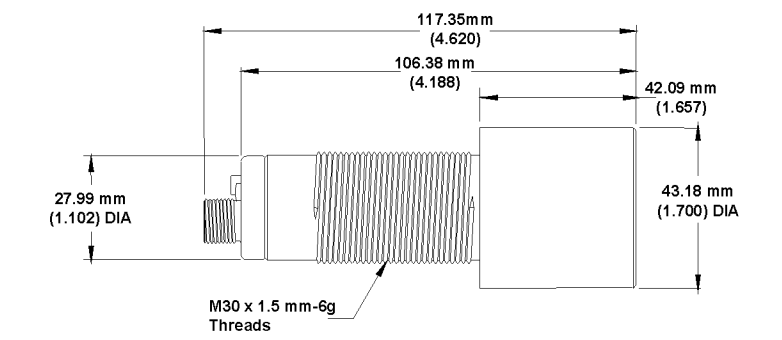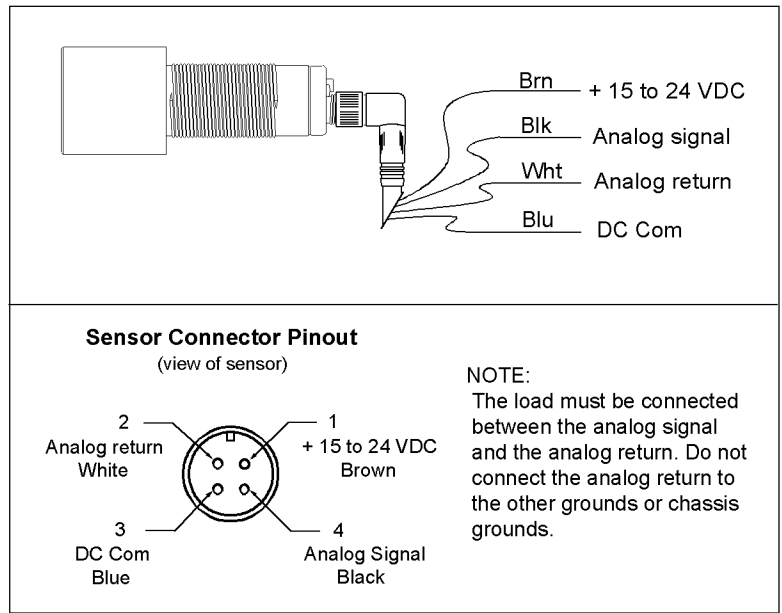## Mounting and Wiring

Mount the sensor firmly so that the object to be detected is never within 203 mm (8.0 inches) of the face of the sensor. For best results the sensor face should be parallel to the object surface. Also the sensor should be away from air currents.

### Dimensions

117.35mm (4.620)
106.38 mm (4.188)
42.09 mm (1.657)
27.99 mm (1.102) DIA
43.18 mm (1.700) DIA
M30 x 1.5 mm-6g Threads

### Wiring Connections

Brn + 15 to 24 VDC
Blk Analog signal
Wht Analog return
Blu DC Com

**Sensor Connector Pinout**
(view of sensor)

2 Analog return White
1 + 15 to 24 VDC Brown
3 DC Com Blue
4 Analog Signal Black

NOTE:
The load must be connected between the analog signal and the analog return. Do not connect the analog return to the other grounds or chassis grounds.

## Operation

The analog output varies directly proportional with the object position relative to the analog span limits. When the object is at or closer than the near analog span limit and farther than the deadband, the analog output is at 20 mA and the amber LED is at full brightness. When the object is at or farther than the far analog span limit and within the sensing range, the analog output is at 4 mA and the amber LED is off.

### Multicolor LED States

The multicolor LED indicates the position of the object

| Multicolor Led | Object Position |
|---|---|
| Red | At or closer than near span limit |
| Green | Between near and far span limits |
| Amber | At or farther than far span limit |
| Off | Object not being detected |

### Amber LED

The amber LED intensity varies directly with the magnitude of the analog output, with off indicating the analog output is at 4 mA and full brightness indicating the analog output is at 20 mA.

### Loss of Echo Operation

Loss of echo occurs when the sensor does not receive any echoes within its sensing range for more than 1 second. On loss of echo the analog output goes to 20 mA.
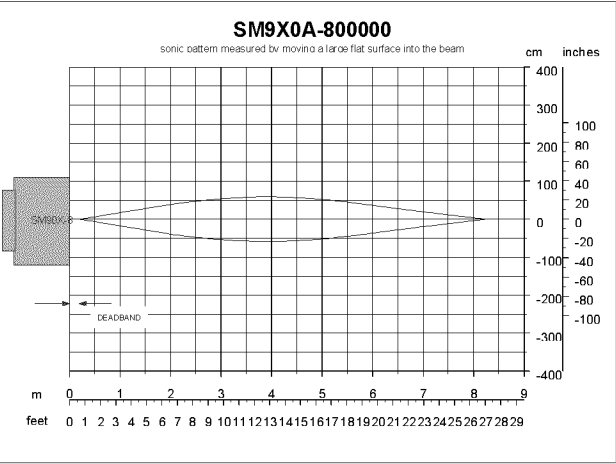
## Setting the Analog Span Limits

Depress the SETUP pushbutton (the multicolor LED rapidly flashes amber to indicate the pushbutton is pressed) until the multicolor LED flashes green (about 3 seconds), and then release the SETUP pushbutton. The multicolor LED continues flashing green indicating the sensor is waiting for the first limit. Align a flat object parallel to the sensor face at the desired distance position for either window limit, and press the SETUP pushbutton once. Upon release of the SETUP pushbutton, the multicolor LED flashes amber indicating the first limit is set and the sensor is waiting for the second limit. Align a flat object parallel to the sensor face at the desired position for the second window limit and press the SETUP pushbutton once. Upon release of the SETUP pushbutton, the multicolor LED turns to the color that indicates where the object is located. The sensor has no timeout for setting limits.

While the SETUP pushbutton is depressed, the multicolor LED turns amber to indicate the sensor detects the object. If the sensor does not detect the object, the multicolor LED is red while the SETUP pushbutton is depressed, and when the SETUP pushbutton is released after not detecting an object, the multicolor LED flashes red 2 seconds, and then requests that limit again by flashing green for the first limit or flashing amber for the second limit.

The limits are saved in nonvolatile memory and thus retained when power is removed from the sensor.

## Beam Plot

**SM9X0A-800000**
sonic pattern measured by moving a large flat surface into the beam

cm    inches
400
300    100
200    80
       60
100    40
       20
0      0
       -20
-100   -40
       -60
-200   -80
       -100
DEADBAND
       -300
       -400

m    0    1    2    3    4    5    6    7    8    9
feet 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

## Accessories

Model AC233      Mounting bracket, right angle
Model AC441A     Handheld configurator

### Mounting Bracket Dimensions



MODEL AC233
SINGLE PROBE
BRACKET 30mm

### AC441A - Handheld Configurator



28.9mm (1.138") Deep

5
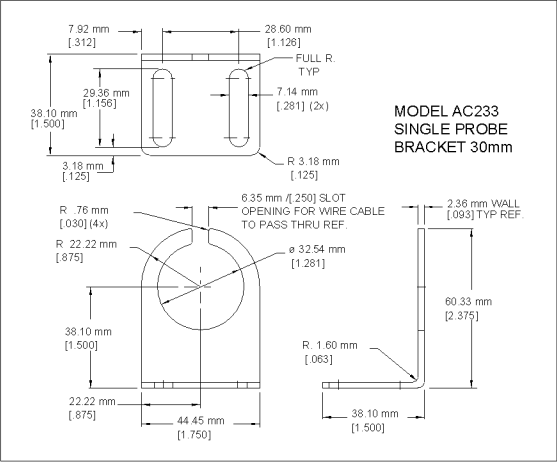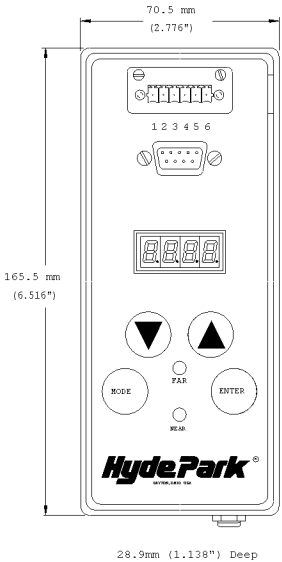
## General Specifications

**Power Supply:** +15 to 24 VDC @ 80 mA, excluding load

**Analog Output:** 4-20 mA

**Response Time:** 500 milliseconds

**Loss-Echo Time:** 1 second

**Loss-Echo State:** 20 mA

**Operating Temperature:**
-10°C to 60°C (14°F to 140°F) @ 100% relative humidity

**Sensing:**
Range: 203 to 8,001 mm (8.0 to 315.0 inches)
Limit Adjustment Resolution: 0.254 mm (0.010 inch)
Sensor Angle with respect to smooth flat surface: 90° ± 10°
Repeatability: ± 0.86 mm (0.034 inch) from smooth flat surface at
                      constant air temperature

**Quick Disconnect Cables (Optional):**
AC130: Straight, 4-conductor, 5 meters (16 feet)
AC132: Right-angle, 4-conductor, 5 meters (16 feet)

**Sensor Housing Material:**
Case: PEI
Face: Epoxy - White

**Sensor Ratings and Approvals**
NEMA 4X (Indoor Use Only) 5, 12, 12K, 13, and IP67

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

Installation/Overvoltage Category: II

# SUPERPROX®

**HydePark** Sensors for the Real World

## SM956A-831400

## Ultrasonic Analog Output Sensor
## 30 mm, Direct 4-20 mA Analog Output
## 20 mA on loss-of-echo

UL LISTED
IND. CONT. EQ.
3KYC
SUPPLY CLASS 2
FUSE 2A UL LISTED

## OPERATOR INSTRUCTIONS

This self-contained, ultrasonic analog output sensor provides an analog output signal that is directly proportional to the object position relative to the analog span limits. The analog output is at 4 mA when an object is at or farther than the far analog span limit. The analog output is at 20 mA when an object is at or closer than the near analog span limit. Objects that are transparent, opaque, plastic, glass, metal, liquid, or solid can be detected within the sensing range. A multicolor LED indicates the zone of the object and an amber LED indicates the magnitude of the 4 to 20 mA analog output.
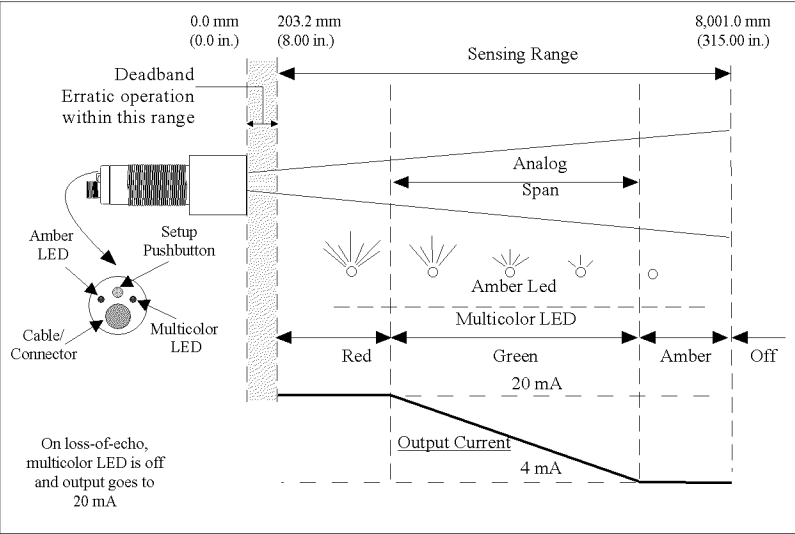


Figure 1

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 or outside the sensing window.

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