OMNTEC
Advanced Tank Monitoring & Leak Detection

MDA-RS Series
4-20 DIGITAL ANALOG PROBE

PROVEN MAGNETOSTRICTIVE SENSING PERFORMANCE IN A REVOLUTIONARY NEW PACKAGE!

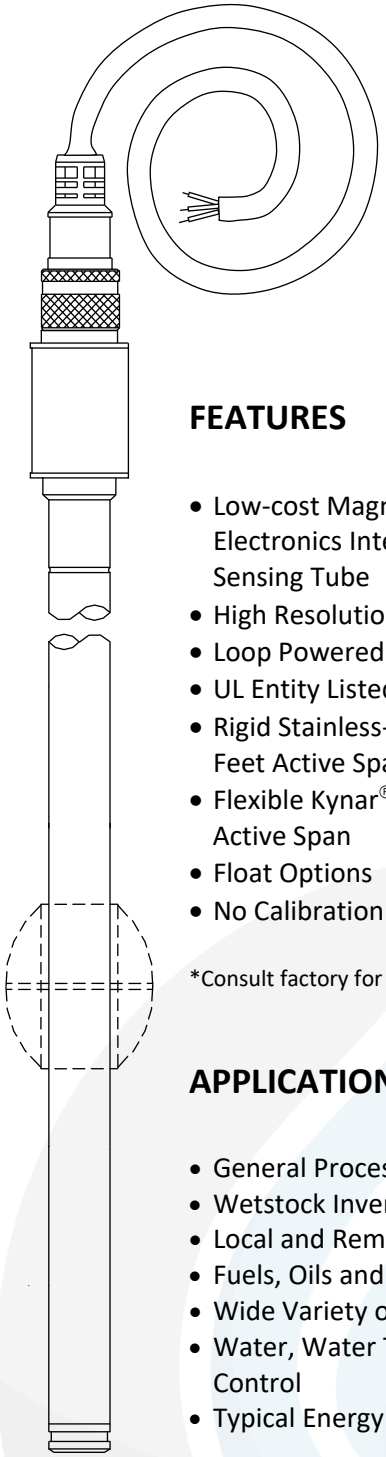
MDA-RS probes take field proven technology and packages it in a revolutionary new way for greater reliability, easy installation, and mounting. MDA-RS is ideal for continuous level monitoring with a variety of liquid media.

All electronics are integrated into a 5/8" diameter sensing tube. MDA-RS is available in stainless steel or flexible Kynar®.

This break through in package design eliminates the bulky electronics enclosure at the top of the probe and offers you greater options for insertion and mounting in tanks and vessels. The 316 stainless steel housing is all welded construction and suitable in a wide variety of applications.

The SMT electronics provide 0.1% accuracy and have a 4 wire, loop powered 4-20mA output for process applications.

The MDA-RS lower cost design provides more options, offers savings on installation, and has the ultimate in "designed-in" reliability.



FEATURES

- Low-cost Magnetostrictive Design with Electronics Integrated into 5/8" Sensing Tube
- High Resolution and Accuracy
- Loop Powered 4-20mA Transducer
- UL Entity Listed, Intrinsically Safe
- Rigid Stainless-Steel Design up to 24 Feet Active Span*
- Flexible Kynar® Design up to 50 Feet Active Span
- Float Options
- No Calibration Required

*Consult factory for lengths over 16 feet

APPLICATIONS

- General Process Control
- Wetstock Inventory Management
- Local and Remote Tank Gauging
- Fuels, Oils and Solvents
- Wide Variety of Chemicals
- Water, Water Treatment and Flood Control
- Typical Energy Management Interface

PRINCIPLES OF OPERATION

The MDA-RS liquid level probe's internal circuits are all SMT electronics. No external transmitter module is required.

Level measurement is retrieved by sending a current pulse down a magnetostrictive wire inside the sensing tube. The interaction of the current pulse and the magnetic field created by a moveable float with embedded magnet produces a torsional strain pulse on the wire. The strain pulse travels up the wire at a known speed and interacts with a pickup device to provide an electronic pulse. The time interval between this pulse and the initial primary current pulse is converted into the appropriate 4-20mA signal which represents the position of the float. This same technology has been used for several years in high resolution probes for underground tank leak detection.

One level output is provided with field programmable 4 and 20 mA points in a standard loop powered configuration. The 4 and 20 mA points can be interchanged as an ordering option. The 4 and 20 mA points are programmable distances from the sensor ends for scaling by the customer's controller.

The MDA-RS probe has entity listing for intrinsic safety by Underwriters Laboratories for Class I, II, III Div. 1, Groups C, D, E, F & G hazardous areas when used with a suitable barrier having proper UL entity parameters.

NO CALIBRATION

The unit needs only to be installed and fixed in position. There are no adjustments or calibrations. Only the float will move with the liquid level and no maintenance required. Scaling or offset can be done in the electronic controller.

REFERENCE SPECIFICATIONS

Operating Voltage (Vs)		10 to 30 VDC*
Loop Impedance (R)		0-1000 Ohms@24volts
Output		4-20 mA
Temperature Range		-20° to +110° C
Accuracy		0.1% or .050" (whichever is greater)
Repeatability		0.025% or .050" (whichever is greater)
Drift		0.1% / degrees C
Enclosure	Material	316SS or PVDF
	Rating	IPX8
Probe Lengths Active Span	Rigid SS	20" – 288" **
	Flexible PVDF	20" – 600"
Deadband	Rigid SS	2"
	Flexible PVDF	3" – 12" (see dimensions below)
Null Zone	Rigid SS	8"
	Flexible PVDF	12" (see dimensions below)
Floats		Any standard
Liquid Viscosity		1500 centipoise (float dependant)
Liquid Specific Gravity		0.65 minimum (float dependant)

* Vs – R (.02) ≥ VDC

** Consult Factory for lengths over 16 ft

Note: Current published specifications are subject to change without notification. Verify specifications with manufacturer.

Patent Pending

CONTROLLER

Units are suitable for use with stand-alone meters, programmable controller inputs, process controls and other loop powered 4-20mA inputs. For hazardous areas, a suitable IS barrier is required.

INTRINSICALLY SAFE APPLICATIONS

The intrinsically safe barrier must be selected with entity parameters of:

Voc less than or equal to 31 Vdc
Isc less than or equal to 165 mA

The total loop capacitance and inductance of the wire should not exceed the Ca and La of the barrier for the appropriate Class and Group required. Use 60p/foot and 0.2 microH/foot for the wire if these parameters are not known.

The resistive impedance of all devices in the current loop including the wire, meter and controller, and the intrinsically safe barrier should not exceed 500 ohms.

The voltage output of the power supply should be great enough to supply at least 14 Vdc at the MDA-RS probe after considering the voltage drops across all other resistance in the loop. The power supply voltage should never exceed the Vmax of the barrier.

BARRIERS

Select either a single channel or a dual channel barrier. The single channel barrier can only be used if the meter (resistive load) is placed in the positive leg of the loop and the meter has a different input. If the meter (resistive load) must have one side connected to ground, then a dual channel barrier must be used.

SUGGESTED BARRIERS

	Single Channel	Dual Channel
STAHL	9001/01-280-100-10	9002/13-280-110-00
MTL	MTL 708	MTL 787P+

SWAGE LOCK

Stainless steel 5/8" NPT ferrule type fitting for tank mounting & vertical adjustability at initial set-up.

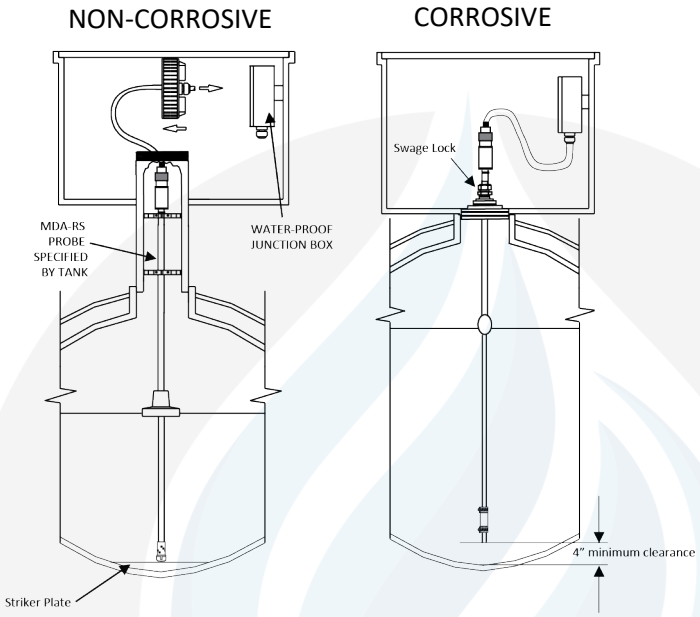
NO CALIBRATION

The unit needs only to be installed and fixed in position. There are no adjustments or calibrations. Only the float will move with the liquid level and no maintenance required. Scaling or offset can be done in the electronic controller.

POWER SUPPLY GUIDELINES

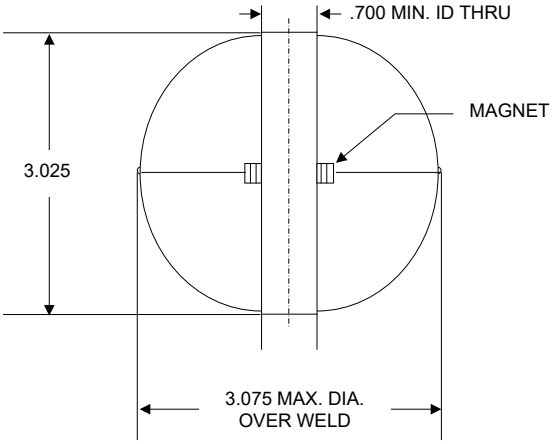
Power supply should have a 24 Vdc typical output, and no more than 1000 feet of 16-gauge wire in the loop. Linear recommended, 0.5% regulation 100 millivolt maximum ripple.

TYPICAL INSTALLATION

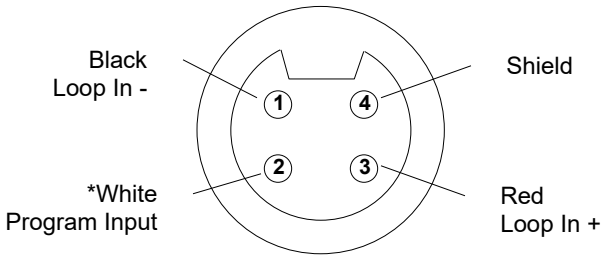


PROPANE FLOAT OPTION

The SSPF-3 is a 3" #304 stainless steel float for propane applications. Note: This float will not fit in 3" schedule 40 pipe.



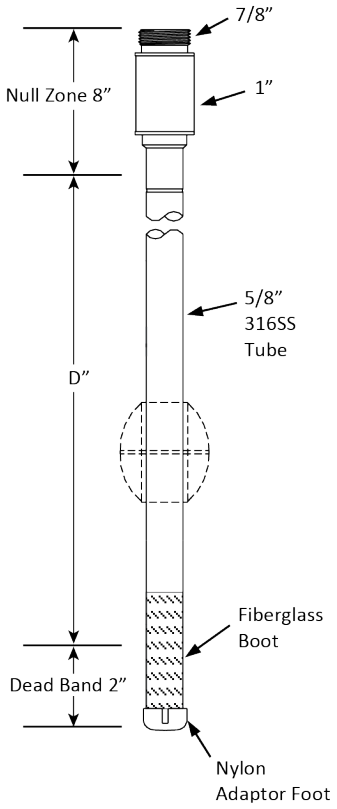
PROBE HEAD PIN ASSIGNMENTS



*After installing probe make sure white wire is taped off and insulated from ground.

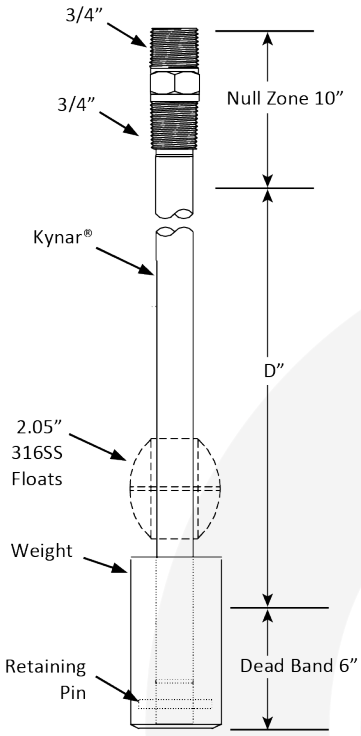
FLEX PROBE DEAD BAND		
O.A.L. (In.)	Dead Band (In)	Clearance (In)
30-144	6.00	1.00
145-288	8.00	2.00
289-432	12.00	3.00
433-600	14.00	4.00

RIGID

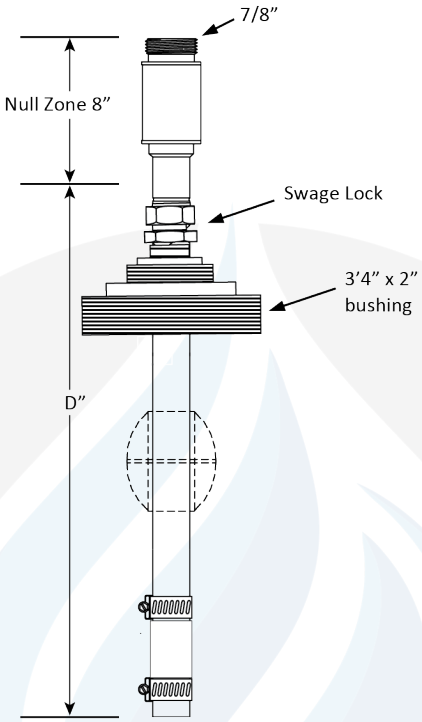


D" = Available Span

FLEX



RIGID WITH SWAGE



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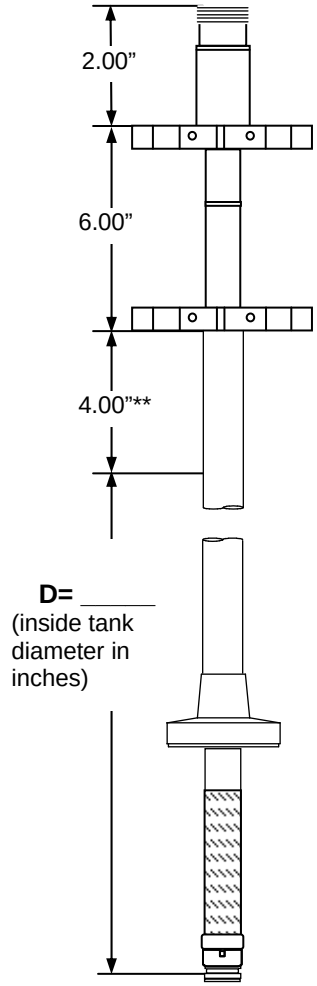
MTG-420-* PROBE DIMENSION

APPROVAL SHEET

CUSTOMER
PO#
EL#
SHIP DATE
QUANTITY
PRODUCT



- Dimension D = _____ inches
- 2” ☐ 4” ☐ opening (check one)

Name: _____

Company: _____

Signature: _____

Date: _____

Signature is required to release product to production

****This dimension compensates for typical 4” manway risers and may be modified upon request.**