

Rosemount™ 404

Contacting Conductivity Sensors



Reliable conductivity measurements for your process

With the Rosemount 404 Contacting Conductivity Sensors, you can accurately measure electrolytic conductivity in a broad range of applications from high purity water to clean cooling water. These sensors are ideal for use in clean, non-corrosive liquid having conductivity less than 2,000 $\mu\text{S}/\text{cm}$ where process conductivity and temperature changes quickly.

Overview

Minimize startup and installation time.

- A factory-measured cell constant ensures out-of-the-box accuracy and no initial calibration requirements.



A robust sensor design.

- The sensors have concentric titanium electrodes separated by a PEEK insulator.
- An EPDM O-ring seals the internal parts of the sensor from the process liquid.
- Meet process compatibility requirements with a choice of either a PVC or stainless steel body.
- Maximum operating pressure up to 212 °F (100 °C).
- Maximum pressure rating up to 100 psig.

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Ordering information



The Rosemount 404 contacting conductivity sensor features an integrated flow cell design. The flow through sensor design has a small holdup volume allowing for rapid response to sudden changes in process conductivity and temperature. The sensor must be used in a sidestream sample. These sensors are available with either a PVC or a stainless steel body. You can disassemble the stainless steel version for cleaning, but the PVC version cannot be taken apart.

Table 1: Rosemount 404 Contacting Conductivity Sensor Ordering Information

Option	Description
404	Conductivity sensor - Endurance low flow
Cell constant	
11	0.01/cm
12	0.1/cm
Flow cell type	
16	PVC
17	Stainless steel
Temperature compensation	
–	Pt-1000 (standard) for Rosemount 1056, 1066-C, 56, and 5081-C
54	Pt-100 for Rosemount 1054; series 2081
Options	
–	No selection
50	Integral 50-ft. (15 m) cable
02	Integral 15-ft. (4.6 m) cable
20	Integral 20-ft. (6 m) cable
03	Integral 33-ft. (10 m) cable
06	Integral 100-ft. (30 m) cable
Calibration and conformance certificates - optional level	
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)

Note

The Endurance™ Rosemount 404 low flow conductivity sensors are designed to closely track rapidly changing process conductivity. The sensor has titanium electrodes and either stainless steel or PVC flow cells. The outer electrode is incorporated into the flow cell. The stainless steel flow cell is rated for 100 psig (791 kPa [abs]) at 212 °F (100 °C) and 100 psig (791 kPa [abs]) at 77 °F (25 °C).

Specifications

Table 2: Rosemount 404 Contacting Conductivity Sensor Specifications

Wetted materials	
Electrodes	Titanium
Insulator	Glass filled PEEK
Body	Option -16: polyethylene Option -17: stainless steel
O-ring	EPDM
Fittings	Option -16: polyethylene Option -17: stainless steel
All wetted surfaces have 15 micro in. (0.4 micrometer) Ra finish.	
Temperature range	
Option -16	32 to 140 °F (0 to 60 °C)
Option -17	32 to 212 °F (0 to 100 °C)
Maximum pressure	
Option -16	100 (791 kPa [abs]) at 77 °F (25 °C); 20 psig (239 [kPa abs]) at 140 °F (60 °C)
Option -17	100 psig (791 kPa [abs]) maximum
Vacuum	
At 1.6-in. Hg (5.2 kPa) air leakage is less than 0.005 SCFM (0.00014 m ³ /min.)	
Cell constants	
0.01 and 0.1/cm	
Process connection	
Option -16	3/8-in. barbed tubing connector
Option -17	Compression fitting for 3/8-in. OD tubing. You can remove fittings to leave 1/4-in. NPT ports.
Cable length	
10 ft. (3 m) standard; other lengths are optional	

Table 3: Rosemount 404 Weights and Shipping Weights

Rounded up to the nearest 1 lb. or 0.5 kg.

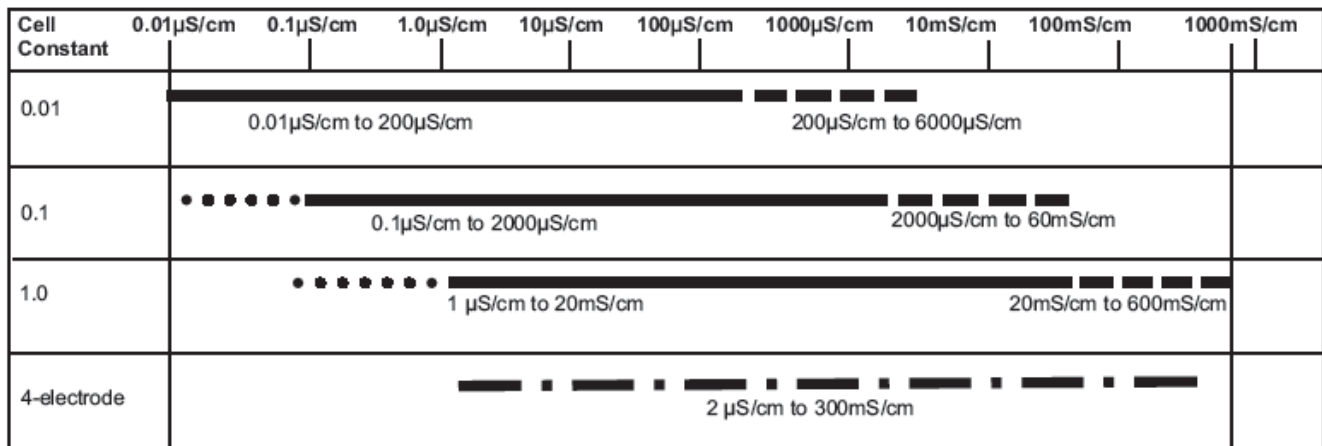
Model	With 10-ft. (3.1 m) cable		With 50-ft. (15.2 m) cable	
	Weight	Shipping weight	Weight	Shipping weight
Rosemount 404-16	2 lb. (1.0 kg)	3 lb. (1.5 kg)	4 lb. (2.0 kg)	5 lb. (2.5 kg)

Table 3: Rosemount 404 Weights and Shipping Weights (continued)

Model	With 10-ft. (3.1 m) cable		With 50-ft. (15.2 m) cable	
	Weight	Shipping weight	Weight	Shipping weight
Rosemount 404-17	4 lb. (2.0 kg)	5 lb. (2.5 kg)	6 lb. (3.0 kg)	7 lb. (3.5 kg)

Figure 1: Recommended Range - Contacting Conductivity

Performance Specifications
Recommended Range – Contacting Conductivity



Cell Constant Linearity





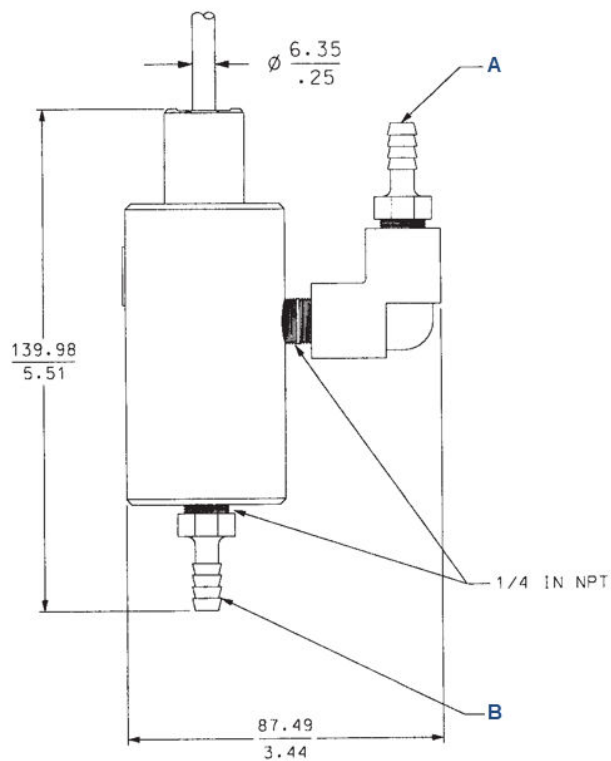
-  ±0.6% of reading in recommended range
-  +2 to -10% of reading outside high recommended range
-  ±5% of reading outside low recommended range
-  ±4% of reading in recommended range

Figure 2: Flow Cell



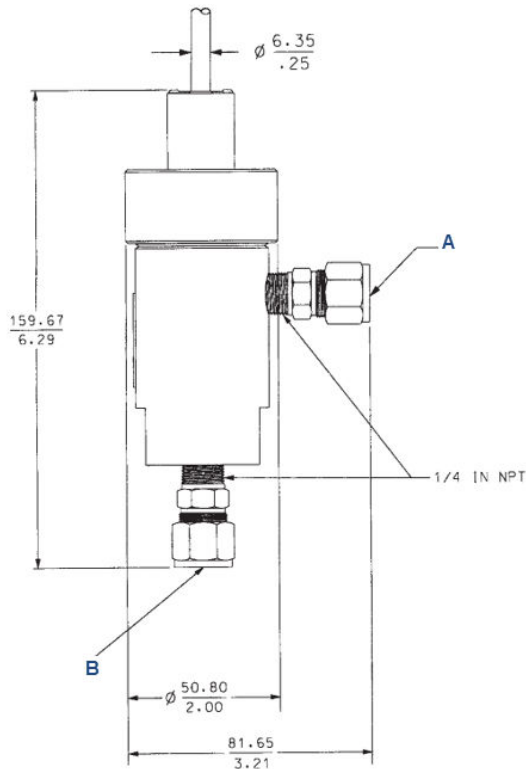
Dimensional drawings

Figure 3: Rosemount 404 Option -16 PVC Flow Cell



- A. Outlet accepts $\frac{3}{8}$ -in. I.D. plastic tubing.
- B. Inlet accepts $\frac{3}{8}$ -in. I.D. plastic tubing.

Figure 4: Rosemount 404 Option -17 Stainless Steel Flow Cell



- A. Outlet $\frac{3}{8}$ -in. O.D. tube
- B. Inlet $\frac{3}{8}$ -in. O.D. tube

Accessories

Part number	Description
23550-00	Junction box for a remote cable connection
9200275	Connecting cable, unterminated, specify length
23747-00	Connecting cable, terminated, specify length
05010781899	Conductivity standard SS-6, 200 μ S/cm, 32 oz. (0.95 L)
05010797875	Conductivity standard, SS-6A, 200 μ S/cm, 1 gal. (3.78 L)
05010782468	Conductivity standard, SS-5, 1000 μ S/cm, 32 oz. (0.95 L)
05010783002	Conductivity standard SS-5A, 1000 μ S/cm, 1 gal. (3.78 L)
05000705464	Conductivity standard, SS-1, 1409 μ S/cm, 32 oz. (0.95 L)
05000709672	Conductivity standard, SS-1A 1409 μ S/cm, 1 gal. (3.78 L)
9210004	Conductivity standard, 2000 μ S/cm, 16 oz. (473.2 ml)

Engineering specifications

Cell constants 0.01 and 0.1/cm

- The sensor shall be suitable for the determination of electrolytic conductivity in clean, noncorrosive sidestream samples where rapid response to changes in conductivity or temperature is needed.
- The sensor shall incorporate titanium electrodes and a PEEK insulator.
- The sensor shall have an integral platinum resistance temperature device (RTD) for temperature measurement.
- The sensor shall be available with either a PVC or stainless steel body flow cell.
- The PVC body shall have 3/8-in. barbed tubing connections.
- The stainless steel body sensor shall have compression fittings for 3/8-in. OD tubing. The compression fittings shall be removeable to leave 1/4-in. FNPT ports.
- The maximum temperature for the PVC body sensor shall be 140 °F (60 °C) at 20 psig (239 kPa [abs]).
- The maximum pressure for the stainless steel body sensor shall be 212 °F (100 °C) at 100 psig (791 kPa [abs]).
- The sensor shall be Rosemount 404 or approved equal.

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