TBT/TBR-600

Features

- Self Contained
- Sensing Range 0” to 40”
- Operating Voltage 20 to 30 VDC
- 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
- Available in Valox Plastic or PVC
- Short Circuit Protected

The TBT/TBR-600-40 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 to 40 inches. 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.

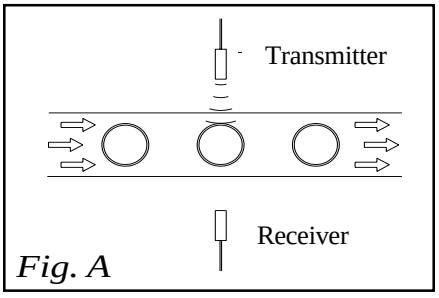


Fig. A

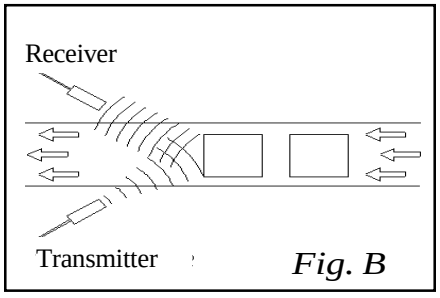


Fig. B

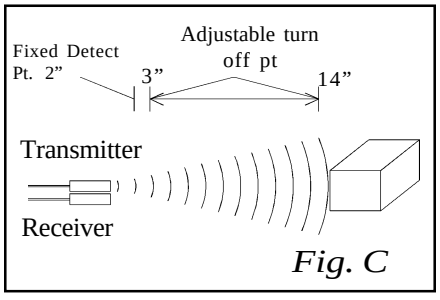


Fig. C

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 clock- wise 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 proceedure 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-600-40 sensors can be used effectively for both sensing applications. The adjustment proceedures for sensitivity, delay, and count rate, pertain to both the Thru-Beam and Reflective type of mounting or sensing applications.

Specifications:

Operational Range: Adjustable 0” to 40”

Input Power: 20 to 30 VDC, 45 milliamps for TBT unit,
20 milliamps for TBR unit

Ambient Temperature: 0°C to 60°C or 32°F to 140°F

Transducer Frequency: 180kHz

Minimum Target Size: Adjustable *Sensitivity* (use control P1)
maximum sensitivity (P1full cw)
Can detect down to 1/8” dia. Rod - Reflective
Can detect down to 1/16” dia. Rod - Thru-Beam

Response Time: Adjustable *Delay* (use control P2)
ON: 2mS min(P2 full ccw) to 200mS max(P2 full cw)
OFF: 3mS min(P2 full ccw) to 200mS max(P2 full cw)

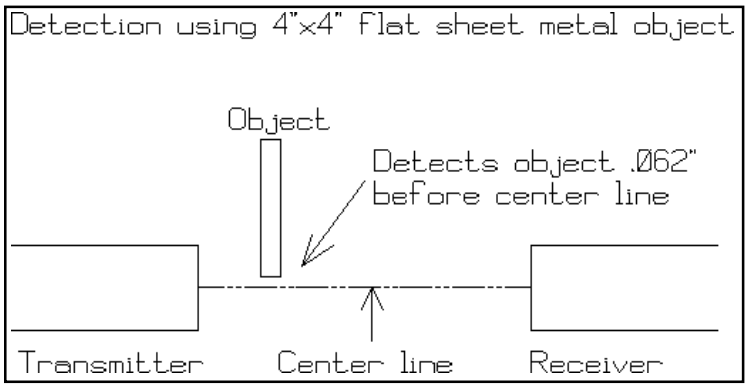
Count Rate: Adjustable (use control P2)
Minimum: 3 per second (P2 full cw)
Maximum: 200 per second (P2 full ccw)

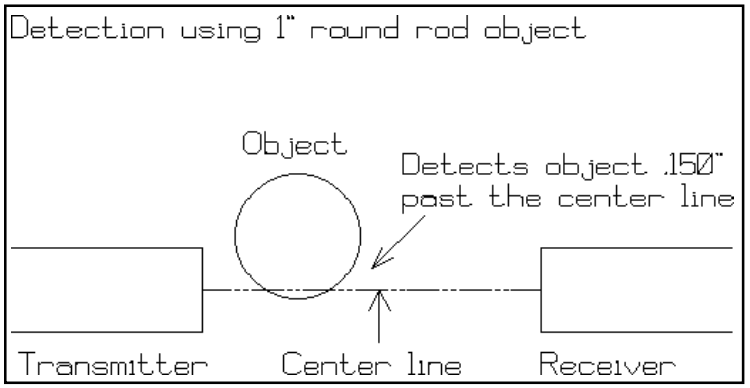
Output: 2 Solid State Relays, 1 N.O.- 1 N.C., 2 to 130
Volts AC or DC, 100mA DC Continuous or
50mA AC Continuous, Short Circuit Protected

Housing Material: 2 Types, 420D Valox Plastic or PVC

Sealing: 420D Valox Plastic - NEMA 1
PVC - NEMA 1, 4, 6P, 12, and 13

Weight: 8 Ounces total per pair (4 Ounces each)





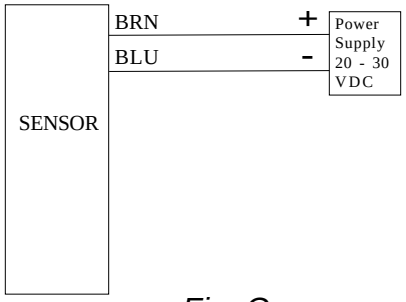


Fig. C

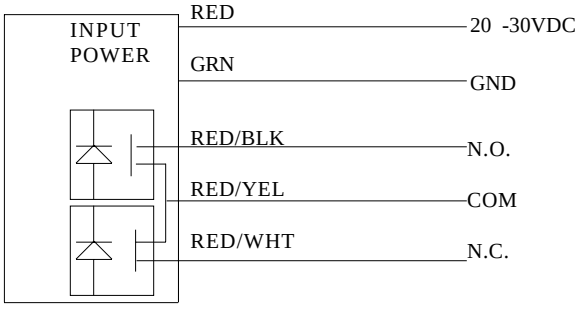


Fig. D

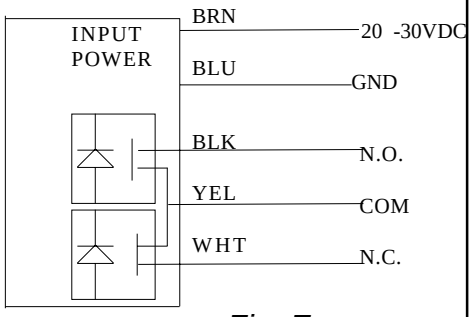
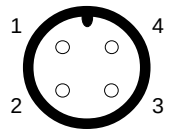


Fig. E

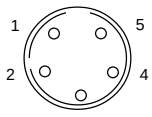
Figure:
A - Beam Spread
B - Beam Spread
C - Wiring Diag. for TBT
D - Wiring Diag. for TBR (QD)
E - Wiring Diag. for TBR
F - QD Connector TBT
G - QD Connector TBR
H - Mounting Dimensions

“QD” cables are sold separately.



1. White
2. Blue
3. Black
4. Brown

Fig. F



1. Red-Wt. Tr
2. Red
3. Green
4. Red-Yl. Tr
5. Red-Bk. Tr

Fig. G

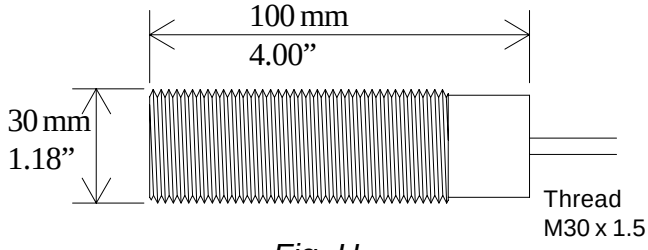


Fig. H

PART NUMBER	RANGE	DESCRIPTION
TBT-600-40	0” to 40”	Transmitter in Valox, Epoxy Filled, with 6 Foot Cable
TBR-600-40	0” to 40”	Receiver in Valox, Epoxy Filled, with 6 Foot Cable
TBT-600-40-QD	0” to 40”	Transmitter in PVC Housing with QD Connector
TBR-600-40-QD	0” to 40”	Receiver in PVC Housing with QD Connector
5000118-3		4 Pin, 6 Foot QD Cable for TBT-600-40-QD
5000118-6		4 Pin, 16 Foot QD Cable for TBT-600-40-QD
5000116-2		5 Pin, 6 Foot QD Cable for TBR-600-40-QD
5000116-4		5 Pin, 20 Foot QD Cable for TBR-600-40-QD

(815) 338-5800 / FAX: (815) 338-5803
935 Dieckman Rd., Woodstock, Il. 60098 USA
http://www.migatron.com e-mail: info@migatron.com