

Rosemount[™] 3900/3900VP

General Purpose pH/ORP Sensors



High performance for your process pH/ORP needs

The Rosemount 3900 and 3900VP pH/ORP combination sensors are used for reliable pH or oxidation reduction potential measurements of aqueous solutions in pipelines, open tanks, or ponds. Their robust designs allow the Rosemount 3900 and 3900VP sensors to be used in a wide range of applications.

Overview

A robust sensor design



- Extended sensor life and protection against poisoning ions using a double junction reference.
- Enhanced performance and increased life with cracking resistant glass.
- Maximum chemical resistance provided by a rugged polyphenylene sulfide body.
- Operates in sub-zero temperatures down to 14 °F (-10.0 °C).
- Built-ins solution ground for advanced diagnostics.

Versatile installation options

- The sensor body features a one-piece construction with both front facing and rear facing process threads.
- 3/4-in. and 1-in. male national pipe thread (MNPT) process connections to meet a variety of application installation requirements.
- Variopol (VP8) cable connection option, for quick cable-to-sensor release, eliminates cable twisting.

SMART preamplifier

- Automatic recognition of pH sensors by Rosemount transmitters: 1066, 1057, 1056, and 56.
- pH calibration data is stored, which allows sensors to be calibrated in advance for "plug and play" installations in the field.

Ordering information



The Rosemount 3900 and 3900VP General Purpose pH/ORP Sensors feature a chemically resistant Ryton® plastic body, along with a built-in solution ground for advanced diagnostics and a Pt-100 resistance temperature device (RTD) for temperature compensation. These sensors are available with either an integral cable connection (Rosemount 3900) or Variopol (VP8) connector (Rosemount 3900VP). Variopol cables are sold separately (see [Accessories](#)).

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Rosemount 3900 ordering information

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Note

The Rosemount 3900 pH/ORP Sensor is housed in a Ryton® plastic body with built-in solution ground for advanced diagnostics. Pt-100 is offered for a temperature compensator. The sensor is available with an integral cable. You can mount the sensor using a process connector, both ordered separately. You can also order junction box kits with preamplifiers separately if the transmitter does not have an integral preamplifier.

Model

Code	Description
3900	General Purpose pH/ORP Sensor

Preamplifier options

Code	Description
01	SMART preamplifier, 32 ft. (10 m) cable ⁽¹⁾
02	No preamplifier, 15 ft. (5 m) cable
04	SMART preamplifier, 50 ft. (15 m) cable ⁽¹⁾
05	SMART preamplifier, 66 ft. (20 m) cable ⁽¹⁾
06	SMART preamplifier, 100 ft. (30 m) cable ⁽¹⁾
07	No preamplifier, 4 ft. (1 m) cable
08	No preamplifier, 10 ft. (3 m) cable

(1) Standard preamplifier if used with Oxidation Reduction Potential (ORP).

Measuring code

Code	Description
10	General Purpose Low Resistivity (GPLR) pH glass (0-14 pH)
12	Platinum Oxidation Reduction Potential (ORP)

Calibration certificates - Optional level

Code	Description
CC	Certificate of Calibration (no test data given)
LC	Loop Calibration Certificate (sensor and transmitter calibrated together, with test data)
EC	Electronic Calibration Certificate (sensor calibrated against factory instrument, with test data)

Rosemount 3900VP ordering information

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Model

Code	Description
3900VP	General Purpose pH/ORP Sensor with Variopol connector

Preamplifier options

Code	Description
01	SMART preamplifier ⁽¹⁾
02	No preamplifier

(1) Standard preamplifier if used with Oxidation Reduction Potential (ORP).

Measuring code

Code	Description
10	General Purpose Low Resistivity (GPLR) pH glass (0-14 pH)
12	Platinum Oxidation Reduction Potential (ORP)

Calibration certificates - Optional level

Code	Description
CC	Certificate of Calibration (no test data given)
LC	Loop Calibration Certificate (sensor and transmitter calibrated together, with test data)
EC	Electronic Calibration Certificate (sensor calibrated against factory instrument, with test data)

Accessories

Part number	Description
11275-01	Handrail mounting assembly
12707-00	Jet spray cleaner
2002011	Tee, Flow-Through, 1-1/2" CPVC, 1" FNPT process connection
23242-02	Mounting adapter, 1½-in. insertion, 1 x ¾ in.
23555-00	Junction box, Rosemount 54/5081/1055/Xmt compatible preamplifier
24091-00	Cell, low flow, ¼-in. inlet and outlet
33894-00	Adapter, 1-in. NPT low flow cell
24281-00	15 ft. (4.57 m) VP8 cable
24281-01	25 ft. (7.62 m) VP8 cable
24281-02	2.5 ft. (0.762 m) VP8 cable
24281-03	50 ft. (15.24 m) VP8 cable
24281-04	100 ft. (30.48 m) VP8 cable
24281-05	4 ft. (1.22 m) VP8 cable
24281-06	10 ft. (3.05 m) VP8 cable
24281-07	20 ft (6.10 m)VP8 cable
24281-08	30 ft. (9.14 m) VP8 cable
9200273	Extension cable, 11-conduit, shielded, unprepped, per foot
9210012	Buffer solution, pH 4.01, 16 oz (453.6 g)
9210013	Buffer solution, pH 6.86, 16 oz (453.6 g)
9210014	Buffer solution, pH 9.18, 16 oz (453.6 g)
00390-7101-0001	Low flow panel
R508-8OZ	Oxidation Reduction Potential (ORP) calibration standard 460 ± 10 mV

Specifications

Table 1: Percent Linearity over pH Range

pH range	Linearity
0-7	97%
1-7	98%
4-7	98%
7-10	99%
7-12	97%
7-13	96%
7-14	95%

Table 2: Rosemount 3900/3900VP pH/ORP Sensor Specifications

Measurement range	
pH	0 to 14
Oxidation reduction potential (ORP)	-1500 to +1500 mV
Operating temperature	
14 °F (-10 °C) to 212 °F (100 °C), automatic temperature compensation from 14 °F (-10 °C) to 212 °F (100 °C)	
Maximum pressure	
100 psig (6.89 barg) at 212 °F (100 °C) CRN rating: 60 psig (4.14 barg) up to 212 °F (100 °C)	
Materials of construction	
Sensor body	Ryton®: Polyphenylene Sulfide (PPS)
O-ring	EPDM
pH electrode	Glass
ORP electrode	Glass, platinum
Solution ground	Stainless steel
Reference junction	PTFE
Conductivity	
Responds to changes in pH at a minimum conductivity of 0.1 µS/cm when used with the low flow panel. The sample flow rate must be controlled to 2 gal per hour.	
Process connection	
Front facing	¾-in. and 1-in. Male National Pipe Thread (MNPT)
Rear facing	1-in. MNPT
Temperature compensation	
Pt-100	
Cable	
3900	Various cable lengths (See Preamplifier options) with integral preamplifier; 15 ft. (4.57 m) and less without preamplifier
3900VP	Use 24281-XX, 2.5 ft. (0.762 m) to 100 ft. (30.48 m). See Accessories .

Table 2: Rosemount 3900/3900VP pH/ORP Sensor Specifications (continued)

Weight/shipping weight
1 lb./2 lb.

Rosemount pH/ORP sensor(s) product certifications

Rev 0.5

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/global.

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.

USA

USA Intrinsic Safety

Certificate	FM17US0198X
Standards	FM Class 3600:1998, FM Class 3610:2010, FM Class 3611: 2004, FM Class 3810: 2005
Markings	IS/I,II,III/1/ABCDEFG/T6 Ta = -20 °C to 60 °C I/O/AEx ia IIC/T6 Ta = -20 °C to 60 °C NI/I/2/ABCD/T6 Ta = -20 °C to 60 °C S/II,III/2/EFG/T6 Ta = -20 °C to 60 °C

Specific Conditions for Safe Use (X):

1. Sensors with Model 1700702 preamplifier:
 - a. Model 385+-a-b-c. Triple junction pH/ORP sensor
 - b. Model 389-a-b-c-d-e. pH/ORP sensor
 - c. Model 389VP-a-b-c-d. pH/ORP sensor
 - d. Model 396VP-a-b-c-d. Submersion/insertion pH/ORP sensor
 - e. Model 396P-a-b-c-d-e. Submersion/insertion pH/ORP sensor

- f. Model 396PVP-a-b-c-d-e. Submersion/insertion pH/ORP sensor
- g. Model 396RVP-a-b-c-d-e. Retraction/submersion/insertion pH/ORP sensor
- h. Model 398RVP-a-b-c-d-e-f. pH/ORP sensor
- i. Model 3200HP-00. High purity water pH sensor
- j. Model 3300HTVP-a-b-c-d. High performance pH and ORP sensor
- k. Model 3400HTVP-a-b-c-d-e. High performance pH and ORP sensor
- l. 3500P-a-b-c-d-e-f. High performance pH and ORP sensor
- m. 3500VP-a-b-c-d-e-f. High performance pH and ORP sensor
- n. Model 3900-a-b-c. General purpose pH/ORP sensor
- o. Model 3900VP-a-b. General purpose pH/ORP sensor

The polymeric surface of all the apparatus listed above may store electrostatic charge and become a source of ignition. Clean surface should only be done with a damp cloth.

2. Sensors without Model 1700702 preamplifier (simple apparatus):
- a. Model 385-a-b-c-d-e. Retractable pH/ORP sensor
 - b. Model 385+-a-b-c Triple junction pH/ORP sensor
 - c. Model 389-a-b-c-d-e. pH/ORP sensor
 - d. Model 389VP-a-b-c. pH/ORP sensor
 - e. Model 396-a-b-c. Submersion/insertion pH sensor
 - f. Model 396VP-a-b. Submersion/insertion pH sensor
 - g. Model 396P-a-b-c-d-e. Submersion/insertion pH/ORP sensor
 - h. Model 396PVP-a-b-c-d. Submersion/insertion pH/ORP sensor
 - i. Model 396R-a-b-c-d-e. Retraction/submersion/insertion pH/ORP sensor
 - j. Model 396RVP-a-b-c-d. Retraction/submersion/insertion pH/ORP sensor
 - k. Model 397-a-b-c-d-e. pH sensor
 - l. Model 398-a-b-c-d-e. pH/ORP sensor
 - m. Model 398VP-a-b-c. pH/ORP sensor
 - n. Model 398R-a-b-c-d-e-f. pH/ORP sensor
 - o. Model 398RVP-a-b-c-d-e-f. pH/ORP sensor
 - p. Model 3200HP-00. High purity water pH sensor
 - q. Model 3300HT-a-b-c-d. High performance pH and ORP sensor
 - r. Model 3300HTVP-a-b-c-d. High performance pH and ORP sensor
 - s. Model 3400HT-a-b-c-d-e-f. High performance pH and ORP sensor
 - t. Model 3400HTVP-a-b-c-d-e-f. High performance pH and ORP sensor
 - u. Model 3500P-a-b-c-d-e-f. High performance pH and ORP sensor
 - v. Model 3500VP-a-b-c-d-e-f. High performance pH and ORP sensor
 - w. Model 3800-a. Auto clavable and steam sterilizable pH sensors
 - x. Model 3800VP-a. Auto clavable and steam sterilizable pH sensors
 - y. Model 3900-a-b-c. General purpose pH/ORP sensor

z. Model 3900VP-a-b. General purpose pH/ORP sensor

The polymeric surface of all the apparatus listed above may store electrostatic charge and become a source of ignition. Clean surface should only be done with a damp cloth.

USA Intrinsic Safety

Certificate 70164066

Standards C22.2 No 0-10, C22.2 No 0.4-M2004, C22.2 No 94-M1991, C22.2 No 142 – M1987, C22.2 No 157-M1992, CAN/CSA E60079-0:07, CAN/CSA E60079-11:02, UL 50-11th Edition, UL 508-17th Edition, UL 913-7th Edition, UL 60079-0: 2005, UL 60079-11: 2002

Markings Preamplifier assembly:
Class I, Division 1, Groups ABCD; Class II, Division 1, Groups EFG; Class III; Class I, Division 2, Groups ABCD; ambient temperature rating –20 °C to +60 °C; Ex ia IIC; T6: Class I, Zone 0, AEx ia IIC; T6
Sensor apparatus with preamplifier:
Class I, Division 1, Groups ABCD; Class II, Division 1, Groups EFG; Class III; Class I, Division 2, Groups ABCD; ambient temperature rating –20 °C to +60 °C; Ex ia IIC; T6: Class I, Zone 0, AEx ia IIC; T6
Sensor apparatus:
Class I, Division 1, Groups ABCD; Class II, Division 1, Groups EFG; Class III; Class I, Division 2, Groups ABCD; Ex ia IIC; T6; ambient temperature rating –20 °C to +60 °C: (simple apparatus)

Canada

Canada Intrinsic Safety

Certificate 70164066

Standards C22.2 No 0-10, C22.2 No 0.4-M2004, C22.2 No 94-M1991, C22.2 No 142 – M1987, C22.2 No 157-M1992, CAN/CSA E60079-0:07, CAN/CSA E60079-11:02, UL 50-11th Edition, UL 508-17th Edition, UL 913-7th Edition, UL 60079-0: 2005, UL 60079-11: 2002

Markings Preamplifier assembly:
Class I, Division 1, Groups ABCD; Class II, Division 1, Groups EFG; Class III; Class I, Division 2, Groups ABCD; ambient temperature rating –20 °C to +60 °C; Ex ia IIC; T6: Class I, Zone 0, AEx ia IIC; T6
Sensor apparatus with preamplifier:
Class I, Division 1, Groups ABCD; Class II, Division 1, Groups EFG; Class III; Class I, Division 2, Groups ABCD; ambient temperature rating –20 °C to +60 °C; Ex ia IIC; T6: Class I, Zone 0, AEx ia IIC; T6
Sensor apparatus:
Class I, Division 1, Groups ABCD; Class II, Division 1, Groups EFG; Class III; Class I, Division 2, Groups ABCD; Ex ia IIC; T6; ambient temperature rating –20 °C to +60 °C: (simple apparatus)

Europe

ATEX/UKEX Intrinsic Safety


ATEX certificate Baseefa10ATEX0156X

UKEX certificate BAS21UKEX0396X


Standards EN IEC 60079-0: 2018
EN 60079-11: 2012

Markings


pH/ORP sensors with no preamplifier fitted

 II 1 G Ex ia IIC T4 Ga (–20 °C to +60 °C)

pH sensors with integral smart preamplifier fitted

 II 1 G Ex ia IIC T4 Ga (–20 °C to +60 °C)

ORP sensors with integral standard preamplifier fitted

 II 1 G Ex ia IIC T4 Ga (–20 °C to +80 °C)

Ex ia IIC T5 Ga (–20 °C to +40 °C)

pH sensors with integral standard preamplifier fitted

 II 1 G Ex ia IIC T4 Ga (–20 °C to +80 °C)

Ex ia IIC T5 Ga (–20 °C to +40 °C)

Special Conditions for Safe Use (X):

1. All pH/ORP sensor models with a plastic enclosure or exposed plastic parts may provide an electrostatic ignition hazard and must only be cleaned with a damp cloth to avoid the danger of ignition due to build-up of electrostatic charge.
2. All pH/ORP sensor models with a metallic enclosure may provide a risk of ignition by impact or friction. Care should be taken during installation to protect the sensor from the risk.
3. External connections to the sensor must be suitably terminated and provide a degree of protection of at least IP20.
4. All pH/ORP sensor models are intended to be in contact with the process fluid and may not meet the 500V r.m.s. test to earth. This must be taken into consideration at installation.

International

IECEx Intrinsic Safety

Certificate

IECEx BAS 10.0083X

Standards

IEC 60079-0: 2011, IEC 60079-11: 2011

Markings

pH/ORP sensors with no preamplifier fitted

Ex ia IIC T4 Ga (–20 °C to +60 °C)

pH sensors with integral smart preamplifier fitted

Ex ia IIC T4 Ga (–20 °C to +60 °C)

ORP sensors with integral standard preamplifier fitted

Ex ia IIC T4 Ga (–20 °C to +80 °C)

Ex ia IIC T5 Ga (–20 °C to +40 °C)

pH sensors with integral standard preamplifier fitted

Ex ia IIC T4 Ga (–20 °C to +80 °C)

Ex ia IIC T5 Ga (–20 °C to +40 °C)

Special Conditions for Safe Use (X):

1. All pH/ORP sensor models with a plastic enclosure or exposed plastic parts may provide an electrostatic ignition hazard and must only be cleaned with a damp cloth to avoid the danger of ignition due to build-up of electrostatic charge.
2. All pH/ORP sensor models with a metallic enclosure may provide a risk of ignition by impact or friction. Care should be taken during installation to protect the sensor from the risk.
3. External connections to the sensor must be suitably terminated and provide a degree of protection of at least IP20.

4. All pH/ORP sensor models are intended to be in contact with the process fluid and may not meet the 500V r.m.s. test to earth. This must be taken into consideration at installation.

China

China Intrinsic Safety

Certificate	GYB19.1035X
Standards	GB 3836.1-2010, GB 3836.4-2010, GB 3836.20-2010
Markings	Ex ia II C T4 Ga (-20 °C to +60 °C)

Special Conditions for Safe Use (X):

1. It is strictly forbidden to rub the plastic shell parts of the product to prevent the risk of static ignition.
2. When the product shell contains light metals, it should be prevented in a zone 0 environment.

EAC

EAC Intrinsic Safety

Certificate	TC RU C-US .MIO62. B.06011
Markings	pH/ORP sensors with no preamplifier fitted Ex ia IIC T4 Ga (-20 °C to +60 °C) pH sensors with integral smart preamplifier fitted Ex ia IIC T4 Ga (-20 °C to +60 °C) ORP sensors with integral standard preamplifier fitted Ex ia IIC T4 Ga (-20 °C to +80 °C) Ex ia IIC T5 Ga (-20 °C to +40 °C) pH sensors with integral standard preamplifier fitted Ex ia IIC T4 Ga (-20 °C to +80 °C) Ex ia IIC T5 Ga (-20 °C to +40 °C)

Special Condition for Safe Use (X):

See certificate for special conditions.

Declaration of Conformity

No: 1119 Rev. E							
	<h2 style="margin: 0;">Declaration of Conformity</h2> <div style="display: flex; justify-content: center; align-items: center; gap: 10px;">   </div>						
<p>We, Rosemount Inc. 6021 Innovation Blvd Shakopee, MN 55379 USA</p> <p>declare under our sole responsibility that the product,</p> <p>Rosemount™ Sensor Model Series: 328A, 385, 385+, 389, 389VP, 396, 396P, 396PVP, 396VP, 396R, 396RVP, 397, 398, 398VP, 398R, 398RVP, 3200HP, 3300HT, 3300HTVP, 3400HT, 3400HTVP, 3500P, 3500VP, 3800, 3800VP, 3900, 3900VP</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Authorized Representative in Europe:</p> <p>Emerson S.R.L., company No. J12/88/2006, Emerson 4 street, Parcul Industrial Tatarom II, Cluj-Napoca 400638, Romania</p> <p>Regulatory Compliance Shared Services Department Email: europaeproductcompliance@emerson.com Phone: +40 374 132 035</p> </div> <div style="width: 45%;"> <p>For product compliance destination sales questions in Great Britain, contact Authorized Representative:</p> <p>Emerson Process Management Limited at ukproductcompliance@emerson.com or +44 11 6282 23 64, Regulatory Compliance Department.</p> <p>Emerson Process Management Limited, company No 00671801, Meridian East, Leicester LE19 1UX, United Kingdom</p> </div> </div> <p>to which this declaration relates, is in conformity with:</p> <ol style="list-style-type: none"> 1) the relevant statutory requirements of Great Britain, including the latest amendments 2) the provisions of the European Union Directives, including the latest amendments <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 45%;"> <p> 11/2/20 (signature & date of issue)</p> <p>ATEX Notified Body for EU Type Examination Certificate: CSA Group Netherlands B.V. [Notified Body Number: 2813] Utrechtseweg 310 6812 AR ARNHEM Netherlands</p> <p>ATEX Notified Body for Quality Assurance: SGS Fimko Oy [Notified Body Number: 0598] Takomitie 8 00380 Helsinki Finland</p> </div> <div style="width: 45%;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Mark Lee</td> <td style="width: 33%;">Vice President, Quality</td> <td style="width: 33%;">Shakopee, MN, USA</td> </tr> <tr> <td>(name)</td> <td>(function)</td> <td>(place of issue)</td> </tr> </table> <p>UK Conformity Assessment Body for UK Type Examination Certificate: CSA Group Testing UK Ltd [Approved Body Number: 0518] Unit 6 Hawarden Industrial Park, Hawarden, CH5 3US United Kingdom</p> <p>UK Approved Body for Quality Assurance: SGS Baseefa Ltd. [Approved Body Number: 1180] Rockhead Business Park, Staden Lane Buxton, Derbyshire. SK17 9RZ United Kingdom</p> </div> </div>		Mark Lee	Vice President, Quality	Shakopee, MN, USA	(name)	(function)	(place of issue)
Mark Lee	Vice President, Quality	Shakopee, MN, USA					
(name)	(function)	(place of issue)					

No: 1119 Rev. E



Declaration of Conformity



ATEX Directive (2014/34/EU)

Baseefa10ATEX0156X – Intrinsically Safe

Equipment Group II,
Category 1 G Ex ia IIC T4 Ga (-20°C ≤ Ta ≤ +60°C)
Models with no Pre-amplifier Fitted or with Integral Smart
Pre-amplifier fitted: 328A, 385, 385+, 389, 389VP, 396,
396P, 396VP, 396PVP, 396R, 396RVP, 397, 398, 398VP,
398R, 398RVP, 3200HP, 3300HT, 3300HTVP, 3400HT,
3400HTVP, 3500P, 3500VP, 3800, 3800VP, 3900, 3900VP

Equipment Group II, Category 1 G Ex ia IIC T4 Ga (-20°C ≤ Ta ≤ +80°C) or T5 (-20°C ≤ Ta ≤ +40°C)
for these model strings: 385+-XX-12, 389-XX-12, 389-XX-XX-54, 396P-XX-12, 396P-XX-XX-54, 3500P-XX-12, 3500VP-XX-12 (Excludes No Pre-amplifier Options: Pre-amplifier/Cable Options -02/-07/-08)

Harmonized Standards:

EN IEC 60079-0:2018
EN 60079-11:2012

Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016 (S.I. 2016/1107)

BAS21UKEX0396X – Intrinsically Safe

Equipment Group II,
Category 1 G Ex ia IIC T4 Ga (-20°C ≤ Ta ≤ +60°C)
Models with no Pre-amplifier Fitted or with Integral Smart
Pre-amplifier fitted: 328A, 385, 385+, 389, 389VP, 396,
396P, 396VP, 396PVP, 396R, 396RVP, 397, 398, 398VP,
398R, 398RVP, 3200HP, 3300HT, 3300HTVP, 3400HT,
3400HTVP, 3500P, 3500VP, 3800, 3800VP, 3900, 3900VP

Equipment Group II, Category 1 G Ex ia IIC T4 Ga (-20°C ≤ Ta ≤ +80°C) or T5 (-20°C ≤ Ta ≤ +40°C)
for these model strings: 385+-XX-12, 389-XX-12, 389-XX-XX-54, 396P-XX-12, 396P-XX-XX-54, 3500P-XX-12, 3500VP-XX-12 (Excludes No Pre-amplifier Options: Pre-amplifier/Cable Options -02/-07/-08)

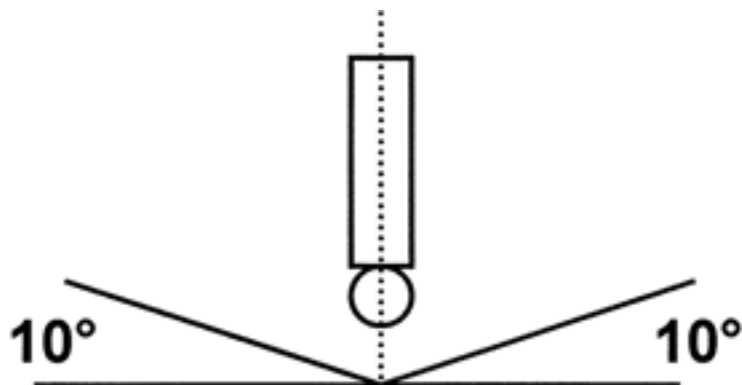
Designated Standards:

EN IEC 60079-0:2018
EN 60079-11:2012



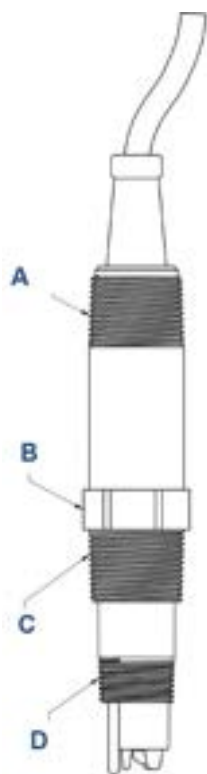
Dimensional and installation drawings

Figure 1: Proper Sensor Installation Orientation

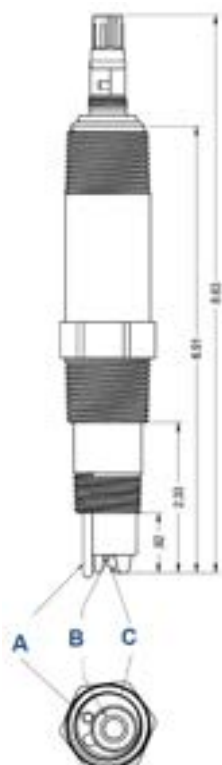


Install sensor within 80 degrees of vertical.

Figure 2: Rosemount 3900 with Integral Cable Connection



- A. 1-in. Male National Pipe Thread (MNPT)
- B. Wrench flats, 1.30 in. across
- C. 1-in. MNPT
- D. 3/4-in. MNPT

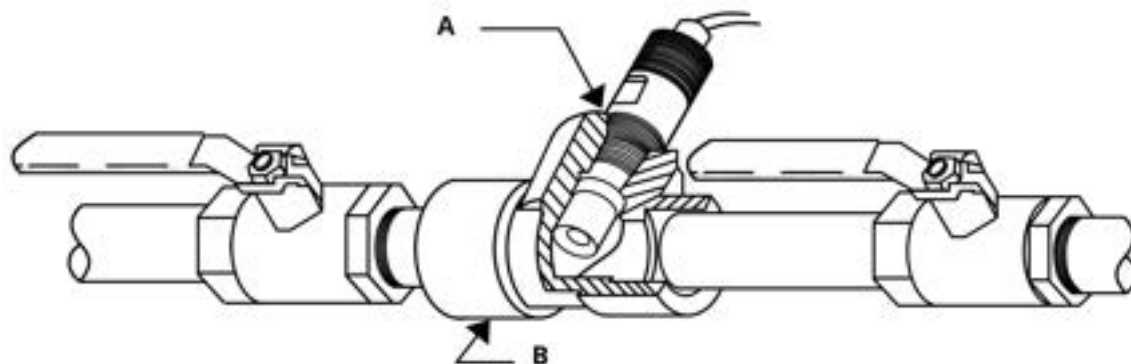
Figure 3: Rosemount 3900VP with Variopol Cable Connection

- A. *Temperature compensation solution ground*
 B. *Reference junction*
 C. *pH electrode*

Table 3: Horizontal Pipe Tee (PN 2002011) Pressure/Temperature Ratings

Pressure	Temperature
150 psig (10.34 barg)	150 ° F
128 psig (8.83 barg)	160 ° F
102 psig (7.03 barg)	170 ° F
80 psig (5.52 barg)	180 ° F
57 psig (3.93 barg)	200 ° F
48 psig (3.31 barg)	210 ° F

Figure 4: Typical Flow-through Insertion Installation using PN 2002011 Pipe Tee



A. 1½-in. x 1-in. reducing bushing

B. 1½-in. pipe tee PN 2002011

Table 4: Low Flow Cell Specifications PN 24091-00/24091-02

Wetted materials	
Body and nut	Polyester/polycarbonate
Fittings	316 stainless steel
Seals	Silicone
Flow cell ratings	
Temperature	32 ° F to 158 ° F
Maximum pressure	90 psig (6.21 barg)
Flow rate	2 gal to 5 gal per hour
Sensor threaded connection	
24091-00	1-in. National Pipe Thread (NPT) adapter
24091-02	¾-in. NPT adapter

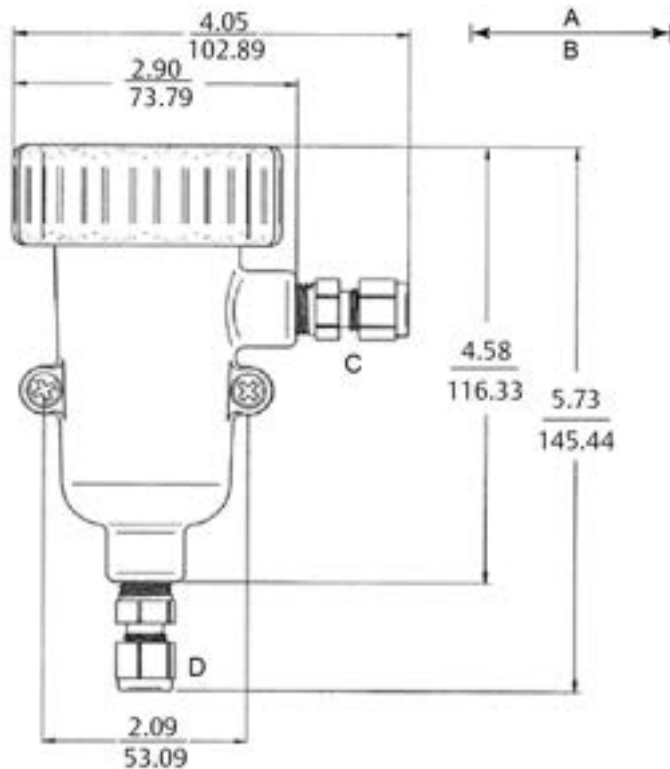
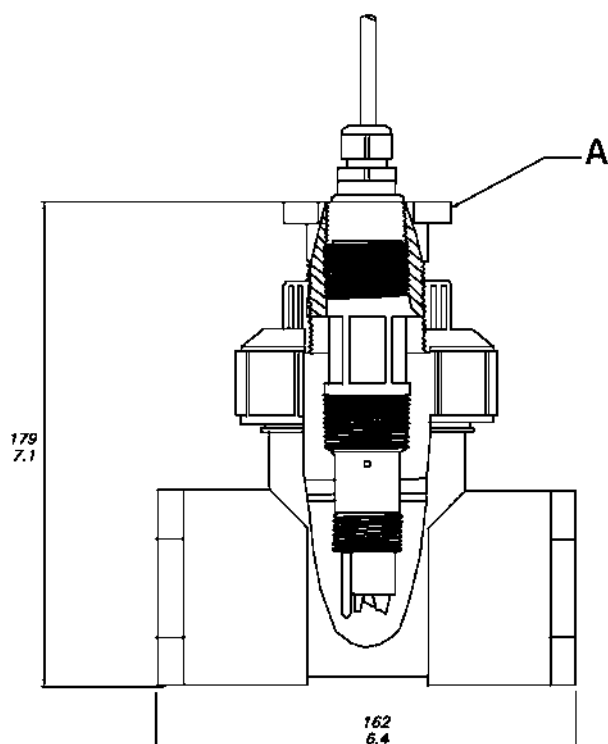
Figure 5: Low Flow Cell (PN 24091-00)

Figure 6: Flow-through Tee (2-in.) (PN 914240-XX)

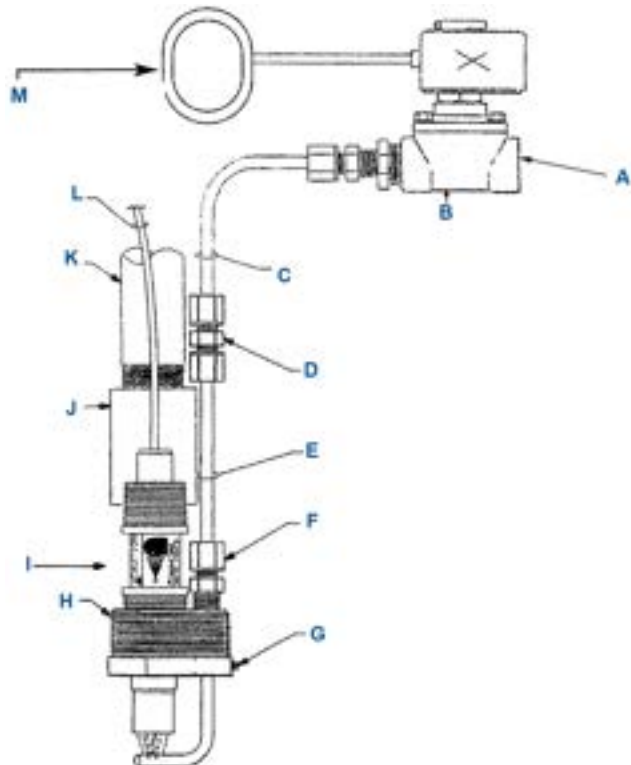
A. Adapter

The following flow-through tees are available for the Rosemount 3900/3900VP.

- 915240-03
- 915240-04
- 915240-05

For a new installation, use the appropriate tee above and add the S10283-LQD adapter.

When replacing an existing Rosemount 399 with a Rosemount 3900 sensor, add the S10283-LQD adapter to convert the tee to accept the Rosemount 3900 sensor.

Figure 7: Jet spray cleaner

- A. Cleaning solution (supplied by customer)
- B. Solenoid valve or manual valve (supplied by customer)
- C. Corrosion resistant tubing (supplied by customer)
- D. Polypropylene ¼-in. (6.4 mm) compression fitting
- E. ¼-in. (6.4 mm) 316 stainless steel
- F. ¼-in. (6.4 mm) polypropylene
- G. Stainless set screw for adjustable spray nozzle height
- H. 2-in. (50.8 mm) NPT threads
- I. Sensor
- J. 1-in. (25.4 mm) PVC coupling for submersible applications (supplied by customer)
- K. 1-in. (25.4 mm) PVC or stainless conduit (supplied by customer)
- L. Cable
- M. Timer supplied by customer or use timer feature in Rosemount instrument

Figure 8: Rosemount 3900 Sensor with Jet Spray Cleaner

The jet spray cleaner eliminates routine, manual sensor maintenance by cleaning the sensor with water or compressed air. You can control flow through the cleaner with a solenoid valve.

Note

You can use the jet spray cleaner with the handrail mounting assembly (PN 11275-01, not shown), or you can mount it through the conduit as shown in [Figure 8](#).

Figure 9: Low Flow Panel PN 00390-7101-0001

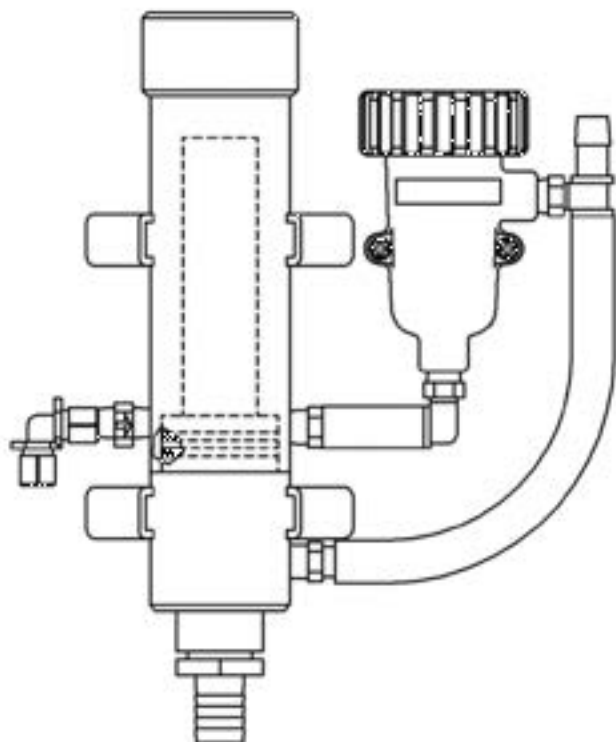


Table 5: Low Flow Panel Specifications

Inlet flow	3 gal to 80 gal per hour
Inlet pressure	3 psig (0.21 barg) to 65 psig (4.48 barg) ⁽¹⁾
Temperature	32 °F (0 °C) to 122 °F (50 °C)

(1) *The minimum inlet pressure is required to open a check valve, which prevents the flow cell from draining if sample flow is lost. Removing the check valve lowers the inlet pressure requirement to a few feet of water head.*

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