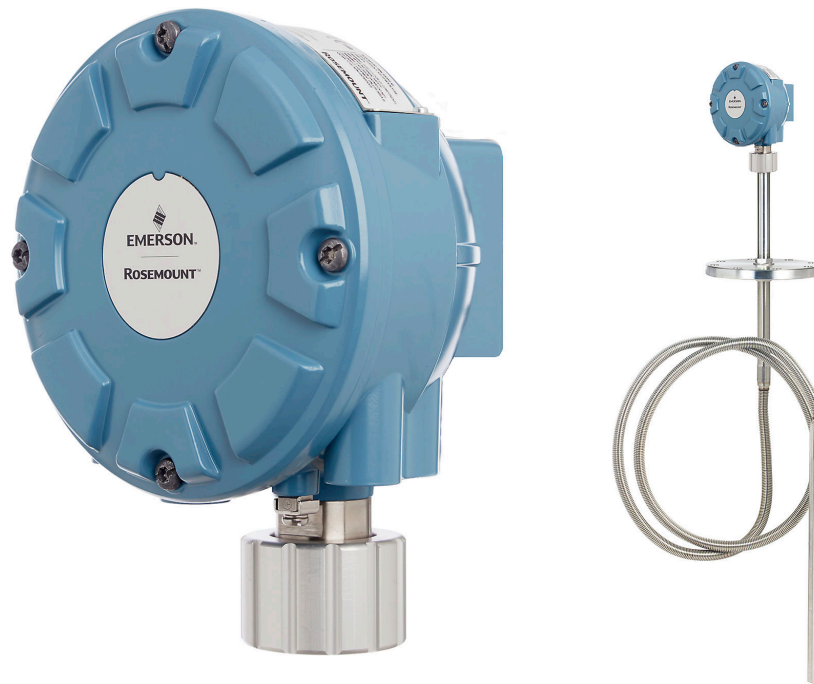


# Rosemount™ 2240S Multi-input Temperature Transmitter

for tank gauging systems



**Provides multiple spot temperature measurement in liquid storage tanks, used for average temperature calculation and stratification correction**

- Obtain outstanding temperature conversion accuracy of  $\pm 0.05$  °C ( $\pm 0.09$  °F)
- Get ultra-stable temperature measurement for precise inventory calculations and custody transfer for API chapter 7.3 compliance
- Connect up to sixteen 3- or 4-wire temperature elements
- Include integrated water level sensor
- Benefit from convenient and safe installation with 2-wire IS bus power supply

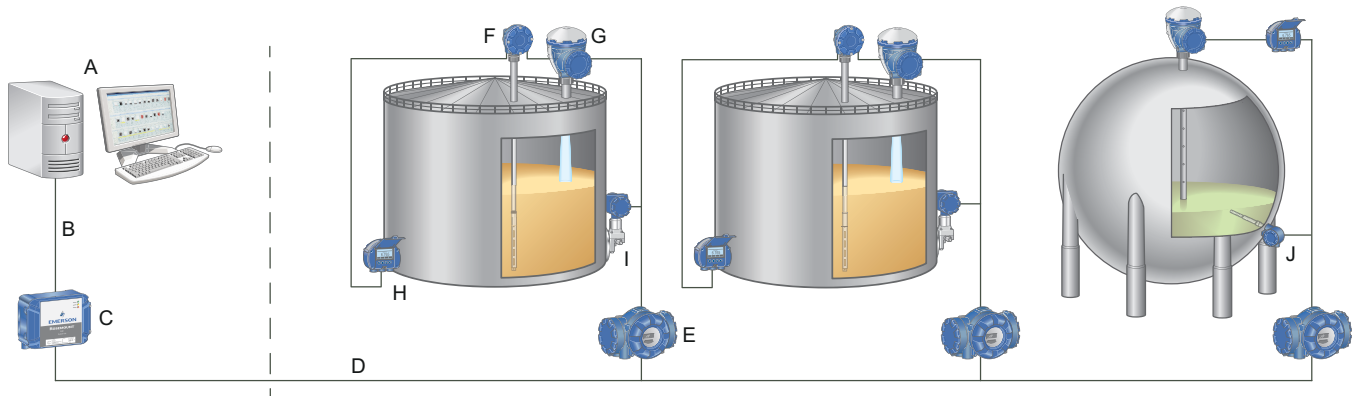
# Exact net volume calculations with highest precision average temperature measurement

The Rosemount 2240S Multi-input Temperature Transmitter provides multiple spot temperature measurement in liquid storage tanks. It is used for calculation of the average temperature of the liquid and corrects for stratification.

The Rosemount 2240S is approved for demanding custody transfer applications, which require very accurate level and temperature measurements for net standard volume calculations. It has an ultra high temperature conversion accuracy of  $\pm 0.05\text{ }^{\circ}\text{C}$  ( $\pm 0.09\text{ }^{\circ}\text{F}$ ). The IP 66/67 and NEMA® 4X certified robust design makes it suitable for installation in harsh environments.

The temperature transmitter supplies measured data, such as temperature and water level, via the intrinsically safe 2-wire Tankbus, to a Rosemount 2410 Tank Hub. Measurement data and status information can be viewed on a PC with the Rosemount TankMaster software, as well as on the integral display of the tank hub and the Rosemount 2230 Graphical Field Display.

**Figure 1: Tank Gauging System Overview**



- A. TankMaster PC
- B. Modbus® RTU/TCP
- C. Rosemount 2460 System Hub
- D. Tankbus
- E. Rosemount 2410 Tank Hub
- F. Rosemount 2240S Multi-input Temperature Transmitter with Rosemount 765 Multiple Spot Temperature and Water Level Sensor
- G. Rosemount 5900S Radar Level Gauge
- H. Rosemount 2230 Graphical Field Display
- I. Rosemount 3051S Pressure Transmitter
- J. Rosemount 644 Temperature Transmitter with Rosemount 65, 114C, or 214C Single Point Temperature Sensor

## Contents

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## Highly accurate multiple spot temperature and water level sensors

Rosemount 2240S can connect up to sixteen 3- or 4-wire temperature spot elements and an integrated water level sensor. The value from each individual spot temperature element, in combination with the level value from the radar gauge is used for average liquid temperature calculation.

The water level sensor is factory calibrated. If any adjustment is necessary during installation, it can easily be done with the Rosemount 2240S built-in on-line calibration feature.

Available temperature sensor versions are:

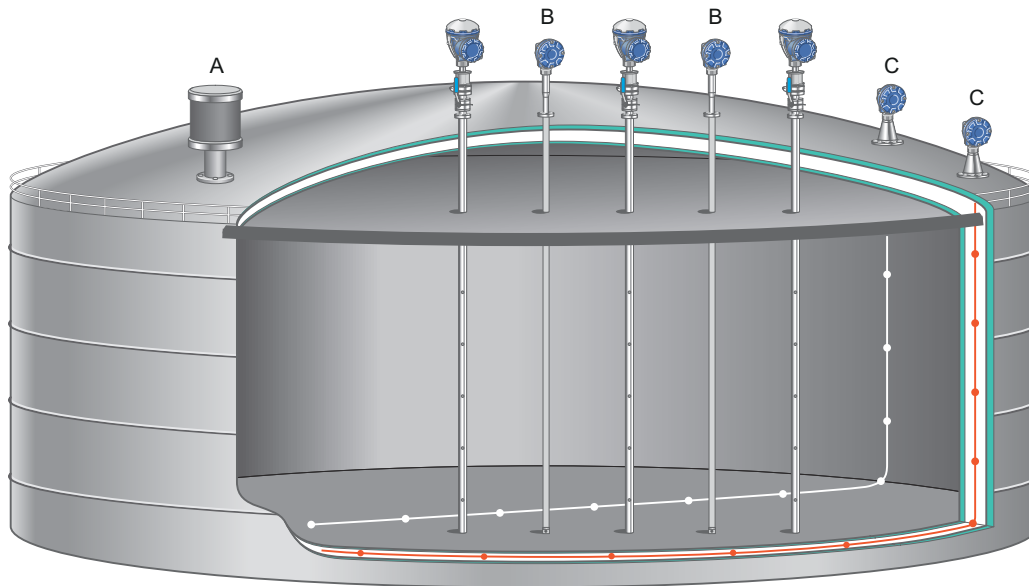
- Rosemount 565 Multiple Spot Temperature Sensor
- Rosemount 566 Multiple Spot Temperature Sensor for cryogenic applications such as LNG
- Rosemount 765 Multiple Spot Temperature Sensor with Integrated Water Level Sensor
- Rosemount 614 Cryogenic Spot Temperature Sensor

## Precise and reliable measurements in cryogenic storage tanks

The Rosemount 2240S Multi-input Temperature Transmitter provides complete temperature measurements for cryogenic and refrigerated full containment storage.

Figure 2 illustrates an LNG Tank Gauging system with temperature transmitters for average liquid temperature measurement and online redundant temperature stratification monitoring. The system also includes temperature transmitters for skin/cool-down temperature measurement (white dotted line) and leak detection (red dotted line).

**Figure 2: Liquefied Natural Gas (LNG) Tank Gauging System**



- A. Separate device for temperature and density profiling (LTD)  
 B. Rosemount 2240S Multi-input Temperature Transmitter with Rosemount 566 Multiple Spot Temperature Sensor  
 C. Rosemount 2240S Multi-input Temperature Transmitter with Rosemount 614 Cryogenic Spot Temperature Sensor

# Ordering information

## Specifications and options

See the Specifications and options section for more details on each configuration. Specification and selection of product materials, options, or components must be made by the purchaser of the equipment. See the Material selection section for more information.

## Model codes

Model codes contain the details related to each product. Exact model codes will vary; an example of a typical model code is shown in [Figure 3](#).

### Figure 3: Model Code Example

|                                     |               |
|-------------------------------------|---------------|
| <u>2240S P 16 4 A F I 1 0 A 1 M</u> | <u>WR3 ST</u> |
| 1                                   | 2             |

1. Required model components (choices available on most)
2. Additional options (variety of features and functions that may be added to products)

## Rosemount 2240S Multi-Input Temperature Transmitter



The ultra-stable Rosemount 2240S is approved for demanding custody transfer applications, which require very accurate temperature measurements for net standard volume calculations.

It can be used with a Rosemount 565, 566, or 765 temperature sensor. The Rosemount 2240S connects up to sixteen 3- or 4-wire temperature spot elements and an integrated water level sensor.

Rosemount 2240S provides average liquid temperature for net volume calculation based on each individual spot temperature element in combination with the corresponding level value. It has an impressive temperature conversion accuracy of  $\pm 0.05$  °C ( $\pm 0.09$  °F).

[VIEW PRODUCT >](#)

### Required model components

#### Model

| Code  | Description                         |
|-------|-------------------------------------|
| 2240S | Multi-input Temperature Transmitter |

#### Performance class

| Code | Description |
|------|-------------|
| P    | Premium     |

#### Number of temperature sensor inputs

| Code              | Description                |
|-------------------|----------------------------|
| 16 <sup>(1)</sup> | Up to 16xRTD spot elements |
| 08 <sup>(1)</sup> | Up to 8xRTD spot elements  |
| 04 <sup>(1)</sup> | Up to 4xRTD spot elements  |
| 00 <sup>(2)</sup> | None                       |

(1) Temperature sensors of Pt-100 or Cu-90 type, for use in -200 to 250 °C (-328 to 482 °F), can be connected to the Rosemount 2240S.

(2) Water level sensor only requires Number of temperature sensor inputs code 00, Temperature elements wiring code 0, and Auxiliary inputs code A.

#### Temperature elements wiring

| Code             | Description   |
|------------------|---|
| 4                | 4-wire or 3-wire (individual or common return)      |
| 0 <sup>(1)</sup> | None (for water level only, no temperature sensors) |

(1) Water level sensor only requires Number of temperature sensor inputs code 00, Temperature elements wiring code 0, and Auxiliary inputs code A.

**Auxiliary inputs**

| Code             | Description  |
|------------------|--|
| A <sup>(1)</sup> | Rosemount 765 temperature and water level sensor input |
| 0                | None   |

(1) *Water level sensor only requires Number of temperature sensor inputs code 00, Temperature elements wiring code 0, and Auxiliary inputs code A.*

**Tankbus: Power and communication**

| Code | Description   |
|------|---|
| F    | Bus powered 2-wire FOUNDATION™ Fieldbus (IEC 61158) |

**Hazardous location certification**

| Code | Description  |
|------|--|
| I1   | ATEX Intrinsic Safety                                      |
| I2   | Brazil Inmetro Intrinsic Safety                            |
| I4   | Japan Intrinsic Safety                                     |
| I5   | FM-US Intrinsic Safety                                     |
| I6   | FM-Canada Intrinsic Safety                                 |
| I7   | IECEx Intrinsic Safety                                     |
| IM   | Technical Regulations Customs Union (EAC) Intrinsic Safety |
| IP   | KC Intrinsic Safety (South Korea)                          |
| NA   | No Hazardous Location Certification                        |

**Custody transfer type approval**

| Code                   | Description               |
|------------------------|---------------------------|
| C <sup>(1)(2)(3)</sup> | PTB (German W&M approval) |
| G <sup>(2)(3)</sup>    | GUM (Poland)              |
| K <sup>(2)(3)</sup>    | GOST (Kazakhstan)         |
| S <sup>(2)(3)</sup>    | GOST (Russia)             |
| 0                      | None                      |

(1) *Approval plate, sealing kit and Eich adapter included. One spot position used for external reference.*

*Available spot elements in Number of temperature sensor inputs = 15, 7, or 3.*

(2) *Requires Rosemount 2410 Tank Hub with corresponding Custody transfer type approval.*

(3) *Requires one out of following displays: Rosemount 2410 with integral display, Rosemount 2230 with corresponding Custody transfer type approval, or TankMaster.*

**Housing**

| Code | Description   |
|------|---|
| A    | Standard enclosure (polyurethane-covered aluminum IP 66/67) |

**Cable/Conduit connections**

| Code             | Description  |
|------------------|--|
| 1                | ½-14 NPT, female thread (includes 2 plugs)                           |
| 2                | M20 x 1.5 adapters, female thread (includes 2 plugs, and 3 adapters) |
| G <sup>(1)</sup> | Metal cable glands (½-14 NPT)  |
| E                | Eurofast® male connector and ½-14 NPT (includes 2 plugs)             |
| M                | Minifast® male connector and ½-14 NPT (includes 2 plugs)             |

(1) Minimum temperature -20 °C (-4 °F). ATEX / IECEx. Exe approved. Includes 2 plugs, and 3 glands (includes an M32 gland if combined with Mechanical installation code W or P).

**Mechanical installation**

| Code             | Description  |
|------------------|--|
| M <sup>(1)</sup> | Prepared for integrated installation with Rosemount 565, 566, or 765 (standard) temperature sensor |
| W <sup>(2)</sup> | Installation kit for wall mounting   |
| P <sup>(2)</sup> | Installation kit for wall and pipe mounting (1-2 in. vertical and horizontal pipes)                |

(1) M33x1.5 female threaded connection. As standard, the transmitter is not pre-assembled with any temperature sensor.

(2) For separate installation of temperature sensor and transmitter.

**Additional options****Tag plate**

| Code | Description            |
|------|------------------------|
| ST   | Engraved SST tag plate |

**Conformance certificate**

| Code | Description                |
|------|----------------------------|
| Q1   | Certificate of conformance |

**Calibration certificate**

| Code | Description             |
|------|-------------------------|
| Q4   | Calibration certificate |

**Hazardous location certificate**

| Code | Description                                    |
|------|--|
| Q7   | Printed copy of hazardous location certificate |

**Extended product warranty**

Rosemount extended warranties have a limited warranty of three or five years from date of shipment.

| <b>Code</b> | <b>Description</b>      |
|-------------|-------------------------|
| WR3         | 3-year Limited Warranty |
| WR5         | 5-year Limited Warranty |



# Specifications

## Performance specifications

### Temperature conversion accuracy

±0.05 °C (±0.09 °F)

Over measuring range and ambient temperature 20 °C (68 °F)

### Ambient temperature effect

±0.05 °C (±0.09 °F) within the total range; -40 to 70 °C (-40 to 158 °F)

### Temperature measuring range

Supports -200 to 250 °C (-328 to 482 °F) for Pt-100

### Resolution

± 0.1 °C (± 0.1 °F) according to API chapter 7 and 12

### Update time

4 seconds

## General specifications

### Material selection

Emerson provides a variety of Rosemount products with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.

### Number of spot elements and wiring

Up to 16 RTD spot elements or averaging sensors can be connected to a Rosemount 2240S.

### Rosemount temperature / water level sensors (models 565, 566, and 765)

Three wiring types can be used:

- 3-wire RTD with common return (1-16 spot elements)
- 3-wire RTD individual:
  - 1-16 spot elements with Rosemount 565 and 566
  - 1-14 spot elements with Rosemount 765

- 4-wire RTD individual:
  - 1-16 spot elements with Rosemount 565 and 566
  - 1-10 spot elements with Rosemount 765

### **Rosemount 614 Cryogenic Spot Temperature Sensor**

The following wiring types can be used:

- 3-wire RTD individual (1-16 spot elements)
- 4-wire RTD individual (1-16 spot elements)

### **Standard temperature sensor types**

Supports Pt-100 (according to IEC/EN60751, ASTM E1137) and Cu-90

### **Metrology sealing possibility**

Yes

### **Write protect switch**

Yes

## **Configuration specifications**

### **Configuration tool**

TankMaster WinSetup is the recommended tool for easy configuration of Rosemount 2240S. The Tankbus autoconfiguration feature, handled by the Rosemount 2410 Tank Hub, supports Rosemount 2240S.

### **Configuration parameters (examples)**

#### **Temperature**

- Number of temperature sensor elements
- Temperature element type (spot or average)
- Temperature element position in tank

#### **Water level sensor**

- Level offset (difference between tank zero level and water zero level)
- Probe length (autoconfigured by Rosemount 765)

### **Output variables and units**

Spot and average temperature: °C (Celsius), and °F (Fahrenheit)

Free water level (FWL): meter, centimeter, millimeter, feet, or inch

## FOUNDATION™ Fieldbus characteristics

### Polarity sensitive

No

### Quiescent current draw

30 mA

### Lift-off minimum voltage

9.0 VDC

### Device capacitance inductance

See [Product certifications](#)

### FOUNDATION Fieldbus class (basic or Link Master)

Link Master (LAS)

### Number of available VCRs

Maximum 20, including one fixed

### Links

Maximum 40

### Minimum slot time / maximum response delay / minimum intermessage delay

8/5/8

### Blocks and execution time

| Block  | Execution time |
|--|----------------|
| 1 Resource                                     | N/A            |
| 3 Transducer (Temperature, Register, AVG_Temp) | N/A            |
| 2 Multiple Analog Input (MAI)                  | 15 ms          |
| 6 Analog Input (AI)                            | 10 ms          |
| 1 Analog Output (AO)                           | 10 ms          |
| 1 Signal Characterizer (SGCR)                  | 10 ms          |
| 1 Proportional/Integral/Derivate (PID)         | 15 ms          |
| 1 Integrator (INT)                             | 10 ms          |
| 1 Arithmetic (ARTH)                            | 10 ms          |
| 2 Input Selector (ISEL)                        | 10 ms          |
| 1 Control Selector (CS)                        | 10 ms          |
| 1 Output Splitter (OS)                         | 10 ms          |

For more information, see the FOUNDATION™ Fieldbus Blocks [Manual](#).

### Instantiation

Yes

### Conforming FOUNDATION™ Fieldbus

ITK 6

### Field Diagnostics support

Yes

### Action support wizards

Restart/stop measurement, write protect device, factory reset - measurement configuration, reset statistics, start/stop device simulation

### Advanced diagnostics

Failures/Maintenance/Advisory alerts: Software, memory/database, electronics, internal communication, simulation, auxiliary device, auxiliary device measurement, ambient temperature, average temperature measurement, temperature measurement, configuration

## Electrical specifications

### Power supply

FISCO: 9.0 - 17.5 VDC polarity insensitive (for example from Rosemount 2410 Tank Hub)

Entity: 9.0 - 30.0 VDC polarity insensitive

### Internal power consumption

0.5 W

### Bus current draw

30 mA

### Tankbus cabling

0.5-1.5 mm<sup>2</sup> (AWG 22-16), twisted shielded pairs

### Built-in Tankbus terminator

Yes (to be connected if required)

### Tankbus to sensor isolation

Minimum 700 VAC

## Auxiliary sensor input

Digital bus connection for water level sensor

## Mechanical specifications

### Housing material

Polyurethane-coated die-cast aluminum

### Cable entry (connection/glands)

Three ½ - 14 NPT entries for cable glands or conduits. Two metal plugs to seal any unused ports are enclosed in the delivery.

Optional:

- M20 x 1.5 conduit / cable adapter
- Cable glands in metal (½ - 14 NPT)
- 4-pin male eurofast connector or A size Mini 4-pin male minifast connector

### Rosemount 565/566/765 connection

M33 x 1.5 female threaded connection

Optional:

- An M32 adapter or M32 gland can be used if the Rosemount 2240S is installed away from the sensor

### Rosemount 614 connection

Optional cone with M33 x 1.5 female threaded connection

## Installation

The Rosemount 2240S can be installed directly on top of the temperature / water level sensor or remotely installed on a 33.4-60.3 mm (1 to 2-in) pipe or on a wall

## Weight

2.8 kg (6.2 lbs)

## Environmental specifications

### Ambient temperature

-40 to 70 °C (-40 to 158 °F)

Minimum start-up temperature -50 °C (-58 °F)

### Storage temperature

-50 to 85 °C (-58 to 185 °F)

### **Humidity**

0-100% relative humidity

### **Ingress protection**

IP 66 and 67 (NEMA® 4X)

### **Transient / built-in lightning protection**

According to IEC 61000-4-5, level 1 kV line to ground.

Complies with IEEE 587 Category B transient protection and IEEE 472 surge protection.

# Product certifications

Rev 2.9

## European directive information

The most recent revision of the EU Declaration of Conformity can be found at [Emerson.com/Rosemount](http://Emerson.com/Rosemount).

## 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).

## 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.

## North America

### IS USA Intrinsic Safety (IS)

|                    |  |
|--------------------|--|
| <b>Certificate</b> | FM 3035518   |
| <b>Standards</b>   | FM Class 3600 – 2011;<br>FM Class 3610 – 2010;<br>FM Class 3810 – 2005;<br>ANSI/ISA 60079-0 – 2013;<br>ANSI/ISA 60079-11 – 2013;<br>ANSI/ISA 60079-26 – 2011;<br>ANSI/IEC 60529 – 2004;<br>ANSI/NEMA 250 – 2008  |
| <b>Markings</b>    | IS / I,II,III / 1 / ABCDEFG / T4 Ta = -50°C to 70°C; 9240040-910 Entity/FISCO; Type 4X/IP66/IP67<br>I / 0 / AEx ia IIC / T4 Ta = -50°C to 70°C; 9240040-910 Entity/FISCO; Type 4X/IP66/IP67<br>I / 1 / AEx ib [ia] IIC T4 Ta = -50°C to 70°C; 9240040-910 FISCO; Type 4X/IP66/IP67 |

### Special Conditions for Safe Use (X):

1. The enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction.
2. Rating I / 1 / AEx ib [ia] IIC T4 Ta = -50°C to 70°C; 9240040-910 FISCO; Type 4X/IP66/IP67 is only applicable when supplied from an FM certified AEx [ib] FISCO Power Supply with triplicate output voltage limitation meeting the requirements for two faults ("ia" voltage limitation).
3. The Rosemount 2240S Multi-Input Temperature Transmitter will not pass the 500Vrms dielectric strength test and this must be taken into account during installation.

|                   | Ui     | Ii     | Pi     | Ci     | Li   |
|-------------------|--------|--------|--------|--------|------|
| Entity parameters | 30 V   | 300 mA | 1.3 W  | 2.2 nF | 2 μH |
| FISCO parameters  | 17.5 V | 380 mA | 5.32 W | 2.2 nF | 2 μH |

### 16 Canada CSA Intrinsically Safe

**Certificate** 3035518C

**Standards** CSA-C22.2 No. 157-92 1992 (2012),  
 CSA-C22.2 No. 1010-1 2004 (2009),  
 CSA-C22.2 No. 25-1966 1992 (2009),  
 CSA-C22.2 No. 60529-05 2005 (2010),  
 CSA-C22.2 No. E60079-0 2011,  
 CSA-C22.2 No. E60079-11 2011,  
 CSA-C22.2 No. 94 2011

**Markings** IS / I,II,III / 1 / ABCDEFG / T4 Ta = -50°C to 70°C; 9240040-910 Entity/FISCO; Type 4X/IP66/IP67  
 I / 0 / Ex ia IIC / T4 Ta = -50°C to 70°C; 9240040-910 Entity/FISCO; Type 4X/IP66/IP67  
 I / 1 / Ex ib [ia] IIC T4 Ta = -50°C to 70°C 9240040-910 FISCO; Type 4X/IP66/IP67

#### Special Conditions for Safe Use (X):

1. The enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction.
2. Rating I / 1 / Ex ib [ia] IIC T4 Ta = -50°C to 70°C 9240040-910 FISCO; Type 4X/IP66/IP67 is only applicable when supplied from an FM certified Ex [ib] FISCO Power Supply with triplicate output voltage limitation meeting the requirements for two faults ("ia" voltage limitation).
3. The Rosemount 2240S Multi-Input Temperature Transmitter will not pass the 500Vrms dielectric strength test and this must be taken into account during installation.

|                   | Ui     | Ii     | Pi     | Ci     | Li   |
|-------------------|--------|--------|--------|--------|------|
| Entity parameters | 30 V   | 300 mA | 1.3 W  | 2.2 nF | 2 μH |
| FISCO parameters  | 17.5 V | 380 mA | 5.32 W | 2.2 nF | 2 μH |

## Europe

### 11 ATEX Intrinsic Safety

**Certificate** FM09ATEX0047X

**Standards** EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007, EN 60529:2013

**Markings:** ⚠️ FISCO Field Device  
 II 1 G Ex ia IIC T4 Ta = -50°C to 70°C Entity/FISCO; IP66, IP67  
 II 2(1) G Ex ib [ia] IIC T4 Ta = -50°C to 70°C FISCO; IP66, IP67

#### Special Conditions for Safe Use (X):

1. The enclosure contain aluminum and is considered to present a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact or friction.



- Rating II 2(1) G Ex ib [ia] IIC T4 Ta = -50°C to 70°C FISCO 9240040-976; IP66, IP67 is only applicable when supplied from a certified Ex [ib] FISCO Power Supply with triplicate output voltage limitation meeting the requirements for two faults ("ia" voltage limitation).
- The Rosemount 2240S Multi-input Temperature Transmitter will not pass the 500Vrms dielectric strength test and this must be taken into account during installation.

|                   | Ui     | Ii     | Pi     | Ci     | Li   |
|-------------------|--------|--------|--------|--------|------|
| Entity parameters | 30 V   | 300 mA | 1.3 W  | 2.2 nF | 2 μH |
| FISCO parameters  | 17.5 V | 380 mA | 5.32 W | 2.2 nF | 2 μH |

## International

### I7 IECEx Intrinsic Safety

|                    |   |
|--------------------|---|
| <b>Certificate</b> | IECEX FMG 10.0010X  |
| <b>Standards</b>   | IEC 60079-0:2011,<br>IEC 60079-11:2011,<br>IEC 60079-26:2006                    |
| <b>Markings</b>    | Ex ia IIC Ga; Entity/FISCO; IP66/IP67<br>Ex ib IIC [ia Ga] Gb; FISCO; IP66/IP67 |

#### Special Conditions for Safe Use (X):

- The enclosure contains aluminum and is considered to present a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact or friction.
- Rating Ex ib IIC [ia Ga] Gb; FISCO 9240040-976; IP66/IP67 is only applicable when supplied from a certified Ex [ib] FISCO Power Supply with triplicate output voltage limitation meeting the requirements for two faults ("ia" voltage limitation).
- The Rosemount 2240S Multi-input Temperature Transmitter will not pass the 500Vrms dielectric strength test and this must be taken into account during installation.

|                   | Ui     | Ii     | Pi     | Ci     | Li   |
|-------------------|--------|--------|--------|--------|------|
| Entity parameters | 30 V   | 300 mA | 1.3 W  | 2.2 nF | 2 μH |
| FISCO parameters  | 17.5 V | 380 mA | 5.32 W | 2.2 nF | 2 μH |

## Brazil

### I2 INMETRO Intrinsic Safety

|                    |  |
|--------------------|--|
| <b>Certificate</b> | UL-BR 17.0927X   |
| <b>Standards</b>   | ABNT NBR IEC 60079-0:2013,<br>ABNT NBR IEC 60079-11:2013,<br>ABNT NBR IEC 60079-26:2016          |
| <b>Markings</b>    | Ex ia IIC T4 Ga (Entity)<br>Ex ib IIC [ia Ga] T4 Gb (FISCO)<br>Tamb = -50 °C to +70 °C, IP 66/67 |

**Special Conditions for Safe Use (X):**

1. See certificate for special conditions.

|                   | Ui     | Ii     | Pi     | Ci     | Li   |
|-------------------|--------|--------|--------|--------|------|
| Entity parameters | 30 V   | 300 mA | 1.3 W  | 2.2 nF | 2 μH |
| FISCO parameters  | 17.5 V | 380 mA | 5.32 W | 2.2 nF | 2 μH |

## Technical Regulations Customs Union (EAC)

### IM EAC Intrinsic Safety

|                    |   |
|--------------------|---|
| <b>Certificate</b> | RU C-SE.AA87.B.00350  |
| <b>Markings</b>    | FISCO field mounted device<br>0Ex ia IIC T4 Ga X<br>1Ex ib [ia Ga] IIC T4 Gb X<br>Tamb = -50 °C to +70 °C, IP 66/67 |

**Special Conditions for Safe Use (X):**

1. See certificate for special conditions.

|                   | Ui     | Ii     | Pi     | Ci     | Li   |
|-------------------|--------|--------|--------|--------|------|
| Entity parameters | 30 V   | 300 mA | 1.3 W  | 2.2 nF | 2 μH |
| FISCO parameters  | 17.5 V | 380 mA | 5.32 W | 2.2 nF | 2 μH |

## Japan

### I4 Japan Intrinsic safe

|                    |  |
|--------------------|--|
| <b>Certificate</b> | CML 17JPN2123X                                     |
| <b>Markings</b>    | Ex ib [ia Ga] IIC T4 Gb, FISCO, -50°C ≤ Ta ≤ +70°C |

**Special Conditions for Safe Use (X):**

1. See certificate for special conditions.

|                  | Ui     | Ii     | Pi     | Ci     | Li   |
|------------------|--------|--------|--------|--------|------|
| FISCO parameters | 17.5 V | 380 mA | 5.32 W | 2.2 nF | 2 μH |

## Republic of Korea

### IP Korea Intrinsic safe

|                    |                |
|--------------------|----------------|
| <b>Certificate</b> | 11-KB4BO-0065X |
|--------------------|----------------|

**Markings** FISCO Field Device (Fieldbus Terminal)  
Ex ia IIC T4

### Special Conditions for Safe Use (X):

1. See certificate for special conditions.

|                   | Ui     | Ii     | Pi     | Ci     | Li   |
|-------------------|--------|--------|--------|--------|------|
| Entity parameters | 30 V   | 300 mA | 1.3 W  | 2.2 nF | 2 μH |
| FISCO parameters  | 17.5 V | 380 mA | 5.32 W | 2.2 nF | 2 μH |

## India

### IW India Intrinsic safe

**Certificate** P382295/1  
**Markings** Ex ia IIC Ga  
Ex ib IIC (ia Ga) Gb

### Special Conditions for Safe Use (X):

1. See certificate for special conditions.

## Conduit plugs and adapters

### IECEx Flameproof and Increased Safety

**Certificate** IECEx FMG 13.0032X  
**Standards** IEC60079-0:2011, IEC60079-1:2007-04, IEC60079-7:2006-07  
**Markings** Ex de IIC Gb

### ATEX Flameproof and Increased Safety

**Certificate** FM13ATEX0076X  
**Standards** EN60079-0:2012, EN60079-1:2007, IEC60079-7:2007  
**Markings**  II 2 G Ex de IIC Gb

**Table 1: Conduit Plug Thread Sizes**

| Thread     | Identification mark |
|------------|---------------------|
| M20 x 1.5  | M20                 |
| ½ - 14 NPT | ½ NPT               |

**Table 2: Thread Adapter Thread Sizes**

| Male thread    | Identification mark |
|----------------|---------------------|
| M20 x 1.5 – 6g | M20                 |
| ½ - 14 NPT     | ½ - 14 NPT          |
| ¾ - 14 NPT     | ¾ - 14 NPT          |
| Female thread  | Identification mark |
| M20 x 1.5 – 6H | M20                 |
| ½ - 14 NPT     | ½ - 14 NPT          |
| G1/2           | G1/2                |

**Special Conditions for Safe Use (X):**

1. When the thread adapter or blanking plug is used with an enclosure in type of protection increased safety “e” the entry thread shall be suitably sealed in order to maintain the ingress protection rating (IP) of the enclosure. See certificate for special conditions.
2. The blanking plug shall not be used with an adapter.
3. Blanking Plug and Threaded Adapter shall be either NPT or Metric thread forms. G½ thread forms are only acceptable for existing (legacy) equipment installations.

## Custody Transfer

**Australia Custody Transfer**

**Certificate** No 5/1/7  
**Standards** Regulation 60: National Measurement Regulations 1999

**Belgium Custody Transfer**

**BMS Certificate** NR. P6.0.014.02-B-16

**Croatia Custody Transfer**

**Certificate** 558-02-01\_01-15-2

**Czech Republic Custody Transfer**

**Certificate** 0111-CS-C022-10

**Estonia Custody Transfer**

**Certificate** TJA 6.13-3\_15.09.11

**France Custody Transfer**

**Certificate** No. LNE-24609

**Germany Custody Transfer**

**Certificate** PTB-1.5-4058175 (Rosemount Tank Gauging system)

**India Custody Transfer**

**Certificate** IND/13/12/191

**Indonesia Custody Transfer**

**Certificate** DITJEN MIGAS CT approval 26.10.2010

**Italy Custody Transfer**

**Certificate** 183349 (Rosemount Tank Gauging system)

**Malaysia Custody Transfer**

**Certificate** ATS 09-11

**Netherlands Custody Transfer**

**NMI Certificate** TC7982

**Norway Custody Transfer**

**Certificate** No. N-11-7146

**Poland Custody Transfer**

**Certificate** ZT-7 2013

**Portugal Custody Transfer**

**Certificate** P12\_101.12\_31

**Serbia Custody Transfer**

**Certificate** 393-7\_0-01-2088

**South Africa Custody Transfer**

**Certificate** SAEx S11-065

**Switzerland Custody Transfer**

**Certificate** Zulassungszertifikat CH-L-11127-01

**Russia Custody Transfer**

GOST Pattern Approval:

**Certificate** SE.C.32.639.A No. 68126 (2240),  
OC.C.29.010.A No. 70348 (Rosemount Tank Gauging system)  
OC.C.29.010.A No. 70349 (Rosemount Tank Gauging system)

**Kazakhstan Custody Transfer**

GOST Pattern Approval:

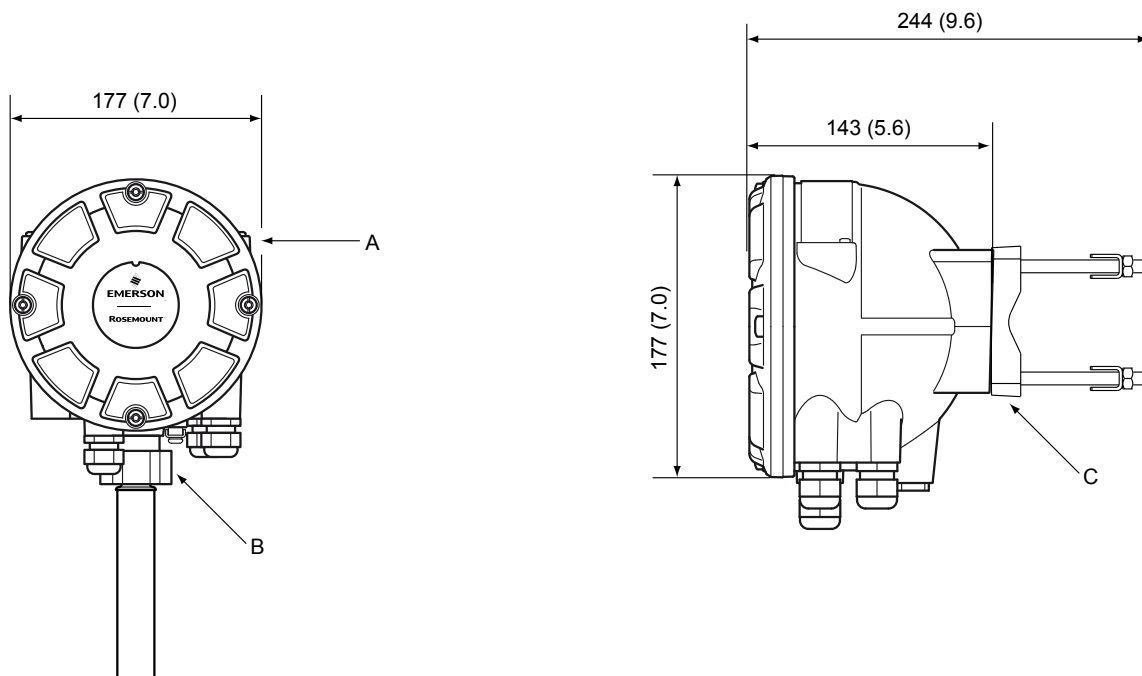
**Certificate** KZ.02.02.06184-2018 (2240)  
KZ.02.02.06533-2018 (Rosemount Tank Gauging system)

**OIML Custody Transfer**

**Certificate**      R85-2008-SE-11.01

## Dimensional drawings

Figure 4: Rosemount 2240S



- A. *Optional tag plate*
- B. *M33*
- C. *Optional mounting kit*

Dimensions are in millimeters (inches).

### Installation options

- Installed with a multiple spot temperature sensor
- Installed separately on a 33.4-60.3 mm (1 to 2-in.) pipe, or on a wall

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