

TOUGHSONIC[®] 14

ULTRASONIC LEVEL & DISTANCE SENSOR



DESCRIPTION

The Toughsonic 14' Ultrasonic Sensors measure level and distance through the air using ultrasonic sound waves. They provide fast, reliable non-contact measurements at distances up to 14 feet, with an optimum range of 4 inches to 10 feet. These sensors come standard with 316 stainless steel housings, ruggedized piezoelectric ultrasonic transducers, epoxy potting, rear status indicators, and a permanently attached 2 meter cable. They are rugged and IP68 immersion-rated for use indoors and out. Both 1" NPT and 30mm threaded mountings are available.

FEATURES

- Optimal Measuring Range: 4 inches - 10 feet
- 316 Stainless Steel housing
- Voltage & 4-20mA outputs
- Operating Temperature: -40 to +158°F (-40 to +70°C)
- RS-232 & RS-485 Communication protocols
- Ability to Sync with up to 32 sensors

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PERFORMANCE SPECIFICATIONS

Optimum Range	10 ft. (3 m)	Max Range	14 feet (4.3 m)
Deadband	Typ. < 4 in. (100 mm)	Adjustment	Button "teach" or SenixVIEW
Case Material	316 stainless steel	Configuration	Stored in non-volatile memory
Temperature	-40 to 158 F (-40 to 70 C)	Outputs	Two selectable, plus serial data
Humidity	0 to 100% operating	Transducer	Ruggedized piezoelectric
Compensation	Temperature compensated	Protection	NEMA-4X, NEMA-6P, IP68
Resolution	Digital: 0.0034 in. (0.086 mm); Analog: 4099 steps (0-10 VDC), 3279 steps (4-20 mA)		
Repeatability	Nominal 0.2% of range @ constant temp. Affected by target, distance, environment		
Update Rate	20 Hz (50 ms), SenixVIEW adjustable; also affected by SenixVIEW filter selections		
Output Selection	Voltage & 4-20 mA current loop (defaults), switches, or a combination; see CONNECTIONS below		
Voltage Output	0-10, 0-5 VDC or PC customized, 10 mA max; also push-button teachable endpoints		
Current Loop	4-20 mA or PC customized, current sourcing, max. loop 450Ω, teachable endpoints		
Sinking Switch	150 mA max. @ 40 VDC max., teachable set point & polarity, fault indication		
Sourcing Switch	150 mA max. @ input voltage, teachable set point & polarity, fault indication		
RS-232, RS-485	Modbus protocol, 9600 to 115200 baud, 8 data bits, 1 stop, no parity		
SYNC feature	Permits up to 32 sensors to operate in close proximity without interaction		

Target Requirements

Objects	Detects flat or curved objects. Surface must reflect ultrasound to sensor
Max. Distance	Affected by size, shape, orientation of target (sound level reflected back to sensor), environment Restrict use to Optimum Range when using over a wide range of environmental conditions
Orientation	Flat surfaces should be oriented perpendicular to sensor output beam
Optical	Unaffected by target color, light, transparency or other optical characteristics

CABLE CONNECTIONS

Cable	Wire	Description
Power	Brown	10-30 VDC @ 60 mA maximum; Typical: 45 mA @ 24 VDC (**)
Ground	Blue	Power and interface common
Voltage Output	White *	0-10 VDC, 0-5 VDC or custom end values between 0 and 10 VDC
Current Loop Output	Black *	4-20 mA or user adjusted end values between 4 and 20 mA
Switch #1 Output	Black *	Sinking ("NPN") or Sourcing ("PNP"), user selected
Switch #2 Output	White *	Sinking ("NPN") or Sourcing ("PNP"), user selected
RS-232 out / RS-485-	Gray	Serial data connection (depends on model - see part numbers)
RS-232 in / RS-485+	Yellow	Serial data connection (depends on model - see part numbers)

Specifications subject to change without notice. This product is not recommended for applications with hazardous or explosive materials, or as a primary device for personal safety



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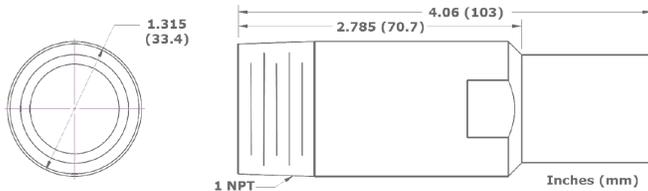


PART NUMBERS

Model Number	Description
TSPC-N1S1-485	Analog, switch and RS-485 serial interface (allows addressable multi-sensor networks)
TSPC-N1S1-485A*	Same as above but with only RS-485 serial data interface *
TSPC-N1S1-232	Analog, switch and RS-232 serial data interface (PC COM port compatible)
TSPC-N1S1-232A*	Same as above but with only RS-232 serial data interface *
TSPC-30S1-232	Serial RS-232 interface (PC COM port compatible)
TSPC-30S1-485	Serial RS-485 interface (allows addressable multi-sensor networks)

DIMENSIONS

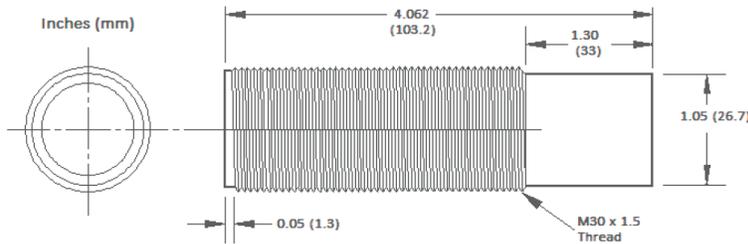
Toughsonic 14 with 1" NPT Threaded Fitting



Mechanical

Dimensions are in inches (mm)
 Standard Cable: 6.5ft (2m)
 Ships with instructions
 Total Weight: 14.2 oz (0.4 kg)

Toughsonic 14 with 30mm Threaded Fitting



Mechanical

Dimensions are in inches (mm)
 Hole diameter: 1.2 in. (30.5 mm)
 Standard Cable: 6.5ft (2m)
 Ships with instructions and two
 30mm stainless mounting nuts
 (other options available)
 Total Weight: 10.4 oz (0.29 kg)

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