Instructions - Parts

Supply System Communications Gateway Module Installation Kit

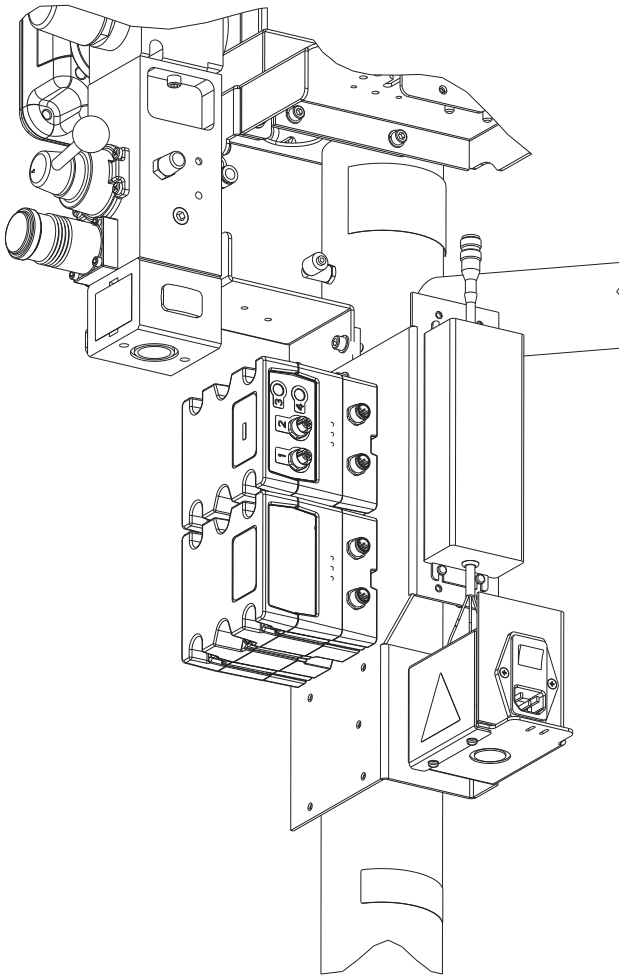
313138E
EN

For use with electric crossover tandem supply systems to provide fieldbus communications abilities. For professional use only.

Not for use in explosive atmospheres.

Development Kit CGK010

Important Safety Instructions
Read all warnings and instructions in your tandem supply system or warm melt supply systems manual. Save those instructions.



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Contents

Related Manuals

Manual	Description
312864	Communications Gateway Module, Instructions - Parts
313528	Tandem Supply System, Operation
313529	Tandem Supply System, Repair - Parts
313527	Supply System, Repair - Parts

Models

The table below lists available Communications Gateway Module (CGM) assemblies for installation kits CGK010 and CGK020. See manual 312864 for repair parts.

CGM Part No.	Fieldbus
CGMDN0	DeviceNet
CGMEP0	EtherNet/IP
CGMPB0	PROFIBUS
CGMPN0	PROFINET

Typical Configuration

Tandem Supply Systems

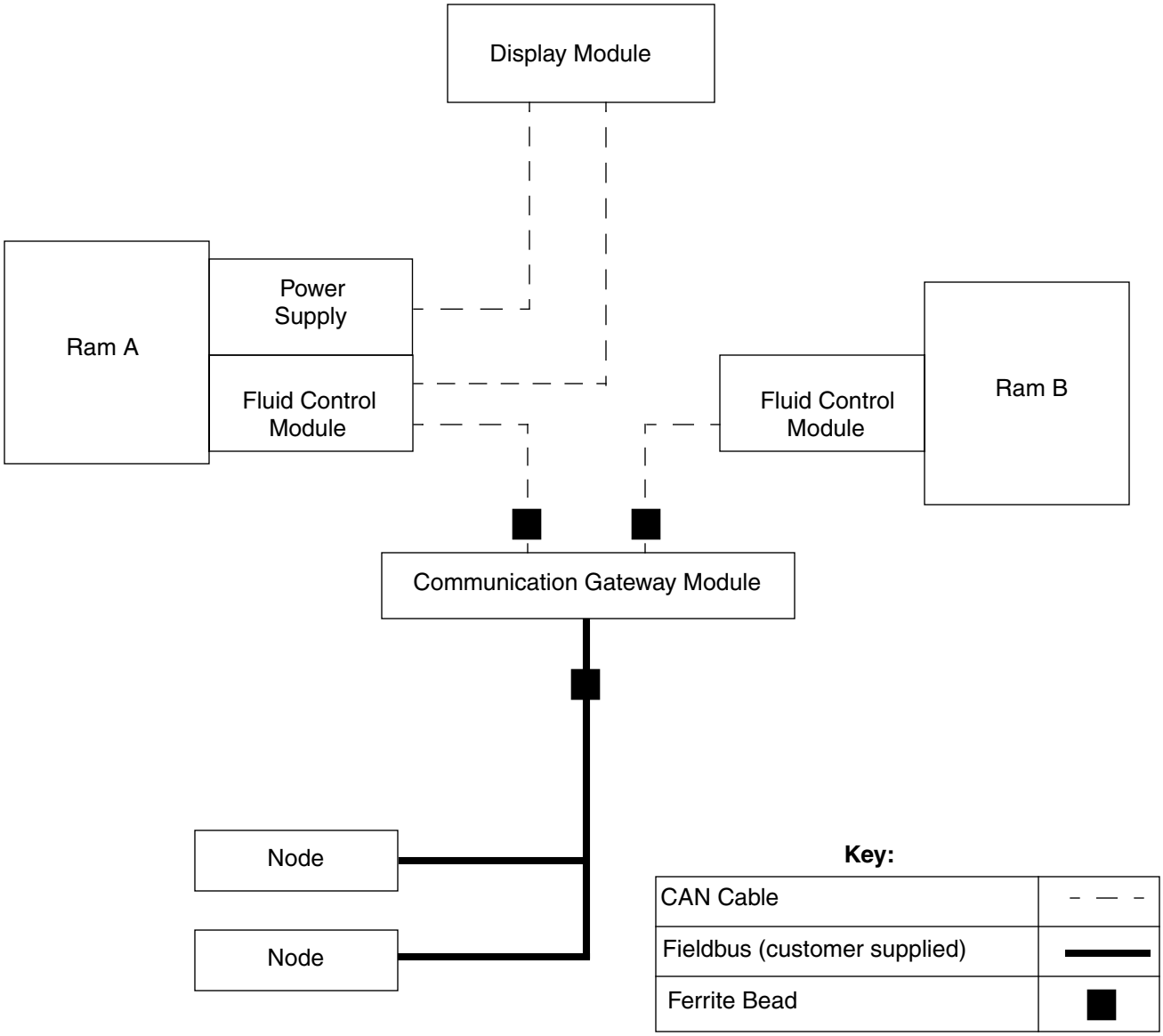


FIG. 1: Typical Installation

Overview

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

Data is provided by the CGM to the fieldbus by a data-map supplied on a map token. Data provided by the CGM to the fieldbus depends on which Graco Control Architecture based system and fieldbus are connected. The data map is defined for this pairing.

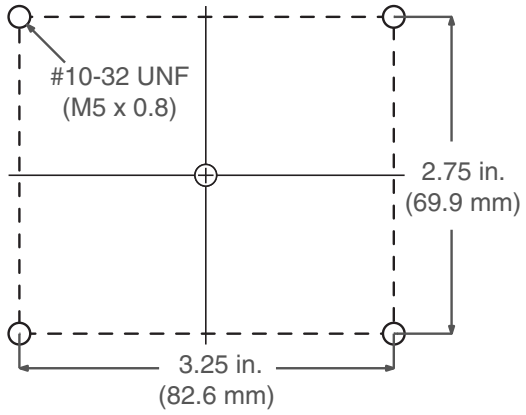
See **Available Internal Data** on page 13 for a list of internal data from the supply system that can be viewed or modified by your fieldbus master.

Installation

NOTE: See manual 312864 for signals associated with the module status LEDs.

1. Remove power from supply system.
2. Relieve pressure. See the supply systems operation manual or the warm melt supply systems instructions-parts manual for instructions.
3. Remove shrouds from right side of Ram A. See the supply systems repair-parts manual for shroud removal procedure.

NOTE: If the hole pattern is not available at installation, create holes with the following details for mounting the CGM Module base.



4. Remove access cover (C), loosen two screws (D) and remove module (A) from base (B).

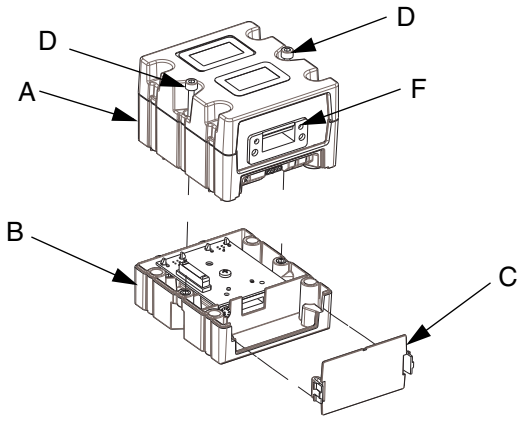


FIG. 2: CGM

5. Insert four screws (6) through top of base (B) and tighten to mounting bracket.

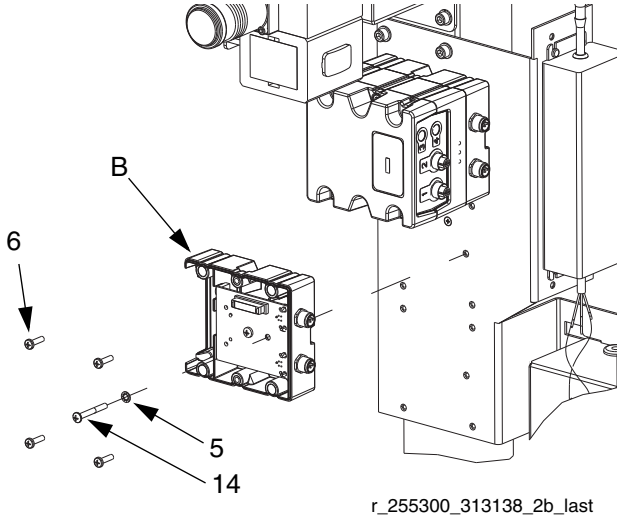


FIG. 3: Mount Base on Mounting Bracket

6. Install grounding screw (14) through washer (5) and tighten so that grounding screw (14) threads into mounting bracket. See FIG. 3.
7. Mount module (A) on base (B) with two screws (D). See FIG. 2.

8. If already connected, disconnect CAN cable (C1) from fluid control module (FCM) on Ram A.

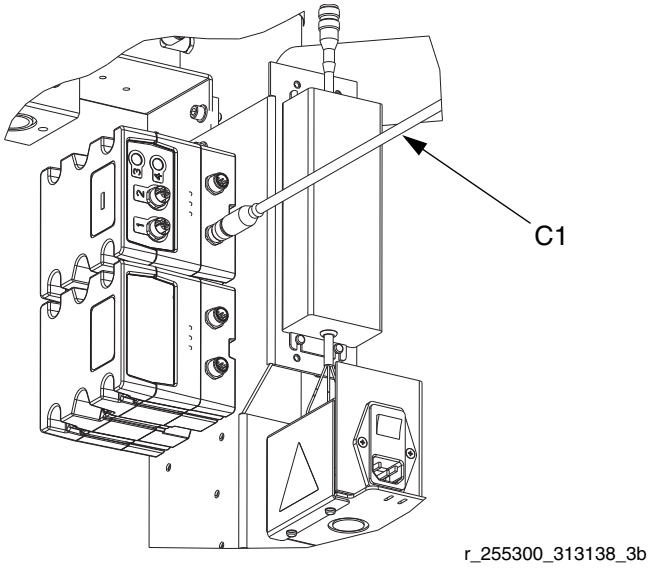


FIG. 4: CGM and FCM on Ram A

9. Connect CAN cable (C1) to the lower CAN connector (H) on the CGM and fluid control module on Ram B. See FIG. 4 and FIG. 5.

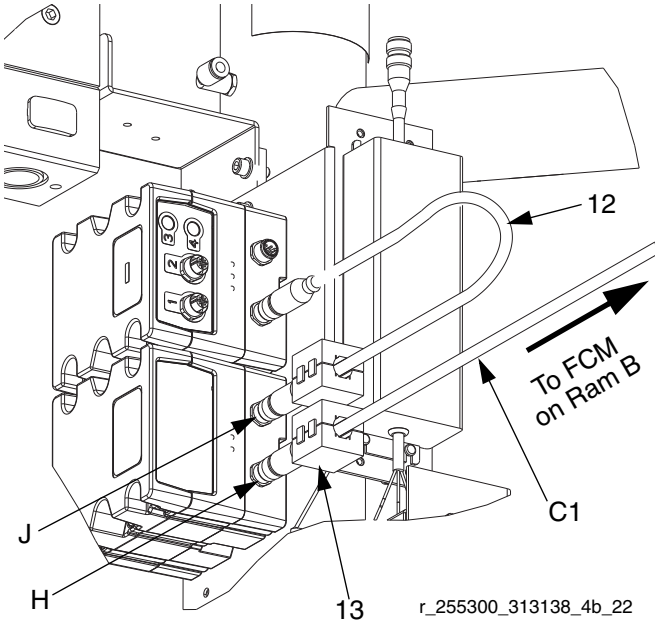


FIG. 5: CGM and FCM Connections on Ram A

10. Connect supplied CAN cable (12) to the upper CAN connector (J) on the CGM and fluid control module on Ram A. See FIG. 4 and FIG. 5.

11. Clamp two ferrite beads (13) on CAN cables adjacent to CGM. See FIG. 1 and FIG. 5 for bead locations.

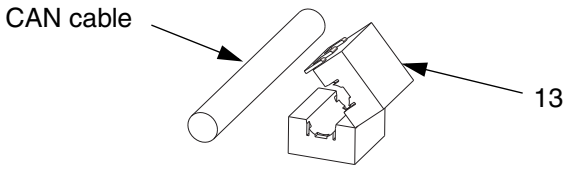


FIG. 6: Clamp ferrite bead

12. Install the data map. Refer to the Install or Update Data Map section of the Communications Gateway Module manual for instructions.

13. Attach access cover (C). See FIG. 2.

14. Replace shrouds. See the supply systems repair-parts manual for shroud assembly procedure.

15. Connect fieldbus cable (customer supplied) to fieldbus connector (F). See FIG. 2.

16. Clamp ferrite bead (13) to fieldbus cable adjacent to CGM. See FIG. 1 on page 3 for bead locations. See FIG. 6.

NOTICE
Route fieldbus cable to avoid interference with moving parts.

NOTE: Review the current fieldbus cable standards for specifications and maximum lengths.

Display Details

Power Up Screen

The following screen appears when the display module is powered up. It remains on while the display module runs through initialization and establishes communication with other components in the system.

FIG. 7: Power Up Screen

Menu Bar

The menu bar appears at the top of the screen, and consists of the following components.

FIG. 8: Menu Bar

Date and Time

The date and time are always displayed in one of the following formats. The time is always displayed as a 24-hour clock.

- DD/MM/YY HH:MM
- MM/DD/YY HH:MM

Navigation

The navigation section, which is to the right of the date and time, indicates the active screen with the center, highlighted icon. The left and right arrows indicate there are more screens that can be accessed within a mode.

Status

The current system status is displayed on the right of the menu bar. If there is an error, an event icon and either a text description of the event or the standard error code for the event is displayed. If there are no errors or warnings, nothing is displayed.

Mode

The mode section displays the current system mode. The current mode is highlighted.

Soft Keys

Icons above the soft keys indicate which mode or action is associated with each soft key. Soft keys that do not have an icon above them are not active in the current screen.

NOTICE

To prevent damage to soft key buttons, do not press the buttons with sharp objects such as pens, plastic cards, or fingernails.

Jump In/Jump Out

In screens that have editable fields, press  to access the fields and make changes. When changes are complete press  again to exit the editable version of the screen.

Navigation within Screens

Press  to open drop-down menus on Setup screens. Also, press  to enter your changes or make a selection.

Press   to navigate to new screens and to navigate left and right within a screen. Also press   to select digits within a field.

Press   to navigate to new screens and to navigate up and down within a screen. Also press   to move between selections within a drop-down menu, and to increment or decrement numbers/characters within a field.

Setup

Use the map token (7) to install or update the data map. See step 12 of **Installation**.

Use the display to set parameters for the CGM on the supply system and selected fieldbus. See **Display Details**, page 6, for display module key functions.

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. Refer to the Warm Melt Supply System manual or the Tandem Supply Systems Operation manual for instructions.

2. From the system setup screen, press  twice to display the device address screen.

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	8
PROFINET	9
DeviceNet	11
EtherNet/IP	11

Set Value and Reset Fieldbus Screen

This screen will display after certain fieldbus parameters are modified, which indicate the CGM will momentarily disconnect from the fieldbus to reset to the new value.

Select  to save changes and reset, or  to go back to previous settings.

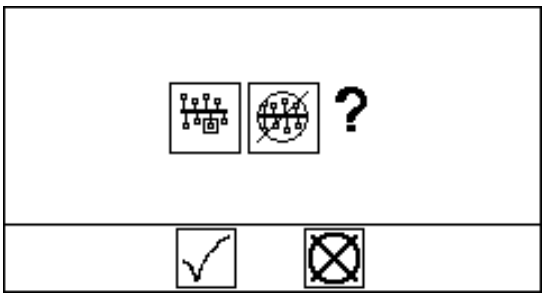


FIG. 9: Set Value and Reset Fieldbus Screen

Set Hardware Revision and Serial Number

All fieldbuses require the supply system hardware revision and serial number. For any fieldbus, use the following instructions to enter the values listed on the supply system identification plate.

NOTE: Enter these values at the time of CGM installation.

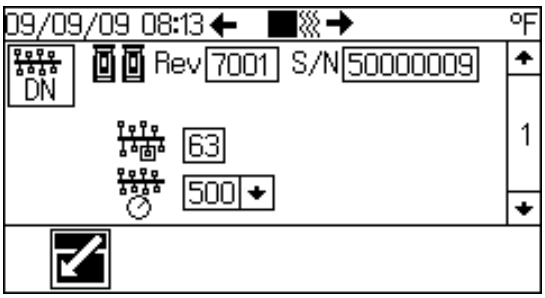


FIG. 10: Device Address

1. Press  to enter setup mode.

2. Press  to navigate to screen 1. See FIG. 10.

3. While pressing S1 (inside rear access cover of display module), press to enter edit mode for screen 1. The field will be highlighted.

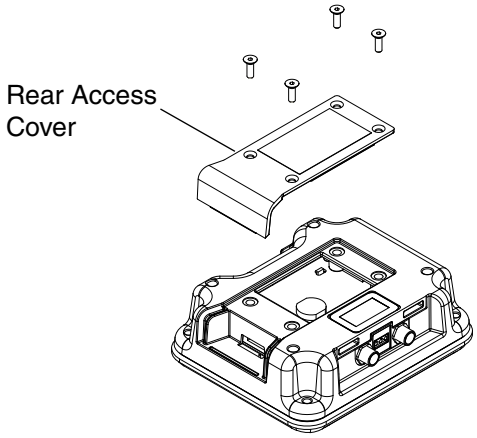


FIG. 11: S1 Location

4. Enter the supply system revision number and press to enter the number.
5. Press to navigate to the S/N field.
6. Enter the supply system serial number and press to enter the number.
7. Press to exit edit mode.

PROFIBUS Fieldbus Screens

Screen 1

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

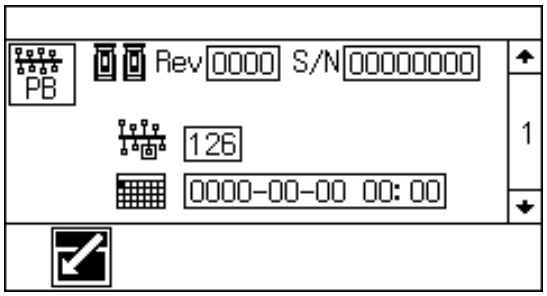


FIG. 12: PROFIBUS Fieldbus Screen 1

Parameter	Range
Hardware Rev.	Read only
System Serial # S/N	Read only
Device Address	000-126
Install Date	Set as required; use format as shown in figure above; validate date and time before saving

Screen 2

Enter identification information for the CGM used in your system.

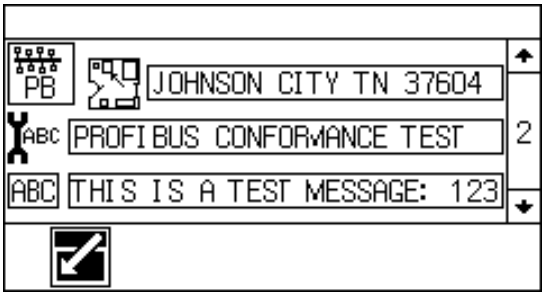


FIG. 13: PROFIBUS Fieldbus Screen 2

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.

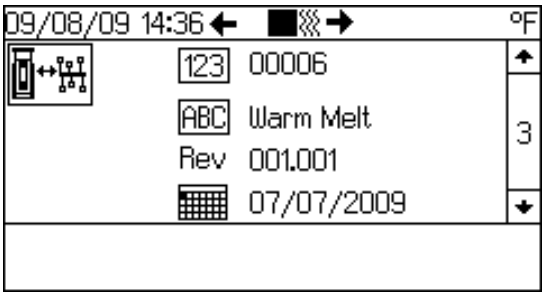


FIG. 14: PROFIBUS Fieldbus Screen 3

PROFINET Fieldbus Screens

Screen 1

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

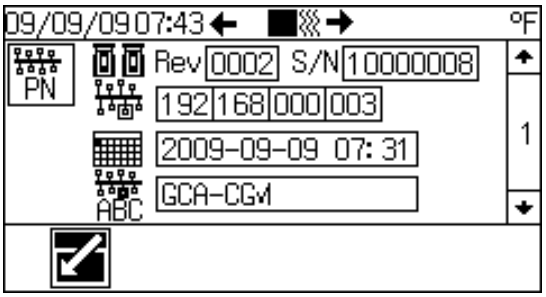


FIG. 15: PROFINET Fieldbus Screen 1

Parameter	Range
Hardware Rev. 	Read only
System Serial # S/N	Read only
IP Address 	Set as required
Install Date 	Set as required; use format as 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.

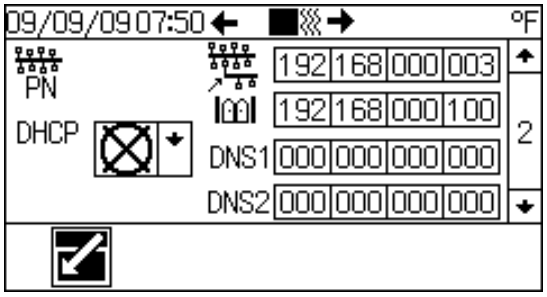


FIG. 16: PROFINET Fieldbus Screen 2

Parameter	Range
DHCP	Yes ✓ or No ⊗
Subnet Mask	Set as required
Gateway	Set as required
DNS 1	Set as required
DNS 2	Set as required

Screen 3

Enter identification information for the CGM used in your system.

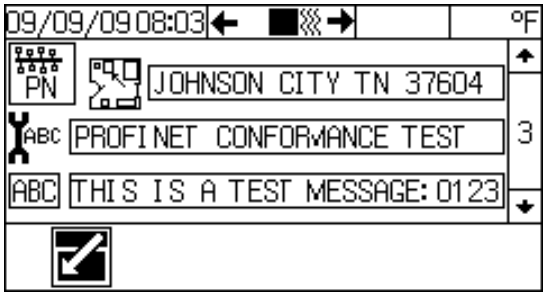


FIG. 17: PROFINET Fieldbus Screen 3

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

Screen 4

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

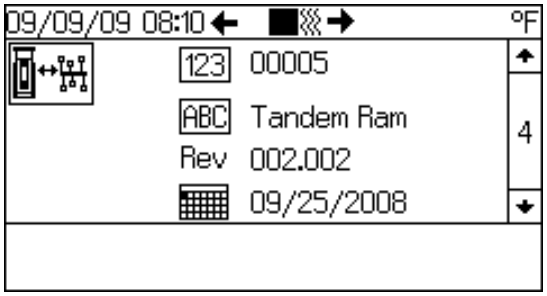


FIG. 18: PROFINET Fieldbus Screen 4

DeviceNet Fieldbus Screens

Screen 1

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

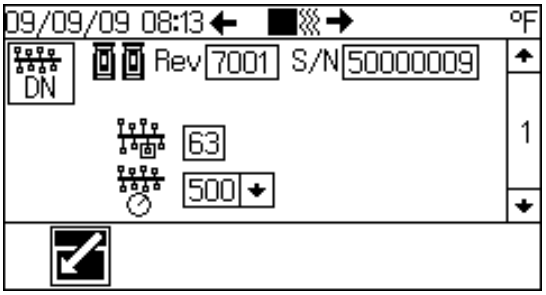


FIG. 19: DeviceNet Fieldbus Screen 1

Parameter	Range
Hardware Rev.	Read only
System Serial # S/N	Read only
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.

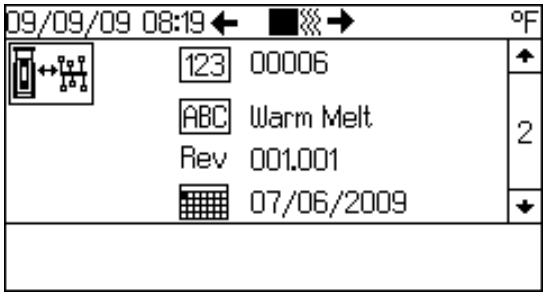


FIG. 20: DeviceNet Fieldbus Screen 2

EtherNet/IP Fieldbus Screens

Screen 1

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

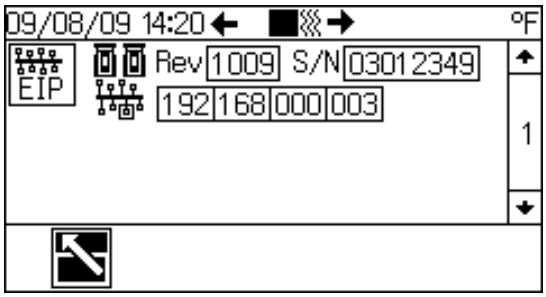


FIG. 21: EtherNet/IP Fieldbus Screen 1

Parameter	Range
Hardware Rev.	Read only
System Serial # S/N	Read only
IP Address	Required at installation

Screen 2

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

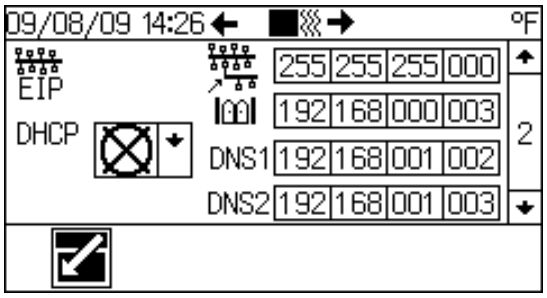


FIG. 22: EtherNet/IP Fieldbus Screen 2

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.

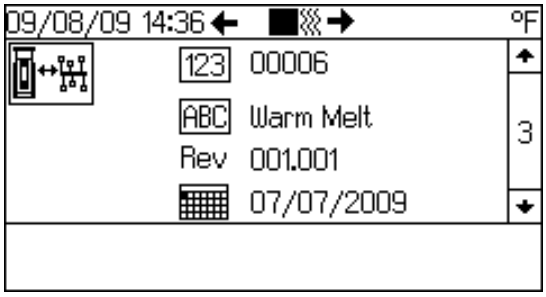


FIG. 23: EtherNet/IP Fieldbus Screen 3

Available Internal Data

See **Appendix A - I/O Signal Descriptions** for additional details regarding each input/output.
Unless stated otherwise:

- The PLC or controlling logic will need to allocate 16 bytes for input data, and 8 bytes for output data.
- Bytes are stored in each instance in little endian order. (byte order within instance: least significant most significant).
- Values are subject to the same maximum and minimum restrictions of the supply system.

Automation Inputs (from Supply System to the PLC)

Instance Number	Input Byte Index(s)	Description	Format/ Notes
1	0 - 1	System Status Word 1 (bit packed)	UINT*
2	2 - 3	System Status Word 2 (bit packed)	UINT*
3	4 - 7	RAM / Drum A (or B) Volume Remaining	UDINT**
4	8 - 11	Data Exchange Interface Input Value	UDINT#
5	12 - 13	Data Exchange Interface Pointer Last Serviced	UINT#
6	14	Active Alarm or Warning Number	USINT##
7	15	Second Possible Active Alarm or Warning Number ($$)	USINT##

Automation Outputs (from PLC to Supply System)

Instance Number	Output Byte(s)	Description	Format/ Notes
1	0 - 1	System Control Word (bit packed)	UINT$
2	2 - 5	Data Exchange Interface Output Value	UDINT#
3	6 - 7	Data Exchange Interface Pointer Output Designation	UINT#

* *Refer to **System Status Bits, Word Tables** for bit definitions.*

** *Volume is provided in Gallons U.S. (Gallons or Oz U.S. Modes), Gallons U.K. (Gallons or Oz U.K. Modes), Liters (Liters or CC's Modes), or pump cycles (cycle mode). Refer to Data Exchange Pointer Designations 2 and 3 in **Data Exchange Interface Pointer Designation Table** in Appendix B for the volume modes available. The volume provided is for the active Ram if using a tandem system, or Ram A if using a single supply system.*

\# *Refer to **Appendix B - Data Exchange Interface**.*

\## *Refer to **Appendix C - Error / Event Tables** for definitions, and explanation for operation.*

$ *See **System Control Bits** table*

$$ *If more than 2 alarms or warnings exist, the "Second Possible Active or Warning Number" will scroll all the other active Alarms or warnings, which are not posted in the "Active Alarm or Warning Number" location. Alarms will take precedence and will be posted as active warnings.*

Appendix A - I/O Signal Descriptions

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

System Status Bits, Word Tables

The following table reflects the status indication information provided to the controlling PLC logic, on input instances #1 and #2. The following descriptions reflect the condition described if the corresponding bit is set (=1).

System Status Word 1:

Bit #	Hexadecimal	Binary #	Description
0	0x0001	0000 0000 0000 0001	System is Active or Turned ON.
1	0x0002	0000 0000 0000 0010	System is Ready
2	0x0004	0000 0000 0000 0100	PLC Control Active
3	0x0008	0000 0000 0000 1000	System Warning is Active
4	0x0010	0000 0000 0001 0000	System Alarm is Active
5	0x0020	0000 0000 0010 0000	System Recirculation Operation Active
6	0x0040	0000 0000 0100 0000	System Depressurize Active
7	0x0080	0000 0000 1000 0000	System Prime Active
8	0x0100	0000 0001 0000 0000	Data Exchange Interface Active or in Transition (Ignore Value if set)
9	0x0200	0000 0010 0000 0000	System User Interface Controls Disabled.
10	0x0400	0000 0100 0000 0000	(Reserved for future use)
11	0x0800	0000 1000 0000 0000	Ram A Drum Low
12	0x1000	0001 0000 0000 0000	Ram A Drum Empty
13	0x2000	0010 0000 0000 0000	Ram / Pump A Ready
14	0x4000	0100 0000 0000 0000	Ram A Not Primed
15	0x8000	1000 0000 0000 0000	(Reserved for future use)

System Status Word 2:

Bit #	Hexadeci-mal	Binary #	Description
0	0x0001	0000 0000 0000 0001	Ram B is Active Ram (Always 0 for Single Systems).
1	0x0002	0000 0000 0000 0010	Volume Remaining Provided (Input Instance 4) is for Drum/ Ram B (Always 0 for Single Systems)
2	0x0004	0000 0000 0000 0100	Cross Over Request Active (Tandem Systems Only).
3	0x0008	0000 0000 0000 1000	Ram B Drum Low (Tandem System Only)
4	0x0010	0000 0000 0001 0000	Ram B Drum Empty (Tandem System)
5	0x0020	0000 0000 0010 0000	Ram / Pump B Ready (Tandem System)
6	0x0040	0000 0000 0100 0000	Ram B Not Primed (Tandem System Only)
7	0x0080	0000 0000 1000 0000	System Turn ON Request Active
8	0x0100	0000 0001 0000 0000	System Prime Request Active
9	0x0200	0000 0010 0000 0000	System Recirculation Request Active
10	0x0400	0000 0100 0000 0000	System Depressurize Request Active
11-15	---	xxxx xxxx x100 0000	(Reserved for future use)

System Control Bits

The following table reflects the bit variables which can be set or cleared to control the following conditions. The following descriptions reflect the condition described if the corresponding bit is set (= 1). Bit requests 1 – 15 will be ignored if the “Enable PLC Interface Control” bit is 0.

Bit #	Hexadecim al	Binary #	Description
0	0x0001	0000 0000 0000 0001	Enable PLC Interface Control (0 = Monitor Only)
1	0x0002	0000 0000 0000 0010	Turn ON system request
2	0x0004	0000 0000 0000 0100	Cross Over request (Tandem Systems Only).
3	0x0008	0000 0000 0000 1000	Prime Active RAM Request
4	0x0010	0000 0000 0001 0000	Recirculate Active RAM Request
5	0x0020	0000 0000 0010 0000	Depressurize System Request
6	0x0040	0000 0000 0100 0000	Disable User Controls Request (on Display Module). Control will be re-enabled when “Enable PLC Interface Control” is cleared.
7	0x0080	0000 0000 1000 0000	Reserved for Future Use.
8 - 15	---	xxxx xxx0 0000 0000	(Reserved for future use)

Appendix B - Data Exchange Interface

This is a bi-directional interface with the ability to both transmit and receive data between the supply system and the controlling logic (PLC). The interface allows for the exchange of a large amount of data between the systems while only occupying a very small data map to support the exchange. The interface also allows for future expansion of data without changing the map structure.

To get or receive data from the supply system, the controlling PLC needs to:

1. Write to the “Data Exchange Interface Pointer Output Designation” location on the map (output instance 3) a value corresponding to the data the PLC wants to receive.

2. Wait for the Supply system to provide the same Pointer Designation number written in the previous step at input instance #5 (“Data Exchange Interface Pointer Last Serviced”).

3. Read the requested data at input instance #4, “Data Exchange Interface Input Value”.

To write or transmit data to the supply system, the controlling PLC needs to:

1. Write the data for the supply system to “Data Exchange Interface Output Value” location, output instance 2.

2. Write to the “Data Exchange Interface Pointer Output Designation” location on the map (output instance 3) a value corresponding to the data the PLC wants to transmit to the supply.

3. The supply will echo back to the PLC, the “Pointer Designation,” and the data “Interface Value” after the supply system processes the data transmit request to input instances #5 and #4 respectively.

NOTE: When the controlling logic (PLC) is exchanging data over this interface, the supply system will set the “Data Exchange Interface Active or in Transition” status bit while it processes the request and writes to the “Data Exchange Interface” input locations (input instances #4 and #5). After valid data is present at the input instances, the supply system will clear the bit. While the bit is set, the controlling PLC should ignore the interface inputs until the bit is cleared. After the supply system services the request, the designation pointer input will match the designation pointer output.

NOTE: When changes are made over the data exchange interface, the supply system display screen may not update immediately. It may be necessary to navigate away from the screen then back to it.

Data Exchange Interface Pointer Designation Table

Data Exchange Pointer Designation	Description	Comments	Read/ Write
0	Interface Not Active		N/A
1	Clear Error Number	Write error or event number (refer to **Appendix C - Error / Event Tables**) which needs cleared (after the condition has been corrected) to “Data Exchange Interface Output Value” location. The supply will echo back the error or event number, and will remove the active error number if the condition is actually removed. Ram Communication Alarms are self-clearing after condition is resolved.	Write
2	Set Volume Units	Available Units: 1 = Cycles, 2 = Gallons U.S., 3 = Gallons UK, 4 = Oz U.S., 5 = Oz U.S., 6 = Liters, 7 = CC’s (default).	Write
3	Get Volume Units		Read
4	Get System Flow Rate	Provided in Selected Volume units (above) x 100 / Minute Integer format. If Volume Units = Cycles, flow provided in cycles/ Minute.	Read
5	Set Tandem Mode	Available Options: 1 = Tandem Mode, 2 = Ram A Mode, 3 = Ram B Mode.	Write
6	Get Tandem Mode		Read
7	Get Cycle Rate	Provided in Cycles / Minute from Active Ram or Pump	Read
8	Get Prime Time Remaining	Provides remaining seconds from Ram which is currently in “Inactive Priming” state.	Read
8 - 30	---	(Reserved for future use)	Read
31	Get Ram A State	Available States: 1 = Inactive Off, 2 = Inactive Not Primed, 3 = Inactive Priming, 4 = Inactive Ready, 5 = Active Off, 6 = Active On, 7 = Active Recirculating, 8 = Active Depressurized.	Read
32	Set Drum A Filled Volume	If setting or Getting drum fill volume, Volumes need to be in Gallons U.S. (Gal or Oz U.S. modes), Gallons U.K. (Gal or Oz U.K. modes) or Liters (Liters or CC modes). If in Cycles, drum volume will be determined by Ram Pump cycles.	Write
33	Get Drum A Filled Volume		Read
34	Get Drum A Volume Remaining	Volume is provided in gallons U.S. (Gallons or Oz U.S. Modes), Gallons U.K. (Gallons or Oz U.K. Modes), Liters (Liters or CC’s Modes), or pump cycles (cycle mode).	Read
35	Get Ram A Grand Totalizer		Read
36	Get Ram A Job Totalizer		Read
37	Reset Ram A Job Totalizer	No Data required for “Data Exchange Interface Output Value” location	Write
38	Get Ram A Software Version	A 32-bit value will be provided in the format of 0xXXCCBBAA, where version numbers will be provided: 0xCC…Build Version 0xBB…Minor Version 0xAA…Major Version	Read
38 - 90	---	(Reserved for future use)	Read

Data Exchange Pointer Designation	Description	Comments	Read/ Write
91	Get Ram B State	Available States: 1 = Inactive Off, 2 = Inactive Not Primed, 3 = Inactive Priming, 4 = Inactive Ready, 5 = Active Off, 6 = Active On, 7 = Active Recirculating, 8 = Active Depressurized.	Read
92	Set Drum B Filled Volume	If setting or Getting drum fill volume, Volumes need to be in Gallons U.S. (Gal or Oz U.S. modes), Gallons U.K. (Gal or Oz U.K. modes) or Liters (Liters or CC modes). If in Cycles, drum volume will be determined by Ram Pump cycles.	Write
93	Get Drum B Filled Volume		Read
94	Get Drum B Volume Remaining	Volume is in provided in gallons U.S. (Gallons or Oz U.S. Modes), Gallons U.K. (Gallons or Oz U.K. Modes), Liters (Liters or CC's Modes), or pump cycles (cycle mode).	Read
95	Get Ram B Grand Totalizer		Read
96	Get Ram B Job Totalizer		Read
97	Reset Ram B Job Totalizer	No Data required for "Data Exchange Interface Output Value" location	Write
98	Get Ram B Software Version	A 32-bit value will be provided in the format of 0xXXCCBBAA, where version numbers will be provided: 0xCC…Build Version 0xBB…Minor Version 0xAA…Major Version	Read
99 - ~65k	---	(Reserved for future use)	

Appendix C - Error / Event Tables

The following table reflects numbers provided in input instances #6 and 7. To clear an error or event condition, when the PLC monitors a non-zero error number on input instance 6 or 7, the PLC logic will need to correct the condition indicated. After that is done, the PLC will need to clear the condition from the screen performing a write operation to the Data Exchange Interface. The PLC will need to write the error number to the “Data Exchange Interface Output Value” location (Output instance #2), then write the “Clear Error Number” designation to the output pointer designation location.

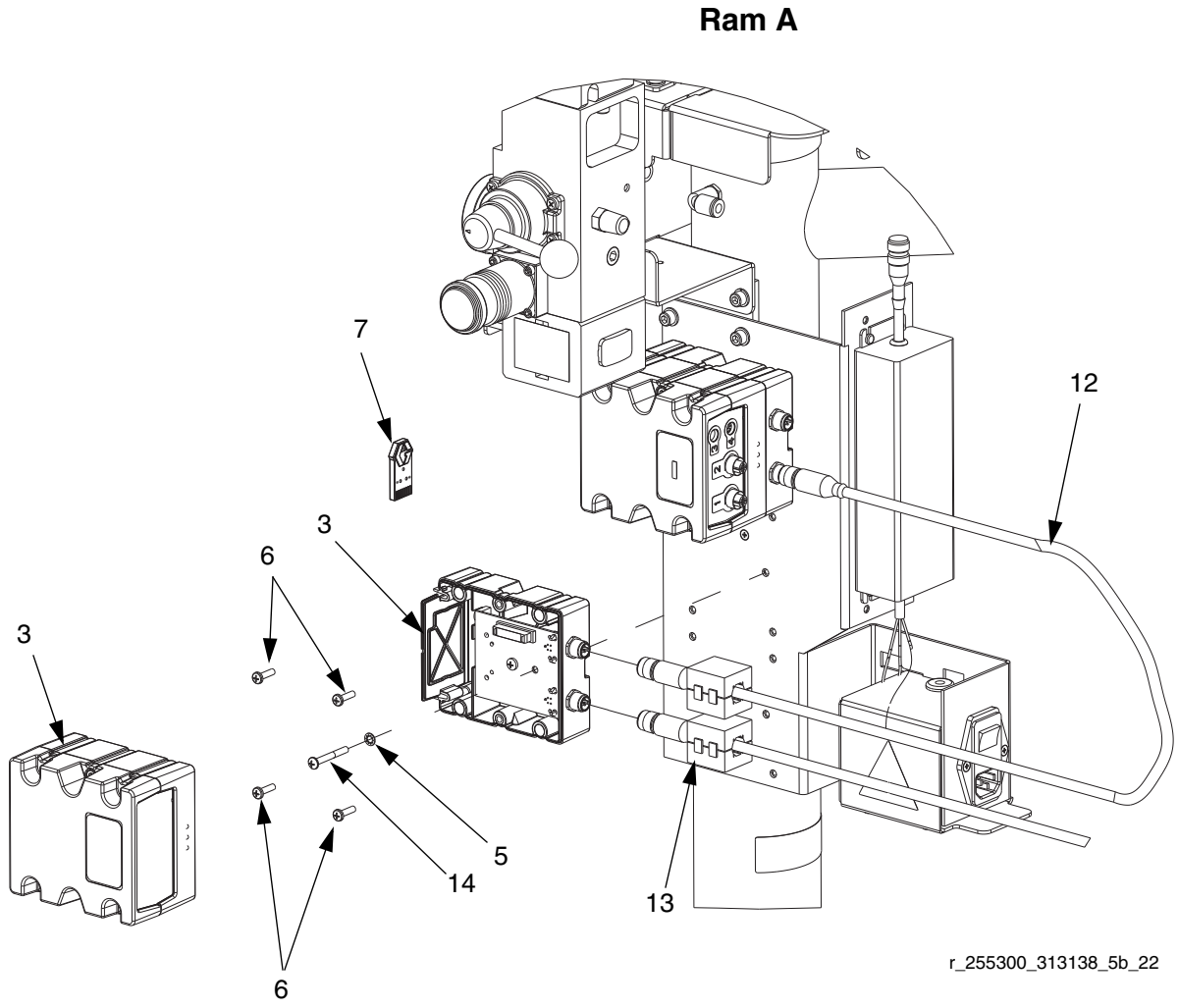
After an event or error requested cleared by the PLC, the indicated 4 character code will be removed, and the error number will be cleared from input instance 6 or 7 if in fact the condition has been corrected. If multiple conditions exist, the process may need repeated for each condition.

Error / Event Number	Code	Description
0	---	No Active Error
1	DD1X	Ram A Diving Up Warning
2	DD1X	Ram A Diving Down Warning
3	ML1X	Ram A Rebuild Platen Seals Counter Expired, warning
4	MA1X	Ram A Pump Counter Expired, warning
5	L21X	Ram / Drum A Low Warning
6	MGDX	Filter Delta Pressure Low, Ram A, warning
7	MGDX	Filter Delta Pressure High, Ram A, warning
8	WK1X	Ram A Fluid Solenoid Disconnect, warning
9	DB1X	Ram A Not Primed Warning
33	DD2X	Ram B Diving Up Warning
34	DD2X	Ram B Diving Down Warning
35	ML2X	Ram B Rebuild Platen Seals Counter Expired, warning
36	MA2X	Ram B Pump Counter Expired, warning
37	L22X	Ram / Drum B Low Warning
38	MGDX	Filter Delta Pressure Low, Ram B, warning
39	MGDX	Filter Delta Pressure High, Ram B, warning
40	WK2X	Ram B Fluid Solenoid Disconnect, warning
41	DB2X	Ram B Not Primed Warning
65	L11X	Drum A Empty Alarm
66	WJ1X	Ram A Air Solenoid Disconnected Alarm
67	DA1X	Ram/ Pump A Pump Runaway Detected Alarm
68	DB1X	Ram/ Pump A Not Primed Alarm
69	DK1X	Ram / Pump A Reed Switch Failure Alarm

Error / Event Number	Code	Description
97	L12X	Drum B Empty Alarm
98	WJ2X	Ram B Air Solenoid Disconnected Alarm
99	DA2X	Ram/ Pump B Pump Runaway Detected Alarm
100	DB2X	Ram/ Pump B Not Primed Alarm
101	DK2X	Ram / Pump B Reed Switch Failure Alarm
145	B61X or B62X	Cross Over Problem Alarm
161	CB1X	Communication Error Ram A, Alarm
162	CB2X	Communication Error Ram B, Alarm
10-32, 42-64, 70-96, 102-144, 146-159, 162-255		Reserved for future use

Parts

Model CGK010



Ref	Part	Description	Qty.
3*	CGMxx0	MODULE, CGM	1
5	157021	WASHER	1
6	114417	SCREW, self tap, pan hd	4
7		TOKEN, map	1
	15V525	For tandem supply system	
	16A932	For warm melt supply system	
12	121000	CABLE, CAN, female / female 0.5m	1
13	121901	SUPPRESSOR, box snap, ferrite	3
14	121070	SCREW, machine #8-32 x 1 3/8 in.	1

* *Not included in kit. See the Communications Gateway Module manual for parts list.*

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