

**EXTERNAL CHAMBER TYPE LEVEL TRANSMITTERS MODELS "EZR"
LOOP POWERED TYPES & 120VAC TYPES WITH MICROPROCESSOR & RELAYS**

DESCRIPTION

KSR Kuebler model "EZR" external chamber transmitters provide an economical, accurate and highly reliable way to measure a tank's liquid level. Mounted outside of the tank, these units can be taken off line without disruption of the process. Close the upper and lower isolation valves, and the unit may be easily removed from service permitting periodic inspection as well as calibration checks to meet quality assurance plans. KSR Kuebler EZR units are easier to specify, easier to install, and easier to maintain than any other externally mounted level transmitter. The model EZR is unaffected by turbulence, foam, temperature changes, and provides super high versatility and high performance in critical process level applications. Model "EZR" units are externally mounted via ANSI flange or NPT connections permitting inspection during vessel operation.

Most EZR's are Loop Powered with 4-20mA output. Line voltage powered units are also offered. Other output types and protocols are available, including 0-10VDC or HART.

Designed for industrial users, all model "EZR" units are ASME Section IX welded, and are hydrostatically tested.

STANDARD FEATURES

Model "EZR" external mount transmitters from KSR Kuebler offer the following standard features:

- ◆ **All Stainless Steel** wetted parts as **standard**-(not carbon steel or iron castings).
- ◆ Lengths over 120" (3,048+mm)
- ◆ Wide selection of materials of construction, both for wetted and environmental parts.
- ◆ Designed Explosion Proof & Intrinsically Safe for use in hazardous locations.
- ◆ Complete selection of industrial process connections.
- ◆ Low specific gravities and high pressures services (500+ PSI)
- ◆ Extreme high and low process temperature capabilities.
- ◆ Select local indication, stainless steel electrical enclosures, or blind units.

The above standard features allow you to select a model that best suits your process control needs, directly from this order guide. The model EZR is unaffected by turbulence, foam, temperature changes, and provides unmatched versatility and high performance in critical process level applications.

Model "EZR" Magnetic Transmitter units are designed for use in Petroleum, Petrochemical, Solvents, Power, Fuels, Chemicals and General Process applications.



The KSR Kuebler Magnetic Level Transmitter model EZR shown above with optional LCD integral display . The float chamber is specially designed in stainless with full penetration welding standard and is carefully crafted for reliable operation, low maintenance and light weight. 4-20mA Loop Powered.

Catalog 1017mini
05/10/02 rv C



EZR-M Microprocessor Based Electronics feature 2 programmable relays 4-20mA output and LED Display

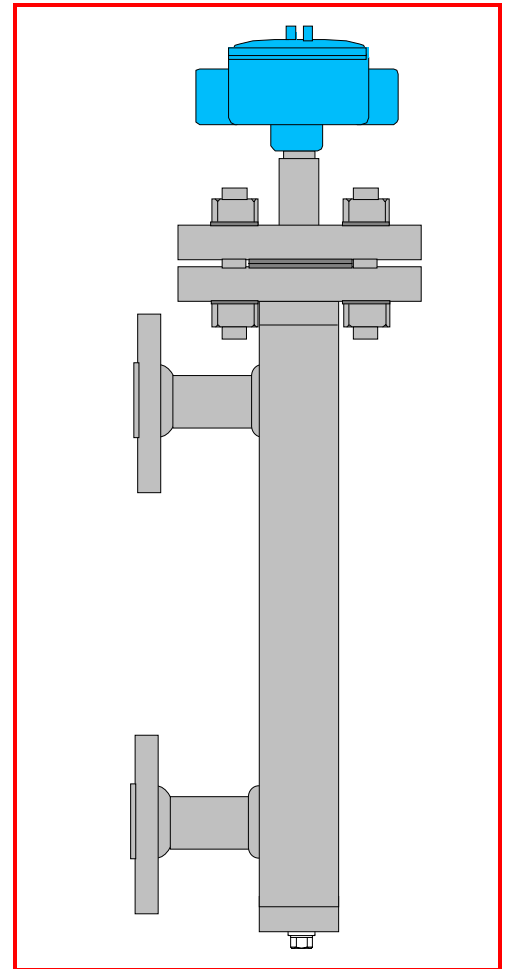
MODEL "EZR" EXTERNAL LEVEL TRANSMITTER FEATURES AND BENEFITS

Features

- ◆ Simple, Robust, and solid design.
- ◆ Loop Powered 4-20mA Output plus other digital outputs
- ◆ High and low temperature capability
- ◆ Wide selection of process connections available as standard on series "EZR".
- ◆ Exotic Materials are standard for model EZR.
- ◆ Wide selection of floats for process compatibility.
- ◆ Unmatched selection of electrical enclosures.
- ◆ Unaffected by changing process conditions.

Benefits

- ◆ Easy to install, and built to last.
- ◆ Easy interface into existing systems, including digital
- ◆ KSR Kuebler transmitters are suitable for services from -100°F to over +450°F.
- ◆ Select ANSI Flanges, NPT, Weld Fittings, DIN, or JIS Connections
- ◆ Hastelloy B and C plus Titanium are standard materials for KSR Kuebler
- ◆ KSR has the float for your pressure and specific gravity.
- ◆ Die cast aluminum or stainless steel housings.
- ◆ Ignores foam, dielectric changes, pressure or temperature changes.



KSR Kuebler series "EZR" Magnetic Transmitter units are used where having reliable level sensing of process fluids is important. Series "EZR" products provide the ultimate in simplicity for installation and require no periodic re-calibration-ever. The sensor design is such that no drift can occur. The EZR is a direct level measurement instrument, as the float is detected absolutely so the level is not inferred as with other measuring technologies, i.e. electrical properties of the fluid as in capacitance, or motion imparted on a spring as in a displacer, or in the transit time of an acoustic wave as in magnetostriction or ultrasonic types.

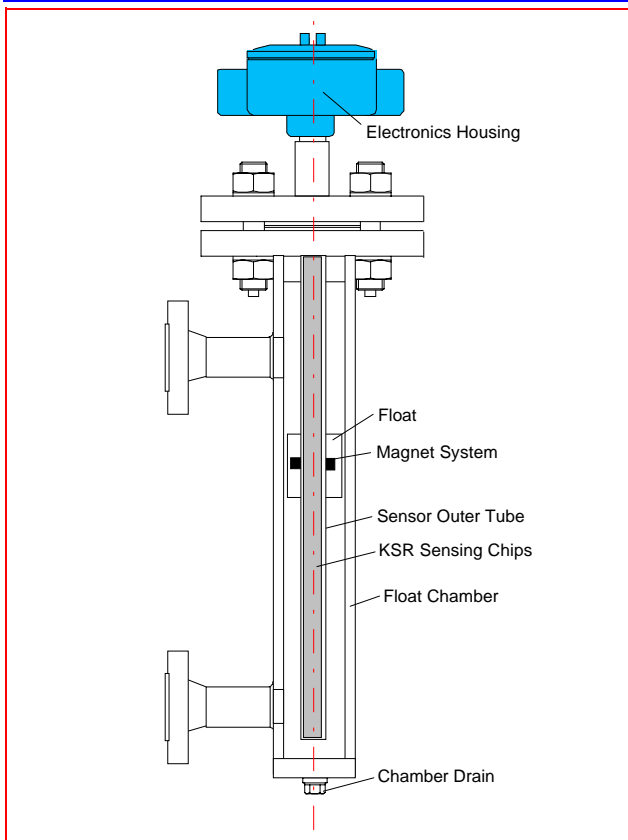
Designed for extreme operating conditions, this smooth operating design provides a continuous level output independent of temperature or environmental concerns.

KSR Kuebler units are designed for extreme process temperatures. Hastelloy or Titanium units are available for use in corrosive environments.

KSR Kuebler model EZR feature the KSR magnetic level sensor used world-wide in tens of thousands of severe industrial applications. Built for process and environmental extremes, these sensors have proven trouble free.

Unlike other external transmitters, the KSR model EZR does not require periodic re-calibration saving time and money.

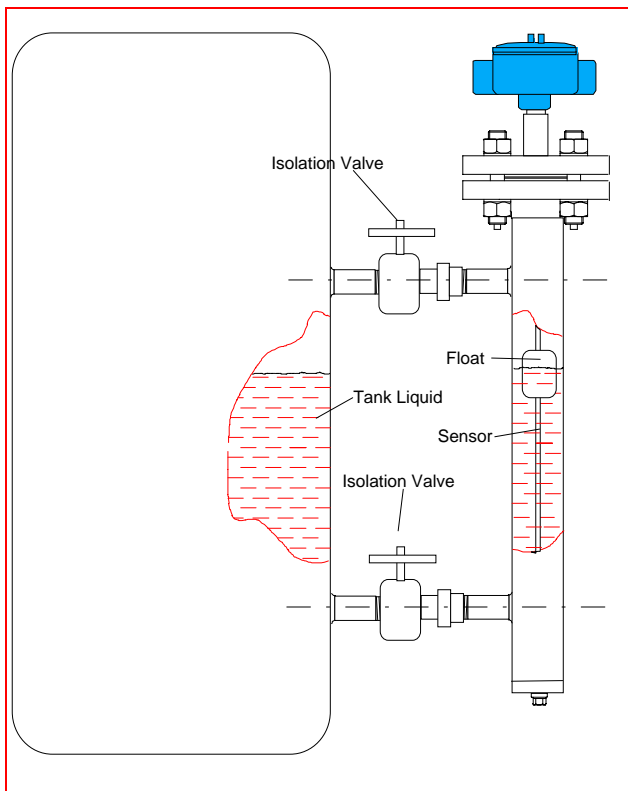
Potted electronics provide an extra degree of protection from harsh environments. A "blind" model is shown above-no display with an Explosion Proof enclosure.



EZR Operating Principle

The float chamber is mounted to the side of a liquid storage vessel, and as the liquid rises and falls, a float with a built in magnetic system inside the float chamber rises and falls with the liquid level. The magnet system is arranged inside the float, so the field surrounds the magnetic sensing chips. The position of the magnet (float) is detected by the sensing chips to a high degree of accuracy permitting the unit to repeat to within 1mm over the measuring range.

This system is an absolute digital sensor, so the liquid level is directly measured, not inferred as with a displacer type sensors which require a spring or torque tube to impart a lifting force on the displacer causing minute upwards motion which is translated to liquid level. The EZR employs no springs or torque tubes that can weaken inducing errors in measurement. The sensor is also designed for temperatures that springs or torque tube units cannot measure accurately due to the sag and contraction due to high and low temperature effects on the spring elements.



Typical EZR Installation Shown at Left

Model "EZR" products are mounted external to the process vessel, and provide reliable measurement of liquid level where turbulence or accessibility to the tank interior is a problem. External mounting also provides for ease of maintenance and process calibration verification, as the unit may be taken off line for these purposes without interruption of the process.

KSR Kuebler also has provided a wide range of accessories for the series EZR such as panel or integral display units, relay packs, and power supply units. Model ERZ electronics are compact and designed to be highly reliable, and are potted for environment stability, so outdoor use in harsh environments are no problem.

The series EZR product line combines reliability and high performance into one easy to specify unit. EZR makes direct level sensing **easier**, more accurate and more reliable than ever before. EZR replaces troublesome capacitance, ultrasonic or obsolete displacer units with no additional wiring or complicated programming.

KSR Kuebler Level Control Products of America has made specifying Magnetic Level Transmitters easy. The following "How to Order" guides allow you to select the exact configuration you need to meet your process control requirements. The next page offers standard options to meet your level measuring needs. Model EZR can be furnished for pressures up to 1,000 PSI and higher. Standard catalog units are rated to 580 PSI @ 482F. Standard specific gravity rating for model EZR is 0.60. However, lower specific gravity models are available.

Choose the model series "EZR" that suits your needs. For general purpose level sensing at the model "EZR-G" offers NEMA 4X electronics housings and can be used in hazardous locations because most EZRs are also Intrinsically Safe (when used with an approved barrier). Choose model "EZR-B" for Group B electronics housing in cast aluminum, or "EZR-S" for group B protection with a 316 stainless housing for those areas where corrosive vapors or sprays are encountered. Model "EZR-M" offer microprocessor based electronics and two relays for pump control and alarm functions. KSR Kuebler offers engineered solutions to difficult mounting applications. The "EZR" can be mounted upside-down, or at angles up to 20 degrees from vertical. You cannot do that with any displacer. If you required special features a "Top and Bottom" type flanged connections, trycock ports, sight glass connections, vents, drain valves, special gaskets, etc, call toll free for great pricing on these "specials". KSR Kuebler can build models per your exact needs. Model "EZR" features standard high and low temperature capabilities from -180 degrees F to >+ 480 degrees F.

1. CHAMBER MODEL/PRESSURE CLASS/TRANSMITTER RESOLUTION:: Begin the model selection process with entering the base model for the chamber pressure class you need.

2. ELECTRONICS HOUSING TYPE AND ELECTRONICS TYPE: Choose from NEMA 4X in die cast aluminum to explosion proof types in aluminum or stainless steel. Select a local LCD or LED indicator if needed. Model EZR-M includes two 5 amp relays and is microprocessor based for easy calibration of relay set points and zero & span span, just push the button!

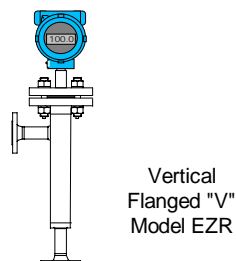
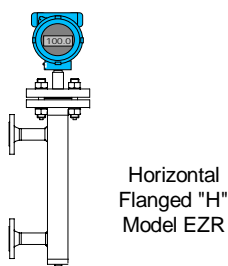
3. MATERIALS OF CONSTRUCTION FOR CHAMBER (Wetted Parts): Select from standard 316Ti stainless steel 316 Dual Grade, or choose Titanium or Hastelloy B or C. Other materials are available for special needs.

4. PROCESS CONNECTION SIZE AND TYPE: Choose between ANSI flanges, NPT or butt weld connections. Other connection types are available such as RTJ and flat faced flanges, plus DIN or JIS flanges. Consult KSR USA for special requirements.

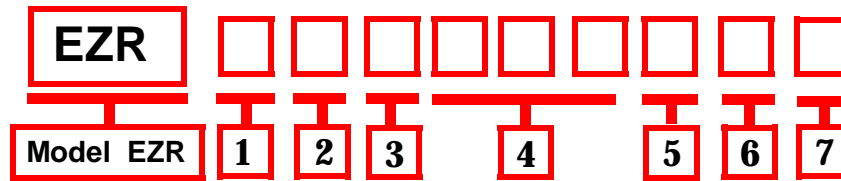
5. CONNECTION CLASS: Choose a connection class to suit your needs. Maximum pressure rating is dependent upon flange rating, float or chamber pressure rating.

6. CONNECTION ORIENTATION: KSR offers both side and side connections and side and bottom as standard. Enter an "X" in this field for special requirements such as top and bottom or top and side type connections.

7. MEASURING RANGE: Select a standard measuring range or have KSR build on to your exact dimensions, we do not charge more for custom lengths.



TOLL FREE 1-888-577-5385



1. PRESSURE CLASS & RESOLUTION

A =0.19" (5mm) resolution 150# pressure class chamber (232 PSI); **B** =0.19" (5mm) resolution 300# pressure class (580 PSI),
C =0.39" (10mm) resolution 150# pressure class chamber (232 PSI); **D** =0.39"(10mm) resolution 300# pressure class (580 PSI),
E =0.78" (20mm) resolution 150# pressure class chamber (232 PSI); **F** =0.78"(20mm) resolution 300# pressure class (580 PSI).

2. TRANSMITTER ELECTRICAL HOUSING & OUTPUT TYPE:

B = **4-20mA** Loop Powered - Blind (no display) Explosion proof (Gr B) explosion proof & NEMA 4X cast aluminum with dual 3/4" NPT conduit entries.

G = **4-20mA** Loop Powered - Blind, NEMA 4X Die cast aluminum housing, single 1/2" NPT conduit entry. Factory Mutual approved Intrinsically Safe, CI 1, Div. I, Gr A.

H = **HART** Compliant Communications (user selectable to 4-20mA), Blind (no display) Explosion proof (Gr B) explosion proof & NEMA 4X cast aluminum with dual 3/4" NPT conduit entries.

L = **4-20mA** Loop Powered NEMA 7/9 (Group B) explosion proof cast aluminum with viewing window for LCD Indicator, dual 1/2" NPT conduit entries, KSR blue epoxy finish. LCD local indicator included.

M = 4-20mA Output, 120VAC or 24 VDC Powered NEMA 7/9 (Group B) explosion proof cast aluminum with viewing window for LED Indicator, dual 3/4" NPT conduit entries, KSR blue epoxy finish. LED local display and two programmable 5 amp relays included. (Specify your desired input voltage).

S = 4-20mA Loop Powered Group B explosion proof stainless steel with viewing window for LCD Indicator, dual 3/4" NPT conduit entries.

W = 4-20mA, Loop Powered, NEMA 4X Stainless steel enclosure, single 1/2" NPT Conduit Entry.

3. "MATERIALS OF CONSTRUCTION"

S = 316Ti Stainless Steel (type 1.4571) Included in base price in "EZR" above, **L** = 316/316L Stainless Steel (Dual Grade),
C = Hastelloy C-276, **B** =Hastelloy B, **T** = Titanium

4. PROCESS CONNECTION SIZE & TYPE

F05=1/2" ANSI flanges, **F75**=3/4" ANSI flange, **F10**=1.0" ANSI flange, **F15**=1.5" ANSI flange, **F20**=2.0" ANSI Flgs.

N05=1/2" NPTM, **N75**=3/4" NPTM, **N10**=1" NPT

W05=1/2" Plain End Welding Nipple, **N75**=3/4" Plain End Welding Nipple, **N10**=1" Plain End Welding Nipple.

5. CONNECTION CLASS (Rating):

A=150# ANSI, **B**=300# ANSI, **C**=600# ANSI, **N**=NPT and butt weld fittings equals chamber rating; **S** = Stub end butt welding nipples; **X**=Special. Maximum pressure rating is dependent upon the minimum rating among the process flanges or chamber pressure rating.

6. CONNECTION ORIENTATION:

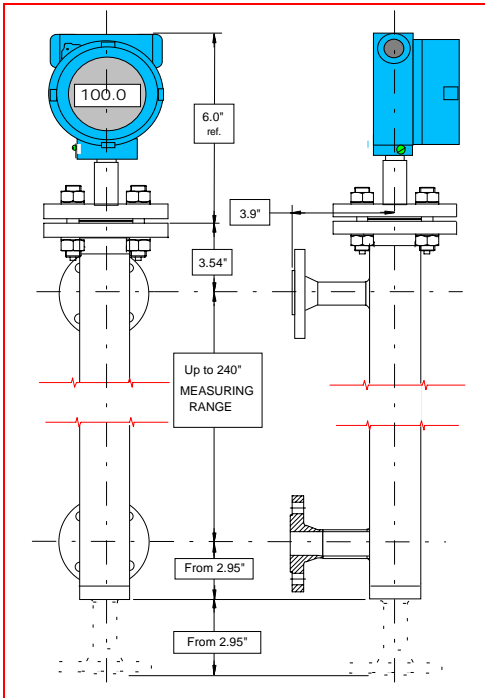
H = Horizontal (side & side) connections off the float chamber body (this option also comes standard with a 3/4" NPT plugged and safety wired drain at chamber bottom; **V** = Vertical (side and bottom), upper connection is horizontally oriented and the bottom connection is made from the bottom of the float chamber where the drain is normally located on a style "H" unit.

7. MEASURING RANGE (process connection centerline for horizontal connections) : **A**=14" (356mm),
B=24" (610mm), **C**=36" (914mm), **D**=48" (1219mm), **E**=60" (1524mm), **F**=72" (1829mm), **G**=84" (2137mm), **H**=96" (2438mm),
J=108" (2743mm), **K**=120" (3,048mm), **X**=Customer specified (up to 240"- 6096mm).

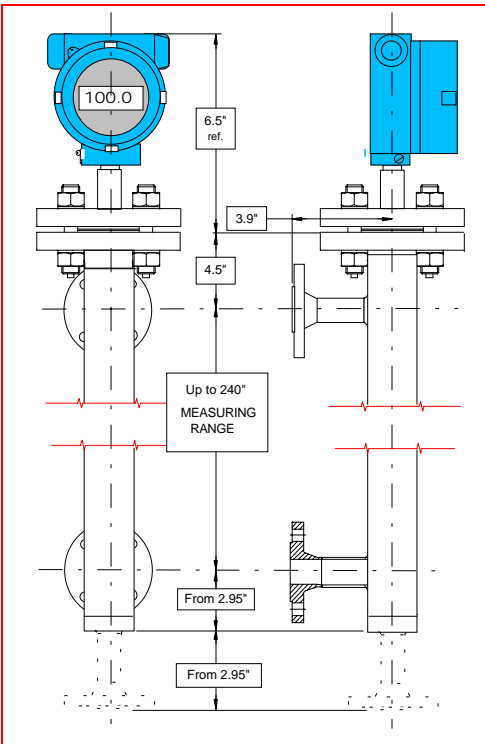
No charge for custom ranges.



TOLL FREE 1-888-577-5385



**MODEL "EZR" 150# CHAMBER
BASIC DIMENSIONS**
Side & Side flange arrangement shown



**MODEL "EZR" 300# CHAMBER
BASIC DIMENSIONS**
Side & Side flange arrangement shown

MODEL "EZR" 150# GENERAL SPECIFICATIONS

Chamber: $\phi 2.37$ " X 0.078" wall thickness or X 2.51" X 0.102"
(60.3 x 2mm or $\phi 64$ x 2mm)

Chamber end top: ANSI 2" 150 lb WNRF Flange or DIN 16 or 25 BAR RFWN Flange. RTJ or Flat Face available.

Chamber end bottom: Flat Cap with drain plug $\frac{3}{4}$ " NPT
Options: - Drain valve,- Drain flange

Process connections: side-side, side-bottom, top and side, top & bottom.

Flanges to 600 lb, ANSI B 16.5 ; $\frac{1}{2}$ " - 2", NPTM/F threaded or welding stubs. DIN or JIS also available.

Distance center-to-center: min.6" (150mm) to max. 240" (6000mm) distance between flange centers (other dimensions on request).

Float: Type depending on Specific Gravity

Chamber Material:Stainless steel 1.4571, 316L, Hastelloy C or B, or Titanium

Nominal pressure: max. 230 PSI @ 100°F / 1,6 MPa

Temperature range: -128°F (-89C) to +482°F (+250C)
(according to design and options)

Optional Display (Shown): LCD, Loop Powered, 3 -1/2 Digits., Red LED with Relays.

Further options: _____

Side & Bottom Flanges: See How to Order Guide
Stainless Steel Housing: See How to Order Guide
Electrical. trace heating: on request
Chamber insulation: on request

MODEL "EZR" 300# GENERAL SPECIFICATIONS

Chamber: $\phi 2.37$ " X 0.078" wall thickness or X 2.51" X 0.102" (60.3 x 2mm or $\phi 64$ x 2mm)

Chamber end top: ANSI 2" 300 lb WNRF Flange or DIN 25 or 40 BAR RFWN.

Chamber end bottom: Flat Cap with drain plug $\frac{3}{4}$ " NPT
Options: - Drain valve,- Drain flange

Process connections: side-side, side-bottom, top and side, top & bottom.

Flanges to 600 lb, ANSI B 16.5 ; $\frac{1}{2}$ " - 2", NPTM/F threaded or welding stubs. DIN or JIS flanges also available.

Distance center-to-center: min.6" (150mm) to max. 240" (6000mm) distance between flange centers (other dimensions on request).

Float: Type depending on Specific Gravity

Chamber Material:Stainless steel 1.4571, 316L, Hastelloy C or B, or Titanium

Nominal pressure: max. 580 PSI @ 100°F / 4.0 MPa (40 Bar)

Temperature range: -128°F (-89C) to +482°F (+250C)
(according to design and options)

Optional Display (Shown): LCD, Loop Powered, 3 -1/2 Digits., Red LED with Relays.

Further options: _____

Side & Bottom Flanges: See How to Order Guide
Stainless Steel Housing: See How to Order Guide
Electrical. trace heating: on request
Chamber insulation: on request

NOTE:
* This pressure rating is for the float chamber only. The float or connections you select may lower the "as installed" pressure rating.

MODEL EZR MAGNETIC LEVEL TRANSMITTER SPECIFICATIONS

Transmitter Product Specification	EZR-G Intrinsically Safe & Weatherproof Magnetic Level Transmitter	EZR-B Explosion Proof & Intrinsically Safe Magnetic Level Transmitter	EZR-L Explosion Proof & Intrinsically Safe Magnetic Level Transmitter	EZR-H Explosion Proof Magnetic Level Transmitter	EZR-M Explosion Proof Magnetic Level Transmitter
Maximum Length*	120" (3048 mm)	120" (3048 mm)	120" (3048 mm)	120" (3048 mm)	120" (3048 mm)
Maximum Resolution	0.19" (5mm)	0.19" (5mm)	0.19" (5mm)	0.19" (5mm)	0.19" (5mm)
Maximum Non-Linearity	0.1% of Span	0.1% of Span	0.1% of Span	0.1% of Span	0.1% of Span
Hysteresis	<.5mm (.020") typical	<.5mm (.020") typical	<.5mm (.020") typical	<.5mm (.020") typical	<.5mm (.020") typical
Required Power Supply (D.C. Volts)	11 to 36 Volts DC	11 to 36 Volts DC	11 to 36 Volts DC	11 to 36 Volts DC	120 -220 VAC 24 Volts DC D
Output or Communication Protocol	4-20mA	4-20mA	4-20mA	HART Protocol or 4-20mA user selected	4-20mA & 2 EA. 8 Amp Programmable Relays
Maximum Loop Resistance (load) @ VDC	1,000 Ohms @ 36 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC	1,000 Ohms @ 36 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC	1,000 Ohms @ 36 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC	1,000 Ohms @ 36 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC	1,000 Ohms @ 36 VDC 750 Ohms @ 24 VDC 400 Ohms @ 12 VDC
Max. & Min. Process Temperature*	-100°F to + 480°F (-74°C to + 250 C)	-100°F to + 480°F (-74°C to + 250 C)	-100°F to + 480°F (-74°C to + 250 C)	-100°F to + 480°F (-74°C to + 250 C)	-100°F to + 480°F (-74°C to + 250 C)
Max/Min. Electronics Ambient Temperature (Housing)	-30°F to + 160°F (-20°C to + +71°C)	-30°F to + 160°F (-20°C to + +71°C)	-30°F to + 160°F (-20°C to + +71°C)	-30°F to + 160°F (-20°C to + +71°C)	10°F to + 160°F (-8°C to + +71°C)
Conduit Entry Size NEMA 4	1/2" NPT	N/A	N/A	N/A	N/A
Conduit Entry Size NEMA 7 Cast Alum. Hsg Group B	N/A	3/4" (dual is standard) Blind Housing, no LCD	3/4" NPT (dual is standard) Hsg with LCD & Window	3/4" (dual is standard) Blind Housing, no LCD	3/4" (dual is standard) Housing with LED Display & Window & Relay Status Indicators
Conduit Entry S/Steel Hsg. NEMA 4X & Gr. B	3/4" NPT (single is standard) Intrinsically Safe Only	3/4" (dual is standard)	3/4" (dual is standard)	3/4" (dual is standard)	N/A
Hazardous Area Ratings Alum. & S/S Hsg Explosion Proof Approvals EZR uses FM Approved KSR Sensors Type T12, T14, T18, HT12, HT14, & HT18	Class 1, Div. 1, Grps B,C, & D Class II, Grps E, F, & G Intrinsically Safe Factory Mutual	Explosion Proof Class 1, Div. 1, Grps B,C, & D Class II, Grps E, F, & G Intrinsically Safe Class 1, Div. 1, Grps A,B,C, & D Class II, Grps E, F, & G Factory Mutual	Explosion Proof Class 1, Div. 1, Grps B,C, & D Class II, Grps E, F, & G Intrinsically Safe Class 1, Div. 1, Grps A,B,C, & D Class II, Grps E, F, & G Factory Mutual	Explosion Proof Class 1, Div. 1, Grps B,C, & D Class II, Grps E, F, & G Sensor FM Approved Intrinsic Safety PTB Approved	Explosion Proof Class 1, Div. 1, Grps B,C, & D Class II, Grps E, F, & G Housing FM Approved Sensor FM Approved

Longer measuring lengths available, consult KSR Kuebler for details.

SEE MORE ON THE WEB AT: WWW.KSR-USA.COM

Fill in this form and Fax it to 1-434-374-9522 for assistance in model selection.

Customer Name _____

Customer Ref.# _____

KSR Model # _____

Chamber Material _____

Connection Centerline _____

Connection Orientation _____

Connection Type _____

Connection Size _____

Connection Rating _____

Vent Connection _____

Drain Connection _____

Max. Pressure _____

Max. Temp. _____

Min. Temp. _____

Liquid Name _____

Output Type _____

Transmitter Resolution _____

Housing Gr. B _____ NEMA 4 _____

Electrical Enclosure Material:
Aluminum _____ Stainless Steel _____

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

Entry Quantity: 1 _____ 2 _____

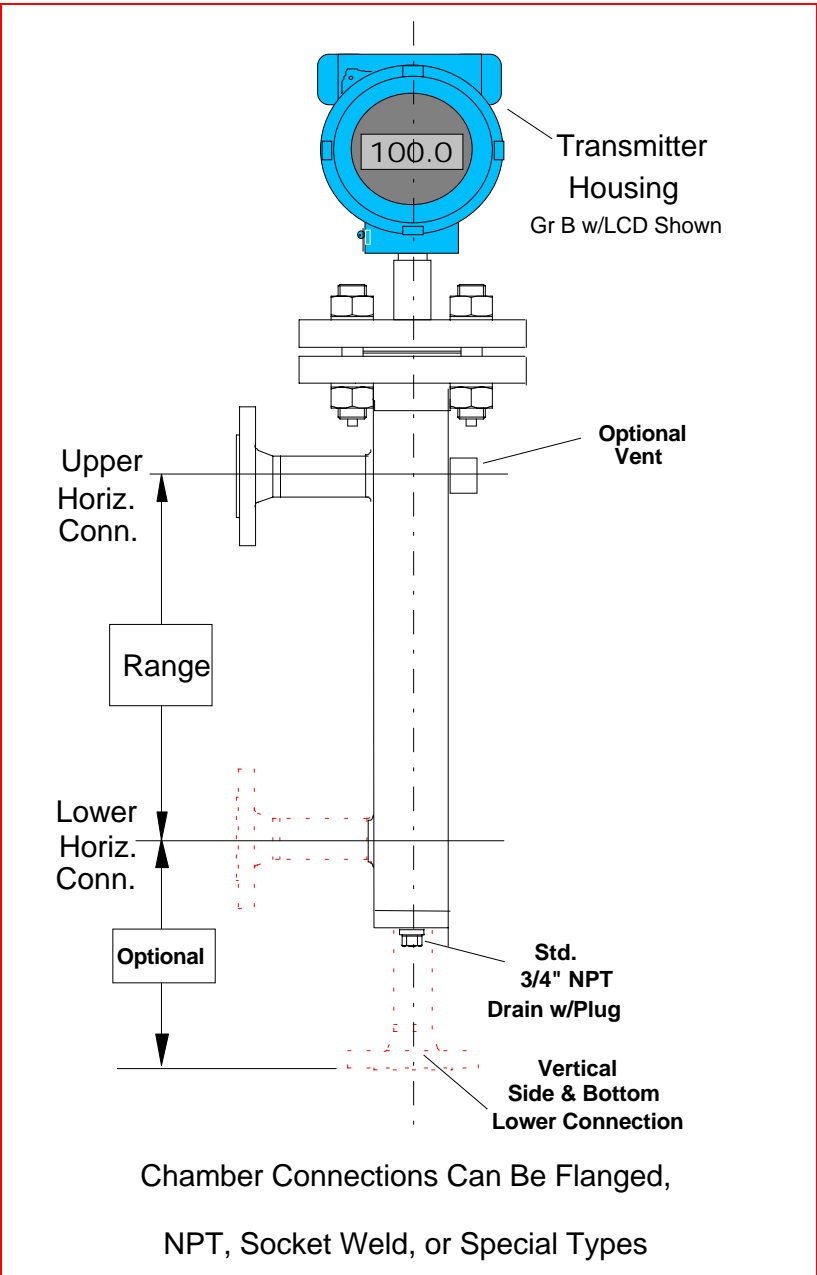
Float Material _____

Upper Liq. S.G. _____

Lower Liq. S.G. _____

By _____

Date _____



Your Fax Number Please
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Your E-Mail Please
