PrecisionView AMR 2.0

Advanced Material Reporting

Installation Guide

309219
Rev. C

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SECTION

1

Introduction

Conventions Used in this Manual

Warnings, Cautions, and Notes

The warning symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

The caution symbol alerts you to the possibility of equipment or property damage or to operation errors if you do not follow the instructions.

The pencil symbol is used to call your attention to additional important or helpful information.

References

Numbers and letters in parentheses in the text, such as (A) or (7), refer to reference numbers and letters in the figures.

Wherever the PrecisionMix® name is mentioned, the information pertains to both the PrecisionMix II-2K station and the PrecisionMix II-3K station, unless otherwise specified.

“Station” refers to both:

- physical devices (such as an Informer station) connected to PrecisionView AMR
- stations you create and configure with the application in the Network Overview.

Installation and Setup Overview

Improper wiring can cause a hazardous condition and result in fire, explosion, or electric shock. A qualified electrician must complete all grounding and wiring connections. Turn off the power to the device(s) before starting installation.

The following steps are an overview of the process of installing and configuring PrecisionView AMR 2.0 and the physical network. Each step is explained in more detail in the procedures and drawings on the following pages and in the *PrecisionView AMR 2.0 User Guide*.

Steps

Detailed instructions for steps 1-3 are in this installation guide.

1. Install the physical network. Follow the instructions for the type of station(s) you are installing.

No interface box is required for PrecisionMix stations.

Refer to the networking schematics (page 11).

Informer station (page 26)	**PrecisionMix station (page 33)**	**ProBatch station (page 37)**
• Connect RS485 cable to interface box. • Connect RS485 and power from interface box to Informer station. • Connect 24 VDC power to interface box.	• Install Network Kit 241379 if not already installed. • Connect RS485 cable to terminals inside PrecisionMix control panel.	• If ProBatch station is in Hazardous area, connect RS485 cable to interface box. • Connect RS485 cable to ProBatch terminals.

2. Install RS232/RS485 Converter Kit 244778 (page 48).
3. Configure each of the physical stations connected to the network, using the station's Setup Mode.

All devices must have unique station numbers for the PrecisionView application to function correctly.

4. Install PrecisionView AMR 2.0 (page 59).

Steps
Detailed instructions for the following steps are in the PrecisionView AMR 2.0 User Guide.
5. Select units of measure.
6. Configure Master Fluid List, HAP, and PrecisionMix Recipes tables.
7. Configure PrecisionView network and stations in Network Overview.
8. Configure Informer, PrecisionMix, and ProBatch stations.
9. Lock material and recipe configuration.
10. Backup the PrecisionView software configuration.

For More Information

Technical Support

To identify the Graco authorized distributor closest to you, call:
1-800-367-4023 Toll Free

Training Programs

For information on available training courses, contact your distributor.

Instruction Manuals

Depending on which devices are part of your network, you may need to refer to the following manuals for additional information.

Manual No.	Description
309102	Informer Package Manual
308916	PrecisionMix II 2-K System Manual
309107	PrecisionMix II 3-K System Manual
309300	ProBatch System Manual
196936	PrecisionView AMR 2.0 User Guide
309366	Interface Box

To order additional PrecisionView AMR 2.0 Installation Guides (this manual), order part number 196938.

Online Documentation

This instruction manual and the *PrecisionView AMR 2.0 User Guide* are included on the PrecisionView AMR 2.0 CD in the “Manuals” directory (pdf files). You need Acrobat® Reader to view the manuals. Install Acrobat Reader from the PrecisionView AMR 2.0 CD if it is not already installed on your computer.

The blue text in the online manuals is “hot text”. Clicking on the text will take you to the information refered to. Use the “Go to Previous View” button ➤➤ in Acrobat Reader to return to the previous page in the manual.

SECTION
2

Typical Networking Diagrams

General Networking Notes

Improper wiring can cause a hazardous condition and result in fire, explosion, or electric shock. A qualified electrician must complete all grounding and wiring connections. Turn off the power to the device(s) before starting installation.

Depending on the devices and network configuration, the use of certain interface boxes is required. There are five types of interface boxes.

Network Configuration	Informer only, Non-hazardous area	Informer with other devices, Non-hazardous area	Informer only, Hazardous area	Informer with other devices, Hazardous area,	ProBatch, Hazardous area
Interface Box:	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
Part No.	**244773**	**244774**	**244775**	**244776**	**244534**
Components:					
Power Supply	X	X	X	X	
Isolator/ Repeater		X		X	
Terminating Resistor		X		X	X
Barrier-Power			X	X	
Barrier-Signal			X	X	X

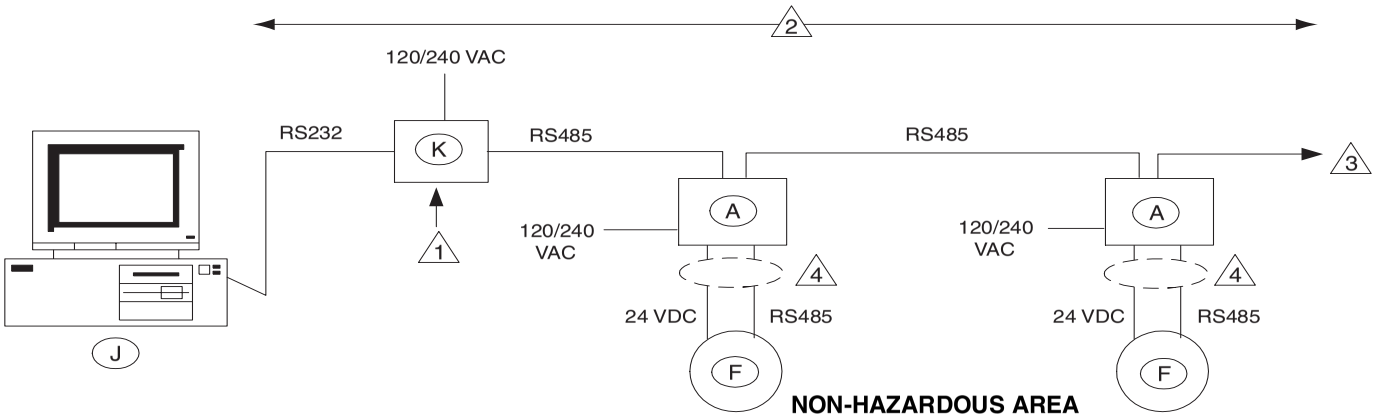
- The following network diagrams are only examples of valid network configurations. Contact your Graco distributor or network specialist for further options.
- You must provide 120/240 VAC power to Interface Boxes A, B, C, and D (244773-244776).
- Unless otherwise noted on the schematics, each end of the modbus RS485 network must have a terminating resistor.

- Every RS485 PrecisionView AMR 2.0 network needs at least one RS232/RS485 Converter Kit 244778 installed to enable connection to a computer serial port. Kit 244778 includes RS232/RS485 converter, 12 VDC power supply, 120 VAC power cord, and a serial cable to connect between the computer and converter.

- An isolator/repeater can increase the maximum network cable length beyond 4000 ft. (1219.2 m), 31 devices. However, each Informer station installed downstream from an isolator should not exceed 1200 ft. (365.76 m). Limitations are affected by allowable response time and other factors. Contact your network specialist for other options.

- Refer to *Interface Box Manual 309366* for information on the maximum number of Informer stations allowed for installation per Interface Box.

- PrecisionView AMR response time is directly related to the number of devices on the network. In general, the more stations enabled for communication, the slower the response time.



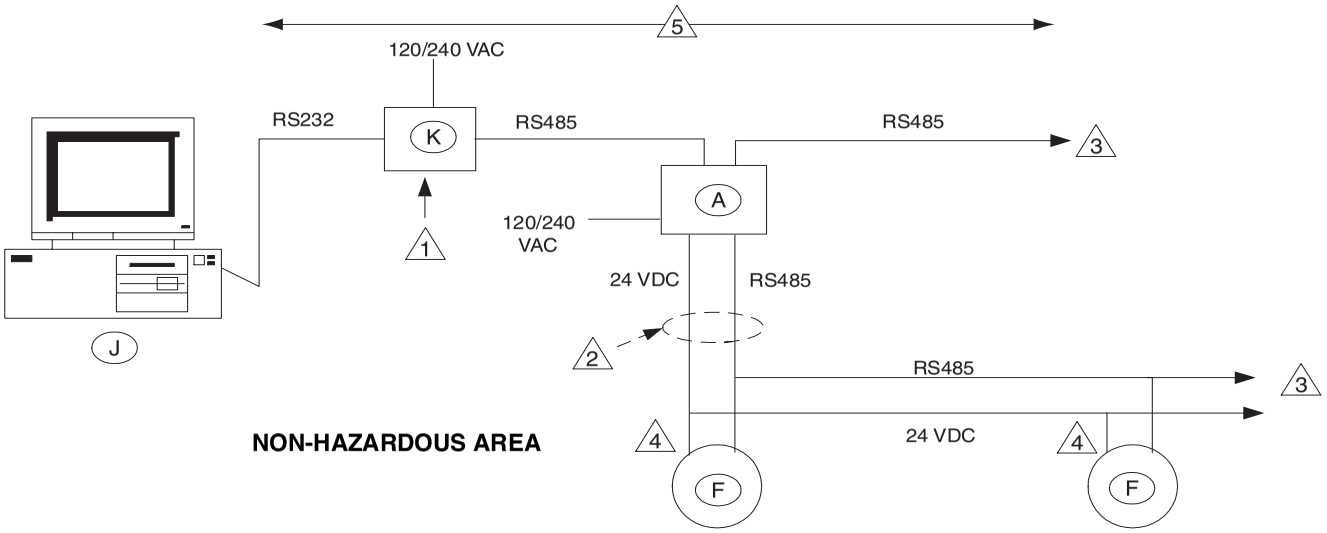
Informer stations - Non-hazardous area

Key

A Interface Box 244773
F Informer Station
J Personal Computer
K RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor OFF.
2. 1200 ft. (365.76 m) maximum cable length for entire network due to absence of terminating resistor.
3. To other Informer stations on network.
4. If using two separate cables, use Belden 9841. If using single cable (typical), use 2 twisted pairs, Alpha 58612.



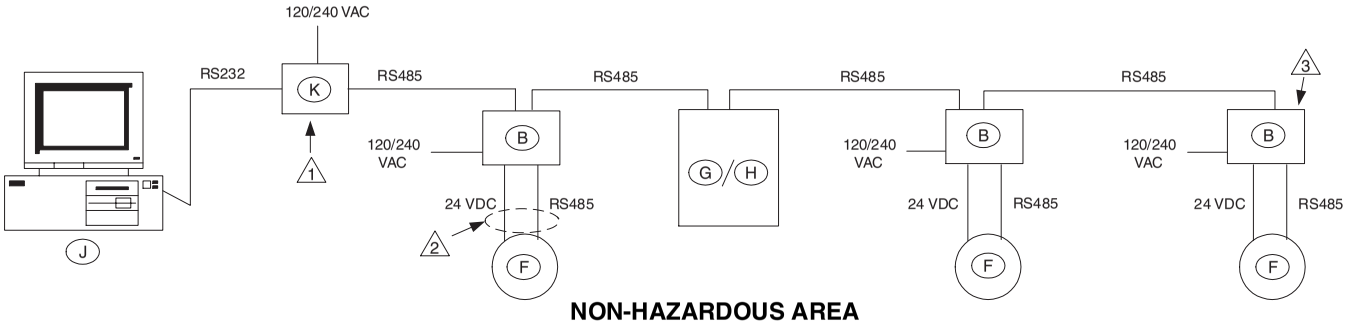
Informer stations - Non-hazardous area

Key

A Interface Box 244773
F Informer Station
J Personal Computer
K RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor OFF.
2. If using two separate cables, use Belden 9841. If using single cable (typical), use 2 twisted pairs, Alpha 58612.
3. To other Informer stations on network.
4. Only one wire can be landed on each Informer terminal. Daisy chain junctions must occur off the terminal using wire tee or at spare terminals inside interface box.
5. 1200 ft. (365.76 m) maximum cable length for entire network due to absence of terminating resistor.



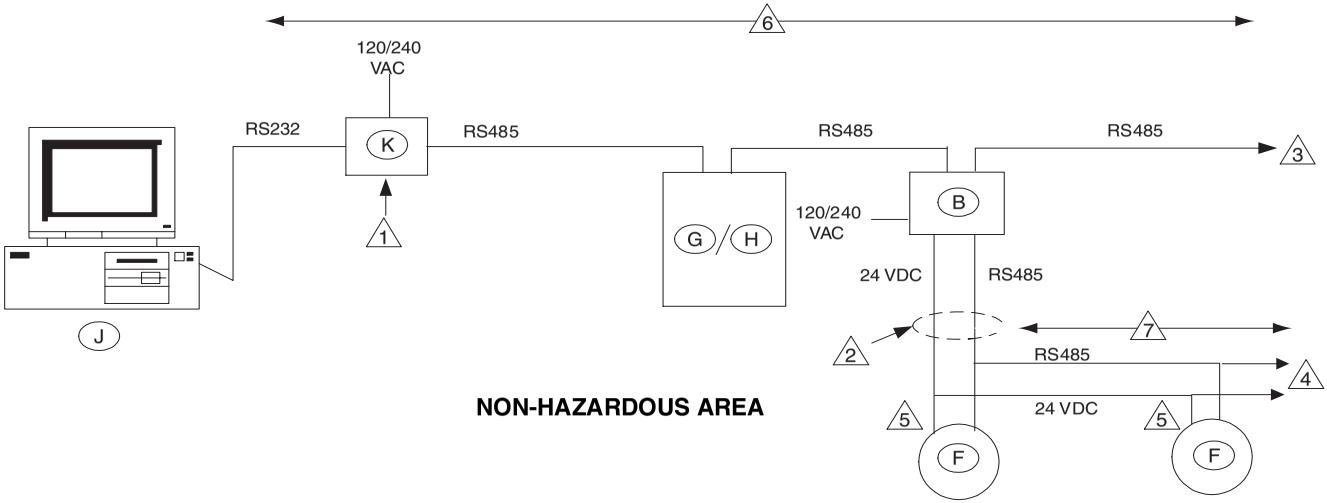
Informer and other devices - Non-hazardous area

Key

B Interface Box 244774
F Informer Station
G PrecisionMix Station
H ProBatch Station
J Personal Computer
K RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor ON.
2. If using two separate cables, use Belden 9841. If using single cable (typical), use 2 twisted pairs, Alpha 58612.
3. Install terminating resistor if this is last box or station on network.



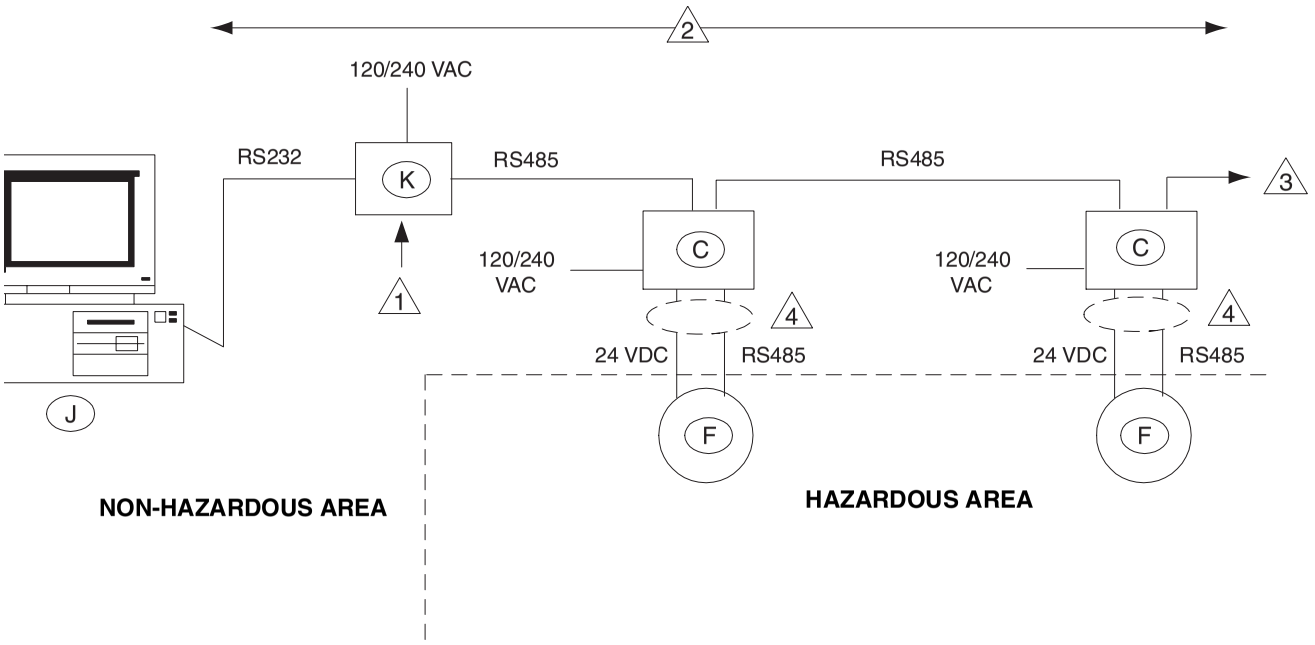
Informer and other devices - Non-hazardous area

Key

B Interface Box 244774
F Informer Station
G PrecisionMix Station
H ProBatch Station
J Personal Computer
K RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor ON.
2. If using two separate cables, use Belden 9841. If using single cable (typical), use 2 twisted pairs, Alpha 58612.
3. To other devices on network. Install terminating resistor if this is last box or station on network.
4. To other Informer stations on network.
5. Only one wire can be landed on each Informer terminal. Daisy chain junctions must occur off the terminal using wire tee or at spare terminals inside interface box.
6. 4000 ft. (1219.2 m) maximum cable length for entire network.
7. 1200 ft. (365.76 m) maximum cable length for entire network due to absence of terminating resistor.



Informer station - Hazardous area

Key

C Interface Box 244775
F Informer Station
J Personal Computer
K RS232/RS485 Converter

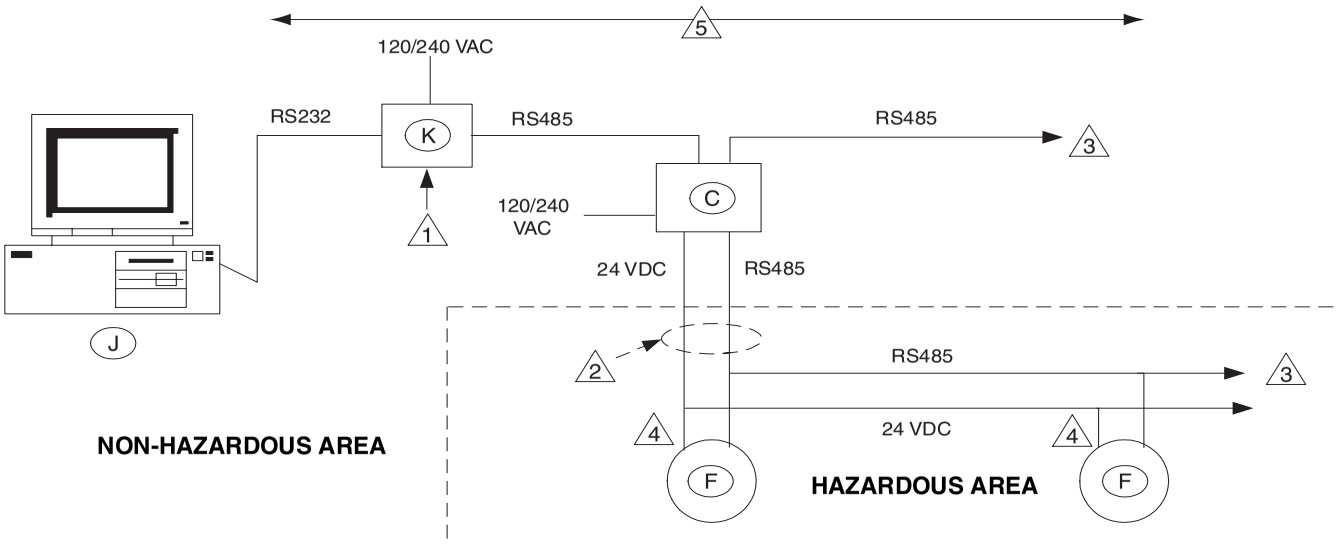
Installation Notes

△1 Dip switch for terminating resistor OFF.

△2 1200 ft. (365.76 m) maximum cable length for entire network due to absence of terminating resistor.

△3 To other Informer stations on network.

△4 If using two separate cables, use Belden 9841. If using single cable (typical), use 2 twisted pairs, Alpha 58612.



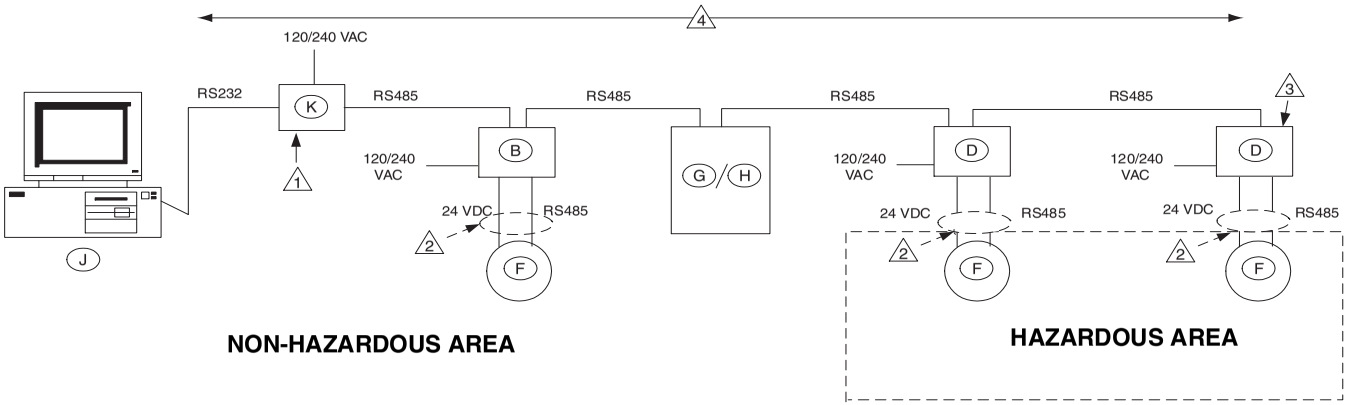
Informer station - Hazardous area

Key

C Interface Box 244775
F Informer Station
J Personal Computer
K RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor OFF.
2. If using two separate cables, use Belden 9841. If using single cable (typical), use 2 twisted pairs, Alpha 58612.
3. To other Informer stations on network.
4. Only one wire can be landed on each Informer terminal. Daisy chain junctions must occur off the terminal using wire tee or at spare terminals inside interface box.
5. 1200 ft. (365.76 m) maximum cable length for entire network due to absence of terminating resistor.



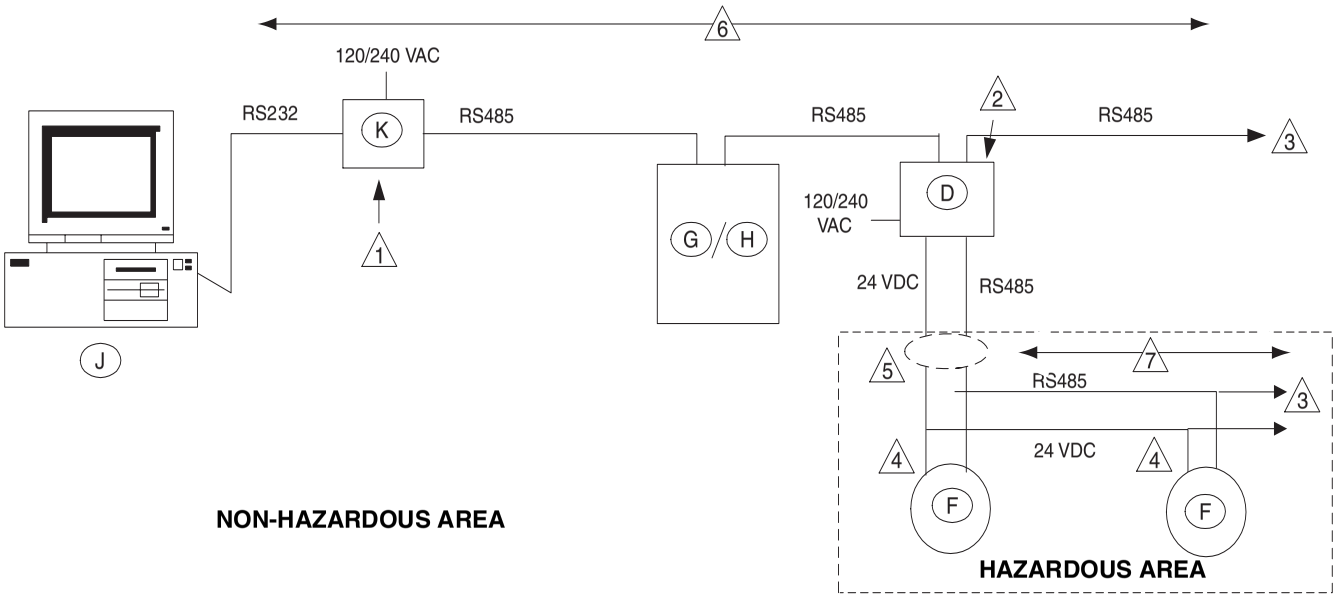
Informer and other devices - Hazardous area

Key

B Interface Box 244774
D Interface Box 244776
F Informer Station
G PrecisionMix Station
H ProBatch Station
J Personal Computer
K RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor ON.
2. If using two separate cables, use Belden 9841. If using single cable (typical), use 2 twisted pairs, Alpha 58612. 1200 ft. (365.76 m) maximum cable length.
3. Install terminating resistor if this is last box or station on network.
4. 4000 ft. (1219.2 m) maximum cable length for entire network.



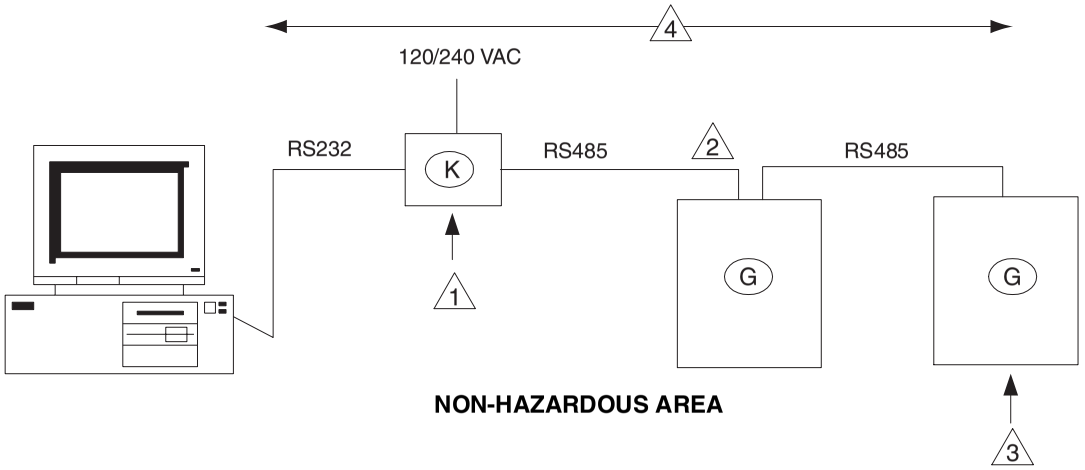
Informer and other devices - Hazardous area

Key

D	Interface Box 244776	H	ProBatch Station
F	Informer Station	J	Personal Computer
G	PrecisionMix Station	K	RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor ON.
2. Install terminating resistor if this is last box or station on network.
3. To other devices on network.
4. Only one wire can be landed on each Informer terminal. Daisy chain junctions must occur off the terminal using wire tee or at spare terminals inside interface box.
5. If using two separate cables, use Belden 9841. If using single cable (typical), use 2 twisted pairs, Alpha 58612. 1200 ft. (365.76 m) maximum cable length.
6. 4000 ft. (1219.2 m) maximum cable length for entire network.
7. 1200 ft. (365.76 m) maximum cable length for entire network due to absence of terminating resistor.



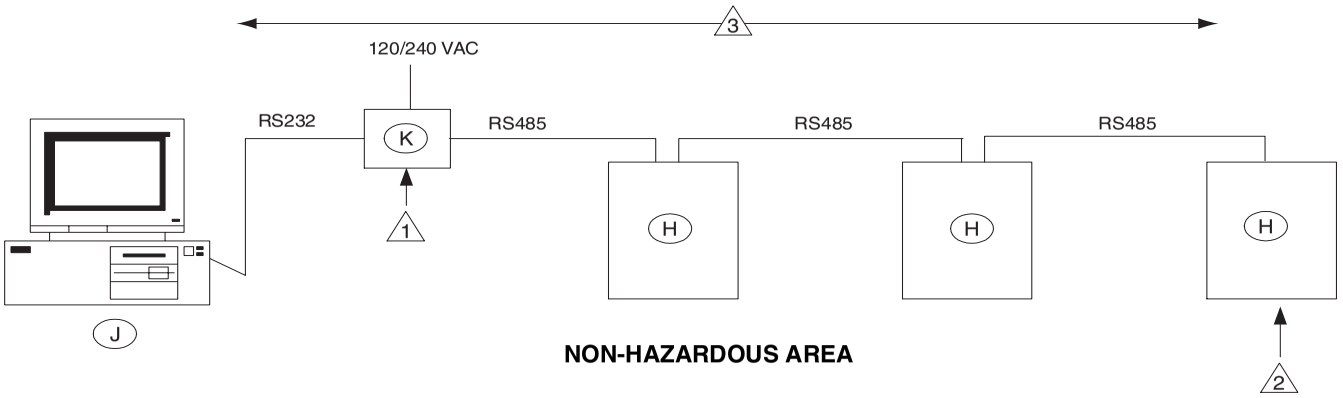
PrecisionMix station - Non-hazardous area

Key

G PrecisionMix Station
J Personal Computer
K RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor ON.
2. No interface box required for PrecisionMix stations.
3. Terminating resistor switch ON (on PrecisionMix network module).
4. 4000 ft. (1219.2 m) maximum cable length for entire network.



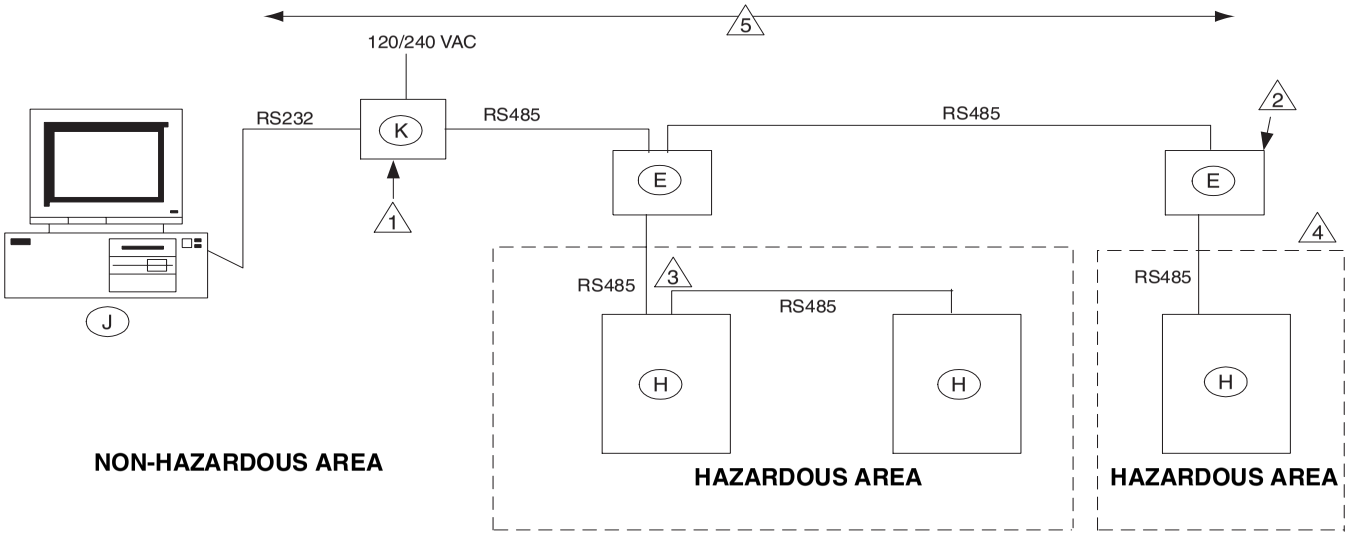
ProBatch station - Non-hazardous area

Key

H ProBatch Station
J Personal Computer
K RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor ON.
2. Terminating resistor installed at network terminals (120 ohm, 1/2 watt).
3. 4000 ft. (1219.2 m) maximum cable length for entire network.



ProBatch stations - Hazardous area

Key

E Interface Box 244534
H ProBatch Station
J Personal Computer
K RS232/RS485 Converter

Installation Notes

1. Dip switch for terminating resistor ON.
2. Install terminating resistor if this is last box or station on network.
3. Limit length of branch to approximately 50 ft. (15.24 m) maximum (typical)
4. Typical Installation, regardless of other devices in network.
5. 4000 ft. (1219.2 m) maximum cable length for entire network.

SECTION
3

Networking Stations

Informer Station

Networking Components Required

You need the following components to network Informer stations.

- Interface Box A, B, C, or D (number of boxes and type depends on the network configuration; see the **Typical Networking Diagrams**, page 11)
- Strain Relief Connector (included with Informer station)
- RS485 and power cables: use two Belden 9841 cables for separate power and communication or one Alpha 58612 cable, which consists of two individually shielded, twisted pairs of 22 AWG wire
- Informer firmware revision 1.04 or greater

To determine Informer firmware revision:

1. Disconnect Informer battery or power supply, then reconnect it.

2. As the Informer station powers up, the firmware revision will appear on the display.

If the Informer firmware is not 1.04 or greater, call Graco customer service at 1-800-328-0211. Request part number 243549, an upgrade kit available free-of-charge. It includes a new software chip and installation instructions.

Connecting Power and Communication Cable(s)

Follow this procedure to connect power and communication cable(s) from the Interface Box to the Informer station(s).

To prepare the Informer station for cable connection:

1. Remove the Informer station from the mounting bracket. Remove the bottom screws and separate the base (2) from the display (1).

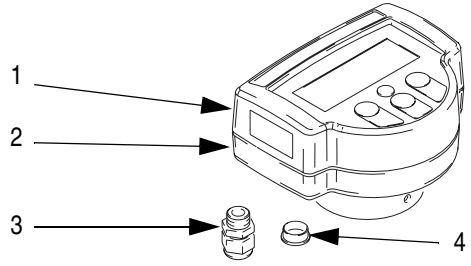


Figure 1: Informer Station

2. Remove one of the two cable port caps (4). The cap can be discarded.

3. Locate the strain relief connector (3), shipped with the Informer package. Remove the nut (5); it can be discarded.

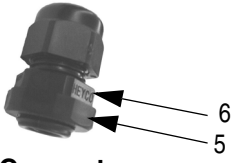


Figure 2: Strain Relief Connector

4. Hand-tighten the strain relief connector (3) into the Informer cable port. Carefully tighten the nut (6) with a wrench; do not overtighten or you may damage the connector.

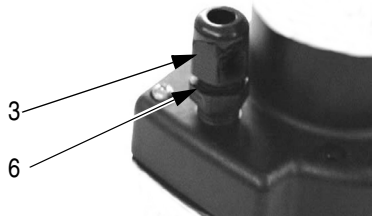


Figure 3: Strain Relief Connector installation

To connect cable(s) to the Informer station:

Improper wiring can cause a hazardous condition and result in fire, explosion, or electric shock. A qualified electrician must complete all grounding and wiring connections.

In both Belden and Alpha cable configurations, one cable wire pair (7, red-black wire) is used for the external 24 VDC power. The other cable wire pair (8, white-black wire) is for serial communication to the remote computer. A ground/shield wire (9, bare wire) is also required.

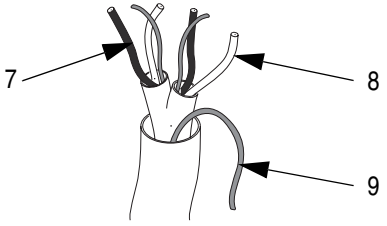


Figure 4: — Alpha 58612 cable shown

Follow the procedure below to connect the cable(s). See the **Typical Networking Diagrams**, page 11, and *Interface Box manual 309366* for additional wiring information.

1. Insert the power and communication cable(s) (10) through the connector cap (11), into the Informer base. To secure the cable(s), carefully turn the strain relief connector cap clockwise with a wrench until it feels snug; do not overtighten.

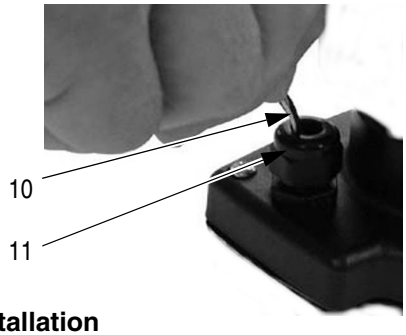


Figure 5: Cable installation

2. Note the location of the two small, green, terminal blocks: J1 and J2.

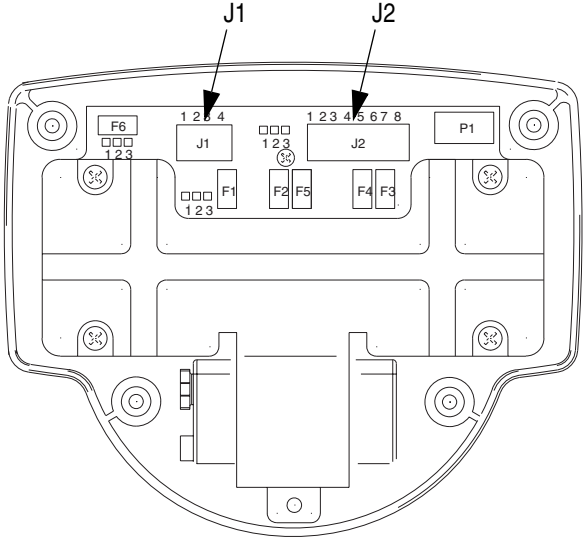


Figure 6: Terminal Blocks

3. Insert the RS485 cable wires in J1 terminals as shown below.

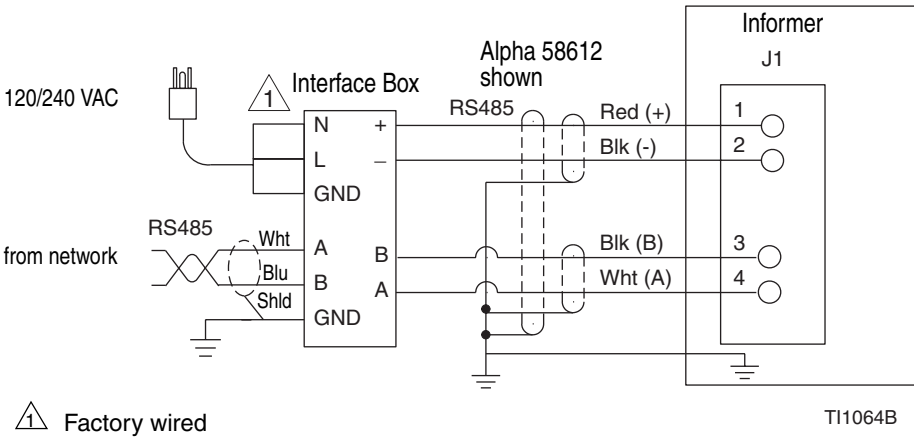


Figure 7: Informer Station and Interface Box wiring

Figure 7 and wiring tables below provide basic Interface Box wiring information. To reduce the risk of electric shock, fire and explosion caused by incorrect wiring, read and follow the instructions in the *Interface Box manual 309366*.

Wire Connection into Interface Box (Belden 9841)

Wire Color	Description	Terminal
white/blue	communication (A)	A
blue/white	communication (B)	B
shield	ground	GND
white (typical)	neutral	N
black (typical)	line	L
green	ground	GND

factory wired

Wire Connection out of Interface Box (Alpha 58612)

Wire Color	Description	Terminal
white	communication (A)	A
black	communication (B)	B
red	+ 24 VDC power	+
black	- 24 VDC common	-

Wire Connection into Informer Station (Alpha 58612)

Wire Color	Description	Terminal
red	+ 24 VDC power	1
black	- 12 VDC common	2
black	communication (B)	3
white	communication (A)	4

4. Unscrew the ground screw (12). Raise the battery cover (13) and remove the battery. The battery is not used with a network configuration.

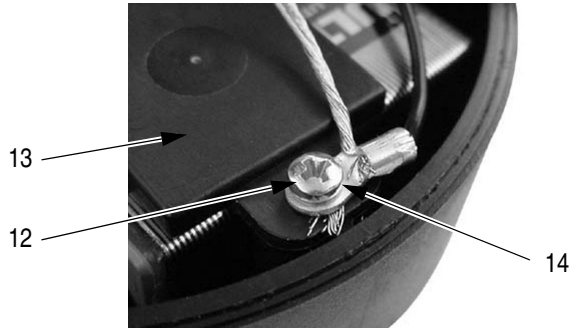


Figure 8: Battery removal and grounding

5. Battery-powered operation is the default for the Informer station. To change to external power, required for network operation, use a needle-nose pliers to move the jumper (15) from pins 2 and 3 to pins 1 and 2.

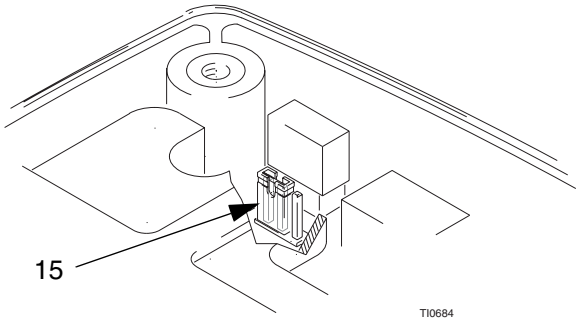


Figure 9: Jumper position

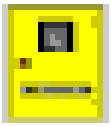
6. Close the cover (13).

7. Twist the remaining three ground/shield wires together and crimp them with a ring terminal (14).

8. Place the ring terminal (14) beneath the ground screw (12).

9. Install the screw (12) and tighten it securely.

10. Reassemble the Informer display and base.



PrecisionMix Station

Networking Components Required

- RS485 cable: use Belden 9841 or equivalent
- Network Kit 241379
- PrecisionMix software version 3.01 or greater

If you ordered the PrecisionMix station with the network communications option, you do not need to order or install Network Kit 241379.

Installing Network Kit 241379

Network Kit 241379 must be installed in each PrecisionMix II station on the network to prepare it for use with PrecisionView AMR 2.0. The kit includes the following items:

- RS485 Interface Module
- PC Network Wire Harness
- Strain Relief Connector
- RS232/RS485 Converter Module (see page 48 for installation)

To install the kit:

Improper wiring can cause a hazardous condition and result in fire, explosion, or electric shock. A qualified electrician must complete all grounding and wiring connections. Make sure the power is off.

1. Turn off power to the PrecisionMix station.

2. Remove the printer module, marked IF311, from the slot (1) if it is installed.

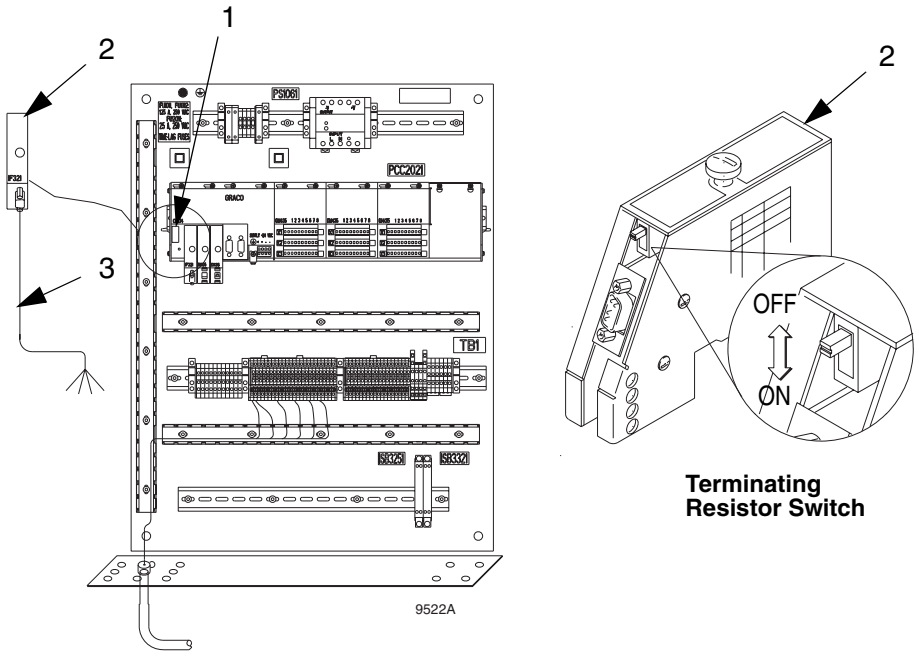


Figure 10: RS485 Network Module installation

3. Install the RS485 network module (2), marked IF321, into the open slot (1) of each of the networked stations. The network module of the last PrecisionMix station must have its terminating resistor switch turned ON. All other stations must have the terminating resistor turned OFF.

4. Connect the RS485 cable (3) between the module (2) and the top side of the station terminal block. Connect the wires to the terminals as shown in Figure 11.

5. Up to 31 stations can be networked to PrecisionView AMR. The maximum total network cable length is 4000 feet (1219.2 m). Connect a RS485 cable between the bottom side of each PrecisionMix station terminal block as shown in Figure 11.

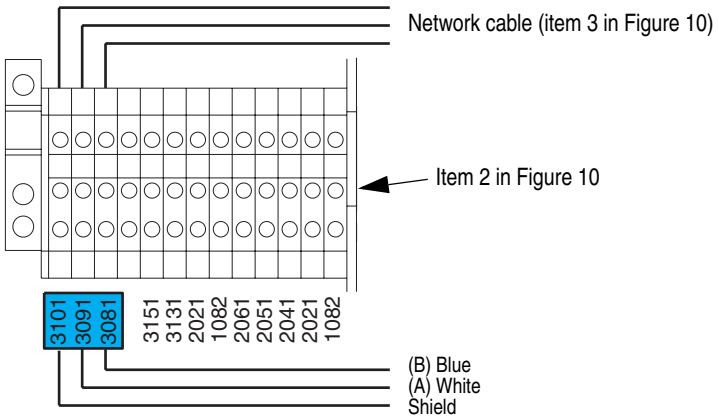


Figure 11: RS485 Network Module IF321

Wire Connection to PrecisionMix Station (Belden 9841)

Wire Color	Description	Terminal
Blue	communication (B)	3081
Shield	ground	3101
White	communication (A)	3091

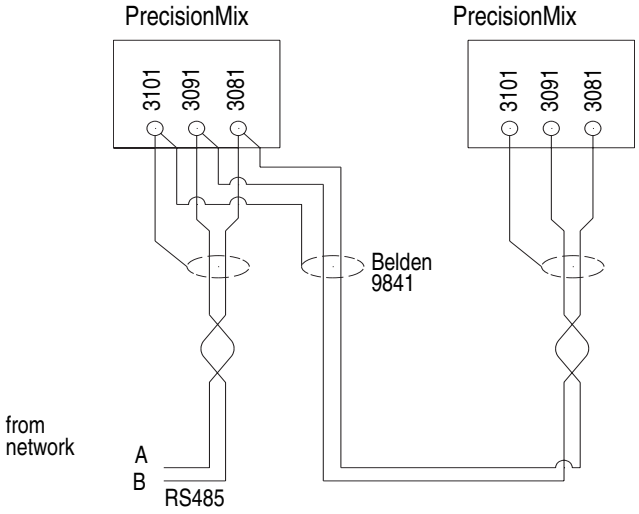


Figure 12: RS485 connection to PrecisionMix stations

6. Make sure the Mode Switch (4) is set to 1 (one) on all of the PrecisionMix stations.

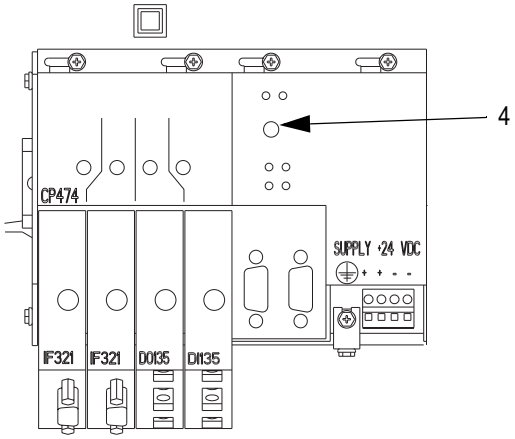


Figure 13: Mode Switch

ProBatch Station

Networking Components Required

- RS485 cable: use Belden 9841 or equivalent
- Interface Box E (part no. 244534) must be installed if the ProBatch station(s) is installed in a Hazardous area
- Terminating resistor (120 ohm, 1/2 watt) if installing ProBatch station in a non-hazardous location

To connect RS485 cable to the ProBatch station:

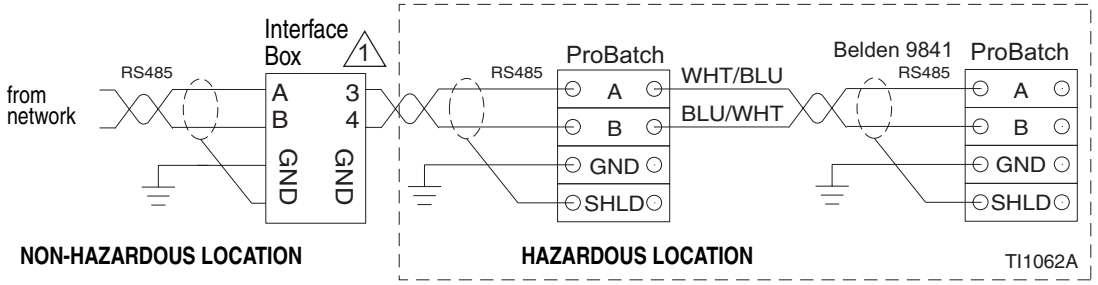
Improper wiring can cause a hazardous condition and result in fire, explosion, or electric shock. A qualified electrician must complete all grounding and wiring connections. Make sure the power is off.

Follow the procedure below to connect the cable. See the **Typical Networking Diagrams**, page 11, for additional wiring information.

1. Turn off power to the ProBatch station.

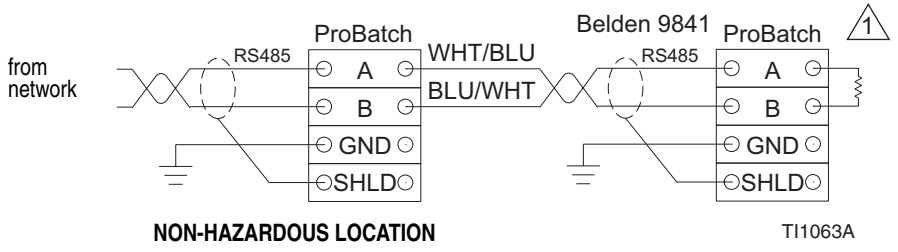
2. Connect the RS485 cable to the ProBatch station terminal block as shown in Figure 14 if the ProBatch station(s) are in a hazardous location or as shown in Figure 15 if the ProBatch station(s) are in a non-hazardous location.

The fluids dispensed by the ProBatch station can create a hazardous area. To reduce the risk of fire and explosion, follow your local code to determine if the ProBatch station is in a hazardous area.



1 Install terminating resistor if this is the last interface box or device on the network.

Figure 14: ProBatch stations in Hazardous location



1 Install terminating resistor (120 ohm, 1/2 w) if this is the last station on the network.

Figure 15: ProBatch stations in Non-hazardous location

SECTION

4

Configuring Stations

Each of the stations connected to the PrecisionView application network has to be configured for network use to establish a communication link. Follow the instructions for the type of station you are configuring.

Configuring Informer Stations

Informer firmware revision must be 1.04 or greater. See page 26.

1. Hold down the Enter ↵ button and press the Up Arrow ↑ simultaneously to enter Setup Mode. Setup parameter A1 appears on the display screen.

The Informer station has 17 setup parameters.

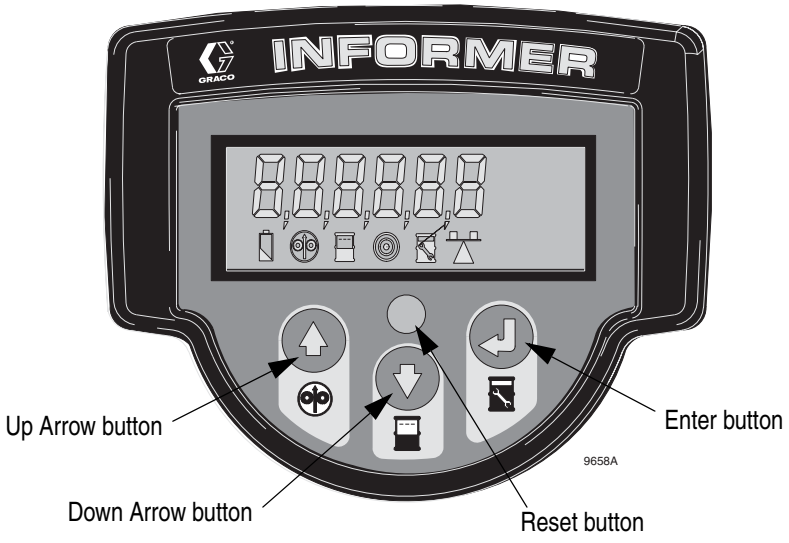


Figure 16: Informer Display

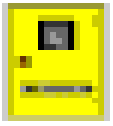
2. Repeatedly press Enter ↵ until you reach the H1 Setup parameter. The H1 parameter corresponds to the Informer station number, a unique value required for the computer to communicate with the Informer station.

3. The default setting for H1 is 1. Press the Up Arrow ↑ to change the setting to a number between 1 and 246 that is NOT being used as a station number by any other device on the network. (Use Down Arrow ↓ to move cursor to next digit.)

4. Press Enter ↵ to advance to the final Settings parameter, J1, which enables/disables the battery operation. The default setting for this parameter is 1. Press the Down Arrow ↓ to change the setting to zero.

Sleep mode is an energy-saving mode of operation in which all unnecessary components are shut down. Setting J1 to 0 prevents the Informer display from entering sleep mode so it is always available for network communication.

5. Hold down Enter ↵ and press the Up Arrow ↑ to exit Setup mode.



Configuring PrecisionMix Stations

1. Turn on the power to the PrecisionMix station.

2. At the Home Screen on the Operator Interface, make sure the PrecisionMix software version is 3.01 or greater. Update the software if necessary.

3. Type 4 and press the Enter ↵ button.

```
                Graco PrecisionMix II (R)
Version 3.01

HOME SCREEN   Station: 00
1. RUN MONITOR
2. TOTALIZERS
3. RECIPE SETUP
4. SYSTEM CONFIGURATION
Select a menu item and press enter: > 4
```

4. If a password screen appears, type in the password and press Enter ↵.

```
          TYPE IN THE PASSWORD AND PRESS ENTER

                          > xxxx
```

5. Type 2 for Station Number and press Enter ↵.

```
SYSTEM CONFIGURATION  Station: 00

MENU

1.LANGUAGE                      11.MIX/PURGE
2.STATION NUMBER                12.FLOW CONTROL
3.DISPLAY UNITS                 13.INTEGRATOR VOLUME
4.RECIPES                       14.COLOR CHANGE
5.POTLIFE TIMER                 15.PASSWORD CHANGE
6.FLOW RATE LIMITS              16.TIME AND DATE
7.SOLVENT METER                 17.RUN SCREEN DISPLAY
8.PURGE SEQUENCE                18.DISPLAY SETUP
9.MIXED LOAD VOL.               19.PRINT SETUP
10.GUN LOCATIONS                20.DOSE TIME DELAY
Select a menu item and press enter: > 2
```

6. The station number is needed when multiple PrecisionMix stations are connected to a network. Each station number must be unique to successfully establish a communication link between the PrecisionMix station and PrecisionView application. Type the station number for the station and press Enter ↵.

```
SYSTEM CONFIGURATION Station: 0
STATION NUMBER

Enter Station number (1-32):
> 1

Note: The system must be powered down and powered back up
      again for the new station number to take effect.
```

7. Type 19 for Print Setup and press Enter ↵.

```
SYSTEM CONFIGURATION  Station: 00

MENU

1.LANGUAGE                      11.MIX/PURGE
2.STATION NUMBER                12.FLOW CONTROL
3.DISPLAY UNITS                 13.INTEGRATOR VOLUME
4.RECIPES                       14.COLOR CHANGE
5.POTLIFE TIMER                 15.PASSWORD CHANGE
6.FLOW RATE LIMITS              16.TIME AND DATE
7.SOLVENT METER                 17.RUN SCREEN DISPLAY
8.PURGE SEQUENCE                18.DISPLAY SETUP
9.MIXED LOAD VOL.               19.PRINT SETUP
10.GUN LOCATIONS                20.DOSE TIME DELAY

Select a menu item and press enter: > 19
```

8. Type 1 for Network (Printer Disabled) and press Enter ↵.

```
SYSTEM CONFIGURATION Station: 1
PRINT SETUP

Select the reporting type:
1. Network (Printer Disabled)
2. Printer Enabled
> 1

Select whether or not a Color Change will automatically
generate a run report.
1. No
2. Yes
>
```

9. Power the station down and back up again so the new settings take effect.

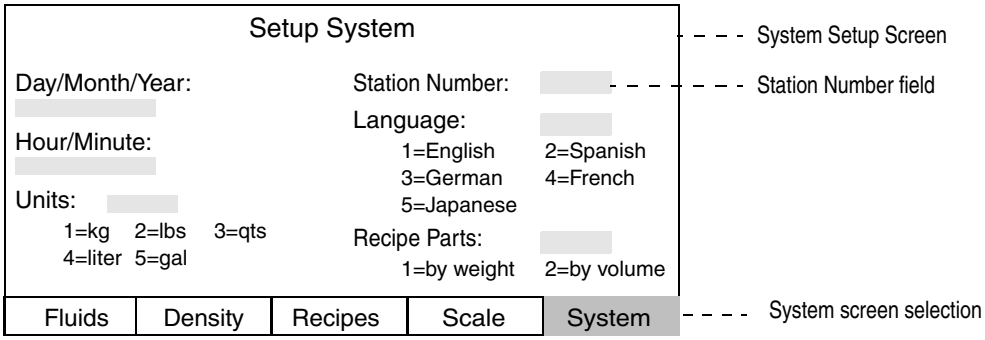
10. Repeat the configuration procedure for each station in the network.

Configuring ProBatch Stations

Setup Mode

1. Turn on the power to the ProBatch station.
2. Insert the ProBatch key (supplied with the system) into the switch and turn it to Setup Mode. The System Setup screen appears.

Press up or down arrows on the ProBatch keypad to move between fields on the screen. Press left or right arrow keys to move between screens.



3. Type the station number (1-31) and press Enter key on the keypad.

The station number is used for communication with the PrecisionView application. Each station must have a different number.

4. Repeat the configuration procedure for each station in the network.

The rest of the ProBatch station configuration can be completed at the physical station or using the PrecisionView application.

SECTION
5

Installing Converter Kit 244778

RS232/485 Converter

Follow this procedure to connect a serial network of stations to the RS232/485 Converter. Refer to Figure 17.

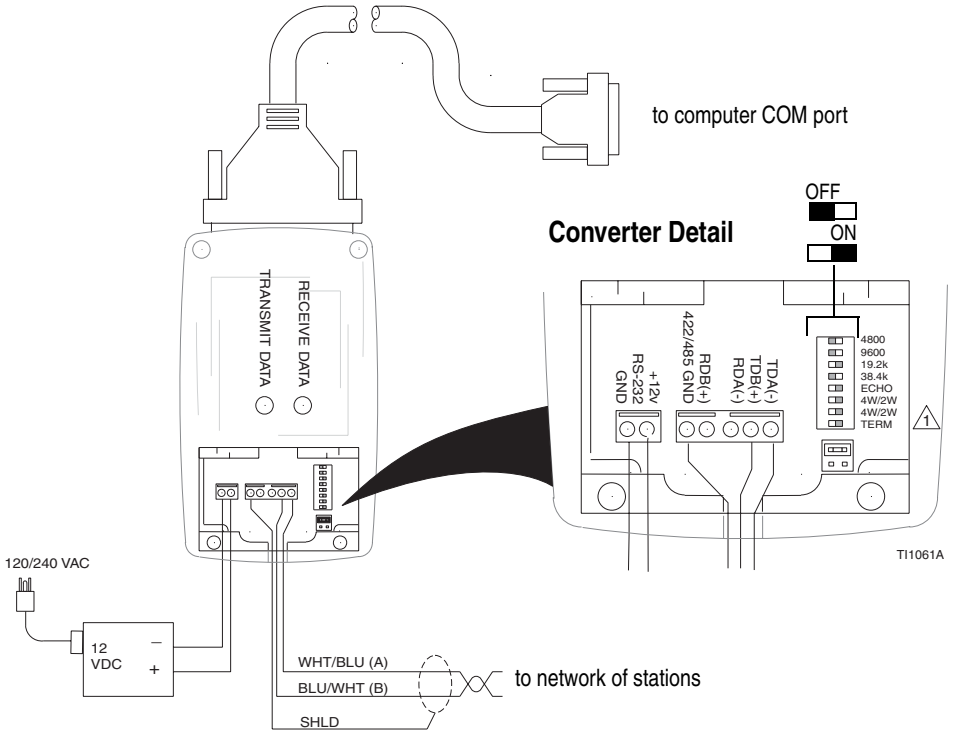
1. Connect the external 12 VDC power supply to terminals 1 and 2.
   - red (+) wire to terminal + 12V
   - black (-) wire to terminal GND

2. Connect the RS485 cable from the networked stations to the converter terminals 3 and 4.
   - white/blue wire (A) to terminal TDA (-)
   - blue/white wire (B) to TDB (+)

3. Connect the RS485 cable ground/shield wire to terminal 422/485 GND.

4. Plug the 12 VDC power supply into a 120/240 VAC outlet.

5. Connect the other end of the converter to the computer COM port.



⚠1 Set terminating resistor dip switch ON or OFF as instructed in Section 2, **Typical Networking Diagrams**.

Figure 17: RS232/485 Converter connection

SECTION
6

TCP/IP Network

Overview

PrecisionView software and PrecisionView-enabled Graco equipment use the Modbus RTU communication protocol to communicate. The physical media (cable) used to link Modbus devices together traditionally has been shielded, twisted-pair cable, using the RS485 standard for serial communication. Recently industry vendors have been developing Modbus protocol over Ethernet TCP/IP networks, called Modbus/TCP™, which allows for flexible networking options, using off-the-shelf networking hardware.

A single PrecisionView AMR network can support only one computer running the PrecisionView application. You cannot remotely view PrecisionView screens/data on another computer on the network without using 3rd party software, such as Symantec pcAnywhere™.

Installation Requirements

Although PrecisionView software has the ability to communicate over both serial and TCP/IP networks, PrecisionView-enabled Graco equipment is configured for a serial network only. To have PrecisionView communicate with Graco equipment over a TCP/IP network, third-party hardware from companies, such as Lantronix[1] (www.lantronix.com) is required.

The Lantronix CoBox-E1M is a device server that accepts and receives TCP/IP messages, typically over category 5 network cable on one end and serial twisted-pair network cable on the other end. The CoBox requires some software configuration and that a serial cable is built or bought to interface to the twisted-pair network. See www.lantronix.com/products/ds/coboxmodbus/ for detailed information, including a downloadable installation manual.

1. Graco is not affiliated or otherwise involved with Lantronix. Their products are listed as examples of the type of hardware required to implement PrecisionView TCP/IP communication.

Other companies that make similar products include:

- Xcell Technology — www.xcell.com/en/index.htm
- Advantec — www.advantech.com/products/ADAM-4572.asp

There are also software solutions, such as the software application supplied by Win-Tech Software (www.win-tech.com/html/mbap.htm), that perform the same type of intermediary function.

PrecisionView TCP/IP Network Communication

When the PrecisionView application requests an update from a particular station, it sends that request in a TCP/IP packet across the LAN. Because the TCP/IP network address was assigned in PrecisionView to be the CoBox IP address, the message is routed to the CoBox. The CoBox receives the message request and forwards it to the appropriate station over the serial network. The station's response to PrecisionView's request is sent over the serial network to the CoBox, which sends it back to the PrecisionView computer.

TCP/IP Network Example

See Figure 18 for an example of a PrecisionView AMR 2.0 TCP/IP network installation.

With the network configuration shown in Figure 18, the PrecisionView application would be configured with five networks. The bottom three network connections are TCP/IP networks. The top two computer connections are serial networks. The bottom computer perfoms the same function as the CoBoxes except the function is executed by a software program (such as Win-Tech produces) rather than a hardware box. All three TCP/IP connections must have IP addresses assigned to the CoBox or computer to enter into the PrecisionView application's TCP/IP network properties.

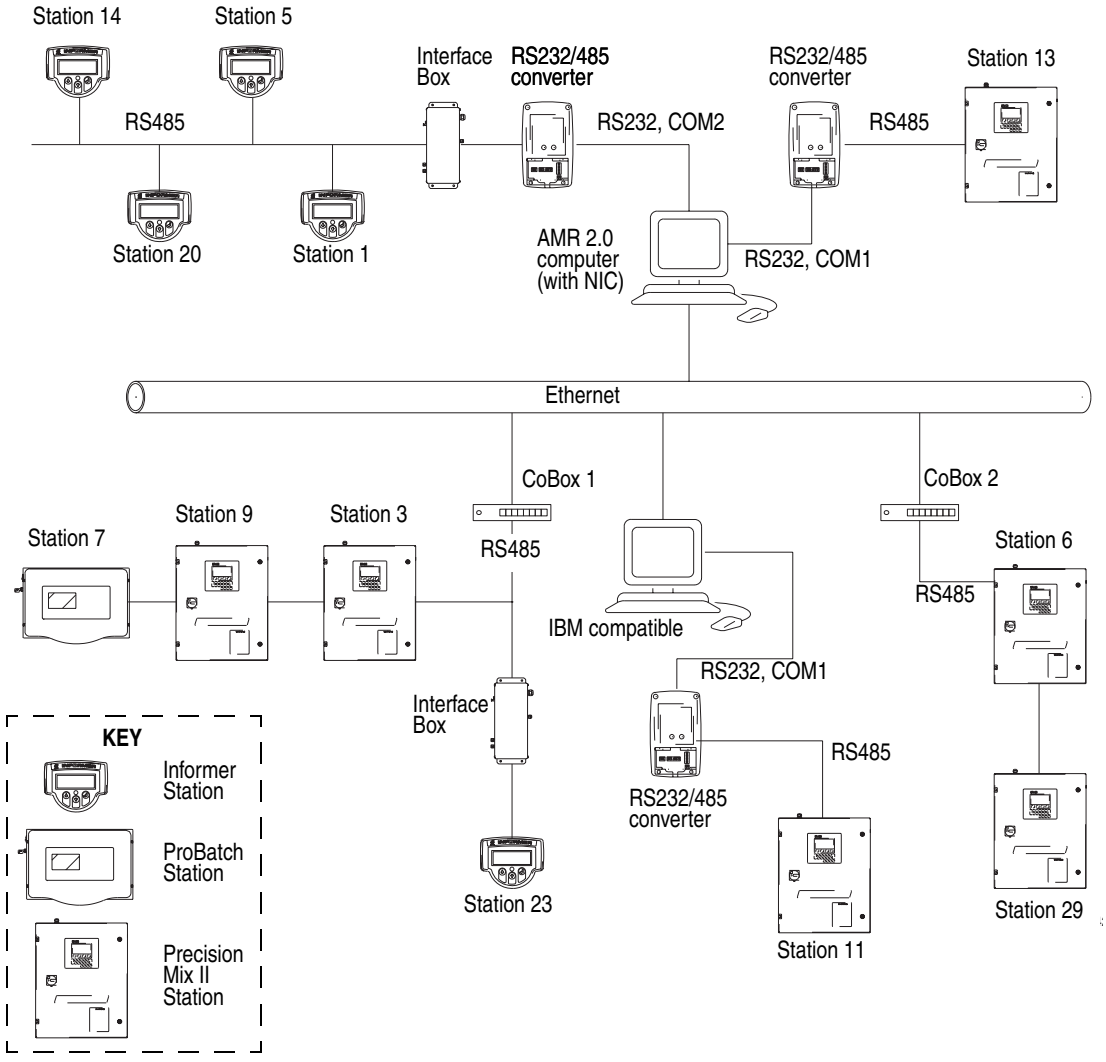


Figure 18: PrecisionView AMR 2.0 TCP/IP network

Example of TCP/IP Network Use

A manufacturing engineer at a large industrial manufacturing facility, has a PrecisionMix II-2K station, an Informer station, and a ProBatch-station on the paint line at the other end of the building. The engineer wants to have the PrecisionView computer, used for monitoring and reporting, in their office. The office LAN, a standard Ethernet TCP/IP network, has network ports in his/her office and at the paint line supervisor's desk. To avoid the time and cost of running a shielded, twisted-pair cable from the paint line to the engineer's office, it is decided to use the existing office LAN and a Lantronix CoBox.

Basic TCP/IP networking steps

For the example above, the TCP/IP network would be installed and setup as follows:

Hardware

1. Connect a RS485 cable between each of the stations on the paint line, including the CoBox itself, which becomes one more station. Serial networking instructions are provided in Section 2 and Section 3. The serial connection at the CoBox requires a male 25-pin D-sub connector; the connector schematic is in the CoBox installation manual.

2. Plug the CoBox into the LAN port at the paint line supervisor's desk with a standard Category 5 network patch cable.

3. Plug the computer that has PrecisionView software installed into the LAN with a second, identical patch cable.

4. Contact your network system administrator for an appropriate IP address, and assign the IP address to the CoBox. Follow instructions in the CoBox installation manual.

PrecisionView Application

5. Add a TCP/IP network to the Network Overview in the Precision-View application. In the Network Properties dialog box, enter the IP address assigned to the CoBox.

6. Add the stations to the TCP/IP network. Each station must have a unique station number.

A single CoBox can support multiple stations. You can add multiple networks within the PrecisionView application, which you might do if you have PrecisionView-enabled equipment in multiple buildings.

SECTION

7

Installing Software

Personal Computer Requirements

The PrecisionView AMR 2.0 application has the following minimum computer requirements.

- Pentium 200 MHz or faster processor
- Microsoft® Windows 98, Windows NT v4.0, or Windows 2000 (Windows 2000 recommended)
- 64 MB or more of RAM (128 MB recommended)
- 40 MB available Hard Disk Space
- CD-ROM Drive, 4X or faster
- Parallel Printer Port (for license key)
- RS485 card or serial RS232 COMM port

Installing the Software

The PrecisionView AMR 2.0 Wizard is defaulted to install two software components:

- PrecisionView AMR 2.0 application
- Microsoft® Data Access Components (MDAC) 2.5

You are prompted to select or deselect one or both of these components during the install. MDAC is required to install AMR 2.0. If you are using Windows 2000, you do not need to install MDAC as it is part of the operating system. MDAC may also be installed if you have a newer version of Windows 98. However, in general, if you are using Windows 98 or NT4, you probably need to install MDAC. If unsure, select MDAC for install.

New Installation

The following instructions are for a first time installation of PrecisionView AMR software. If you have AMR, version 1.0, and are upgrading to version 2.0, there are additional steps you need to follow. See **Installation for AMR 1.0 Users**, page 61.

1. Connect the License Keylock to the computer parallel port (LPT1). If a printer or other device is already connected to the parallel port, disconnect the device cable from the port, connect the License Keylock, and reconnect the device cable to the back of the License Keylock. The License Keylock will not interrupt or disrupt the operation of another device using the same port.

2. Start Windows.

3. Close any other open applications

4. Insert the PrecisionView AMR 2.0 CD into the CD-ROM drive.

5. Select RUN from the Windows Start menu. In the Open text box, type ***x*:\PrecisionView AMR 2.0 Setup.exe** where *x* is the letter assigned to your CD-ROM drive. The default installation directory is C:\Program Files\Graco\PrecisionView AMR.

6. Choose the desired language and click OK.

The language that the PrecisionView application will use is dependent on the language selected. Language can only be selected during installation. It cannot be changed once the software is installed.

7. Follow the PrecisionView AMR 2.0 setup instructions on the screen.

   a. The PrecisionView AMR 2.0 Wizard is defaulted to install both PrecisionView AMR 2.0 and MDAC. If you are unsure if MDAC is already installed on your computer, be sure to install it.

   b. If MDAC was not installed on your computer previously, you will be prompted to reboot the computer after MDAC is installed. Reboot the computer when prompted.

      - When Windows starts again, restart the AMR 2.0 setup process by running ***x*:\PrecisionView AMR 2.0 Setup.exe** again. Select the install directory entered previously.

      - When you are at the component selection screen, only the AMR 2.0 application should be selected. Continue setup from this point to complete the AMR 2.0 install.

By default, the AMR 2.0 database is installed in the same directory as the AMR 2.0 software is located. Graco will not support changing the database location to another directory or computer.

Installation for AMR 1.0 Users

These instructions apply only to users who already have PrecisionView AMR 1.0 installed, (any AMR version older than 2.0). If you do not currently have PrecisionView AMR installed, follow the **New Installation** instructions, page 59. To view your software version, click on Help on the main menu bar and choose “About PrecisionView AMR”.

Do not uninstall PrecisionView AMR 1.0 before installing AMR 2.0. You need AMR 1.0 to run the AMR Database Migration Utility (included with the AMR 2.0 software package). Refer to **Database Migration Utility**, page 62.

You need to use the AMR 1.0 application to access historical AMR 1.0 production data to view or generate AMR reports. You may want to keep AMR 1.0 on your computer indefinitely for this purpose. To keep AMR 1.0 on your computer, follow these guidelines:

- Install AMR 2.0 in a different directory than AMR 1.0 is in.
- Disable AMR 1.0 communication to each station in the station properties dialog box.
- Change the AMR 1.0 network COM port setting to an unused COM port. Neither AMR 1.0 or AMR 2.0 will function properly if they are both enabled to communicate to your network, especially if they are trying to use the same serial port.

All existing configuration and data is retained in the AMR 1.0 database. However, for an extra safety measure, **make a backup copy of the AMR 1.0 database before starting the AMR 2.0 install.** Save the backup copy of the database to a safe, convenient location, such as another hard drive, network drive, or zip disk.

Database Migration Utility

To avoid re-entering configuration data that already exists in an AMR 1.0 database, run the Database Migration Utility (installed with the PrecisionView AMR 2.0 application). This utility allows you to transfer all AMR 1.0 configuration data to the AMR 2.0 database. Configuration data includes station and fluid information (including fluid components, recipes, stations, HAPs). **Production data, such as PrecisionMix jobs and other historical data, is not transferred.**

For the best results, run the Database Migration Utility immediately after installing PrecisionView AMR 2.0, while the database is completely empty. Do not run AMR 2.0 until after the utility is finished running.

We recommend you follow these steps:

1. Do not uninstall AMR 1.0.

2. Install PrecisionView AMR 2.0. Follow steps 1-7, under **New Installation**, page 59.

3. From Windows Explorer, find the AMR 2.0 installation directory. Run the Database Migration Utility by double-clicking on **AMR Database Migration Tool.exe**.

4. While running the utility, you are prompted to specify the location of the AMR 1.0 database. By default, the file is in C:\Program Files\Graco\PrecisionView AMR and is called PViewAMR.mdb.

5. You are prompted to specify the location of the AMR 2.0 database. By default, the file is in C:\Program Files\Graco\PrecisionView AMR 2 and is called PViewAMR2.mdb.

6. Once database files are specified, click the Convert button. This process will take several minutes.

7. When conversion is finished, you can start AMR 2.0. See **Starting PrecisionView AMR 2.0**, page 64.

Setup Program Files

The setup program (PrecisionView AMR 2_0 Setup.EXE) installs the following files to the target directory.

File	Description
AMRClient.exe	PrecisionView AMR 2.0 application executable.
AMRClient.XYZ	Translation DLL for the language selected during installation.
AMRDataServer Module.exe	PrecisionView AMR 2.0 Data Server executable.
PviewAMR2.mdb	Microsoft® Access 2000 database for the application. Users may wish to copy this file to a safe location once the application is configured.
PrecisionView AMRVersion.txt	Text file containing version information for the application.
PviewAMR.mdw	Security settings for the application database. Deleting this file does not make the database unsecured, but does stop the application from functioning properly.
Hinstall.exe	HASP key driver installation utility.
Install.log	Installation log.
Unwise.exe	Uninstall program.

Microsoft® is a registered trademark of the Microsoft Corporation.

Open Database Connectivity (ODBC)

The setup program automatically configures the PrecisionView AMR 2.0 database to be available for ODBC clients. The ODBC data source name for the database is **PViewAMR2_ODBC**. For remote access, the appropriate network hardware and software must be installed and properly configured. See the *PrecisionView AMR 2.0 User Guide* for table structures with field definitions.

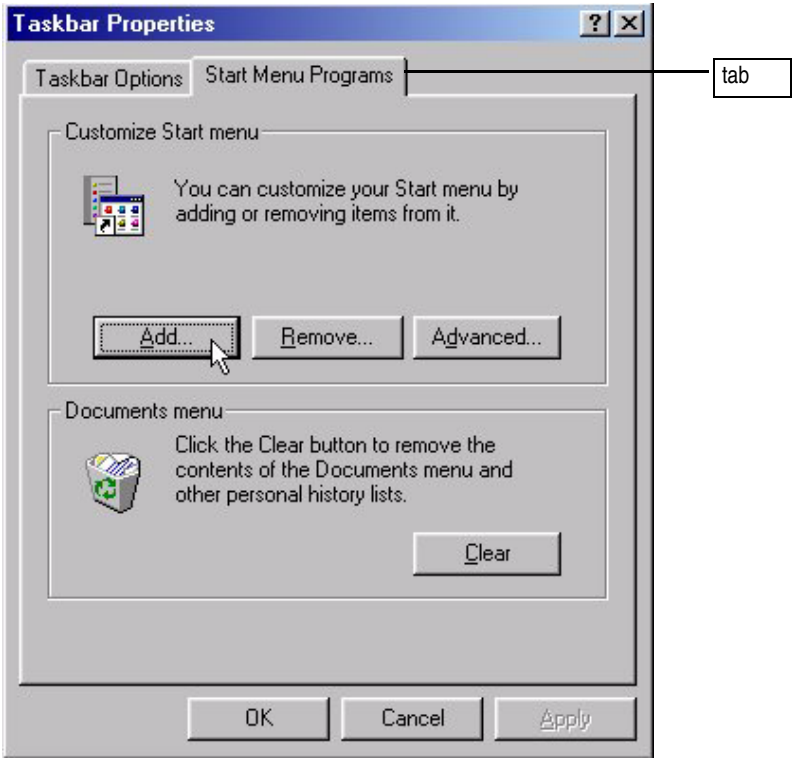
Starting PrecisionView AMR 2.0

To start PrecisionView AMR 2.0, double-click the PrecisionView AMR 2.0 icon that was placed on your desktop during the software installation. You can also click the Start button on the Windows taskbar and select Programs ➤ Graco ➤ PrecisionView AMR 2.0. The PrecisionView AMR main window opens.

To start AMR automatically whenever you log into the computer, follow this procedure to add AMR to the Start Menu Startup Folder.

1. Right-click on the Windows taskbar and select Properties or left-click on the Windows taskbar and select Settings ➤ Taskbar & Start Menu.

2. Select the Start Menu Programs tab, then click the Add button.



3. The Create Shortcut dialog box appears. Press the Browse button and browse to the location of the PrecisionView application. The default location is C:\Program Files\Graco\PrecisionView AMR 2.

4. Select AMR Client.exe and click Open.

5. In the Create Shortcut dialog box, click Next.

6. The Select Program Folder dialog box appears showing a list of the current program folders in the Start menu. Scroll to and select Start Menu ➤ Programs ➤ StartUp, then click the Next button.

7. Type a shortcut name, such as “PrecisionView AMR 2”, in the text box and click the Finish button.

8. Click OK in the Taskbar Properties dialog box.

The PrecisionView AMR 2.0 application will only collect production data while the application is running on the PC. Closing the application will stop communication between PC and the networked stations.

Technical Support Information

When the application starts, it displays the Technical Support dialog box. Enter the Graco distributor contact information into the form for future reference, then click OK. Technical support personnel may ask for this information when providing technical assistance. The information can be retrieved by selecting Help ➤ About PrecisionView AMR and clicking the Technical Support button.

If you need help identifying the distributor closest to you, call:
1-800-367-4023 Toll Free.

If no data is entered into the Technical Support information form, it will display each time the application is launched until at least one field of information is entered.