

Rosemount™ 1057

Single Channel Transmitter



Safety Information

Rosemount 1057 Reference Manual

For information on specifications, programming, and calibrations see the Rosemount 1057 Reference Manual at [Emerson.com/Rosemount](https://www.emerson.com/Rosemount): *Manual: Rosemount 1057 Three-Input Intelligent Transmitter*.

Read this page before proceeding!

Your instrument purchase from Emerson is one of the finest available for your particular application. These instruments have been designed and tested to meet many national and international standards. Experience indicates that its performance is directly related to the quality of the installation and knowledge of the user in operating and maintaining the instrument. To ensure its continued operation to the design specifications, personnel should read this Quick Start Guide thoroughly before proceeding with installation, commissioning, operation, and maintenance of this instrument. If this equipment is used in a manner not specified by the manufacturer, the protection provided by it against hazards may be impaired.

- Failure to follow the proper instructions may cause any one of the following situations to occur: loss of life, personal injury, property damage, damage to this instrument, and warranty invalidation.
- Ensure that you have received the correct model and options from your purchase order. Verify that this Quick Start Guide covers your model and options. If it does not, call 800 854 8257 or 949 757 8500 to request the correct Quick Start Guide.
- For clarification of instructions, contact your Rosemount representative.
- Follow all warnings, cautions, and instructions marked on and supplied with the product.
- Use only qualified personnel to install, operate, program, and maintain the product.
- Inform and educate your personnel in the proper installation, operation, and maintenance of the product.
- Install equipment as specified in the installation instructions of the appropriate Reference Manual and per applicable local and national codes. Connect all products to the proper electrical and pressure sources.
- Use only factory documented components for repair. Tampering or unauthorized substitution of parts and procedures can affect the performance and cause unsafe operation of your process.
- All equipment doors must be closed, and protective covers must be in place unless qualified personnel are performing maintenance.

⚠ WARNING

Risk of electrical shock

Installation and servicing of this product may expose personnel to dangerous voltages.

Equipment protected throughout by double insulation.

Disconnect main power wired to separate power source before servicing.

Do not operate or energize instrument with case open.

Signal wiring within this box must be rated at least 240 V for European mains operation.

Non-metallic cable strain reliefs do not provide grounding between conduit connections. Use grounding type bushings and jumper wires.

Unused cable conduit entries must be securely sealed by non-flammable closures to provide exposure integrity in compliance with personal safety and environmental protection requirements. Unused conduit openings must be sealed with Type 4X or IP66 conduit plugs to maintain the ingress protection rating (Type 4X).

Electrical installation must be in accordance with the National Electrical Code (ANSI/NFPA-70) and/or any other national or local codes.

Operate only with front panel fastened and in place.

Safety and performance require that this instrument be connected and properly grounded through a three-wire power source.

Proper use and configuration is the operator's responsibility.

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1 First steps

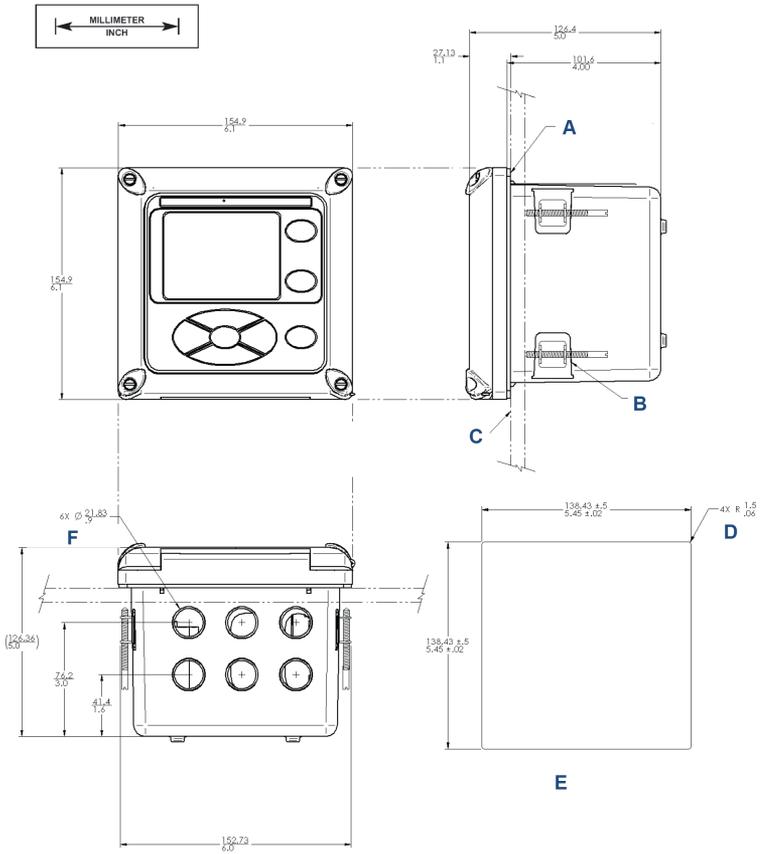
1.1 Unpack and inspect

Procedure

1. Inspect the shipping container. If it is damaged, contact the shipper immediately for instructions.
2. If there is no apparent damage, unpack the container. Be sure all items shown on the packing list are present. If items are missing, notify Emerson immediately.

1.2 Mount

Figure 1-1: Panel Mounting Dimensions

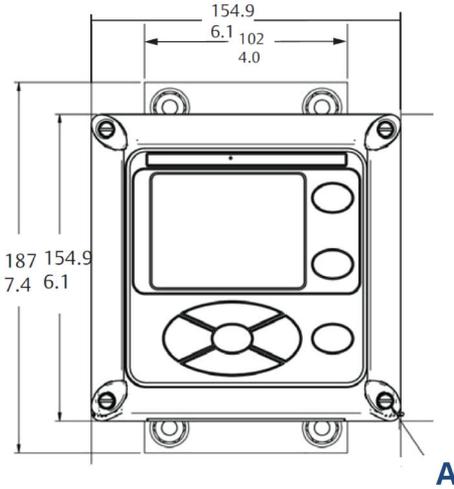


- A. Panel mount gasket
- B. Four mounting brackets and screws provided with transmitter
- C. Panel supplied by other. Maximum thickness: 0.375 in. (9.52 mm)
- D. Maximum radius
- E. Panel cut-out

Note

The front panel is hinged at the bottom. The panel swings down for easy access to the wiring locations. Panel mounting seal integrity (4/4X) for outdoor applications is the responsibility of the end user.

Figure 1-2: Wall Mount Front View



A. Four cover screws

Figure 1-3: Wall Mount Side View

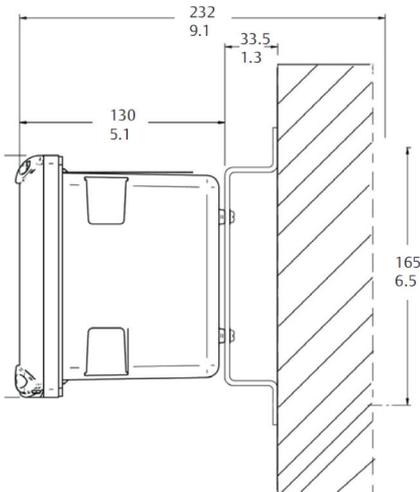
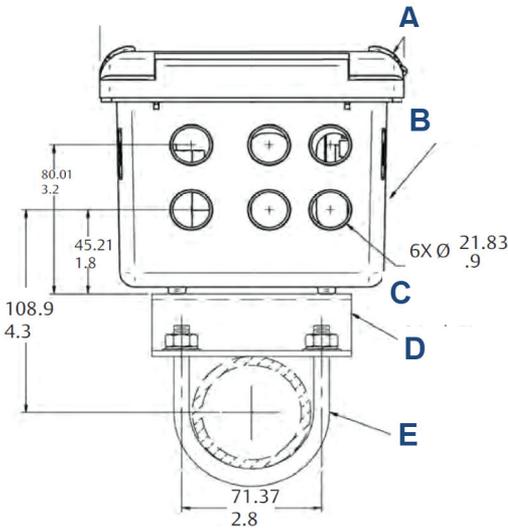
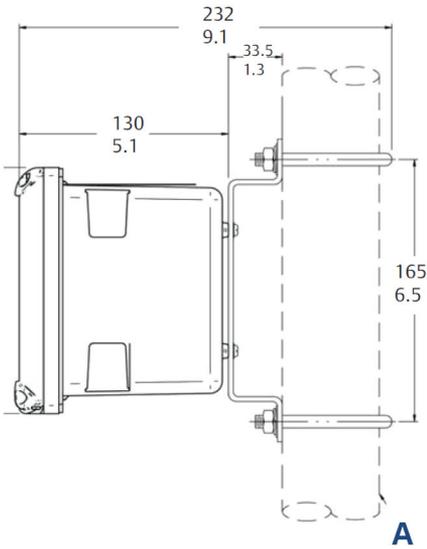


Figure 1-4: Pipe Mount Bottom View



- A. Front panel
- B. Panel and pipe mount enclosure
- C. Conduit opening
- D. 2-in. (50.8 mm) pipe mount bracket
- E. Two sets U-bolts for 2-in. (50.8 mm) pipe in kit PN 23820-00

Figure 1-5: Pipe Mount Side View



A. 2-in. (50.8 mm) pipe supplied by customer

NOTICE

The front panel is hinged at the bottom. The panel swings down for easy access to the wiring locations.

2 Install

2.1 General installation information

1. Install the transmitter with a sunshield or out of direct sunlight and areas with extreme temperatures.
2. Install the transmitter in an area where vibration and electromagnetic and radio frequency interference are minimized or absent.
3. Keep the transmitter and sensor wiring at least one foot from high voltage conductors. Be sure there is easy access to the transmitter.
4. The transmitter is suitable for panel, pipe, or surface mounting. Refer to [Figure 1-1](#) and [Figure 1-2](#).

3 Wire

3.1 General wiring information

The transmitter is easy to wire.

The front panel is hinged at the bottom. The panel swings down for easy access to the wiring locations.

3.1.1 Removable connectors and signal input boards

The transmitter uses removable signal input boards and communication boards for ease of wiring and installation.

You can remove each of the signal boards either partially or completely from the enclosure for wiring. The transmitter has three slots for placement of up to two signal input boards and one communication board.

Slot 1 - left	Slot 2 - center	Slot 3 - right
Communication board	Input board 1	Input board 2

3.1.2 Signal input boards

Slots 2 and 3 are for signal input measurement boards.

Procedure

1. Wire the sensor leads to the measurement board following the lead locations marked on the board.
2. Carefully slide the wired board fully into the enclosure slot and take up the excess sensor cable through the cable gland.
3. Tighten the cable gland nut to secure the cable and ensure a sealed enclosure.

3.1.3 Alarm relays

Emerson supplies four alarm relays with the switching power supply (85 to 264 Vac, 03 order code) and the 24 Vdc power supply (20 - 30 Vdc, 02 order code). You can use all relays for process measurement(s) or temperature. You can also configure any relay as a fault alarm instead of a process alarm. In addition, you may configure any relay independently and program it to activate pumps or control valves.

As process alarms, alarm logic (high or low activation or USP*) and deadband are user-programmable. Customer-defined failsafe operation is supported as a programmable menu function to allow all relays to be energized or not energized as a default condition upon powering the transmitter. You may program the USP* alarm to activate when the conductivity is within a user-selectable percentage of the limit. USP*

alarming is available only when a contacting conductivity measurement board is installed.

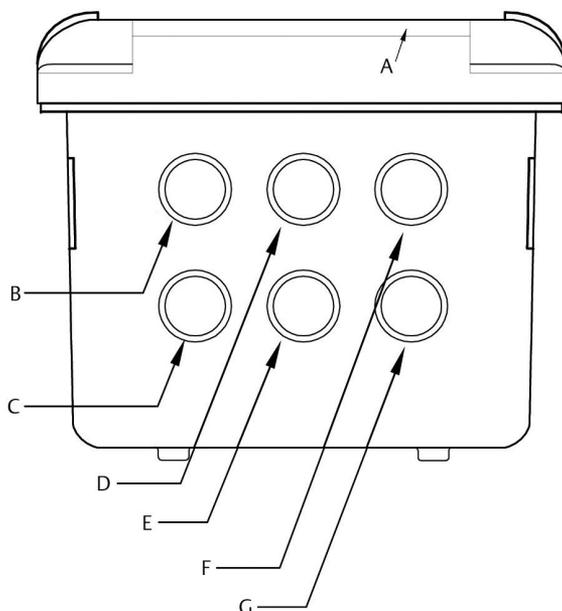
3.2 Prepare conduit openings

There are six conduit openings in all configurations of the transmitter.

Note

Emerson fits four of the openings with plugs upon shipment.

Figure 3-1: Conduit Openings



- A. Front panel/keypad
- B. Power leads
- C. Alarm relay leads
- D. Sensor 1 cable
- E. 4-20 mA/HART®/Profibus® leads
- F. Sensor 2 cable
- G. Spare opening

Note

Always use proper cable gland fittings and plugs for wire and cable installations.

Conduit openings accept ½-in. (12.7 mm) conduit fittings or PG13.5 cable glands. To keep the case watertight, block unused openings with Type 4X or IP66 conduit plugs.

Note

Use watertight fittings and hubs that comply with your requirements. Connect the conduit hub to the conduit before attaching the fitting to the transmitter.

3.3 Power, output, and sensor connections

3.3.1 Power wiring

Emerson offers two power supplies for the Rosemount

1. 24 Vdc (20-30 V) power supply (02 ordering code)
2. 85-265 Vac switching power supply (03 ordering code)

AC mains (115 or 230 V) leads and 24 Vdc leads are wired to the power supply board which is mounted vertically on the left side of the main enclosure cavity. Each lead location is marked clearly on the power supply board. Wire the power leads to the power supply board using the lead markings on the board.

The grounding plate is connected to the earth terminal of power supply input connector TB1 on the 01 (115/230 Vac) and 03 (85-265 Vac) power supplies. The green screws on the grounding plate are intended for connection to some sensors to minimize radio frequency interference. The green screws are not intended to be used for safety purposes.

Figure 3-2: 24 Vdc Power Supply (02 Ordering Code)



This power supply automatically detects DC power and accepts 20 Vdc to 30 Vdc inputs.

Four programmable alarm relays are included.

Figure 3-3: Switching AC Power Supply (03 Ordering Code)



This power supply automatically detects AC line conditions and switches to the proper line voltage and line frequency.

Four programmable relays are included.

3.3.2

3.3.3 Alarm relay wiring

Emerson supplies four alarm relays with the switching power supply (85 to 265 Vac, 03 order code) and the 24 Vdc power supply (20-30 Vdc, 02 order code).

Wire the relay leads on each of the independent relays to the correct position on the power supply board using the printed lead markings (NO/ Normally open, NC/Normally closed, or Com/Common) on the board. .

Figure 3-4: 4-24 Vdc Power Supply (02 ordering code)

NO1	Relay 1
COM1	
NC1	
NO2	Relay 2
COM2	
NC2	
NO3	Relay 3
COM3	
NC3	
NO4	Relay 4
COM4	
NC4	

3.3.4 Wire sensor to transmitter

Procedure

1. Wire the correct sensor leads to the main board using the lead locations marked directly on the board.
2. After wiring the sensor leads, carefully slide the wired board fully into the enclosure slot and take up the excess sensor cable through the cable gland.

When wiring a pH/ORP sensor to the transmitter, follow this order:

1. Wire the terminal block 3/resistance temperature device (RTD) to the return, sense, and RTD in terminals.
2. Wire TB2/reference and solution ground to the reference in, reference shield, and solution ground terminals.

3. Wire TB4/preamplifier (if present) to the +volts and -volts terminals.
4. Wire TB1/pH input to the pH shield and pH in terminals.

When wiring a contacting or toroidal conductivity sensor to the transmitter, follow this order:

1. Wire TB2/RTD to the return, sense, RTD in, and shield terminals.
2. Wire TB1/conductivity to the receive B, receive A, shield, drive B, drive A, and shield terminals.

When wiring a chlorine, oxygen, or ozone sensor to the transmitter, follow this order:

1. Wire TB5/anode and cathode to the anode and cathode terminals.
2. Wire TB3/RTD to the return, sense, and RTD in terminals.
3. Wire the TB2/solution ground to the solution ground terminal.

For recommended wire entry points, see [Figure 3-1](#).

4 Navigating the display

4.1 User interface

The transmitter has a large display which shows the three live measurement readouts and up to six additional process variables or diagnostic parameters concurrently. The display is back-lit, and the you can customize the format to meet your requirements. In addition, a dedicated **DIAGNOSTIC** button is available to provide access to useful operational information on installed sensor(s) and any problematic conditions. The display flashes **Fault** and/or **Warning** when these conditions occur. Help screens are displayed for most fault and warning conditions to guide you in troubleshooting. During calibration and programming, key presses cause different displays to occur. The displays are self-explanatory and guide you step-by-step through the procedure.



4.2 Instrument keypad

There are four function keys and four selection keys on the instrument keypad.

Function keys

Four top-level menu items appear when you press **MENU**.

- **Calibrate:** Calibrate the attached sensor(s) and analog output(s).
- **Hold:** Suspend analog output(s).
- **Program:** Program outputs, measurement, temperature, security, and reset.
- **Display:** Program display format, language, warnings, and contrast.

Press **MENU** to display the **Main Menu** screen. Press **MENU** followed by **EXIT** to display the main display.

Pressing the **DIAG** key displays active faults and warnings and provides detailed instrument information and sensor diagnostics, including faults, warnings, sensor 1, 2, and 3 information, current outputs live values, model configuration string, e.g., 1057PPC03AN, instrument software version, and AC frequency. Pressing **ENTER** on Sensor 1 or Sensor 2 provides useful diagnostics and information (as applicable): Measurement, Sensor type, Raw signal value, Cell constant, Zero offset, Temperature, Temperature offset, Selected measurement range, Cable resistance, Temperature sensor resistance, and Signal board software version.

Press **ENTER** to store numbers and settings and move the display to the next screen.

Press **EXIT** to return to the previous screen without storing changes.

Selection keys

Surrounding the **ENTER** key, four selection keys - **Up**, **Down**, **Right**, and **Left** - move the cursor to all areas of the screen while using the menus.

Selection keys are used to:

1. Select items on the menu screens.
2. Scroll up and down the menu lists.
3. Enter or edit numeric values.
4. Move the cursor to the right or left.
5. Select measurement units during operation.

4.3 Main display

The transmitter displays one, two, or three primary measurement values, up to six secondary measurement values, a fault and warning banner, and alarm relay flags.

Process measurements

Three process variables are displayed if three signal boards are installed. One process variable and process temperature are displayed if one signal board is installed with one sensor. The upper display area shows the Sensor 1 process reading. The center display area shows the Sensor 2 process reading. For dual conductivity, you can assign the upper and center display areas to different process variables as follows:

- Measure 1
- Measure 2
- Measure 3
- % Reject
- % Pass
- Ratio
- Blank
- pH Calc

Secondary values

Up to six secondary values are shown in display quadrants at the bottom half of the screen. You can program all six secondary value positions to any displayable parameter available.

Possible secondary values include:

- Slope 1, 2, 3
- Ref off 1, 2, 3
- Glimp 1, 2, 3
- Ref imp 1, 2, 3
- Raw 1, 2, 3
- mV input 1, 2, 3
- Temp 1, 2, 3
- Man temp 1, 2, 3
- Output 1 mA
- Output 2 mA

- Output 3 mA
- Output 4 mA
- Output 1%
- Output 2%
- Output 3%
- Output 4%
- Measure 1, 2, 3
- Blank

Fault and Warning banner

If the transmitter detects a problem with itself or the sensor, the word **Fault** or **Warning** will appear at the bottom of the display. A fault requires immediate attention. A warning indicates a problematic condition or an impending failure. For troubleshooting assistance, press **DIAG**.

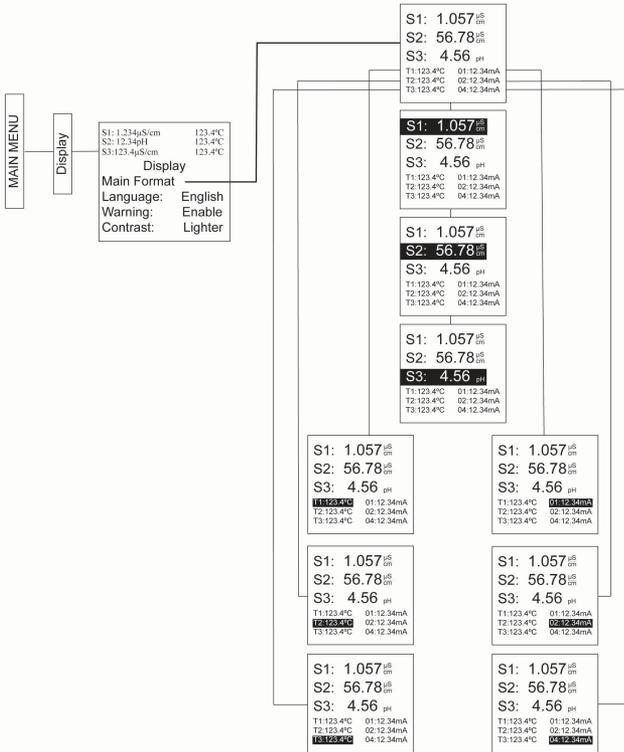
Formatting the main display

You can program the main display screen to show primary process variables, secondary process variables, and diagnostics.

1. Press **MENU**.
2. Scroll down to **Display**. Press **ENTER**.
3. **Main Format** is highlighted. Press **ENTER**.
4. The Sensor 1 process value is highlighted in reverse video. Press the selection keys to navigate down to the screen sections that you wish to program. Press **ENTER**.
5. Choose the desired display parameter or diagnostic for each of the four display sections in the lower screen.
6. Continue to navigate and program all desired screen selections. Press **MENU** and **EXIT**. The screen returns to the main display.

For single sensor configurations, the default display shows the live process measurement in the upper display area and temperature in the center display area. You can elect to disable the display of temperature in the center display area using the Main Format function. See [Figure 4-1](#) to guide you through programming the main display to select process parameters and diagnostics of your choice.

Figure 4-1: Formatting the main display



4.4 Menu system

The transmitter uses a scroll and select menu system. Press the **MENU** key at any time to open the top-level menu, including **Calibrate**, **Hold**, **Program**, and **Display** functions.

To find a menu item, scroll with the **Up** and **Down** keys until the item is highlighted. Continue to scroll and select menu items until the desired function is chosen. To select the menu item, press **ENTER**. To return to a previous menu level or to enable the main live display, press **EXIT** repeatedly. To return immediately to the main display from any menu level, press **MENU** and then **EXIT**.

The selection keys have the following functions:

- The **Up** key (above **ENTER**) increments numerical values, moves the decimal point one place to the right, or selects units of measurement.
- The **Down** key (below **ENTER**) decrements numerical values, moves the decimal point one place to the left, or selects units of measurement.
- The **Left** key (left of **ENTER**) moves the cursor to the left.
- The **Right** key (right of **ENTER**) moves the cursor to the right.

During all menu displays (except main display format and Quick Start), the live process measurements and secondary measurement values are displayed in the top two lines of the upper display area. This conveniently allows display of the live values during important calibration and programming operations.

Menu screens time out after two minutes and return to the main display.

5 Start up transmitter

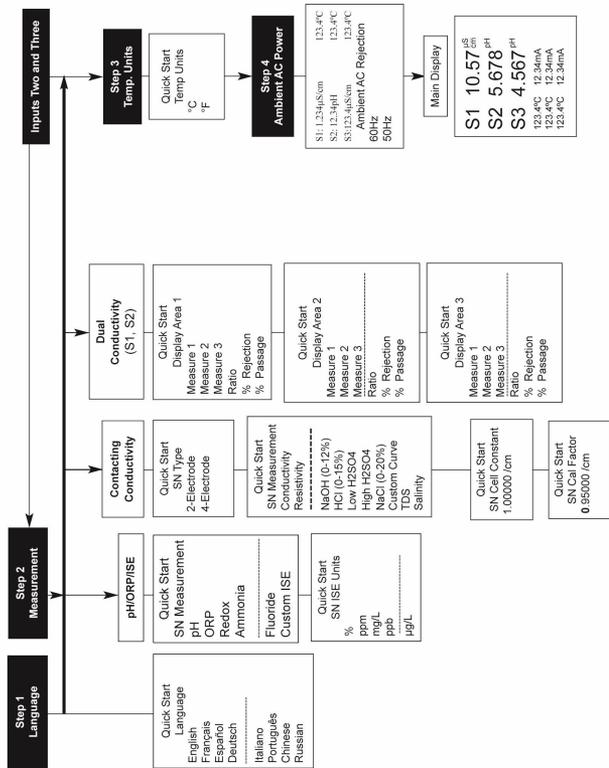
Procedure

1. Wire sensor(s) to the signal boards.
See [Wire](#) for wiring instructions. Refer to the sensor Quick Start Guide for additional details. Make current output, alarm relay, and power connections.
2. Once connections are secured and verified, close the panel and apply power to the transmitter.

When the transmitter is powered up for the first time, **Quick Start** screens appear. Quick Start operating tips are as follows:

- a. A backlit field shows the position of the cursor.
 - b. To move the cursor left or right, use the keys to the left or right of the **ENTER** key. To scroll up or down or to increase or decrease the value of a digit, use the keys above and below the **ENTER** key. Use the **Left** or **Right** keys to move the decimal point.
 - c. Press **ENTER** to store a setting. Press **EXIT** to leave without storing changes. Press **EXIT** during Quick Start to return the display to the initial startup screen (**Select language**).
3. Complete the steps as shown in the quick start guide flow diagram, [Figure 5-1](#)

Figure 5-1: Quick Start Guide



After the last step, the main display appears. The outputs are assigned to default values.

- To change output and temperature-related settings, go to the main menu and choose Program. Follow the prompts.

For a general guide to the **Program** menu, see [Figure 5-2](#)

6 Product certifications

Rev 1.0

6.1 European Directive information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

6.2 Ordinary location certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

6.3 Installing equipment in North America

The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

6.4 USA

6.4.1 CSA hazardous locations

Certificate 70173522

Standards CSA Standard C22.2 No. 010, CSA Standard C22.2 No. 0.4-04, CSA Standard C22.2 No. 25-1966, CSA Standard C22.2 No. 94-M1991, CSA Standard C22.2 No. 142-M1987, CSA Standard C22.2 No. 213-M1987, CSA Standard C22.2 No. 60529:05(Reaffirmed 2015), ANSI/IEC 60529-2004 (Reaffirmed 2011), ANSI/ISA 12.12.01:2007, UL Standard No. 50 (11th Ed), UL Standard No. 508 (17th Ed)

Markings Class I, Division 2, Groups A, B, C, and D;
Class II, Division II, Groups E, F, and G;
Class III

Maximum ambient 55 °C, temperature codd T4;
enclosure Type 4X; IP66

6.4.2 UL ordinary locations

Certificate	20170327-E207618
Standards	UL 61010-1, CAN/CSA-C22.2 No. 61010-1
Markings	Ordinary locations

6.5 Canada

6.5.1 CSA hazardous locations

Certificate	70173522
Standards	CSA Standard C22.2 No. 010, CSA Standard C22.2 No. 0.4-04, CSA Standard C22.2 No. 25-1966, CSA Standard C22.2 No. 94-M1991, CSA Standard C22.2 No. 142-M1987, CSA Standard C22.2 No. 213-M1987, CSA Standard C22.2 No. 60529:05(Reaffirmed 2015), ANSI/IEC 60529-2004 (Reaffirmed 2011), ANSI/ISA 12.12.01:2007, UL Standard No. 50 (11th Ed), UL Standard No. 508 (17th Ed)
Markings	Class I, Division 2, Groups A, B, C, and D; Class II, Division II, Groups E, F, and G; Class III Maximum ambient 55 °C, temperature codd T4; enclosure Type 4X; IP66

7 EU Declaration of Conformity

	
EU Declaration of Conformity No: RAD 1123 Rev. A	
<p>We,</p> <p>Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317-9685 USA</p> <p>declare under our sole responsibility that the product,</p> <p>Rosemount™ Multi-Parameter Analyzer Model 1057-AA-BB-CC-DD-EE</p> <p>manufactured by,</p> <p>Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317-9685 USA</p> <p>to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments, as shown in the attached schedule.</p> <p>Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.</p>	
 _____ (signature)	Vice President of Global Quality _____ (function)
Chris LaPoint _____ (name)	23-Apr-18, Shakopee, MN USA _____ (date of issue & place)
Page 1 of 2	



EU Declaration of Conformity

No: RAD 1123 Rev. A

The product,

Rosemount Multi-Parameter Analyzer Model 1057-AA-BB-CC-DD-EE

Where

AA is Power:

- 01 115/230V AC, no relays
- 02 24 VDC, 4 alarm relays
- 03 85-265VAC, 4 alarm relays

BB is Measurement 1:

- 20 Contacting Conductivity
- 22 pH/ORP/ISP

CC is Measurement 2:

- 30 Contacting Conductivity
- 32 pH/ORP/ISP
- 38 None

DD is Measurement 3:

- 40 Contacting Conductivity
- 42 pH/ORP/ISP
- 48 None

EE is UL option:

- Blank if no selection
- UL Ordinary Location

to which this declaration relates, is in conformity with relevant Union harmonization legislation:

EMC Directive (2014/30/EU)

Harmonized Standards:
EN 61326-1:2013

Low Voltage Directive (2014/35/EU)

Harmonized Standards:
EN 61010-1:2010

8 China RoHS table

含有China RoHS管控物质超过最大浓度限值的部件型号列表 1057
List of 1057 Parts with China RoHS Concentration above MCVs

部件名称 Part Name	有害物质 / Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers (PBDE)
电子组件 Electronics Assembly	X	O	O	O	O	O
传感器组件 Sensor Assembly	X	O	O	O	O	O

本表格系依据SJ/T11364的规定而制作。

This table is proposed in accordance with the provision of SJ/T11364.

O: 意为该部件的所有均质材料中该有害物质的含量均低于GB/T 26572所规定的限量要求。

O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: 意为在该部件所使用的的所有均质材料里，至少有一类均质材料中该有害物质的含量高于GB/T 26572所规定的限量要求

X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

部件名称 Part Name	组装备件说明 Spare Parts Descriptions for Assemblies
电子组件 Electronics Assembly	电子线路板组件 Electronic Board Assemblies 液晶显示屏或本地操作界面显示屏 LCD or LOI Display
传感器组件 Sensor Assembly	传感器模块 Sensor Module



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 [youtube.com/RosemountMeasurement](https://www.youtube.com/RosemountMeasurement)

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