

Small Size – Alloys

XM-860 Series – Compact, Resistive Output Level Sensors

- ▶ High Volume/Low Cost OEM Design
- ▶ Brass or Stainless Steel Construction
- ▶ 1/2" or 1" Resolution
- ▶ Lengths to 24 inches (610 mm)

OEMs with fluid gauging requirements now have an affordable, yet robust continuous output sensor they can use to great value. Gems XM-860 liquid level sensors are a durable, low-cost solution for applications that don't require high-resolution output. Made of brass or stainless steel, this series offers rugged construction, utilizing a new, coated reed switch core that stands up to high levels of shock and vibration. They are equally at home in applications ranging from tranquil storage day tanks to the challenge of off-highway vehicle fluids tank gauging.

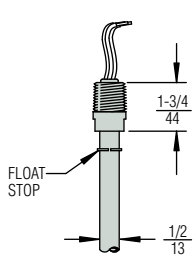
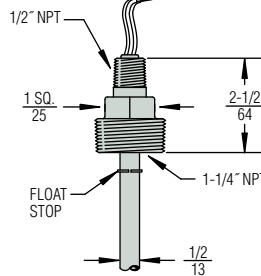
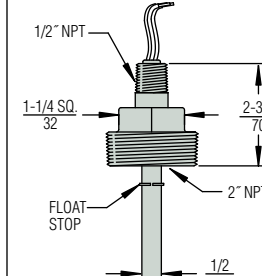
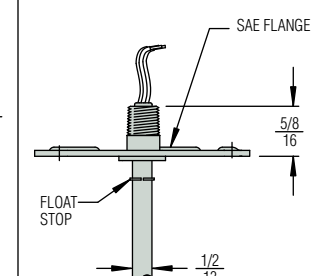
Gems XM-860 Advantages

- Floats provide true reading of liquid's surface position
- Floats can be used to sense dissimilar liquid interfaces (e.g. water/oil interface), including resulting emulsions.
- Unaffected by dielectric property of fluid
- Intrinsically-safe and Explosion-proof models available
- Unaffected by turbulence and motion

Typical Applications

- Generator Sets Fuel Tanks
- Reclamation Systems
- Coolant Reservoirs
- Auto Transmissions Fluid Reservoirs
- OHV Fuel Tanks
- Storage Day Tanks

1. Mounting Types

	Type 1 1/2" NPT Internal Mount	Type 2 1-1/4" NPT External Mount	Type 3 2" NPT External Mount	Type 4 SAE Flange External Mount
				
Stem Material	Brass or 316 Stainless Steel			Brass
Mounting Material	Brass or 316 Stainless Steel			Brass
Float Stop Material	Brass Units: Beryllium Copper Grip Rings; Stainless Steel Units: S.S. ARMCO PH-15-7MO Grip Rings			
Stem Length	24 inches (610 mm), Max.			
Output Wiring	Lead Wires Only	Lead Wires or Junction Box*		

* Explosion-Proof (EP) units are supplied with junction box. Junction boxes for IS- or non-rated units may be ordered separately—P/N 113873.



LEVEL SENSORS – CONTINUOUS

2. Output Types

Make ordering selections from *either* the 2-wire or 3-wire output types detailed below.

2a. 2-Wire Versions, 1-inch Resolution

Designed for simplicity and economy, 2-wire resistive-output versions connect directly to many common automotive-type panel meters. Accuracy is 1 inch. Select the output resistance code from the table below for your Order Check List.

Output Resistance				
Resistance Code	Top Hard Stop	Individual Step R	Full Transition	Unit
R1	33	$\frac{240-33}{A \text{ (In.)}}$	240	Ohms
R2	33	$\frac{255-33}{A \text{ (In.)}}$	255	Ohms
R3	240	$\frac{240-33}{A \text{ (In.)}}$	33	Ohms
R4	255	$\frac{255-33}{A \text{ (In.)}}$	33	Ohms

High Resistance = $\pm 2.75\Omega$
 Low Resistance = $33 \pm 0.50\Omega$

Electrical Rating – Red to Black Wire

Resistance	33-240 or 33-255
Minimum Resistance	1000 Ohms
Maximum Voltage	30.0 VDC
Maximum Current	0.030 Amps
Maximum Power Dissipation	0.10 Watts/Inch of Indication

2b. 3-Wire Versions, 1/2-inch Resolution

These versions connect to Gems signal-conditioners (optionally selected in step 6b) for a variety of VDC and mA outputs. Accuracy is 1/2 inch. The standard resistance code is shown below. Consult factory for other resistance values.

Resistance Code	Resistance Value			
	R _{Lead}	R	R _{Lag}	Unit
P1	0	100	0	Ohms

Total Indicating R = $R_{\text{Lead}} + (A \text{ (In.)} \times R) + R_{\text{Lag}}$

Electrical Rating – Red to Black Wire

Minimum Resistance	1000 Ohms
Maximum Voltage	30.0 VDC
Maximum Current	0.030 Amps
Maximum Power Dissipation	0.10 Watts/Inch of Indication

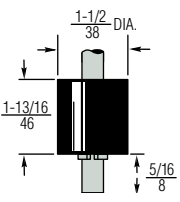
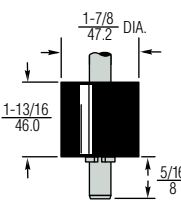
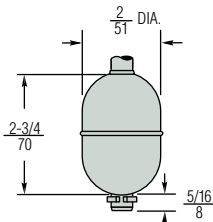
3. Output Options

- A. Non-Rated Units.** Supplied with lead wire output; junction box optional.
- B. Explosion-Proof Rated Units.** Supplied from factory with explosion-proof junction box.
- C. Intrinsically-Safe Rated Units.** Supplied with lead wire output; junction box optional.

4. Float Types

Make selection based on Mounting Type being used and performance requirements.

IMPORTANT: If you are specifying either an Explosion-Proof or Intrinsically-Safe output, you must select a stainless steel float here.

Float Material	Buna N	Buna N	316 Stainless Steel
Compatible Mountings	Type 1, 2, 3, 4	Type 1 & 3	Type 1 & 3
Float Dimensions			
Part Number	197428	43359	43590
Min. Liquid Specific Gravity	.63	.55	.75
Operating Pressure, Max*	150 PSI (10.3 bar)		300 PSI (20.7 bar)
Operating Temperature, Max.	Water: 180°F (82°C) Oil: 230°F (110°C)		300°F (149°C)

*@ Ambient Temperature

5. To Determine Dimensions

- X:** Dimensional factor based on selected float (see table below)
- B:** Overall Length = Inches of Indication + C** + X
- C:** Distance from bottom of mounting to float stop (customer specified):
 - 1/4" (6.4mm) minimum
 - 1-1/4" (31.8mm) minimum on Type 1, XT Series only
- M:** Distance from stem bottom to lowest level of indication
- N:** Distance from upper float stop to highest level of indication

Calculating Length

Note: 2-wire output units must specify Inches of Indication in even increments of 1 inch;
3-wire output units must be specified in even increments of 1/2 inch.

To find Overall Length when Inches or Indication is known:

- Inches of Indication + C** + X = Overall Length

To find Maximum Inches of Indication when Overall Length is known:

- Overall Length - C** - X = Maximum Inches of Indication

** C dimension is determined by customer.

If not specified, the float stop will be located at the minimum value (1/4").

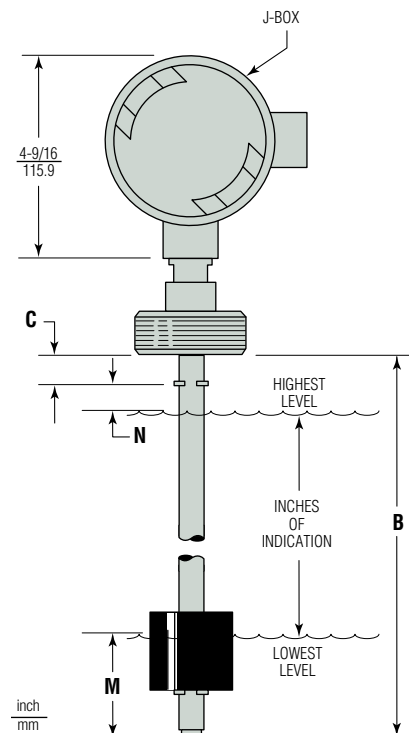
Float Factors

Float Part Number	X Factor	M Dimension	N Dimension
197428	2.5 (63.5)	1.312 (33.3)	1.187 (30.1)
43359	2.5 (63.5)	1.312 (33.3)	1.187 (30.1)
43590	3.437 (87.3)	2.187 (55.5)	1.25 (31.7)


inch (mm)

M and N Dimensions are based on water (specific gravity 1.0).

Typical Configuration



LEVEL SENSORS - CONTINUOUS

 <p>Photocopy This Form Use one form for each product type you are selecting. <small>This form may also be completed online at gemssensors.com for RFQ.</small></p>	This is a Request for a Quote Order P.O. _____ Quantity Needed _____ Date Required ____/____/____ Shipping Method: _____ Partial Accepted: Yes No	Name _____ Company _____ Street _____ City _____ State ____ Zip _____ Phone (____) _____ Fax (____) _____
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Float Type Level Transmitters – XM-860 Series

Application Environmental Conditions

This information is essential to the accurate and proper operation of your GEMS configurable sensors. Please complete fully and accurately.

- 1. **Liquid Media:** _____
- 2. **Pressure:** Minimum _____ psig Maximum _____ psig
- 3. **Temperature:** Minimum _____ °F Maximum _____ °F
- 4. **Specific Gravity:** Minimum _____ Maximum _____

- 5. **Viscosity:** _____ SSU
- 6. **Tank Material:** _____
Tank Depth: _____
- 7. **Unit is Mounted In:** Tank Top Tank Bottom
- 8. **Moisture Protection Required?** Yes No

1. Series

- XM-860 (1/2" Resolution) – 3 wire output
- XM-860 (1" Resolution) – 2 wire output

2. Mounting Type

- Type 1 (1/2" NPT) Type 2 (1-1/4" NPT)
- Type 3 (2" NPT) Type 4 (SAE Flange)

3. Materials

- a. Stem:
- Brass 316 Stainless Steel

- b. Mounting:
- Brass 316 Stainless Steel*

*Type 1, 2, & 3 only

4. Float Type

- 197428** – Buna N (Use with any Mounting Type)
- 43359** – Buna N (Use **only** with Mounting Type 1 or 3)
- 43590** – Stainless Steel (Use **only** with Mounting Type 1 or 3)

5. Dimensions

Overall Length (complete one line only):

Float Selected	Indicating Length ¹ (Whole Inches)	C Dimension ±1/16" (1.6mm)	Float Factor X Inch (mm)	Overall Length 24" (610 mm) Max.
197428			2.5 (63.5)	
43359			2.5 (63.5)	
43590			3.44 (87.3)	

Notes:

- 1. Indicating Length: 1" increments
- 2. Minimum C Dimension = 1/4"

6. Input/Output

Optional 24 VDC Power Supply:

- 115 VAC input 230 VAC input

Please contact Gems for any configuration or special requirements not covered on this form. **800-378-1600**

Quote: \$ _____ Date Quoted: ____/____/____

