The DEETER Group®

TBT/TBR-600
Self-Contained Ultrasonic Sensor

Features

- Self Contained
- Sensing Range 0 - 40"
- Operating Voltage 20 - 30VDC
- 200 counts per Second Maximum
- N.O. & N.C. Solid State Outputs
- Signal Strength LED Indicator
- Used as Thru-Beam or Reflective
- Adjustable Delay
- Adjustable Count Rate
- Adjustable Sensitivity
- PVC Housing
- Short Circuit Protected

The TBT/TBR-600-40QD is primarily a Thru-Beam sensor consisting of one transmit and one receive transducer, in separate and self contained housings. It can count up to 200 objects per second, as they pass through its ultrasonic beam, from 0 - 40". The sensors can also be mounted in a Reflective position to detect targets. The Thru-Beam and Reflective mounting options provide the user with simple and accurate ways to detect the presence of various objects. An adjustable Delay control is added to vary the output response of the solid state relays to the time, or count rate, of a moving target. An adjustable Sensitivity control is added to provide highly accurate target detection. P1 on the receiver (TBR) is labeled sensitivity adjustment. The LED is provided to show signal strength. The sensor is factory set with P1 fully clockwise (cw), making the LED solid red in color. When P1 is fully counterclockwise (ccw), the LED will be solid green in color. After positioning the sensors at the required distance, a typical adjustment is performed by turning P1 ccw, causing the LED to change from a solid red to a mostly red condition. The unit is now properly adjusted. To achieve greater sensitivity for smaller targets, turn P1 ccw so that the LED will be more green in color. To make the sensors less susceptible to heavy dirt build up, turn P1 cw so that the LED will be brighter red in color.

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ISO 9001
REGISTERED FIRM

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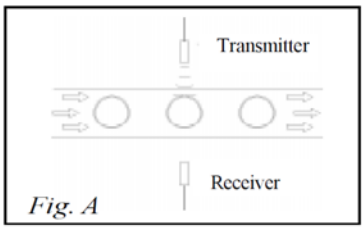
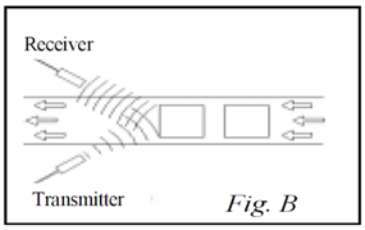
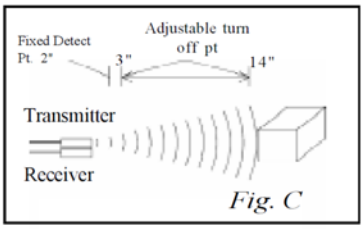


Sensitivity



Delay



Thru-Beam/Reflective

Sensitivity

Adjustable sensitivity is provided to accurately detect the distance of the target, by use of the P1 control potentiometer. To adjust, position the sensors in the desired locations. P1 should be fully counter clockwise, for the minimum sensitivity. In this position the LED will be in the green, or no detect state. Turn P1 slowly clockwise until the LED changes in color to a red yellow combination, and remains stable. In this state the sensors will provide the best detection of the desired target, and will not be affected by an adjacent target.

Delay

Adjustable delay is provided to vary the response of the solid state relay outputs, in relationship to time or the count rate of a moving target, by use of the P2 control potentiometer. P2 fully counter clockwise provides the fastest response time, and P2 fully clockwise provides the slowest response time. See the specification page under Response Time and/or Count Rate for more detail. The adjustment is performed simply by turning P2, counter clockwise (faster) or clockwise (slower), to respond appropriately to the speed of the targets moving past the sensors detection point.

Thru-Beam/Reflective

Figure A shows the transmit and receive sensors mounted for a Thru-Beam application. Figures B and C show the transmit and receive sensors mounted for a Reflective application. The TBT/TBR-600-40QD sensors can be used effectively for both sensing applications. The adjustment procedures for sensitivity, delay, and count rate, pertain to both the Thru-Beam and Reflective type of mounting or sensing applications.

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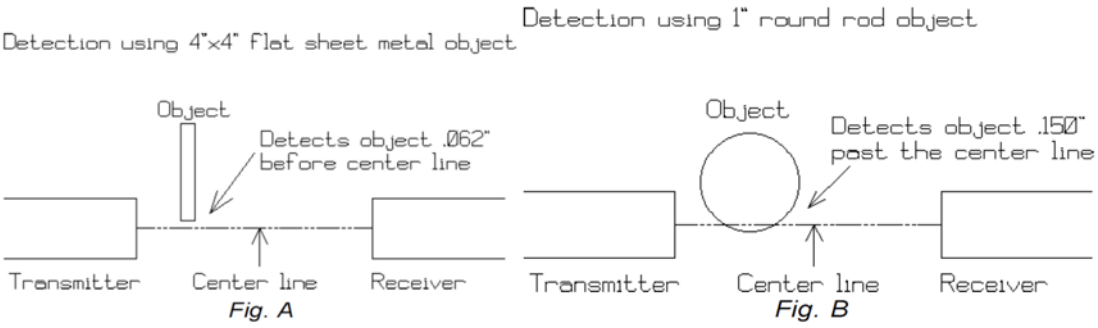
Specifications

Operational Range	Adjustable 0 - 40"
Input Power	20 - 30VDC
Input Current	TBT-600 is 45mA TBR-600 is 20mA
Ambient Temperature	0 - 60°C or 32 - 140°F
Humidity	0 - 95% Non-Condensing
Transducer Frequency	150kHz
Minimum Target Size	Adjustable Sensitivity (use control P1) Maximum Sensitivity (P1 full cw) Reflective - 1/8" dia. Rod Minimum Thru-Beam - 1/16" dia. Rod Minimum
Response Time ON OFF	Adjustable Delay (use control P2) 2ms min(P2 full ccw) to 200ms max(P2 full cw) 3ms min(P2 full ccw) to 200ms max(P2 full cw)
Count Rate Minimum Maximum	Adjustable (use control P2) 3 per second (P2 full cw) 200 per second (P2 full ccw)
Output	2 Solid State Relays, 1 N.O.- 1 N.C., 2 to 130 Volts AC or DC, 100mA DC Continuous or 50mA AC Continuous, Short Circuit Protected
Housing Material	PVC with PVC sensing face
Enclosure	NEMA 1, 4, 6P, 12, and 13
Weight	8 Ounces total per pair (4 Ounces each)



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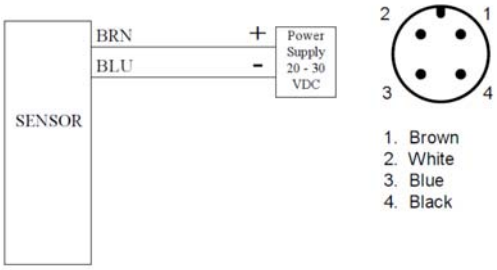

Fig. C

Fig. D

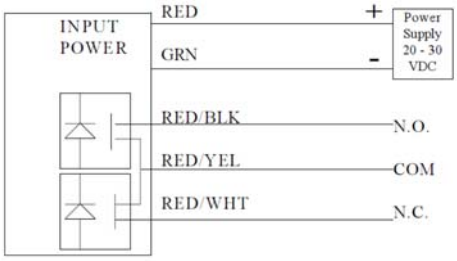

Fig. E

Fig. F

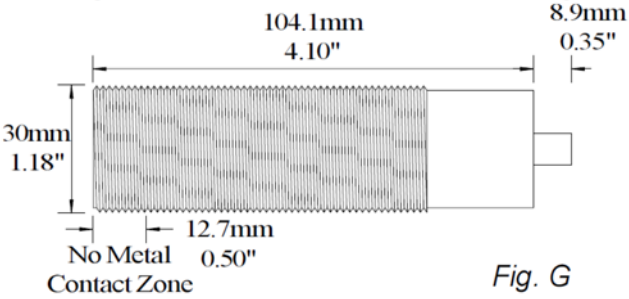

Fig. G

Figure:

A - Beam Spread
B - Beam Spread
C - Wiring Diag. for TBT
D - QD Connector TBT
E - Wiring Diag. for TBR
F - QD Connector TBR
G - Mounting Dimensions

Ordering Code

Part Number	Range	Description
TBT-600-40QD	0 - 40"	Transmitter with Quick Disconnect
TBR-600-40QD	0 - 40"	Receiver with Quick Disconnect
5000118-3		4 Pin, 6 Foot Cable for TBT-600-40QD - Sold Separately
5000118-6		4 Pin, 16 Foot Cable for TBT-600-40QD - Sold Separately
5000116-2		5 Pin, 6 Foot Cable for TBR-600-40QD - Sold Separately
5000116-4		5 Pin, 20 Foot Cable for TBR-600-40QD - Sold Separately

All electrical equipment should be installed by a qualified/certified electrician.
The Deeter Group follows a policy of continual development of its products and reserves the right to change specifications and/or features without notice

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