

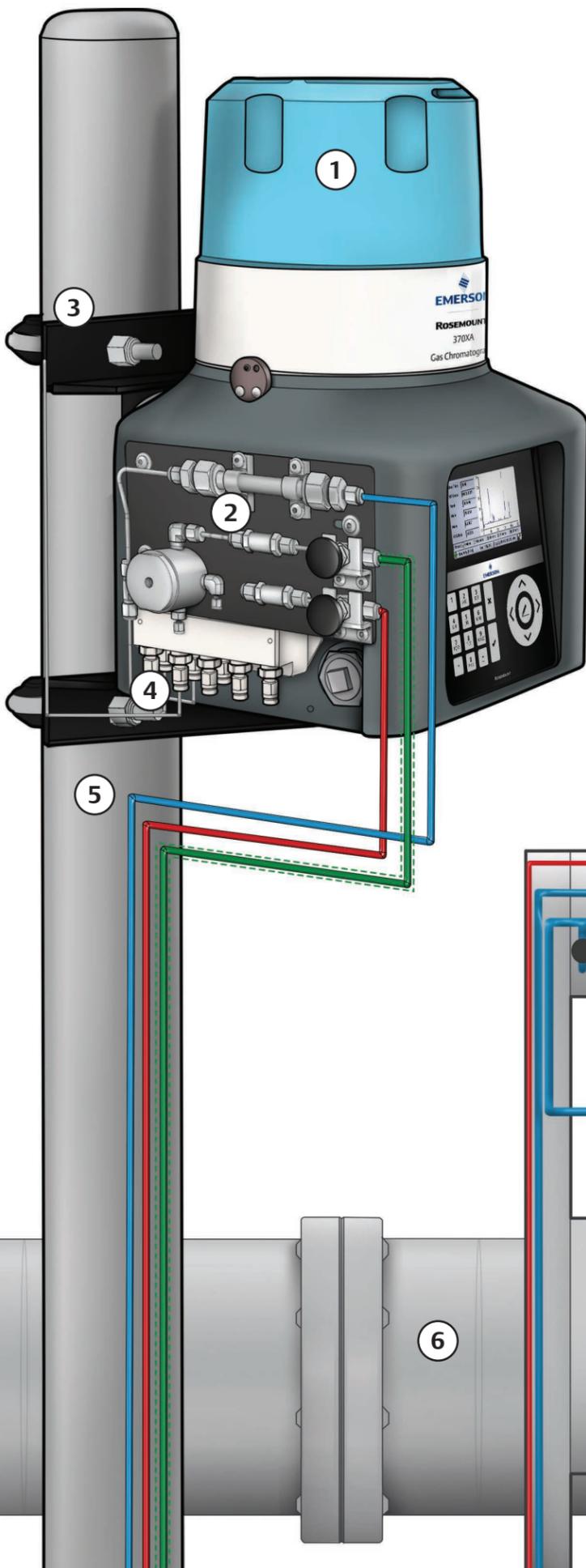
Rosemount™ 370XA Natural Gas Chromatograph

Quick Start Guide



Typical installation

- ① Rosemount 370XA Natural Gas Chromatograph
- ② Sample handling system
- ③ Pole mount brackets
- ④ Measure and sample vents
- ⑤ 4-in. Pole
- ⑥ Natural gas pipeline
- ⑦ Carrier gas: Ultra-high purity (99.9995 %) helium (or optional hydrogen)
- ⑧ Calibration gas
- ⑨ ¼-in (6.35 mm) clean, dry, stainless steel tubing
- ⑩ Carrier gas switchover valves
- ⑪ ⅜-in (3.175 mm) stainless steel tubing
- ⑫ Heat-traced (insulated) stainless steel tubing
- ⑬ Sample-probe: Installed at ⅓^d on center



Minimum specifications

These are the minimum specifications recommended for a typical installation. Please reference the Rosemount 370XA product manual for more details or call the factory for additional support.

Standard power:

- 24 Vdc (21 Vdc–30 Vdc)
- 55 Watts startup, < 25 Watts steady state

Environmental temperature:

- -4 °F to 140 °F (-20 °C to 60 °C)

Enclosure protection rating:

- IP65 and NEMA 4X

Carrier gas

- Must be regulated to 90 psig (6.2 BarG)
- Zero-grade helium
- Zero-grade hydrogen available as an option

Actuation gas

- Must be regulated to 90 psig (6.2 BarG)
- Helium
- Nitrogen
- Clean dry air

Sample input pressure range:

- 10 to 25 psig (0.7 to 1.7 BarG)

Safety first. Before you start...

This Quick Start Guide is intended for typical installations only. For more details, please reference the Rosemount 370XA product manual or contact the factory.

WARNING

Use this unit in a well-ventilated area, as required by government regulations.

WARNING

Exit ports may discharge dangerous levels of toxic vapors; use proper protection and a suitable exhaust device.

WARNING

Observe and comply with all precautionary signs posted on the GC. Failure to do so may result in injury or death to personnel or cause damage to the equipment.

NOTICE

Install and operate all equipment as designed and comply with all safety requirements. The “Seller” does not accept any responsibility for installations of the 370XA, or any attached equipment, in which the installation or operation thereof has been performed in a manner that is negligent and/or non-compliant with applicable safety requirements.

NOTICE

The unit is intended to be connected to a 24 Vdc power source by qualified personnel in accordance with local and national codes.

NOTICE

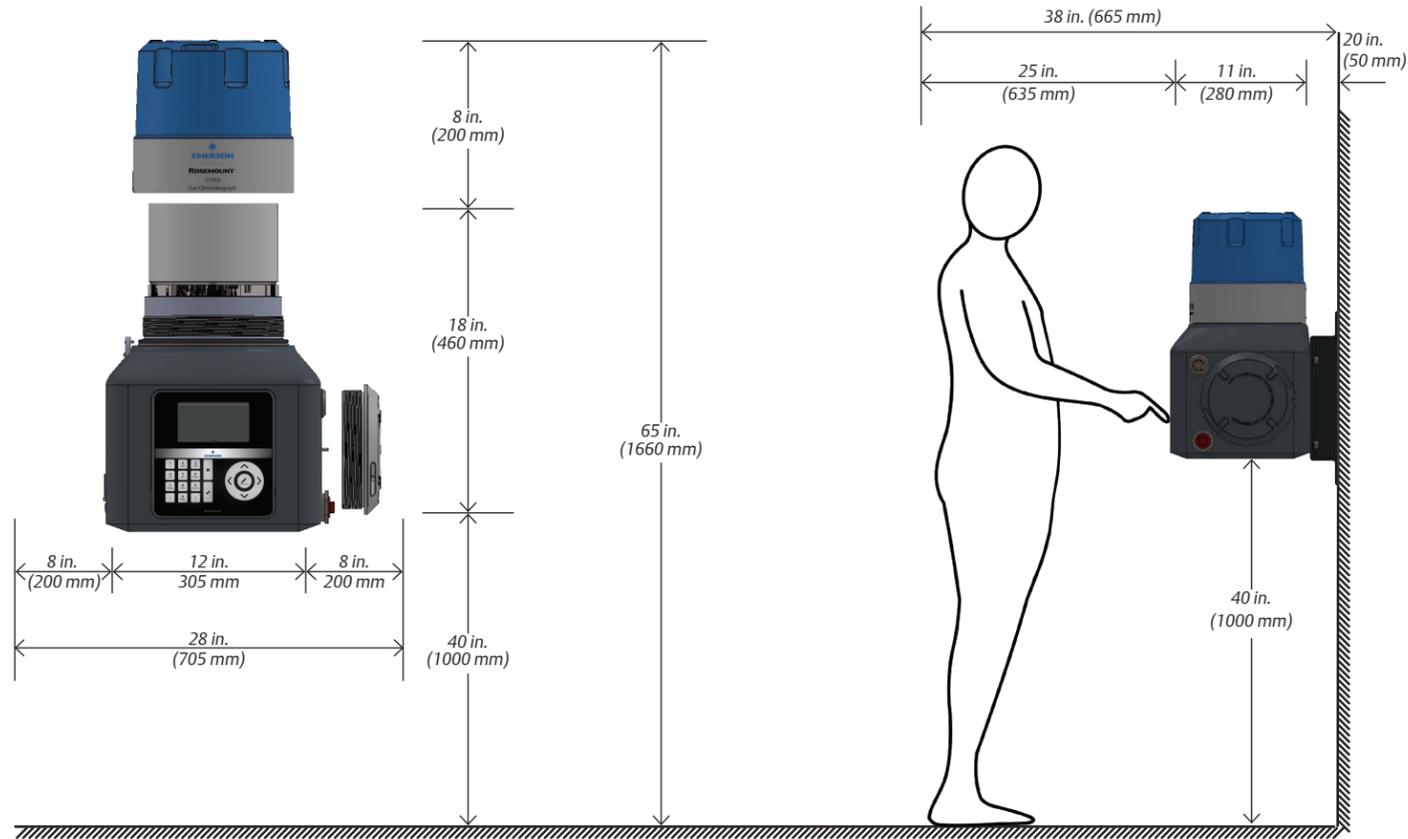
A suitable APPROVED switch and fuse or a circuit breaker shall be provided to facilitate the disconnection of power.

NOTICE

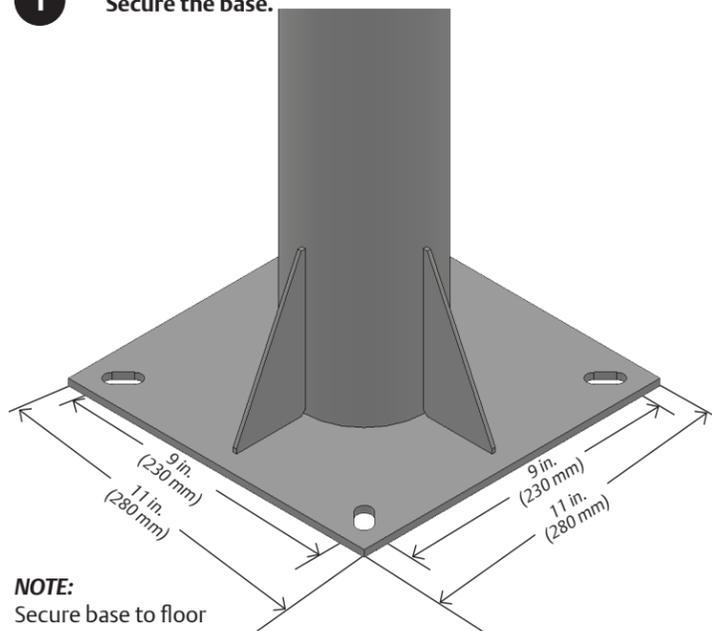
All gas connections must be properly leak tested at installation.

Step 1- Mounting the Rosemount 370XA

Recommended Minimum Installation Clearances



1 Secure the base.



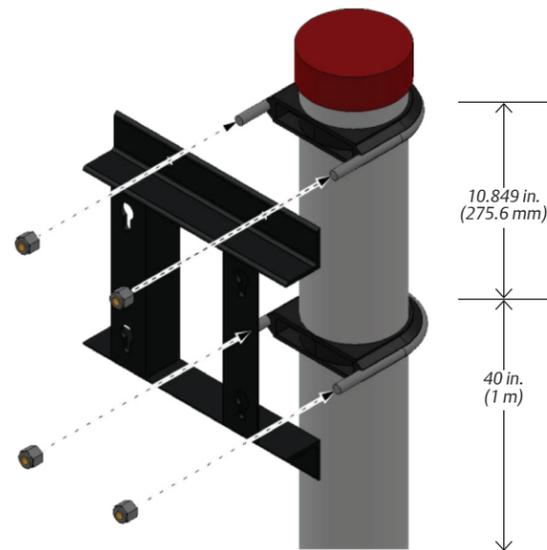
NOTE:
Secure base to floor

1. Secure to the floor with four ½-in. (12.7 mm) or ¾-in. (9.525 mm) cement anchors.

NOTE: The cement foundation should be able to support the weight of the GC, 50 lb. (22 kg), and its accessories, as well as any other utilities that may be installed.

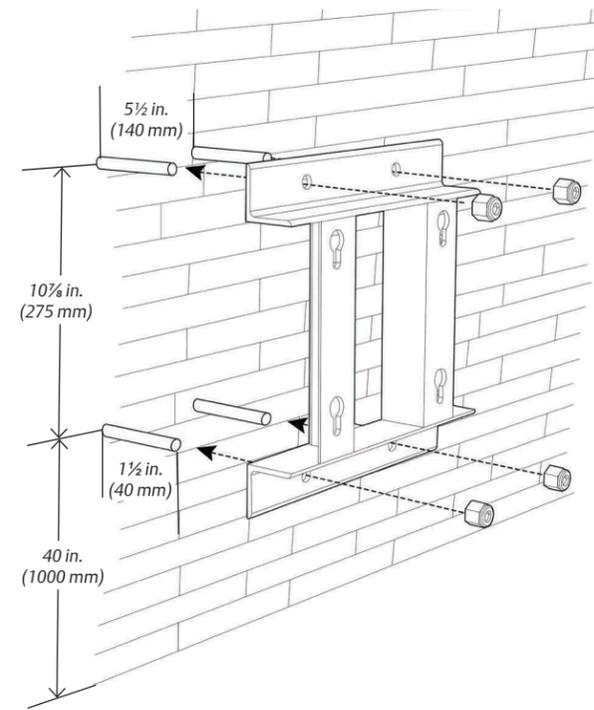
2. Install mounting pole in base; if supplying your own pole, it should be 4 in. (106 mm) in diameter and at least 55 in. (1397 mm) or 4.5 ft (1.39 m) tall.

2 Mount the bracket.



1. Attach the bracket to the pole by sliding the plastic inserts onto the pole.
2. Install the two U-bolts through the inserts and the holes in the bracket.
3. The base of the bracket should be 40 in. (1000 mm) from the ground to make the operator interface easy to use.

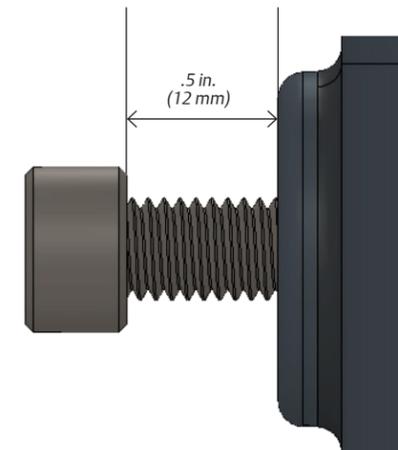
3 Mount the bracket on the wall.



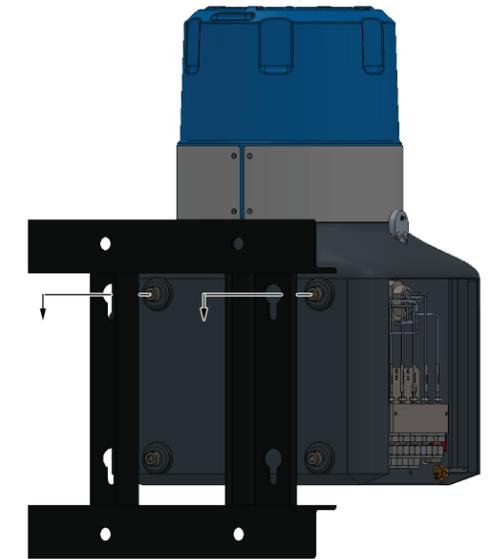
1. Install ⅝-in. (10 mm) anchors (not supplied) suitable to anchor the weight of the GC, approximately 50 lb. (22 kg) as per the drawing. Use the bracket as a guide to locate the anchors correctly before drilling the holes. The threads of the anchors should protrude from the wall by 1 ½ in. (40 mm).
2. Mount the bracket to the wall anchors and tighten the nuts. Ensure that the bracket is attached firmly to the wall.

4 Tighten the screws on the bracket.

1. Use a 6 mm hex wrench to screw the top two bolts into the back of the GC without the washers, leaving ½ in. (1.27 cm) of thread showing.



3. Maneuver the GC to insert the two top bolts into the eyelets of the mounting bracket and allow the bolts to drop down and hold the GC loosely on the bracket.



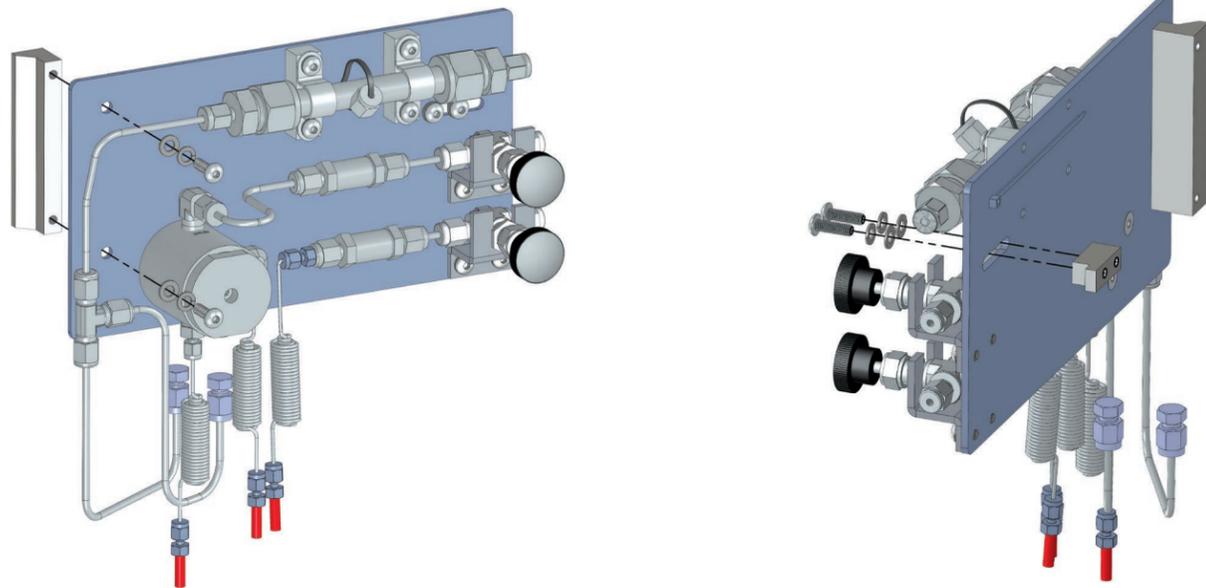
4. Screw in the two bottom bolts through the mounting bracket with the washers on. The flat washer should be against the bracket, and the spring washer between the flat washer and the bolt head. Hand tighten these two bolts so that they secure the GC in place.
5. One at a time, remove the top bolts, put on the washers, and screw the bolts into the back of the GC and hand tighten.

Step 2 – Sample handling system and gas line connections

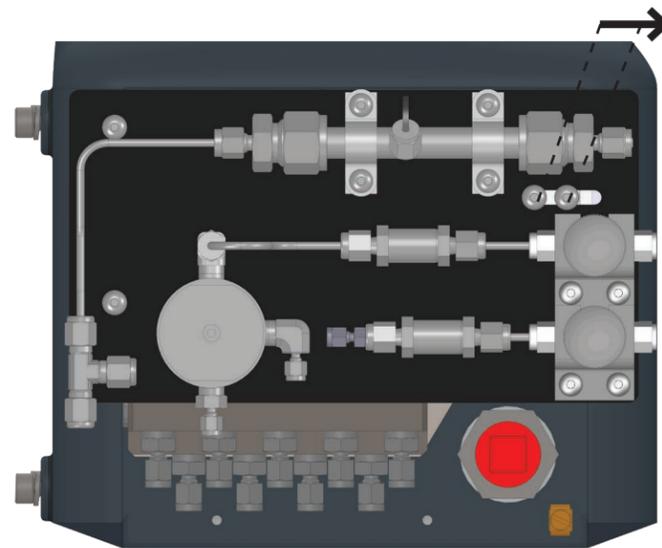
1 Mount the single stream sample plate.

Note: This procedure differs when using hydrogen (instead of helium) as a carrier gas.

- Use the two 1-in bolts and a 5/32 hex wrench to screw the large mounting bar tightly to the left side of the plate with the angled foot facing the edge of the plate.
- Use the two 0.5 in bolts and a 5/32 hex wrench to screw the small mounting bar loosely to the right side of the plate with the angled foot facing the edge of the plate.



- Angle the plate onto the left side of the GC so that the large mounting block fits behind the left edge of the cut-out. Swing the right side of the plate around until it attaches to the right side of the cut-out.

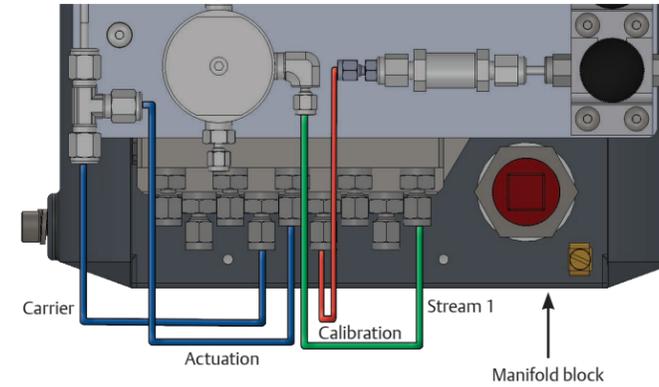


- Slide the small mounting bar to the right so that it fits behind the right edge of the cut-out. Tighten the small mounting block's screws.

Note: To install a multi-stream sample system, please refer to the instructions provided in the sample system installation kit.

2 Connect the gas lines.

Helium carrier gas



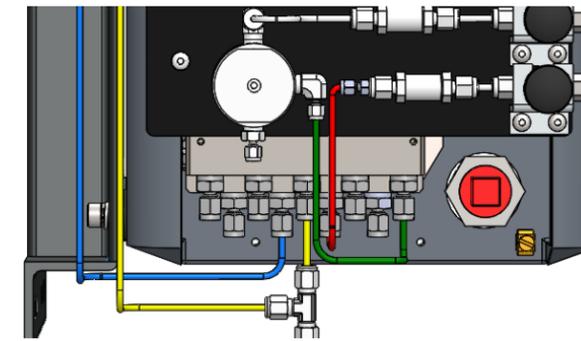
- Using the tubing supplied with the sample system, connect the stream, actuation, and calibration gases from the sample plate to the manifold block (also shown on previous page).

— Stream 1
— Calibration
— Carrier/actuation

NOTE:

Be careful not to crimp the sample system's tubing when bending them to connect to the GC's manifold block. Doing so will inhibit gas flow. Ensure all caps on tubing connections have been removed.

Hydrogen carrier gas



— Stream 1
— Calibration
— Carrier
— Actuation

- Connect the atmospheric vents to a vent line of at least 3/8-in (1.905 cm) diameter that is routed to the atmosphere in a safe area to ensure there is no back-pressure created on the vents.

— Sample Vent
— Measure Vent
— Sample Bypass

NOTE:

The flows out of the vents are:

Sample Vent – 10 to 50 cc/min of sample gas for approximately three and a half minutes of the four-minute cycle.

Measure vent – Continuous flow of less than 1 cc per analysis cycle.

Sample Bypass – Continuous flow of 150 to 200 cc/min of sample gas.

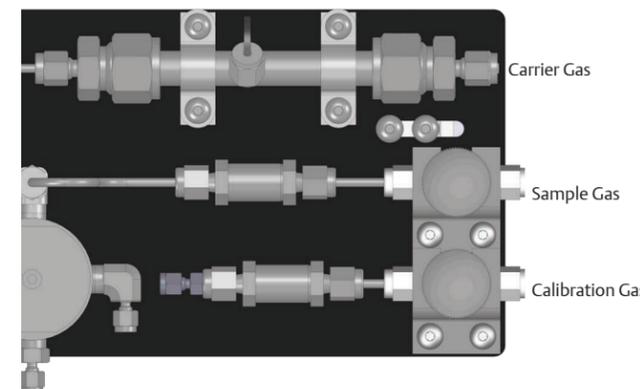
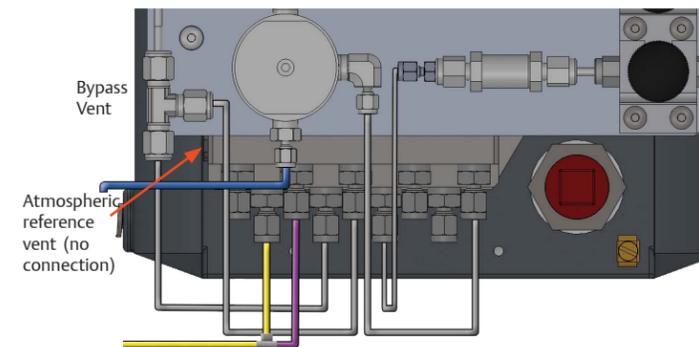
- Open the carrier gas bottle valves and set the regulator to 80 psig (5.5 BarG) - recommended. 90 psig (6.2 BarG) is the maximum pressure..

- Open the calibration gas bottle valves and set to 15 psig (1 BarG).

- Open the sample probe valves and set the sample pressure to 20 psig (1.4 BarG).

- Leak check all lines with liquid leak-check solution.

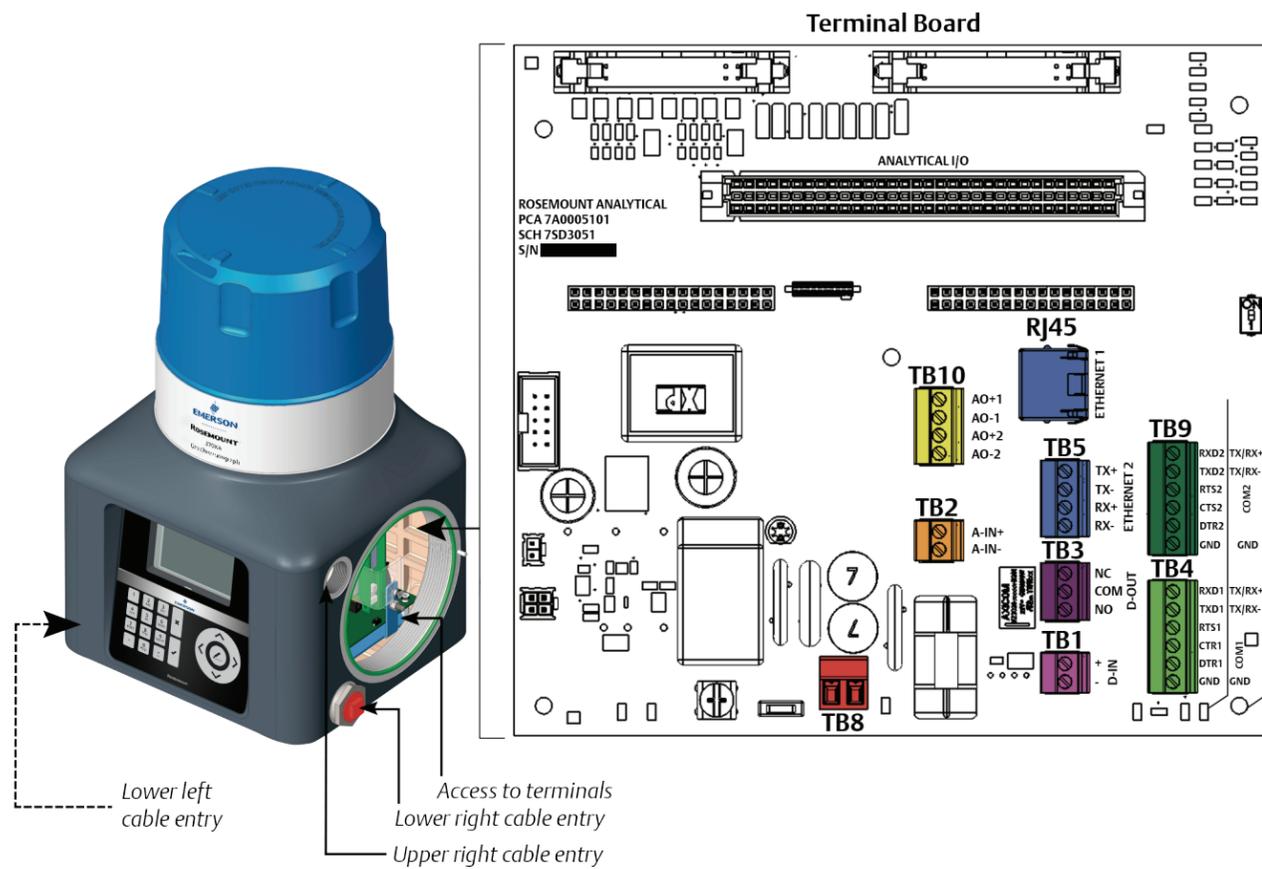
- Open the sample and calibration valves on the sample panel and leak-check up to the fittings on the GC's inlet manifold.



Step 3 – Wiring

1 Connect power and communications wiring.

1. Route the power supply lines through the lower left or right cable entry – whichever is the most convenient.
2. Connect power wires to TB8. DO NOT APPLY POWER YET.
3. Route the communication wiring through the lower right cable entry. If additional separation of wiring is required, use the upper right cable entry for the additional signal wiring. Refer to the Terminal Board Key Map for communications wiring.
4. Connect the signal wiring as shown in the diagrams below.



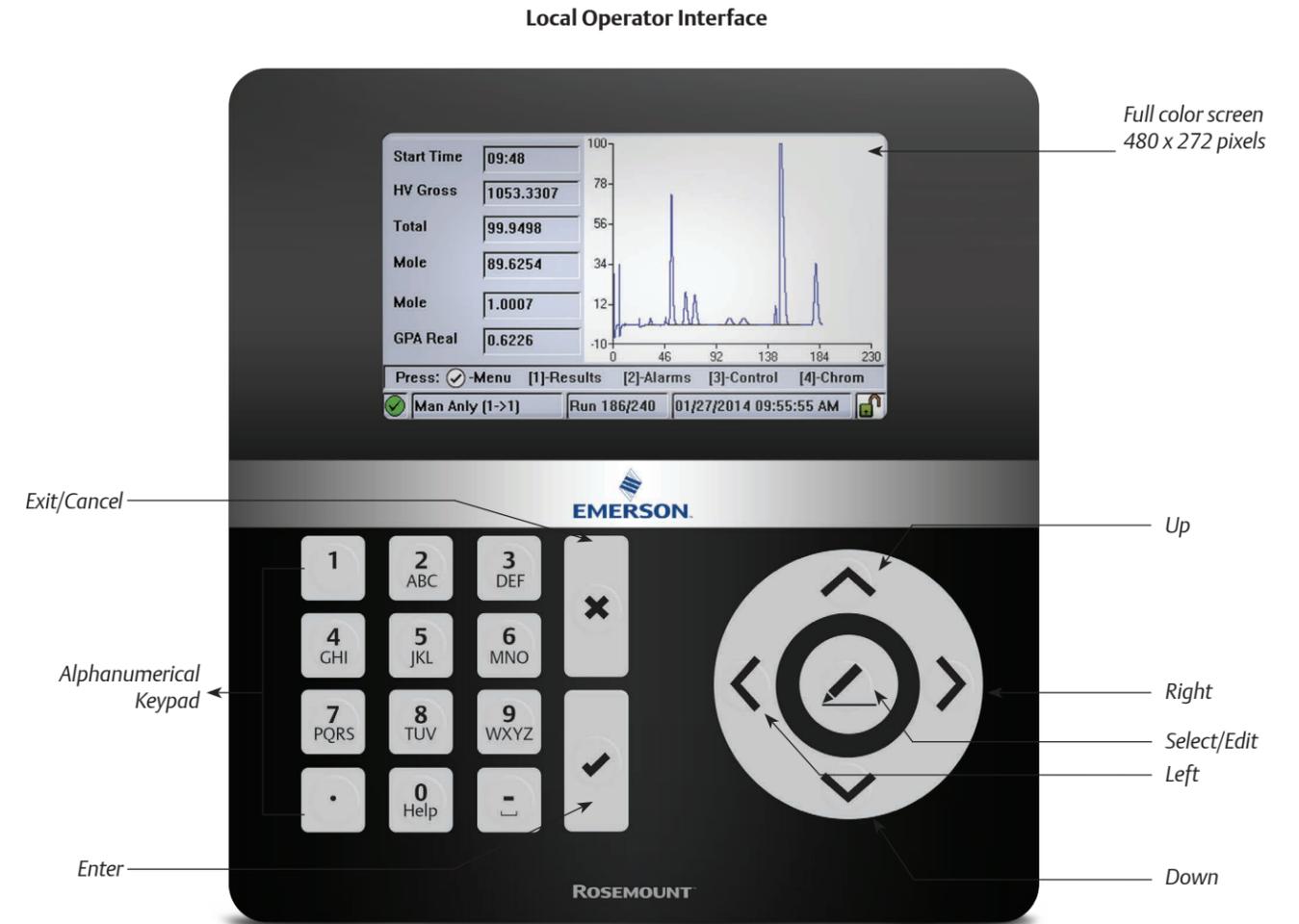
Terminal Board Map Key

Power	Ethernet 2	COM1 Port (RS-232)	COM2 Port (RS-232)	Analog Outputs (2)	Analog Input	Digital Output	Digital Input
TB8 - + (24 VDC)	TB5 RX- RX+ TX- TX+	TB4 GND TXD RXD	TB9 GND TXD RXD	TB10 AO1+ AO1- AO2+ AO2-	TB2 A-IN- A-IN+	TB3 NO COM NC	TB1 D-IN- D-IN+
		COM1 Port (RS-485) TB4 GND TX/RX+ TX/RX-	COM2 Port (RS-485) TB9 GND TX/RX+ TX/RX-				

Step 4 – Startup

1 Power the GC.

1. Turn on the power. The local operator interface (LOI) will show the Emerson logo while the software starts up, and then it will show the home screen.



Display icons

- ✓ No alarms
- ! Unacknowledged alarm(s)
- ✗ Active alarm(s)
- 🔓 Security switch unlocked
- 🔒 Security switch locked

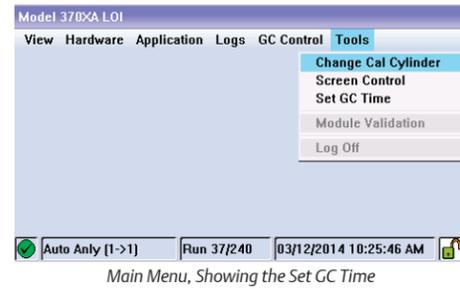
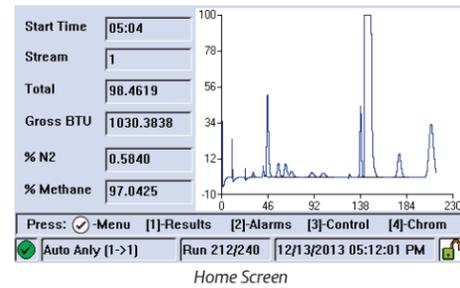
Main Menu Display Options

- View
- Hardware
- Application
- Logs
- GC Controls
- Tools

2 How to enter letters from the keypad.

- To display a desired letter, repeatedly press the appropriate key until the letter displays. For example, to display the letter "H", press the 4 key three times.

Step 5 – Configure and calibrate the GC.



Communications

Label	Port 1	Port 2	Ethernet Port
Modbus ID	1	1	1
Baud Rate	9600	9600	
Data Bits	8	8	
Stop Bits	1	1	
Parity	None	None	
SAP File	SIM_2251	SIM_2251	DEFAULT_MAP
Port	RS232	RS485	

Communication Screen for the Serial Ports

TCP/IP Settings

Ethernet 1 IP Address	10.208.108.67
Ethernet 1 Mask	255.255.255.0
Ethernet 1 Gateway	10.208.108.1
Ethernet 1 DHCP	Off
Ethernet 2 IP Address	172.16.17.102
Ethernet 2 Mask	255.255.255.0
Ethernet 2 Gateway	172.16.17.2

TCP/IP Settings Screen

Calibration Concentration

		Total: 100.0
C6+ 47/35/17	0.03	n-Pentane 0.1
Propane	1	Nitrogen 2.49
i-Butane	0.301	Methane 89.6210
n-Butane	0.3	Carbon Dioxide 0.99
Neopentane	0.098	Ethane 4.97
i-Pentane	0.1	<input checked="" type="checkbox"/> Auto Calculate Methane

Calibration Concentration Screen

As the GC warms up to operating temperature and purges the carrier gas through the system, configure the GC's site-specific settings, such as the calibration gas values and communication settings.

Note: If the unit is not in Idle mode, then do the following:

1. Press **3** on the keypad to go to the **GC Control** menu.
2. Press the down arrow to highlight the **Halt** command.
3. Press **✓** on the keypad and then follow the prompts.

Note: The Login screen will appear if you are not logged in.

Enter your user name and password. The default values for Rosemount 370XA GCs is:

User: EMERSON

Password: (blank)

Configure the time and date.

1. From the Main Menu, select **Set GC Time** from the **Tools** menu.
2. Confirm the time and date is correct. To change the time or date, use the arrow keys to navigate to the field to change and press the **Select/Edit** key to edit.
3. Press the **✓** key to save the changes, or the **✗** key to discard changes and exit to the main menu.

Configure the serial port settings.

4. From the Main Menu, use the arrow keys to navigate to the **Application** menu and select the **Communications** option.
5. Use the arrow keys to navigate through the various settings and press the **Select/Edit** key to edit the appropriate values. The settings must match the settings of the host device communicating to the GC on that port.
6. When you have finished making changes, press the **✓** key to save changes and close the screen.

Configure the Ethernet port.

1. From the Main Menu, use the arrow keys to navigate to the **Application** menu and select the **TCP/IP Settings** option.
2. Use the arrow keys to navigate through the various settings and press the **Select/Edit** key to edit the appropriate values. The settings must match the settings of the host device communicating to the GC on that port.
3. When you have finished making changes, press the **✓** key to save changes and close the screen.

If required, you can access the **Analog Input**, **Analog Output**, **Digital Input**, and **Digital Outputs** settings from the **Hardware** menu. Refer to the manual for further information

Enter the calibration gas values.

1. From the main menu, navigate to the **Application** menu and select **Calibration Gas Info**.
2. Press the **Select/Edit** edit key and enter the calibration gas concentration values for each component. Note that the methane value will be calculated automatically. You can use this as a check against the value on the certificate to ensure all the values have been entered correctly.

Calibration Cylinder Replacement Assistant

Step 7 of 10: Enter Uncertainty %

C6+ 47/35/17	2	n-Pentane	2
Propane	2	Nitrogen	2
i-Butane	2	Methane	2
n-Butane	2	Carbon Dioxide	2
Neopentane	2	Ethane	2
i-Pentane	2		

Press **✓** to continue, or **✗** to abort.

Calibration Gas Uncertainty Screen

Cal Gas Certificate CV

Cal Gas Certificate CV	1056.1	BTU/#3
CV Check Deviation	2	%
Calculated CV [at 103 kPa and 15 C]	1056.28	BTU/#3

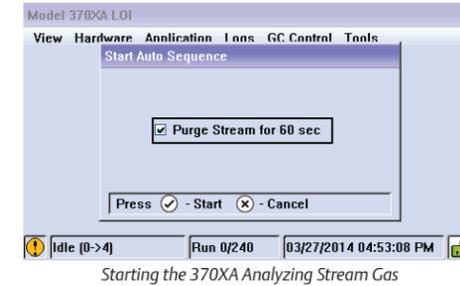
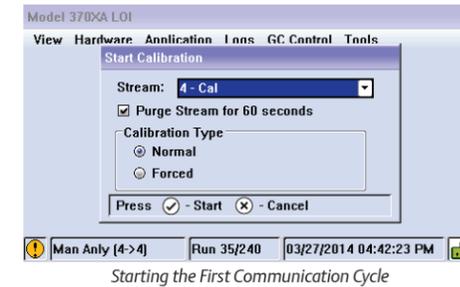
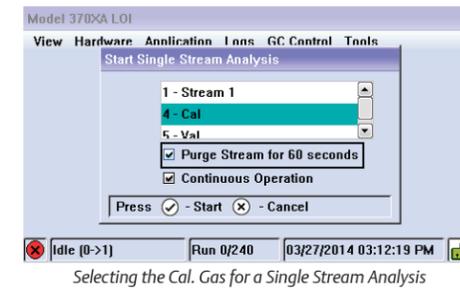
Press **✓** to finish, or **✗** to cancel.

Calibration Gas Energy Content Screen

Heaters

Label	Heater 1	Heater 2
Switch	Auto	Fixed On
Setpoint (C)	80.0	
Temperature (C)	80.1	42.0
Current PWM	40.2	0.0
Status	Ok	Ok

Heater Screen Showing Current PWM



3. Press the **✓** key to continue, and enter in the uncertainty values from the certificate.

NOTE: If the calibration certificate does not include uncertainty values, use the default 2% setting.

4. Press the **✓** key to continue, and enter the energy value for the calibration blend.

NOTE: The calculated value shown on the display is calculated using the same C6+ Ratio of C6/C7/C8 as is used in the stream calculations. This value may differ to the value on the certificate which may use a hexane only energy content. Use the calculated value from the screen to avoid nuisance alarms during calibrations.

5. Press **✓** to save and close the screen.

Wait for the oven to reach the operating temperature.

1. From the Main Menu, navigate to the **Hardware** menu and select **Heaters**.
2. Wait for the **Heater Out of Range** alarm to clear. This should take approximately two hours from when power is applied.

Clear alarms.

1. From the Main Menu, navigate to the **View** menu and select **Current Alarms**.
2. Press **[2]** to acknowledge and clear all alarms.
3. Press **✓** to return to the **Main Menu**.

Purge calibration gas.

1. From the Main Menu, navigate to the **GC Control** menu and select **Single Stream**.
2. Select the **4-Cal** stream and check the **Purge Stream for 60 seconds** option.
3. Let the GC run for at least 30 minutes.

Calibrate the GC.

1. From the Main Menu, navigate to the **GC Control** menu and select **Halt** to stop the current analysis.
2. When the analysis cycle finishes, select **Calibration** from the control menu.
3. Select **Purge Stream for 60 seconds** and a **Normal** calibration type and press **✓** to start the calibration cycle.
4. Confirm at the end of the calibration cycle no alarms were generated. If alarms were activated, refer to the manual that is included on the MON2020 CD-ROM that is shipped with the GC.

Put the GC into service.

1. From the Main Menu, navigate to the **GC Control** menu and select **Auto Sequence**.
2. Select **Purge stream for 60 seconds** and press **✓** to start the analysis cycle.

For more configuration and operating instructions, refer to the manual that is included on the MON2020 CD or USB that is shipped with the GC, and is available online at www.Emerson.com/RosemountGasAnalysis

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