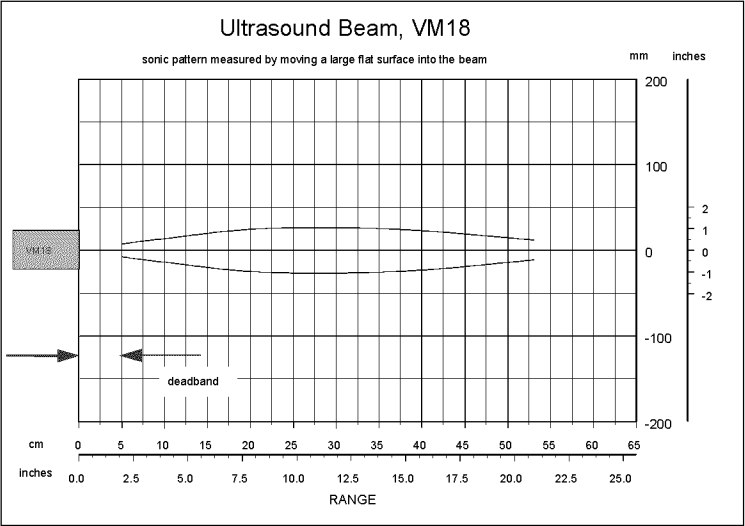


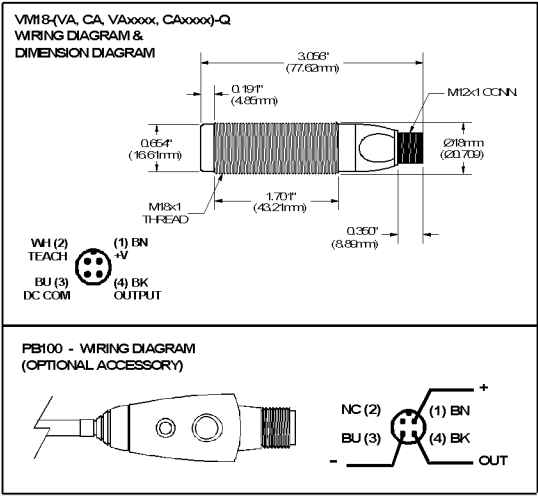
Beam Plot



Mounting / Alignment

Mount the sensor such that the surface of the object to be detected is approximately centered within the sensor’s sensing field. Mount the sensor firmly to avoid vibration. The sensor face should be parallel to the liquid or material surface and free of air currents.

Wiring Connections and Dimensions, Connector Model



Accessories

Model	PB100	Inline Pushbutton Switch (for teaching window)
Model	AC130	Straight, 4-Conductor Cable, Shielded, 5 meters (16 ft.)
Model	AC132	Right-Angle, 4-Conductor Cable, Shielded, 5 meters (16 ft.)
Model	AC228	Right-Angle Bracket

Sensing State Indicator LED’s (Operation Mode)

Off:	Sensor is not powered
Amber Only:	Object is within span limits
Green Only:	Object is not within span limits or no target is detected

Output Indicator LED

Orange:	Intensity varies directly with output magnitude
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Teach Sensing Span

Before operating the sensor, you should teach the sensor the sensing span, which is the distance between the near and far limits. The following procedure describes teaching the limits with a PB100 pushbutton accessory. To teach the limits, press and hold the pushbutton. The amber LED fast flashes and then after 3 seconds, the green LED slowly flashes indicating the sensor is in teach mode. Release the pushbutton, and the green LED continues slowly flashing to indicate the sensor is waiting for the first limit. Place a target at either the near or far limit, then press and release the pushbutton. While the pushbutton is pressed with a target present, the amber LED turns on indicating a valid echo is being detected. After the first limit is successfully taught, the amber LED slowly flashes to indicate the sensor is waiting for the second limit. Place a target at the second limit, and press and release the pushbutton. While the pushbutton is pressed with a target present, the LED stops flashing, indicating a valid echo is being detected. After the second limit is taught, the two limits are saved in non-volatile memory and the green LED fast flashes for 3 seconds to indicate the limits were successfully saved.

If not using an optional PB100 pushbutton, the process is similar. The White teach wire (Pin 2) can be grounded to the Blue DC return wire (Pin 3) to simulate the pushing of the button. All LED indications and the teach sequence are identical to the above detailed process.

While setting either limit, if no echo is detected the green and amber LED’s fast flash alternately to indicate no object is detected. After 5 seconds, the sensor resumes operation with the old limits. If either limit is not set in 30 seconds, a limit timeout occurs, the green and amber LED’s flash for 3 seconds indicating the error, and then the sensor resumes operating with the old limits.

General Specifications

Power Supply:

Supply: +15 to 24 VDC ($\pm 10\%$) @ 40 mA max (including output load)
Protection: ESD and reverse-polarity

Analog Output:

Voltage: 0 - 10 volts
Minimum Load Resistance: 2K ohms minimum
Protection: ESD and short circuit

Pushbutton Input:

Active voltage level: < 1.0 volt
Inactive voltage level: > 2.5 volts
Activation On/Off time: > 25 ms (3 seconds to arm for limit setup)

Response Time: 60 ms to 95% of full value

Loss-Echo Time: 250 milliseconds

Loss-Echo State: Hold last known value until echo is re-acquired

Operating Temperature: -30°C to 70°C (-22°F to 158°F)

Sensing: [T_A=20°C (68°F)] -Large Flat Target

Range: 50.8 mm (2.00 in.) to 508.0 mm (20.00 in.)
Maximum plane-reflector angle: $\pm 5^\circ$
Sonic Cone Angle: See beam plot
Window-edge accuracy: ± 1.27 mm (0.050 in.) @ constant temperature
Minimum object size Rod: 2.5 mm (0.098 in) at 254.0 mm (10.00") range, 0° tilt
Factory Set sensing window: 50.8 mm (2.00 in.) to 508.0 mm (20.00 in.)
Temperature Compensation: Temperature Compensation Enabled

Sensor Dimensions: See Sensor Dimension section

Sensor Connector Cable: Model AC130 or AC132 (see accessories section)

Sensor Materials:

Housing: PBT
Transducer face: Epoxy
Cable: Non-toxic PVC jacket
LED: Nylon

Sensor Ratings and Approvals:

NEMA 4X (Indoor Use Only) 5, 12, 12K, 13, and IP67

Installation/Overvoltage Category: II



CE Mark Compliant: Declaration of conformity available upon request.

This Product is UL Listed if powered by a Class II Power Supply and protected by a 2.0A Max UL Listed Fuse

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All goods purchased from Hyde Park Electronics LLC shall be free from defects in materials, design and workmanship under normal conditions of use for one year from the date of shipment. THIS WARRANTY IS THE SOLE WARRANTY AND IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE. THE LIABILITY OF HYDE PARK TO ANY PURCHASER SHALL BE LIMITED EXCLUSIVELY TO THE COST OF REPLACEMENT OR REPAIR OF DEFECTIVE PARTS, AND SHALL NOT INCLUDE LIABILITY FOR ANY DIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES WHATSOEVER, WHETHER FORESEEN OR UNFORESEEN, INCLUDING BUT NOT LIMITED TO LOST PROFITS, LOST SALES, OR INJURY TO PERSONS OR PROPERTY.

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VIRTUTM

VM18-VA2000-Q

Hyde Park
Sensors for the Real World

Ultrasonic Analog Output Sensor

0-10 Volt Analog Output, 18 mm Barrel with Quick Connect

Autoslope teachable limits, Hold on Loss-of-Echo

0 volts at power up



OPERATOR INSTRUCTIONS

This self-contained ultrasonic sensor provides an analog output signal proportional to the object position relative to the analog span limits. The Autoslope feature allows a reversible analog slope. Inverse mode is selected by teaching the near limit first and Direct mode by teaching the far limit first. Objects that are transparent, opaque, plastic, glass, metal, liquid, or solid can be detected within the sensing range. An amber and a green LED indicate sensing state, and an orange LED indicates the output magnitude.

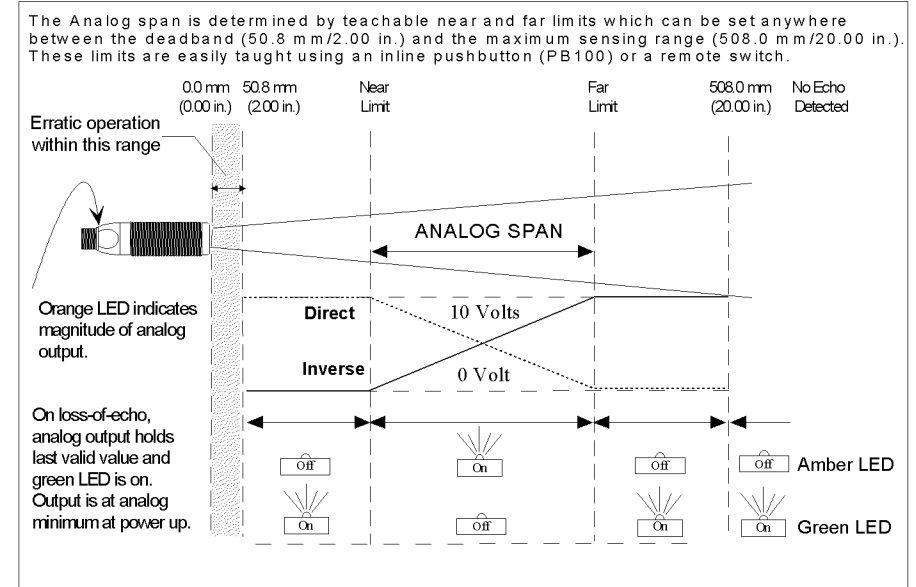


Figure 1

Literature and application engineering assistance are provided by Hyde Park and its authorized distributors to aid the customer in selecting the product for an application. The customer, however, is responsible for determining the suitability of the product in the application.

⚠ WARNING

UNINTENDED OPERATION

Do not use this product to detect objects within the deadband.

Failure to follow this instruction can result in death, serious injury or equipment damage.