

MAGNETIC TANK GAUGES WITH ELECTRONIC OUTPUT

MODEL SERIES T12 - T14 - TD14 - T18 - TD18 - T48

DESCRIPTION

KSR Kuebler electronic tank gauges, series "T" and "TD" provide a continuous 4 to 20 mA output. Loop powered, the KSR units easily interface into existing control loops, and are compatible with literally hundreds of existing controllers, recorders, PLC's and DCS units. These industrial transmitters are designed for use in Petroleum, Petrochemical, Solvents, and General Process applications. Series "T" and "TD" tank gauges are top mounted units that install through the top of the process vessel via ANSI flange or threaded connection.

Series "T" gauges employ the patented KSR Kuebler resistance measuring chain design. This design incorporates sealed switches located in the float guide tube. The switches are actuated by the field of a permanent magnet in the float. The float riding upon the liquid magnetically transmits its position to the sensing chain, and the electronics convert this to an analog 4-20mA output.

The KSR series "T" gauges are also available in High Temperature and Sanitary versions.

KSR Kuebler series "T" tank gauges are used where reliable level measurement of process fluids is important. KSR series "T" and "TD" are loop powered. Inter-connection to an existing control system simple and easy. KSR series "T" also feature several standard sensor pipe diameters, important for applications requiring above normal mechanical strength. All KSR series "T" sensors employ heavy wall tubing as standard. Series "T" gauges can be used with KSR control units to perform pump control and alarm functions. KSR can also provide a control unit to provide tank linearization, important for accurate mass measurements in horizontal cylinders. Kuebler tank gauges combine reliability and high performance into one easy to specify unit.

Series "TD" are used in applications requiring continuous product *and* interface level measurement. Two independent 4-20mA loops are standard on "TD" units, making difficult installations a snap.

Immune to RFI and EMI, KSR tank gauges are also drift free, never requiring re-calibration.

STANDARD FEATURES

Series "T" and "TD" tank gauges from KSR Kuebler offer the following standard features:

- ◆ Two wire loop powered 4-20mA output.
- ◆ Lengths to 480" (12,000+mm)
- ◆ Wide selection of materials both for wetted and environmental parts.
- ◆ Factory Mutual Approved explosion proof and intrinsically safe for use in hazardous locations.
- ◆ Dual float models, (dual loops) for sensing interface and product, from a single unit.
- ◆ Wide selection of industrial process connections, welded to the sensor.
- ◆ Low specific gravities and high pressure services.
- ◆ Up to 300 °F process temperature capabilities.
- ◆ All Stainless Steel wetted parts as standard.

The above standard features allow you to select a model that best suits your process control needs, directly from this technical guide.



Standard KSR Kuebler Units

KSR Kuebler tank gauge "TD18" shown with a standard powder coated NEMA 7 & 9 / 4X type enclosure (left) with a welded NPT connection. This unit is configured to measure two levels, product and water bottoms.

A "T18" with an explosion proof cast aluminum enclosure and a welded ANSI flange and integral LCD display is shown at right.

Catalog 1001g
04/26/02 rv A

HOW A KSR KUEBLER ELECTRONIC TANK GAUGE WORKS

A float with a built-in magnetic system actuates tiny magnetic sensors through the sensor tube wall. These special KSR Kuebler magnetic switches form a resistance measuring chain that continuously generates a voltage proportional to the height of the liquid level.

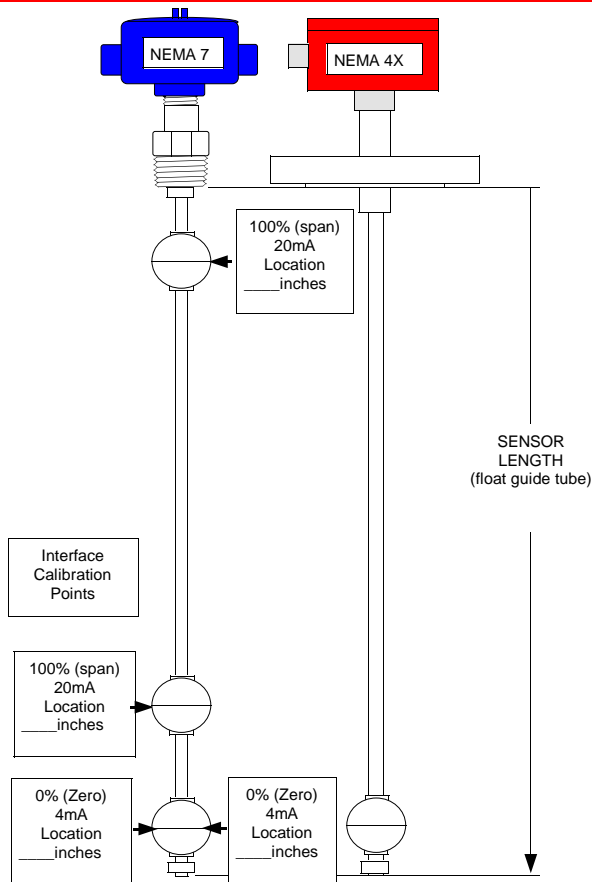
The resistance measuring chain is closely stepped and is made up from special small KSR ASIC chips positioned along a PCB. Due to this assembly the generated voltage is approximately continuous. The custom electronics, located either integral in the electrical enclosure of the unit, or up to a mile away in remote applications, converts the voltage change to a standard 4-20mA output signal. Standard electrical outputs are either 4 to 20mA, or 0-10 VDC. Systems that can interpret potentiometer outputs may read the series "T" directly, with no on-board electronics required.

Built for rugged industrial applications, the model series "T" tank gauge is designed to give years of trouble free operation. Designed to be maintenance free, the KSR model series "T" never requires re-calibration.

STAINLESS STEEL FLOATS FOR SERIES "T" TANK GAUGES

Float Part #	Float Mat'l	Float Form	Float Dia.	Inner Dia.	Float S.G.	Max. Press.	Max. Temp.
SVK-T	316Ti S/S	Cylinder	1.73" (44mm)	.59" (15mm)	.80 (.80g/cm3)	232PSI (16Bars)	482°F (250C)
SV-T	316Ti S/S	Ball	2.04" (52mm)	.59" (15mm)	.70 (.70g/cm3)	580PSI (40Bars)	482°F (250C)
SVA-T	316Ti S/S	Ball	2.44" (62mm)	.59" (15mm)	.60 (.60g/cm3)	464PSI (32Bars)	482°F (250C)
SVB-T	316Ti S/S	Ball	3.22" (82mm)	.59" (15mm)	.45 (.45g/cm3)	362.5PSI (25Bars)	482°F (250C)
SVB23-T	316Ti S/S	Ball	3.14" (80mm)	.90 (23mm)	.60 (.60g/cm3)	362.5PSI (25Bars)	482°F (250C)
SVC-T	316Ti S/S	Ball	3.85" (98mm)	.90 (23mm)	.60 (.60g/cm3)	362.5PSI (25Bars)	482°F (250C)
SVD-T	316Ti S/S	Ball	4.13" (105mm)	.90 (23mm)	.55 (.55g/cm3)	362.5PSI (25Bars)	482°F (250C)
SVF23-T	316Ti S/S	Ball	4.72" (120mm)	.90" (23mm)	.42 (.42g/cm3)	362.5PSI (25Bars)	482°F (250C)
SVF38-T	316Ti S/S	Ball	4.72" (120mm)	1.49" (38mm)	.60 (.60g/cm3)	362.5PSI (25Bars)	482°F (250C)
SV200-T	316Ti S/S	Ball	7.87" (200mm)	2.20" (56mm)	.55 (.55g/cm3)	232PSI (16Bars)	482°F (250C)
SV300-T	316Ti S/S	UFO	11.81" (300mm)	2.20" (56mm)	.40 (.40g/cm3)	232PSI (16Bars)	482°F (250C)

Select the float that matches your process requirements.
KSR Kuebler calibrates floats for interface service.



Customer Name _____

Customer Ref.# _____

KSR Model # _____

Sensor Information

Sensor Length _____

Sensor Material _____

Connection Type _____

Connection Size _____

Connection Rating _____

Max. Pressure _____

Max. Temp. _____

Min. Temp. _____

Liquid Name _____

Electrical Information

Output Type _____

Housing Type: NEMA 7 _____ NEMA 4 _____

Electrical Enclosure Material:
Aluminum _____ Stainless Steel _____

Conduit Entry: 1/2" _____ 3/4" _____

Entry Quantity: 1 _____ 2 _____

Float Information

Float Material _____

Product Float #1 part# _____

Interface Float part# _____

Upper Liq. S.G. _____


Lower Liq. S.G. _____

By _____

Date _____



TOLL FREE 1-888-577-5385

Tank Gauges Series T Specifications	T12	T14 & TD14	T18 & TD18	T48 & TD48
Maximum Length	120" (3048 mm)	120" (3048 mm)	240" (6096 mm)	480" (12192 mm)
Minimum Resolution	.50" (12.7mm)	.25" (6.35mm)	.19" (5mm)	.19" (5mm)
Maximum Non-Linearity	0.1% of Span	0.1% of Span	0.1% of Span	0.1% of Span
Required Power Supply	11 to 30 Volts DC	11 to 30 Volts DC	11 to 30 Volts DC	11 to 30 Volts DC
Maximum Loop Resistance (load) @ VDC	1,000 Ohms @ 30 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC	1,000 Ohms @ 30 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC	1,000 Ohms @ 30 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC	1,000 Ohms @ 30 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC
Maximum Process Pressure*	NPT=1,000 PSI ANSI Flanged =Flange Rating*	NPT=1,000 PSI ANSI Flanged =Flange Rating*	NPT=1,000 PSI ANSI Flanged =Flange Rating*	NPT=1,000 PSI ANSI Flanged =Flange Rating*
Max. & Min. Process Temperature*	-100°F to + 300°F (-73 C to + 149 C)	-100°F to + 300°F (-73 C to + 149 C)	-100°F to + 300°F (-73 C to + 149 C)	-100°F to + 300°F (-73 C to + 149 C)
Max/Min. Electronics Ambient Temperature	-30°F to + 160°F (-34 C to + 71 C)	-30°F to + 160°F (-34 C to + 71 C)	-30°F to + 160°F (-34 C to + 71 C)	-30°F to + 160°F (-34 C to + 71 C)
Sensor Tube Diameter	.47" (12 mm)	.55" (14 mm)	.787" (18 mm)	1.89" (48 mm)
Sensor Tube Wall Thickness	.040" (1 mm)	.040" (1 mm)	.118" (3 mm)	.118" (3 mm)
Conduit Entry Size NEMA 4X	3/4" NPT	3/4" NPT N/A TD14	3/4" NPT N/A TD18	3/4" NPT N/A TD48
Conduit Entry Size NEMA 7 (Single Loop)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)
Conduit Entry Size NEMA 7 (Dual Loop)	N/A	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)	3/4" NPT (dual is standard)
Conduit Entry S/Steel NEMA 4 x	1/2" NPT (dual is optional)	1/2" NPT (dual is optional)	1/2" NPT (dual is optional)	1/2" NPT (dual is optional)
Transmitter Hysteresis	<.5mm (.020") typical	<.5mm (.020") typical	<.5mm (.020") typical	<.5mm (.020") typical
Factory Mutual Hazardous Area Approvals 	Explosion Proof Class 1, Division 1, Groups B, C, & D Intrinsically Safe** Class 1, Division 1, Groups A, B, C, & D	Explosion Proof Class 1, Division 1, Groups B, C, & D Intrinsically Safe** Class 1, Division 1, Groups A, B, C, & D	Explosion Proof Class 1, Division 1, Groups B, C, & D Intrinsically Safe** Class 1, Division 1, Groups A, B, C, & D	Explosion Proof Class 1, Division 1, Groups B, C, & D Intrinsically Safe** Class 1, Division 1, Groups A, B, C, & D

* Maximum pressure and temperature rating can be limited by the float or connection used with your KSR Kuebler level transmitter model series "T".

** Only when properly connected with an approved Intrinsic Safety Barrier. Series TD requires (2) barriers, one per channel.