



# SonaSwitch<sup>®</sup> 1650-S

The SonaSwitch<sup>®</sup> 1650-S electrostatic ultrasonic transducer system, with laser aiming, provides a complete sensor solution to simplify your product design and packaging.

## Specifications



## Features

- 50 KHz Electrostatic Transducer with Integrated SMT Electronic Circuitry
- Two (2) Independent Push-button Settable Detection Ranges
- Form C (NO/NC) Relay Output for each Range
- Output Range Window and Power LED Indicators
- Ranges from 6" to 20'
- Temperature Compensated Switch-point Output

## Part No.

FGI-1650001 SonaSwitch<sup>®</sup> 1650-S Sensor with 6' cable

## Description

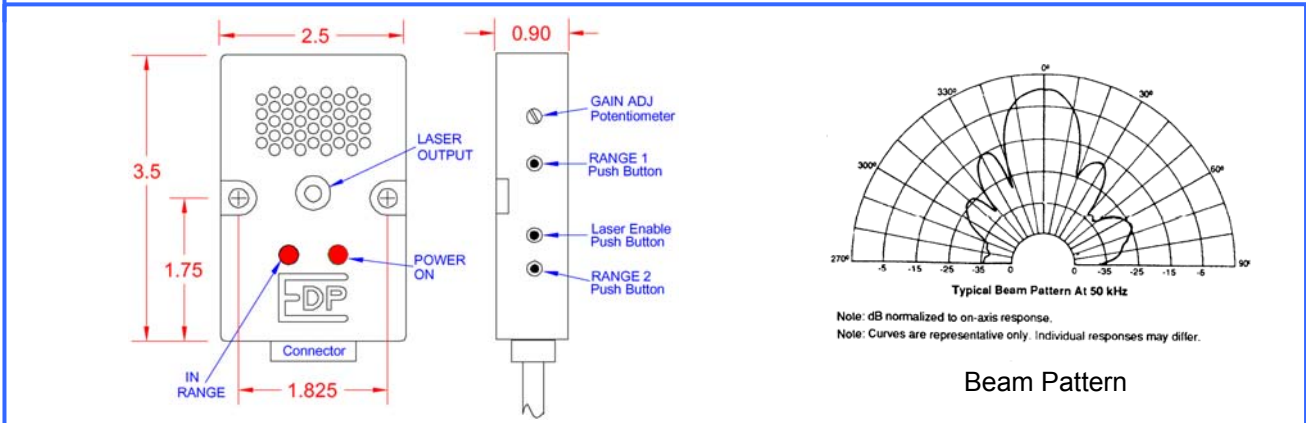
The SonaSwitch<sup>®</sup> 1650-S Laser ultrasonic sensor provides a total system in a compact package, containing an ultra sensitive electrostatic transducer and supporting circuitry to provide two (2) independent outputs, each independently push-button settable, indicating the detection of a target between 6 inches and 20 feet away. The 1650-S can be externally triggered, or continually sense at a 10 Hz rate. The 1650-S is insensitive to temperature, humidity, and pressure changes. The Sensor can also withstand high audio and EMI/RFI levels.

## Benefits

- Self Contained Compact Design
- Can be Triggered Internally or Externally
- Able to Range from 6" to 20'
- Excellent Receive Sensitivity
- Push Button Range Settings for quick and easy set-up.

## Applications

Level Measurement, Proximity Detection, Presence Detection, Robotics, Educational Products



**SonaSwitch® 1650-S Specifications**

**Distance Ranges:** ..... 0.15 – 6.10 M ..... (0.5 - 20 feet)

**Switch Point Accuracy:** (over entire range).....± 0.1%

**Beam Pattern:**..... See Graph  
Typically 15° nominal.

**Repetition Rate:** (astable)..... 10 Hz  
May be externally triggered up to a 50 Hz rate

**Outputs:** Form C Relay Outputs.....2

- Relay continuously energized during the detection period.
- Relay Contacts rated at:
  - 0.4 amps, 125 VAC resistive
  - 1.25 amps, 24VDC resistive

**Relay Response Time:**

0.5 seconds nominal from start of detection to relay closure; 0.5 second nominal shut-off time

**Power Requirements:** .... 12 to 24 VAC; 10 to 30 VDC  
(Maximum current = 0.15 A; 0.08 A average)

**Operating Temperature:**.....-40 to +85° C  
(-40 to 185° F)

**Weight:** (approximately) ..... 198 grams (7.0 oz)

**Dimensions:**

**Height** ..... 8.89cm .... (3.50 inch)

**Width**..... 5.72 cm ... (2.25 inch)

**Depth** ..... 2.29 cm ... (0.90 inch)

**Mounting:** ..... Two (2) No.10 (5/32”) machine screws  
mounted flat on 1.85” centers.

**Cable:**..... Supplied with a 6 foot cable

**Case Material:** .....High temperature electroplated  
ABS Plastic

**Case Color:**..... Medium Blue

Specifications subject to change without notice

**General Installation Procedures**

1. Always Mount the SonaSwitch® 1650-S in a suitable dry location. The SonaSwitch® 1650-S is designed for use in indoor or protected environments only. Excessive moisture in the circuit board and transducer will result in damage and improper operation, and will void all warranties.
2. Mount the SonaSwitch® 1650-S as far off the ground as practical (A minimum of 24 inches).
3. Adjust the gain to the Minimum setting necessary to insure reliable target detection (excessive gain can result in false detections).
4. Mount the SonaSwitch® 1650-S in a location where environmental interference sources are minimized (examples are EMI sources, air nozzles, excessive air turbulence, etc.)

**Calibration**

Calibrating the SonaSwitch® 1650-S is as simple as placing a target in front of the sensor and setting the range by depressing the appropriate push button. The 1650-S also incorporates a laser which allows precise positioning of the sensor with relationship to the target.

For detailed installation and calibration procedures, refer to the Installation instructions included with your SonaSwitch® 1650-S.

**WARNING**  
**NEVER LOOK DIRECTLY INTO THE LASER LIGHT WHEN ACTIVATED**  
**DOING SO MAY CAUSE PERMANENT DAMAGE TO YOUR EYES AN/OR VISION**

**Cable Wiring Information**

Conn. Pin #	Wire Color	Function	Description
1	RED	POWER INPUT	12-24 VAC/20-30VDC Power Input
2	BLACK	POWER INPUT	12-24 VAC/20-30VDC Power Input
3	WHITE	N.O. 1	Relay 1 - Normally Open Contact
4	YELLOW	COM 1	Relay 1 - Common
5	ORANGE	N.C. 1	Relay 1 - Normally Closed Contact
6	BLUE	EXT. TRIG.	External Trigger Input
7	BROWN	ECHO OUT	TTL Level PWM Clock Output
8	GREEN	GND	Ground Return (Common)
9	VIOLET	N.O. 2	Relay 2 - Normally Open Contact
10	GRAY	COM 2	Relay 2 - Common
11	PINK	N.C. 2	Relay 2 - Normally Closed Contact
12	BROWN/WHITE		
13	BLACK/WHITE	EXTERNAL TRIGGER ENABLE	Enable External Trigger Input (pin #6)
14	RED/WHITE	RECV. OUT	Internal Receiver Test Output
15	LIGHT GREEN	LASER EN.	Enable Laser Pointer
SHELL	DRAIN		