

TOUGHSONIC[®] 50

ULTRASONIC LEVEL & DISTANCE SENSOR



DESCRIPTION

TSPC sensors and WhitmanVIEW 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.

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

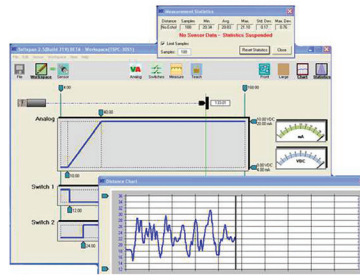
- Survives submersion
- Temperature compensation for improved accuracy
- Short & overload protected I/O
- Adjustable sensitivity
- Rear status indicators (3)

Free Functionality

using adjustable interface features like switch hysteresis and timedelays 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!

Use WhitmanVIEW 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 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).level for flood detection and much more.



Flange not included

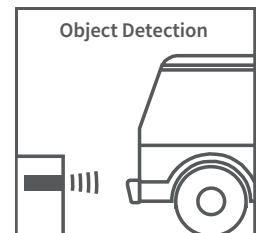
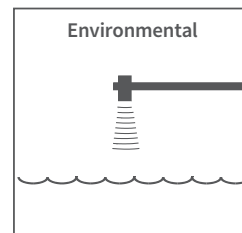
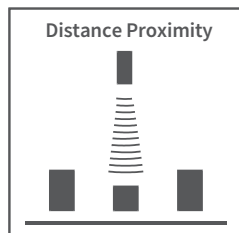
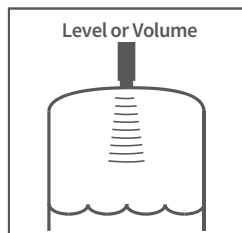
TSPC-21RM-xxx (Rear Mount)



Flange not included

TSPC-21RP-xxx (PVC housing)

**Non-Contact
Ultrasonic
Distance & Level
Measurement**



PERFORMANCE SPECIFICATIONS

Optimum Range	33 ft. (10 m)	Max Range	50 ft. (15.2 m)
Deadband	Typ. < 12 inches (30.3 cm)	Adjustment	WhitmanVIEW 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: 0.0068 in. (0.172 mm); Analog: 4099 steps (0-10 VDC), 3279 steps (4-20 mA) Nominal		
Repeatability	Nominal 0.2% of range @ constant temp. Affected by target, distance, environment		
Update Rate	10 Hz (100 ms), WhitmanVIEW adjustable; affected by WhitmanVIEW filter selections		
Voltage Output	0-10, 0-5 VDC or PC customized; 10 mA max. (*)		
Current Loop #1	Current sourcing 4-20 mA or PC customized, max. loop 450Ω (*)		
Current Loop #2	Current sinking 4-20 mA or PC customized, max. loop 450Ω (*)		
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, 9600-115200 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 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		

CABLE CONNECTIONS

Cable	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)

PART NUMBERS

Model Number	Description
TSPC-21S-232	Clamp mounted, 316SS housing, serial RS-232 interface (PC COM port compatible)
TSPC-21S-485	Clamp mounted, 316SS housing, serial RS-485 interface (allows multi-sensor networking)
TSPC-21SRM-232	Rear mount 1.5" NPT thread, SS316 housing, serial RS-232 interface (PC COM port compatible)
TSPC-21SRM-485	Rear mount 1.5" NPT thread, SS316 housing, serial RS-485 interface (allows multi-sensor networking)
TSPC-25P-232	Threaded 2.5" NPT front and rear, PVC housing, serial RS-232 interface (PC COM port compatible)
TSPC-25P-485	Threaded 2.5" NPT front & rear, PVC housing, serial RS-485 interface (allows multi-sensor networking)

ToughSonic 50 models are also available with only the serial data interface. Whitman also offers interconnection, communication, mounting, and display components

DIMENSIONS

Model Number	Length x Diameter	Weight
TSPC-21S	4.8 in (122 mm) x 2.312 in (59mm)	29.9 oz (0.82 kg) 21S with Rear Mount 5.9 in (150 mm) x
21S with Rear Mount	2.50 in (63 mm)	31.5 oz (0.89 kg)
TSPC-25P	5.0 in (127 mm) x 2.5 in (63.5mm)	29.1 oz (0.82 kg)

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