

# Rosemount™ 385

## pH/ORP Sensor



- Retractable sensor can be easily removed and replaced under pressure without process shutdown.
- Chemically rugged Tefzel body with titanium tube provides maximum resistance and is completely sealed to eliminate sensor leakage.
- Long-life, triple junction reference electrode provides longer service in applications where poisoning ions are present.
- Integral preamplifier provides noise free, long distance transmission of the high impedance pH signal.
- Weatherproof junction box permits installation in most environments.

# Overview



## Features and Applications

The Rosemount 385 pH/ORP sensor is designed to meet a wide variety of industrial applications. It has been specially designed for applications where the process cannot be shut down and separate sample stream is difficult or impossible to provide.

The Rosemount 385 body is constructed with a standard titanium tube and Tefzel, allowing the sensor to be used in especially harsh applications such as bleach lines in paper mills.

The Rosemount 385 pH/ORP sensor is designed for use with a standard 1-1/2 inch ball valve. This makes it ideal for replacing or updating any manufacturer's existing retractable pH/ORP sensor without process shut-down. Initial installations can even be accomplished without process shut-down by hot tapping a 1-1/2 inch ball valve at the desired point of measurement.

Sensor removal is accomplished by retracting the sensor until it reaches the built-in mechanical stop (no cables or chains are required for retraction). The ball valve may then be closed, and the insertion sensor removed from the process. The entire process is accomplished with almost no loss of process fluid and without depressurizing the line. Once the sensor is removed from the ball valve it can easily be buffer checked or its disposable sensor tube replaced.

The Rosemount 385 pH sensor comes standard with a triple junction gel filled reference cell. The peripheral ceramic liquid junction around the base of the glass electrode assures maximum working life even in solutions containing ammonia, chlorine, and other poisoning ions.

The plug-in style, solid state preamplifier is housed in a weatherproof junction box as an integral part of the sensor. This preamplifier provides noise free, long distance transmission of the pH/ORP signal to a remote analyzer, such as the Rosemount 3081 pH/ORP, 54pH/ORP, 1054B pH/ORP, and many others. (Refer to the respective Product Data Sheets for further information.)

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## Ordering Information

Standard features include a Tefzel sensor body with triple junction gel filled reference electrode and automatic temperature compensator housed in a titanium tube. The sensor comes with a weatherproof junction box and an internal preamplifier.

**Table 1. Rosemount 385 pH/ORP Sensor ordering information**

Model	Sensor type
385	pH/ORP sensor
<b>Tube Material</b>	
02	Titanium
<b>Sensor Compatibility</b>	
04	No TC - For Rosemount 1181 ORP, 1060, 1023
06	Pt-100 - For Rosemount 1054/1054A/B ORP
07	3k TC - For Rosemount 1181 pH, 1050, 1003
08	Pt-100 - For Rosemount 1054/1054A/B pH, 2054 pH, and 2081
<b>Combination Electrode</b>	
10	pH - GPLR Glass
11	High pH Glass
12	ORP
<b>Preamplifier</b>	
51	Integral Preamplifier for use with Rosemount 1003, 1023
52	No Preamplifier for use with Rosemount 1181 pH/ORP, 1050/1060, and 1003/1023
53	No Preamplifier for use with Rosemount 1054, 1054A, 1054B, 2054, and 2081
<b>Typical Model Number: 385-02-06-10-54</b>	

## Specifications

**Table 2. Rosemount 385 sensor specifications**

<b>pH range</b>	
0 to 14pH	
<b>Repeatability</b>	
± 0.05 pH	
<b>Temperature compensation</b>	
0 to 100 °C (212 °F)	
<b>Maximum process pressure and temperature</b>	
790 kPa [abs] (100 psig) at 100 °C (212 °F)	
<b>Maximum pressure at retraction and insertion</b>	
542 kPa [abs] (64 psig)	
<b>Junction box</b>	
Weatherproof	
<b>Wetted materials</b>	
Tefzel, titanium, Viton EPDM, a 316 stainless steel tube fitting, glass, and ceramic	
<b>Process connections</b>	
1-1/2 in. with ball valve, 1 in. without ball valve	
<b>Interconnecting cables (sold separately)</b>	
P/N 9200000	
<b>Electrical classification</b>	
General purpose	
<b>Weight/shipping weight</b>	
With ball valve	10 lb/15 lb (4.5 kg/6.8 kg)
Without ball valve	5 lb/10 lb (2.25 kg/4.5 kg)

**Table 3. Percent Linearity Over pH Range**

pH Range	Option 10	Option 11
0-2 pH	94%	94%
2-12 pH	99%	97%
12-13 pH	97%	98%
13-14 pH	92%	98%

# Dimensional and Installation Drawings

Figure 1. Typical mounting details

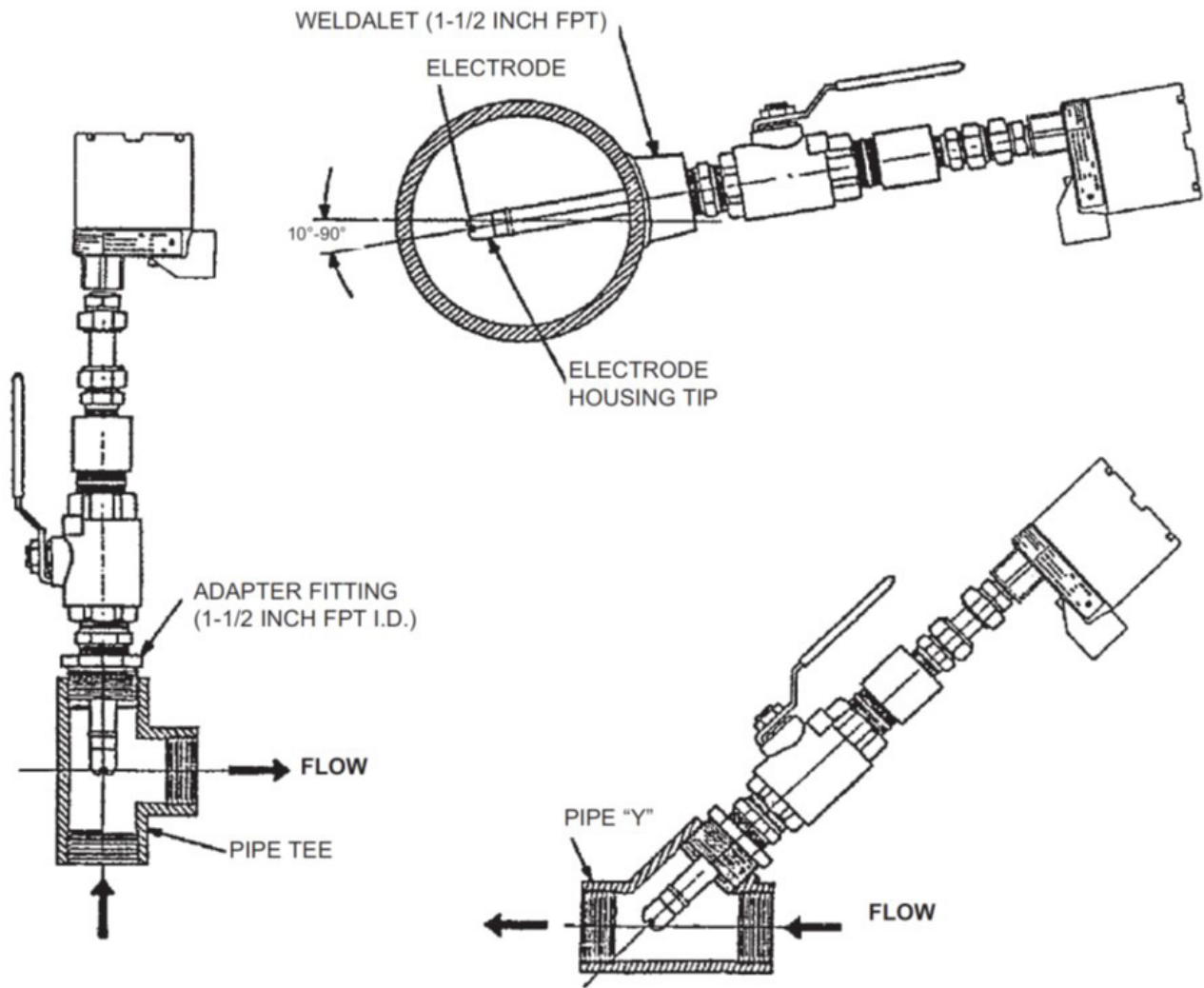
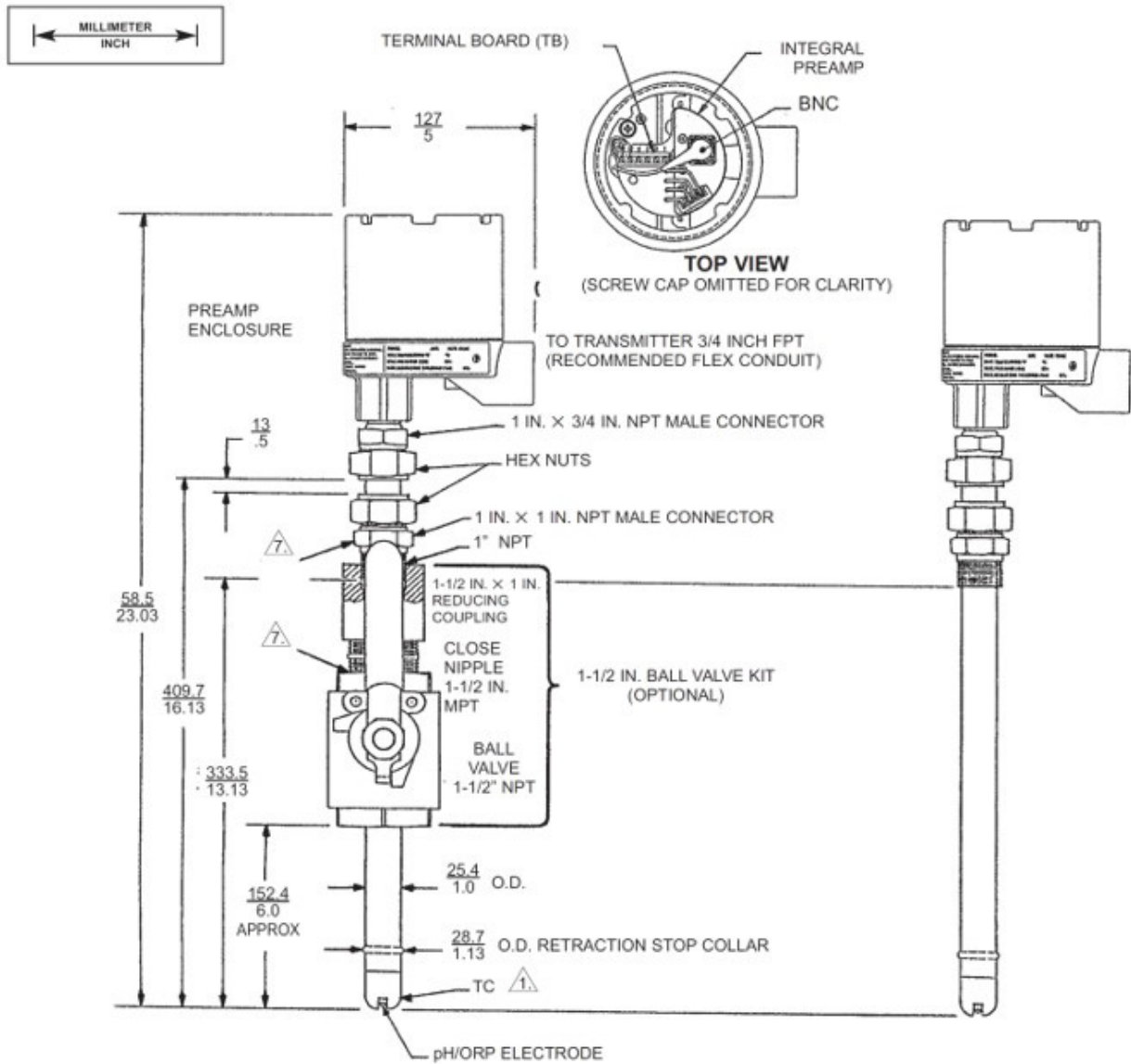


Figure 2. Mounting and Dimensional Drawing



- CAUTION:**  
RESIDUAL PRESSURE AND PROCESS MAY REMAIN TRAPPED BETWEEN BALL VALVE AND MALE CONNECTOR.
6. PRESSURE/TEMPERATURE RATING: 100 PSIG AT 100°C.  
MAXIMUM PRESSURE AT RETRACTION: 64 PSIG  
WETTED MATERIALS: 316 SST, TITANIUM, TEFZEL, VITON, EPDM GLASS OR PLATINUM.
  5. SEE DRAWING NO. 40038502 FOR WIRING DETAILS.
  4. WIRING TO J-BOX MUST BE VIA FLEXIBLE CABLE (19" MIN) OR CONDUIT FOR EASE OF SENSOR HOUSING REMOVAL.
  3. PROVIDE A MINIMUM OF 24 INCH CLEARANCE ABOVE JUNCTION BOX FOR SENSOR HOUSING REMOVAL.
  2. INSTALL SENSOR ASSY WITHIN 80° OF VERTICAL WITH ELECTRODE TIP POINTING DOWNWARD.
- TC NOT USED ON MODELS: 1181 ORP 1060 AND 1023.**  
NOTES: UNLESS OTHERWISE SPECIFIED.

## Accessories

**Table 4. Rosemount 385 Sensor accessories information**


Part number	Description
23166-00	Connector Kit, 1x1" 316 SS, with O-Ring Groove
23166-01	Connector Kit, 1x1" Titanium, with O-Ring Groove
23240-00	Ball valve Kit, 1-¼" 316 SS (Code 21)
23239-04	Kit, pH Sensor Tube w/3K TC, Titanium, General Purpose (Code 07-10, P/N 23288-08)
23239-05	Kit, pH Sensor Tube w/PT 100 TC, Titanium, General Purpose (Code 08-10, P/N 23288-09)
23239-06	Kit, ORP Sensor Tube w/No TC, Titanium (Code 04-12, P/N 23288-12)
23239-07	Kit, ORP Sensor Tube w/PT 100 TC, Titanium (Code 06-12, P/N 23288-13)
23239-08	Kit, pH Sensor Tube w/3K TC, Titanium, High pH (Code 07-11, P/N 23288-16)
23239-09	Kit, pH Sensor Tube w/PT 100 TC, Titanium, High pH (Code 08-11, P/N 23288-17)
33046-00	Ferrule, 1" 316SS, Split (for J-Box)
9200000	Cable, 20#Ga, 4 Cond, 1 Shielded Pair (Belden 8722)
9210012	pH Buffer, 4.01 pH, 16 oz.
9210013	pH Buffer, 6.86 pH, 16 oz.
9210014	pH Buffer, 9.18 pH, 16 oz.
9310096	Hex Nut, 1" 316 SS
9310100	Ferrule, 1" Teflon (Standard)
23594-01	O-ring, 2-214 EPDM (qty 4)


### Global Headquarters

#### Emerson Automation Solutions

8200 Market Blvd

Chanhassen, MN 55317

 +1 800 999 9307 or +1 952 906 8888

 +1 952 949 7001


 [Liquid.CSC@Emerson.com](mailto:Liquid.CSC@Emerson.com)


### North America Regional Office

#### Emerson Automation Solutions

8200 Market Blvd.

Chanhassen, MN 55317, USA

 +1 800 999 9307 or +1 952 906 8888

 +1 952 949 7001


 [RMT-NA.RCCRFQ@Emerson.com](mailto:RMT-NA.RCCRFQ@Emerson.com)

### Latin America Regional Office

#### Emerson Automation Solutions

1300 Concord Terrace, Suite 400

Sunrise, FL 33323, USA

 +1 954 846 5030

 +1 954 846 5121

 [RFQ.RMD-RCC@Emerson.com](mailto:RFQ.RMD-RCC@Emerson.com)


### Europe Regional Office


#### Emerson Automation Solutions GmbH

Neuhofstrasse 19a P.O. Box 1046

CH 6340 Baar

Switzerland

 +41 (0) 41 768 6111

 +41 (0) 41 768 6300


 [RFQ.RMD-RCC@Emerson.com](mailto:RFQ.RMD-RCC@Emerson.com)


### Asia Pacific Regional Office

#### Emerson Automation Solutions Asia Pacific Pte Ltd

1 Pandan Crescent

Singapore 128461

 +65 6777 8211

 +65 6777 0947

 [Enquiries@AP.Emerson.com](mailto:Enquiries@AP.Emerson.com)


### Middle East and Africa Regional Office


#### Emerson Automation Solutions

Emerson FZE P.O. Box 17033,


Jebel Ali Free Zone - South 2


Dubai, United Arab Emirates


 +971 4 8118100

 +971 4 8865465


 [RFQ.RMTMEA@Emerson.com](mailto:RFQ.RMTMEA@Emerson.com)

 [Analyticexpert.com](http://Analyticexpert.com)

 [Linkedin.com/company/Emerson-Automation-Solutions](https://www.linkedin.com/company/Emerson-Automation-Solutions)

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