

# TECHNICAL BRIEF

## FB5X LEVEL SENSOR

Class I, Div. 1, Grps. A, B, C & D

### Applications

- Level measurement
- Open channel flow



### Features

- Rugged sealed construction
- Housing design will accommodate transceiver and signal processing electronics
- Mounting cap available in BSP, NPT, or M32 threads
- Standard internal shielding

### Options

- Complete assembly available with standard cable lengths
- 10K $\Omega$  thermistors are optional for temperature compensation
- Available in PVDF housing for use in chemically aggressive environments
- FM approved



### SPECIFICATIONS

Best Operating Frequency: 50 kHz,  $\pm 4\%$

Minimum Transmit Sensitivity  
at Best Transmit Frequency: 106 dB,  $1\mu\text{Pa}/\text{V}$  at 1 m

Minimum Receive Sensitivity  
at Best Receive Frequency: -162 dB re  $1\text{V}/\mu\text{Pa}$

Minimum Parallel Resistance: 450  $\Omega$ ,  $\pm 30\%$   
Minimum and Maximum

Sensing Range\*: 25 cm to 15 m

Typical Sensing Range: 30 cm to 10 m

Free (1 kHz) Capacitance: 5,700 pF,  $\pm 20\%$  pF

Beamwidth  
(@ -3 dB Full Angle):  $12^\circ$ ,  $\pm 2^\circ$

Maximum Driving Voltage  
(2% Duty Cycle Tone Burst): 1,500 V<sub>pp</sub>

Operating Temperature: -40°C to 90°C

Weight: 560 g

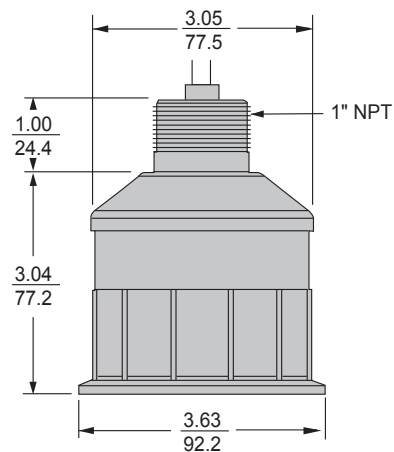
Cable Length: 45 feet

Housing Material: Glass filled polyester

Acoustic Window: Glass reinforced epoxy

\*Pulse-Echo Mode. Minimum and maximum ranges are best case scenarios. Actual range may vary, depending on drive circuitry and signal processing.

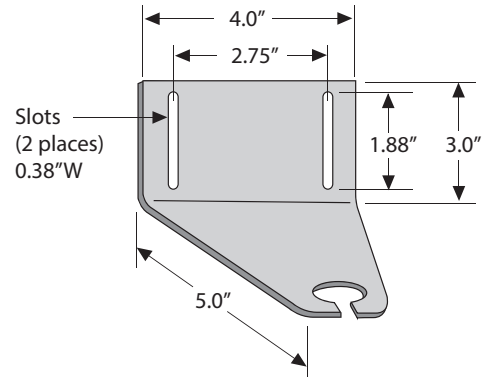
### Dimensions



## FB5X LEVEL SENSOR

### Sensor Bracket:

A Stainless Steel sensor bracket is provided with each FB sensor. Dimensions are shown to the right. Simply route cable through the end of the bracket and slide the 1 inch nipple through the hole in the bracket and tighten both nuts.



### Sensor Bracket:

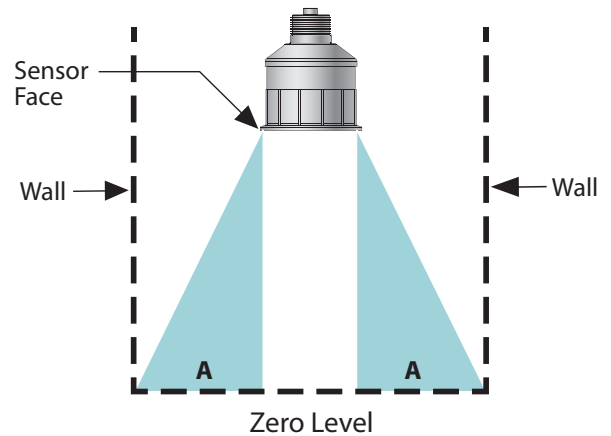
All primary devices (flume/weirs) will have a horizontal distance that is required. This dimension is usually upstream of the restriction in the device. (i.e. throat of flume, or crest of weir)

On both level and flow measurements, there is a minimum clearance from a wall or obstruction to the side of the sensor. (Refer to the drawing on the right.) This dimension is referred to as "A." "A" is calculated as follows:

**FB5X Sensor:**  $A = 6$  degrees or  $(0.09 * \text{Total Range})$

Total Range = Distance from bottom of sensor to zero level in feet or inches.

**Example:** Using an FB5X with a Total Range of 10ft.  $0.09 * 10\text{ft} = 0.9\text{ft}$ , or 10.8in.ft. The sensor will need to be mounted as a minimum of 0.09ft or 10.8 inches away from any wall or obstruction..



### System Diagram

