: Labels 1 and 2 are part of the menu bar and repeat on all screens. If the potlife timer is not visible, refer to the sprayer manual for instructions on how to enable it.

NOTE: Labels 3 and 4 will repeat on all versions of this run screen.

NOTE: All versions of this screen display the sum of Flow Rate A and Flow Rate B. Some operation modes display A and B separately. The gateways always provide Flow Rate A and Flow Rate B independently.

Label	Input to PLC Description	Units	Comments	Output from PLC Description
1	Potlife Timer	Minutes	Minutes remaining until potlife timer expires	Can be reset to maximum value using Reset Potlife Timer
2	System in Weight Mode	Integer	0 = Volume mode 1 = Weight mode	Read Only

Label	Input to PLC Description	Units	Comments	Output from PLC Description
3	Pump On Off	Integer	0 = Pump is off 1 = Pump is on Highlighted icon indicates pump is on.	Pump On Off Control
4	Operation Mode	Integer	Icon on display indicates operation mode. 0 = Spray 1 = Run Pump A (recirc) 2 = Run Pump B (recirc) 3 = Run Pump AB (recirc) 4 = Park 5 = Pump Test 6 = Ratio Test/Batch Dispense 8 = Inactive (system off) 9 = Valve Test All other values are unused	Operation Mode Control Acceptable values are 0, 1, 2, 3, 4, or 8 All other values will be rejected
5	Pressure A Pressure B	psi, bar, MPa		Read Only
6	Temperature A Temperature B	°F or °C		Read Only
7	Flow Rate A Flow Rate B	cc/min		Read Only
8	Actual Ratio		Ratio is in thousandths 1200 is 1.2:1 ratio	Read Only

Run (Information Screens)

Alarm

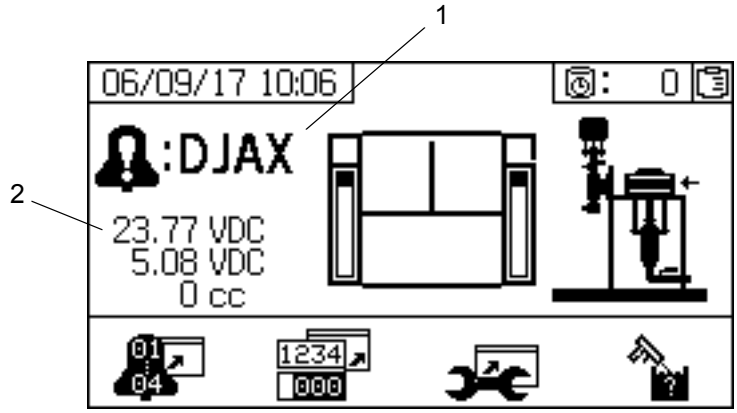


FIG. 19: Alarm Screen

Label	Input to PLC Description	Units	Comments	Output from PLC Description
1	Event Code	Integer	See **I/O Signals**, page 17 for details of Event Code.	Can be reset using Reset Alarms
2	Voltage System DC	mV		Read Only

Totalizers and Job Number

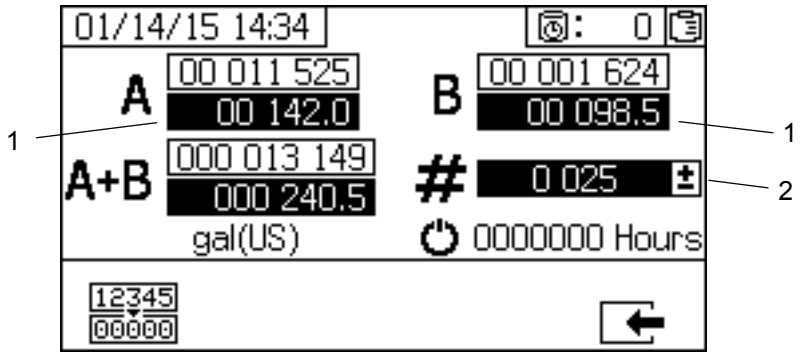


FIG. 20: Totalizers and Job Number Screen

Label	Input to PLC Description	Units	Comments	Output from PLC Description
1	Batch Total A Batch Total B	Liters, gallons (US), or gallons (Imperial)	Display shows batch totals of A, B, and A plus B. The gateway provides batch totals for A and B.	Can be reset to 0 using Reset Batch Totalizers
2	Job Number	Integer		Can be changed using Set Job Number. Job numbers from 0 to 9999 are valid.

Setup Screen

Setup Home

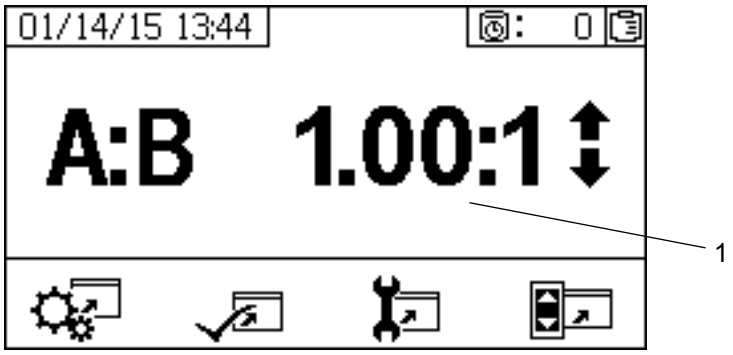


FIG. 21: Setup Screen

Label	Input to PLC Description	Units	Comments	Output from PLC Description
1	Target Ratio	Integer	Ratio in thousandths. That is: 1200 = 1.2:1 ratio 1800 = 1.8:1 ratio	Volume Ratio Target Ctrl

NOTE: The target ratio can only be changed when the system is in volume mode.

Date/Time/Units

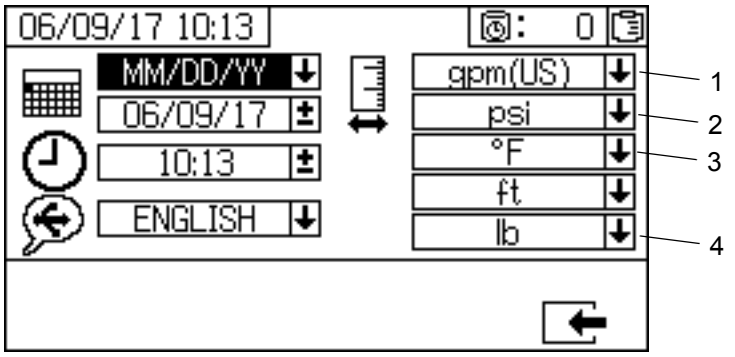


FIG. 22: Date/Time/Units Screen

Label	Input to PLC Description	Units	Comments	Output from PLC Description
1	Volume Units	Integer	0 = liter 1 = gallons (US) 2 = gallons (Imperial)	Read Only
2	Pressure Units	Integer	0 = psi 1 = bar 2 = MPa	Read Only
3	Temperature Units	Integer	0 = °F 1 = °C	Read Only
4	Weight Units	Integer	0 = lb 1 = kg	Read Only

I/O Signals

Automation Input Signals

This section provides details about the CGM Automation Input and Output signals.

Pump On/Off

Values	Pump On/Off
0	Pump is off
1	Pump is on

Operation Mode

Values	Operation Mode
0	Spray
1	Run Pump A (recirc)
2	Run Pump B (recirc)
3	Run Pump AB (recirc)
4	Park
5	Pump test
6	Batch dispense
7	Reserved
8	Inactive (system off)
9	Valve test

Target Ratio

Provides target volume or weight ratio based on value of System in Weight Mode. Ratio is in thousandths. That is:

1200 = 1.2:1 ratio

1800 = 1.8:1 ratio

Actual Ratio

Provides actual volume or weight ratio based on value of System in Weight Mode. Ratio is in thousandths. That is:

1200 = 1.2:1 ratio

1800 = 1.8:1 ratio

Event Code

Contains the 4 character event code as ASCII characters, but only the most recent to occur. Each of the 4 bytes in the integer represent one of the ASCII characters in the actual error code. The most significant byte is the first character.

Temperature A

Temperature B

F° or C° depending on the setting of temperature units in the display.

NOTE: A value of 0°F represents an error.

Pressure A

Pressure B

Units in psi, bar, or MPa depending on setting of pressure units in the display.

An integer value within those units.

Flow Rate A

Flow Rate B

Cubic centimeters (milliliters) per minute

An integer value.

Batch Total A

Batch Total B

Batch material usage in volume or weight depending on current system mode. The particular volume or weight units depend on the setting of units in the display. The value will be in tenths of gallons, liters, pounds, or kilograms. That is:

If system mode is volume and volume units is liters, a value of 700 represents 70.0 liters.

System in Weight Mode

Indicates if the system is set to volume or weight mode.

Values	Pump On/Off
0	System is in volume mode
1	System is in weight mode

Units

All units settings are set in the Display Module. The following signals are used to communicate this information to the automation controller.

Pressure Units

Values	Units
0	psi
1	bar
2	MPa

Temperature Units

Values	Units
0	°F
1	°C

Volume Units

Values	Units	Display Flow Rate Settings
0	liter	cc/min or liter/min
1	gallons (US)	oz/min or gpm (US)
2	gallons (Imperial)	oz/min or gpm (Imperial)

Weight Units

Values	Units
0	lb
1	kg

Potlife Timer Enable

Values	Units
0	Potlife timer is disabled
1	Potlife timer is enabled

Potlife Timer

The remaining potlife timer in minutes. A potlife time of 1 minute is actually from 1 to 60 seconds.

Job Number

The current job number of the system.

Voltage System DC

DC supply voltage in the system (in mV).

Automation Output Signals

Pump On Off Control

Through the gateway, the pump can only be turned on if the operation mode is set to Spray, Run Pump A, Run Pump B, Run Pump AB, or Park.

Values	Pump On Off
0	Pump is off
1	Pump is on

All non-zero values will also be treated as a request to turn pump on.

Operation Mode Control

The pump must be off for the operation mode to be changed.

Values	Operation Mode
0	Spray
1	Run Pump A (recirc)
2	Run Pump B (recirc)
3	Run Pump AB (recirc)
4	Park
8	Inactive (system off)

All other values will be rejected.

Volume Ratio Target Ctrl

The target volume ratio can only be set when the system is in volume mode. See **System in Weight Mode**, page 18.

Ratio in thousandths. That is:

1200 = 1.2:1 ratio

1800 = 1.8:1 ratio

Acceptable range is 1.0:1 to 10.0:1 (1,000 to 10,000). All other values will be rejected.

Reset Alarms

Values	Units
0	Reset alarms
1	Must set to 0 before setting to 1 to reset alarms again

Reset Batch Totalizers

Values	Units
0	Reset batch totalizers
1	Must set to 0 before setting to 1 to reset batch totalizers again

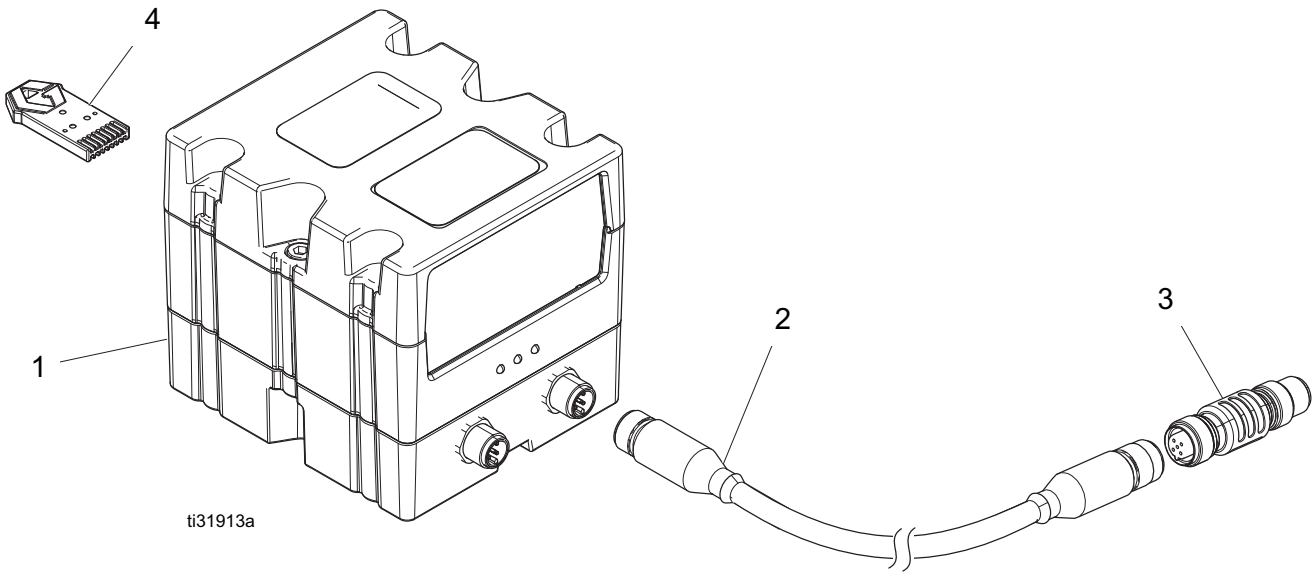
Reset Potlife Timer

Values	Units
0	Reset potlife timer.
1	Must set to 0 before setting to 1 to reset potlife timer again.

Set Job Number

Changes to current job number. Job numbers from 0 to 9999 are valid. All other values will be ignored.

Parts



Ref.	Part	Description	Qty.
1*		MODULE, Communications Gateway	1
	CGMDN0	DeviceNet; 26A530 only	
	CGMEP0	EtherNet/IP; 26A531 only	
	CGMPB0	PROFIBUS; 26A532 only	
	CGMPN0	PROFINET; 26A533 only	
2	121003	CABLE, CAN, 3.0 m	1
3	16T072	ADAPTER, CAN cable	1
4†	17E110	TOKEN, software upgrade, XM	1
5	17T695	TOKEN, software upgrade, map, XM	1

* *Fieldbus Gateway modules do not have an XM-specific map installed. Therefore, use map token (*17T695*) to install map before use.*

† *Series E or later of 17E110 is required on the XM system to use the CGM.*

The following alternate-length cables are also available separately.

Part	Description
121001	CABLE, CAN, 1.0 m
121228	CABLE, CAN, 15.0 m

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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