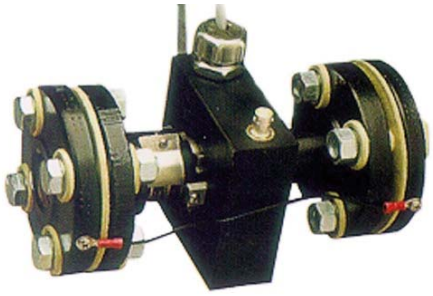
Product Data Sheet
PDS 71-222/rev.A
July 2007

FLOW THROUGH TOROIDAL SENSOR

- FLOW THROUGH DESIGN is ideal for use with viscous or fibrous process liquids.
- SENSOR FITS into 1-inch and 2-inch process lines using 150 or 300 lb flanges.
- TEFLON PIPE liner resists corrosion.
- TEMPERATURE SENSOR INCLUDED.



MODEL 222

APPLICATIONS

The Rosemount Analytical Model 222 flow-through sensor is ideal for use in viscous or fibrous liquids. No part of the sensor protrudes into the sample flow, so there is no obstruction on which solids can accumulate.

FEATURES

The Model 222 sensor has elements of both a contacting and inductive sensor. In the traditional inductive sensor, the plastic-encased drive and receive toroids are inserted directly into the process liquid. An AC voltage applied to the drive toroid induces a voltage in the liquid surrounding the coil. The voltage causes an ionic current to flow. The magnitude of current is proportional to the conductance of the liquid. The ionic current induces a current in the second or receive coil, which the analyzer measures. The induced current is directly proportional to the conductivity of the solution.

In the Model 222 sensor, the toroids are not immersed in the liquid. Instead, they surround a length of Teflon-lined pipe through which the process liquid flows. Because the toroids are not in the liquid, there is not a complete circuit around them. The circuit is completed by connecting the unlined outer flanges used to bolt the sensor into the process line with an insulated wire passing outside the toroidal pair.

The Model 222 sensor includes a Pt 100 RTD to allow temperature-compensated conductivity measurements. The RTD is installed in a user-supplied thermowell.

Choose either a 1-inch or a 2-inch diameter sensor with either a 150 or 300 lb mounting flange.

Flow through toroidal conductivity sensors work well in highly conductive liquids, up to about 2 S/cm (2,000,000 uS/cm). The minimum conductivity is 500 uS/cm.

The measurement is insensitive to flow rate and direction. The sensor must be installed so that it is completely filled with liquid.

[1]Teflon is a registered trademark of E.I. duPoint de Nemours and Co.

SPECIFICATIONS

Cell constants (nominal):

diameter	cell constant
1 inch	6/cm
2 inch	4/cm

Minimum conductivity: 500 uS/cm

Maximum conductivity: 2 S/cm

Wetted materials: Teflon-lined carbon steel pipe, with carbon steel after flanges; 316SS outer flanges are also available (option -21)

Process connections:

1-inch 150 lb or 300 lb raised face threaded ANSI B16.5 flange

2-inch 150 lb or 300 lb raised face threaded ANSI B16.5 flange

Temperature and pressure:

flange	temperature	pressure
150 lb	360ºF (182ºC)	125 psig (963 kPa abs)
300 lb	360ºF (182ºC)	250 psig (1825 kPa abs)

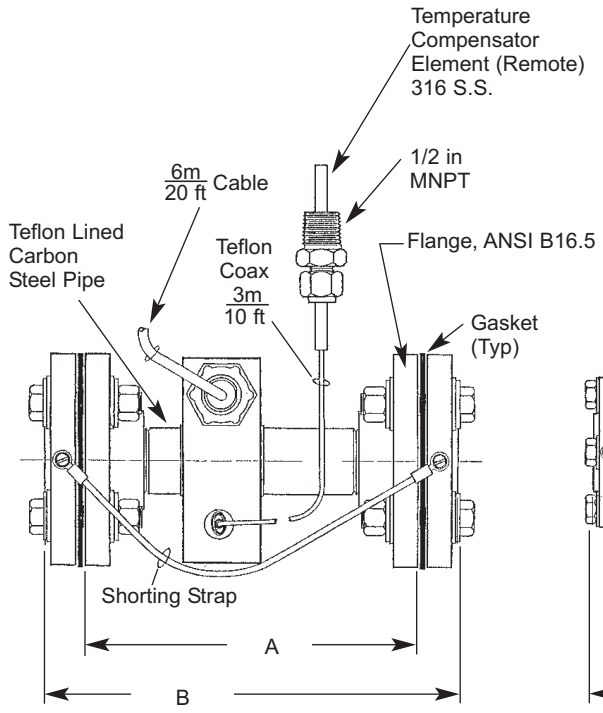
Cable length: 20 ft (6.1 m)

Maximum cable length: 100 ft (30 m)

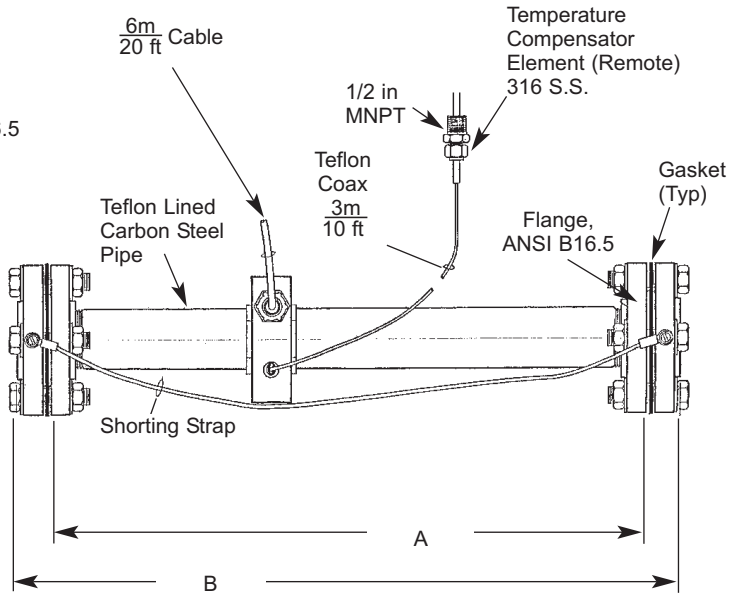
Weight/shipping weight:

diameter	flange	weight	shipping weight
1 inch	150 lb	11 lb (5.0 kg)	14 lb (6.5 kg)
1 inch	300 lb	17 lb (8.0 kg)	20 lb (9.0 kg)
2 inch	150 lb	33 lb (15.0 kg)	37 lb (17.0 kg)
2 inch	300 lb	35 lb (16.0 kg)	40 lb (18.0 kg)

Weights and shipping weights are rounded up to the nearest 1 lb or 0.5 kg.



1-inch diameter sensor



2-inch diameter sensor

Model	Pipe diam	Flange (1)	A dimension (2)	B dimension (3)
222-01	1 inch	150 lb	7.0 in (178 mm)	8.4 in (213 mm)
222-02	2 inch	150 lb	24.0 in (610 mm)	26.0 in (660 mm)
222-05	1 inch	300 lb	7.0 in (178 mm)	9.1 in (232 mm)
222-06	2 inch	300 lb	24.0 in (610 mm)	26.6 in (676 mm)
222-21	1 inch	150 lb	7.0 in (178 mm)	8.4 in (213 mm)

(1) Outside flanges are ANSI B16.5 raised face, threaded pipe flanges.
(2) Dimension is ±0.125 in (3mm).
(3) Approximate dimension.

MODEL 222 DIMENSIONAL DRAWING

MODEL 222 FLOW-THROUGH TOROIDAL CONDUCTIVITY SENSOR

The Model 222 Flow-Through Conductivity Sensor includes Teflon-lined pipe, external toroid assembly, two unlined carbon steel outer flanges, temperature compensation element (Pt 100 RTD), and 20 ft (6 m) of integral cable. Stainless steel outer flanges (150 lb, 316SS) are available with the 1-inch sensor as an option. The sensor can be used with the 1055, 1056, 54eC, 5081-T, and Xmt-T instruments.

MODEL 222 FLOW-THROUGH TOROIDAL CONDUCTIVITY SENSOR	
CODE	**SIZES (REQUIRED SELECTION)** (Note 1)
01	1 inch, 150 lb
02	2 inch, 150 lb (not available with code -21)
05	1 inch, 300 lb (not available with code -21)
06	2 inch, 300 lb (not available with code -21)
01-21	1 inch, 150 lb, 316 SS outer flanges

CODE	CABLE (REQUIRED SELECTION) (Note 2)
54	Standard integral cable (Note 2)

222	-01	-54	EXAMPLE

NOTES:

1. **Grounding rings are required for proper operation if the outer flanges of the Model 222 sensor are substituted by the customer with non-conductive flanges. Order SQ 7430 and consult the factory for pricing.**
2. Cables can be extended using the remote junction box PN 23550-00. See EXTENSION CABLE.

ACCESSORIES

PART NUMBER	DESCRIPTION
2001492	Stainless steel tag, specify marking
23550-00	Remote junction box for use with 1055, 1056, 54eC, 5081-T and Xmt-T

EXTENSION CABLE

PART NUMBER	DESCRIPTION
23294-00	Interconnecting cable for use with 222 sensors

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