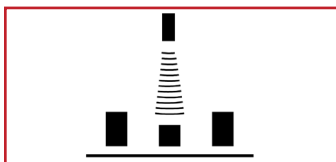


ToughSonic sensors and SensorView™ software put the power of ultrasonics in your hands. Quickly adjust, optimize, save and clone your setups without calibration!

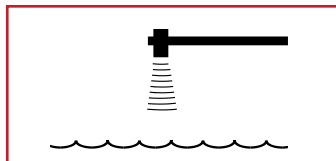
These sensors are housed in a single small potted enclosure for environmental durability and long life. They mount at a distance from a liquid or solid material and measure distance to the surface.

Sensor outputs respond to that measured distance. Applications exist in many industries, and include pump control, bulk inventory, high/low level alarms, river level for flood detection and much more.

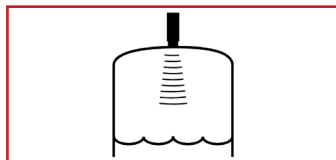
Non-Contact Ultrasonic Distance & Level Measurement (Clamp or 1.5 Inch NPT)



Distance-Proximity



Environmental



Level or Volume



Object Detection

Features

Distance Measurements

- Long range, short dead band
- Continuous and point level
- Water or non-caustic materials
- Adjustable by computer (PC software, locally or remotely)
- Narrow beam with adjustments to optimize performance

Packaging & Performance

- Survives submersion
- Temperature compensation for improved accuracy
- Short & overload protected I/O
- Adjustable sensitivity
- Rear status indicators (3)

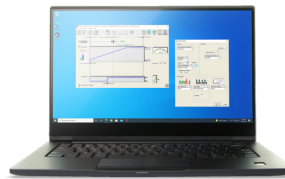
Free Functionality

Free Functionality using adjustable interface features like switch hysteresis and time delays to build complete solutions such as pump or material flow controllers. Save cost by eliminating PLCs, delay circuits and time delay relays!

PC Setup Power!

PC Programming Software

Use SensorView™ software (see separate data sheet) to select and adjust all interfaces, timing parameters, filters and modes. Then view, analyze or log data to optimize your application.



Flexible Configuration

Flexible configuration means fewer parts to stock and quick duplication! Application setups can be stored on your PC and later recalled. Using a single inventory part you can quickly clone replacement sensors for any number of applications with re-calibration!

Model Options

Both stainless and PVC housings are offered for flexibility. All have multiple analog and switch outputs plus a serial data interface for PC configuration or other data communications (serial data only models are also available).



TS-200-50 (Rear Mount)

Flange not included



ToughSonic® TS-100-50 Level & Distance Sensor

Windows PC Setup, Waterproof, Multiple Outputs

Specifications

Optimum Range	33 ft. (10 m)	Max Range	50 ft. (15.2 m)
Deadband	Typ. < 12 inches (30.3 cm)	Adjustment	SenixVIEW software (included)
Case Material	316 stainless steel or PVC	Configuration	Stored in non-volatile memory
Temperature	-40 to 158 F (-40 to 70 C)	Outputs	Five selectable, plus serial data
Humidity	0 to 100% operating	Transducer	Ruggedized piezoelectric
Compensation	Temperature compensated	Protection	NEMA-4X, NEMA-6P, IP68
Resolution	Serial data: 0.0135 in. (0.3438 mm); Analog steps: 4099 (0-10 VDC), 3279 (4-20 mA)		
Repeatability	Nominal 0.2% of range @ constant temp. Affected by target, distance, environment		
Update Rate	5 Hz (200 ms), SenixVIEW adjustable; affected by SensorView™ filter selections		
Voltage Output	0-10, 0-5 VDC or PC customized; 10 mA max. (*)		
Current Loop #1	Current sourcing 4-20 mA or SensorView™ adjustable, max. loop 450Ω (*)		
Current Loop #2	Current sinking 4-20 mA or SensorView™ adjustable, max. loop 450Ω (*)		
Sinking Switch	150 mA max. @ 40 VDC max., adjustable set point & polarity, fault indication		
Sourcing Switch	150 mA max. @ input voltage, adjustable set point & polarity, fault indication		
RS-232, RS-485	Modbus protocol, 9600-115200 baud (selectable), 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 back 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, transparency, light, or other optical characteristics		

Connections

Cable Connection	Wire	Description
Power	Brown	10-30 VDC @ 70 mA maximum; Typical: 45 mA @ 24 VDC (**)
Ground	Blue	Power and interface common
Voltage Output *	Violet	0-10 VDC, 0-5 VDC or custom end values between 0 and 10 VDC
Current Loop Output *	Green	4-20 mA sourcing (adjustable end values between 4 and 20 mA)
Current Loop Output *	Orange	4-20 mA sinking (adjustable 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 model selection)
RS-232 in / RS-485+	Yellow	Serial data connection (depends on model - see model selection)

(*) Analog outputs share common distance endpoints. Both 4-20 mA outputs share the same adjustable max / min end values. The max. loop resistance is derated below 15 VDC input voltage.

(**) At default update rate. Output currents not included.

Part Numbers

Model Number	Description
TS-100.50D102M	50 ft (15.2 m) range, 2.312 inch/ 59mm clamp connection, SS housing, RS-485 & analog output, 6.5 ft (2 m) cable length
TS-100.50D202M	50 ft (15.2 m) range, 2.312 inch/ 59mm clamp connection, SS housing, RS-485 output only, 6.5 ft (2 m) cable length
TS-100.50E102M	50 ft (15.2 m), 1.5 inch NPT rear mount, SS housing, RS-485 & analog output, 6.5 ft (2 m) cable length
TS-100.50E202M	50 ft (15.2 m), 1.5 inch NPT rear mount, SS housing, RS-485 output only, 6.5 ft (2 m) cable length

ToughSonic 50 models are also available with only the serial data interface. BinMaster also offers interconnection, communications, mounting and display accessories.

Dimensions

Model	Length x Diameter	Weight
TS-100.50D Series	4.8 in (122 mm) x 2.312 in (59 mm)	29.9 oz (0.82 kg)
TS-100.50E Series	5.9 in (150 mm) x 2.50 in (63 mm)	31.5 oz (0.89 kg)

All have 6.5 ft (2 m) shielded cable attached. Other lengths available.