

R-SERIES MODEL RF FLEX HOUSING STYLE

Flex Sensor Housing Style For the R-Series Model RF Sensor



- Hydraulic cylinder applications with limited installation space
- Absolute sensor for linear measurement along an arc
- Full range of outputs including voltage, current, SSI, CANbus, DeviceNet, Profibus and EtherCAT
- Non-contact sensing technology
- Non-linearity less than 0.02%
- Repeatability within 0.001%
- Measuring range: 255 mm (10 in.) to 10,060 mm (396 in.)**

Parameters	Specifications
Measured variable:	Displacement and/or velocity* Multi-position measurement up to 15 positions simultaneously (CANbus and Profibus) *
Non-linearity:	< ± 0.02% full scale (minimum ± 100 µm)
Repeatability:	< ± 0.001% full scale (minimum ± 2.5 µm) Hysteresis: < 4 µm typical 2 µm
Outputs:	Voltage, current, SSI, CANbus, DeviceNet, Profibus and EtherCAT *
Stroke length:	255 mm (10 in.) to 10,060 mm (396 in.) **
Operating voltage:	+24 Vdc nominal: -15 or +20% Polarity protection: up to -30 Vdc Overvoltage protection: up to 36 Vdc Current drain: 100 mA typical Dielectric withstand voltage: 500 Vdc (DC ground to machine ground)
Operating conditions:	Sensor mounting position: Any orientation Position magnet speed: Any Temperature: - 40 °C (-40 °F) to 75 °C (167 °F) Relative humidity: 90%, no condensation Sealing: IP 30 (IP 67 rating when installed inside the MTS half-inch O.D. pressure housing pipe).
EMC test:	Emissions IEC/EN 50081-1, Immunity IEC/EN 50082-2, IEC/EN 61000-4-2/3/4/6, level 3/4 criterium A, CE qualified
Shock rating:	100 g (single hit)/IEC standard 68-2-27 (survivability)
Vibration rating:	5 g/10-2000 Hz/IEC standard 68-2-6
Connection type:	Connector or cable outlet (output dependent) *
Housing:	Sensor head: Aluminum diecasting housing Sensor stroke: Flexible stainless steel pipe (Teflon® coated), minimum bend radius 200 mm (8 in.).
Magnet type:	Ring magnet, open-ring magnet or block magnet

* Consult individual sensor data sheets for more product specifications and sensor ordering codes.

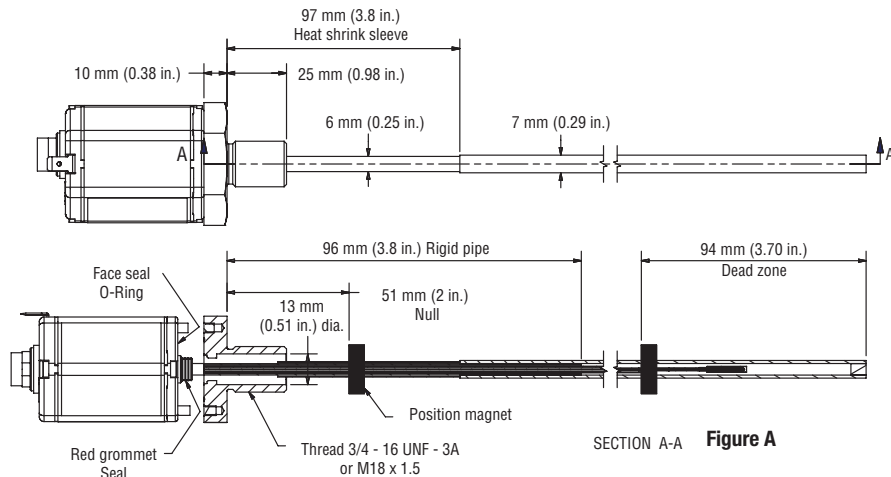
** Consult factory for longer measuring stroke lengths possible.

R-Series Model RF Flex

SENSOR INSTALLATION AND DIMENSIONS

Temposonics model RF sensor is very flexible - when space is a problem. MTS adds flexible sensor models to its family of highly accurate, linear-position sensors. The flexible sensor provides proven non-contact and trouble-free performance for very long stroke lengths and linear measurements on an arc. The flexible sensor is available with all R-Series outputs including analog, serial digital and bus interfaces. Standard stroke lengths for the sensor are up to 7.6 meters (300 in.) and for special applications, longer lengths are available by consulting the factory.

Flexible sensors incorporate the Temposonics SE (Sensing Element) technology that is the same building block all MTS sensor models use. The SE is housed in a Teflon coated stainless steel housing that is flexible and can be bent in an arc to an 8 inch minimum bend radius. Sensor specifications are measured with a flexible sensor element at a 0° bend radius. Most operating parameters are identical to its rigid cousin. Model RF sensors are recommended for long-length applications because they are simply coiled inside a 40-inch diameter box for shipping, which simplifies logistics and handling.



Notes:

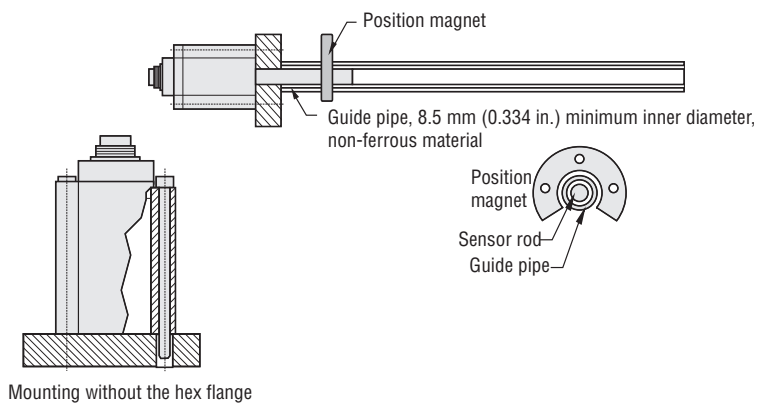
1. Total sensor length tolerances are:
+ 8 mm (0.3 in.) / - 5 mm (0.2 in.) up to 7600 mm (300 in.) stroke lengths and
+ 15 mm (0.6 in.) / - 5 mm (0.2 in.) over 7600 mm (300 in.) stroke lengths.
2. Tolerances of total length have no influence for the measuring stroke length.

Sensor Installation

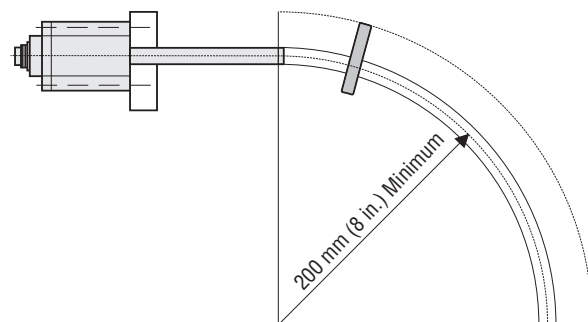
The model RF sensor is provided with a flat-faced or raised-face flange (see table below), with either U.S. customary threads, (3/4 - 16 UNF inches), or metric threads, (M18 x 1.5). The flange is secured to the sensor head by 2 metric screws, (M4 x 59 mm, 2.5 mm hex socket head). The flange can be used, or removed, to best accommodate the installation requirements. If the sensor is mounted without the flange, the red grommet seal can be cut off to provide a flush mounting surface for the sensor's face seal O-Ring. (See Figure A).

Most applications require that the RF flex sensor be supported, such as, placed inside a guide pipe made of non-ferrous material, straight or bent to the desired shape. When installed inside the MTS half-inch O.D. pressure housing pipe, the RF flex sensor is suitable for use in hydraulic cylinders, and can simplify installation where space is limited, (see Figure B).

Example, straight measurements



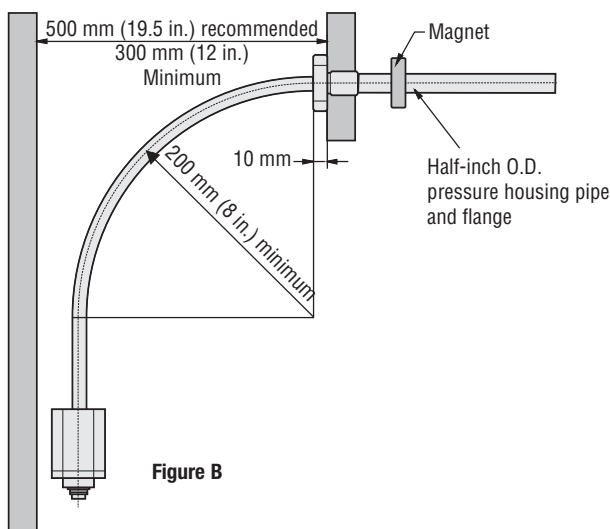
Example, curvilinear measurements



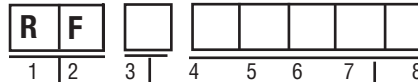
Note:

The model RF sensor requires supports or anchoring to maintain proper alignment between the flexible rod and the magnet, otherwise the sensor performance may be compromised.

Figure B



HOW TO ORDER



To complete the sensor model number, consult the specific "How to Order" page for the R-Series model you need.

SENSOR MODEL

RF = Flexible style

HOUSING STYLE

Magnet must be ordered separately:

M = Metric threads, flat-faced flange

S = US customary threads, flat-faced flange

STROKE LENGTH

--- **M** = Millimeters (Encode in 5 mm increments)

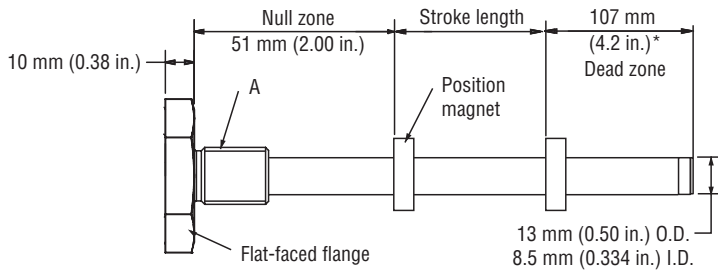
--- **U** = Inches and tenths (Encode in 0.1 in. increments)

Stroke length notes:

1. RF stroke length = 255 mm (10 in.) - 10,060 mm (396 in.)
2. Consult factory for longer lengths.

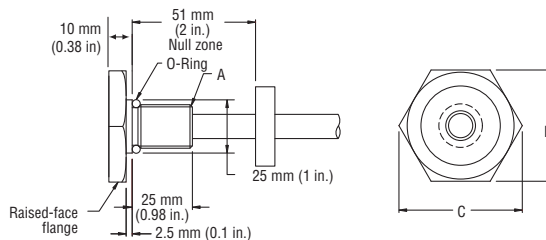
HALF INCH O.D. PRESSURE HOUSING PIPE AND FLANGE FOR RF FLEX SENSOR

The half inch O.D. pressure housing pipe with flange is designed specifically for the RF flex sensor. It provides protection from high pressures, as found in hydraulic cylinders, up to 5,000 psi static, 10,000 psi spike. For large cylinders, using the half-inch O.D. pressure pipe requires a larger gun-drilled bore in the piston head/rod assembly. Typically, a 0.75 inch bore is used to match the large ring magnet, 201554, (see page 80).



Pressure housing pipe, style "HL" shown, (flat-faced flange with U.S. customary threads).

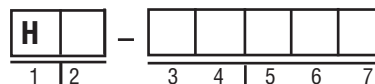
*4.2 in. Dead zone = 3.7 in. dead zone of RF sensor + 0.5 in. gap.



Pressure housing pipe, style "HP" shown, (raised-faced flange with U.S. customary threads).

Flange type	Description	A Flange threads	B Dimensions	C Dimensions
HP	US customary threads with raised-face flange	3/4"-16 UNF-3A	44.5 mm (1.75 in.)	51 mm (2 in.)
HL	US customary threads with flat-faced flange	3/4"-16 UNF-3A	44.5 mm (1.75 in.)	51 mm (2 in.)
HD	Metric threads with flat-faced flange	M18 x 1.5	46 mm (1.81 in.)	53 mm (2.1 in.)

HOW TO ORDER - HALF INCH O.D. PRESSURE HOUSING PIPE AND FLANGE FOR RF FLEX SENSOR



PRESSURE PIPE AND FLANGE STYLE

HL = 1/2 inch O.D. pressure housing pipe with flat-faced flange, US customary threads

HP = 1/2 inch O.D. pressure housing pipe with raised-faced flange, US customary threads

HD = 1/2 inch O.D. pressure housing pipe with flat-faced flange, metric threads

STROKE LENGTH

--- **M** = Millimeters (Encode in 5 mm increments) or

--- **U** = Inches and tenths (Encode in 0.1 in. increments)

Stroke length note:

Stroke length range = 255 mm (10 in.) to 7620 mm (300 in.)

(Examples)

HL0120U = 1/2 inch O.D. pressure housing pipe with flat-faced flange, US customary threads, for a 12.0 inch stroke length

HD1000M = 1/2 inch O.D. pressure housing pipe with flat-faced flange, metric threads, for a 1000 mm stroke length

