

# ToughSonic® 50 Level & Distance Sensor

Windows PC Setup, Waterproof, Multiple Outputs

**TSPC** sensors and SenixVIEW 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**

## 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 time delays to build complete solutions such as pump or material flow controllers. Save cost by eliminating PLCs, delay circuits and time delay relays!

**Up to 50-ft. (15.2 m) maximum range in IP68 rated stainless or PVC housing**

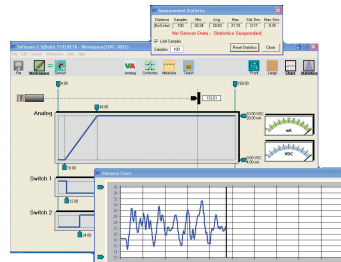


**SenixVIEW PC Software included!**



## PC Setup Power!

Use **SenixVIEW** 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.



## Model Options

Three package styles are offered for mounting flexibility. Each sensor has multiple analog and switch outputs plus a serial data interface for PC configuration or other data communication needs.



Flange & adapter not included

**TSPC-21SRM (Stainless)**

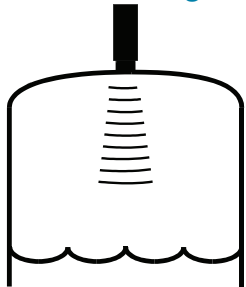


Flange not

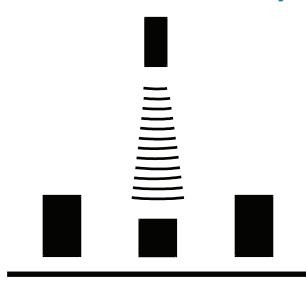
**TSPC-25P (PVC)**

**TOUGHSONIC®**  
Tough. Smart.

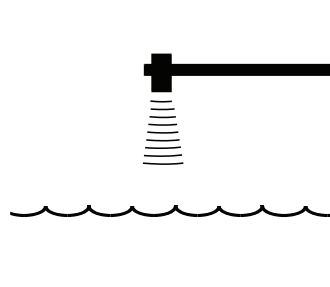
### Level or Height



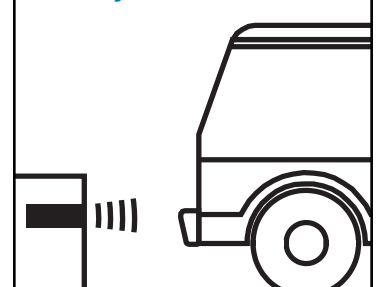
### Distance-Proximity



### Environmental



### Object Detection





## ToughSonic<sup>®</sup> 50 Level & Distance Sensors

### Specifications

<b>Optimum Range</b>	33 ft. (10 m)	<b>Max Range</b>	50 ft. (15.2 m)
<b>Deadband</b>	Typ. < 12 inches (30.3 cm)	<b>Adjustment</b>	SenixVIEW software (included)
<b>Case Material</b>	316 stainless steel or PVC	<b>Configuration</b>	Stored in non-volatile memory
<b>Temperature</b>	-40 to 158 F (-40 to 70 C)	<b>Outputs</b>	Five selectable, plus serial data
<b>Humidity</b>	0 to 100% operating	<b>Transducer</b>	Ruggedized piezoelectric
<b>Compensation</b>	Temperature compensated	<b>Protection</b>	NEMA-4X, NEMA-6P, IP68
<b>Resolution</b>	Digital: 0.0135 in. (0.3438 mm); Analog steps: 4099 (0-10 VDC), 3279 (4-20 mA)/mmA		
<b>Repeatability</b>	Nominal 0.2% of range @ constant temp. Affected by target, distance, environment		
<b>Update Rate</b>	5 Hz (200 ms), SenixVIEW adjustable; affected by SenixVIEW filter selections		
<b>Voltage Output</b>	0-10, 0-5 VDC or PC customized; 10 mA max. (*)		
<b>Current Loop #1</b>	Current sourcing 4-20 mA or SenixVIEW adjustable, max. loop 450Ω (*)		
<b>Current Loop #2</b>	Current sinking 4-20 mA or SenixVIEW adjustable, max. loop 450Ω (*)		
<b>Sinking Switch</b>	150 mA max. @ 40 VDC max., adjustable set point & polarity, fault indication		
<b>Sourcing Switch</b>	150 mA max. @ input voltage, adjustable set point & polarity, fault indication		
<b>RS-232, RS-485</b>	Modbus protocol, 9600-115200 baud (selectable), 8 data bits, 1 stop, no parity		
<b>SYNC feature</b>	Permits up to 32 sensors to operate in close proximity without interaction		
<b>Target Requirements</b>			
<b>Objects</b>	Detects flat or curved objects. Surface must reflect ultrasound back to sensor.		
<b>Max. Distance</b>	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		
<b>Orientation</b>	Flat surfaces should be oriented perpendicular to sensor output beam		
<b>Optical</b>	Unaffected by target color, transparency, light, or other optical characteristics		

### Connections

Cable Connection	Wire	Description
<b>Power</b>	Brown	10-30 VDC @ 70 mA maximum; Typical: 45 mA @ 24 VDC (**)
<b>Ground</b>	Blue	Power and interface common
<b>Voltage Output *</b>	Violet	0-10 VDC, 0-5 VDC or custom end values between 0 and 10 VDC
<b>Current Loop Output *</b>	Green	4-20 mA sourcing (adjustable end values between 4 and 20 mA)
<b>Current Loop Output *</b>	Orange	4-20 mA sinking (adjustable end values between 4 and 20 mA)
<b>Switch #1 Output</b>	Black	Sinking ("NPN") or Sourcing ("PNP"), user selected
<b>Switch #2 Output</b>	White	Sinking ("NPN") or Sourcing ("PNP"), user selected
<b>RS-232 out / RS-485-</b>	Gray	Serial data connection (depends on model - see model selection)
<b>RS-232 in / RS-485+</b>	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. Sensitivity reduced below 15 VDC input voltage.

### Part Numbers

Model Number	Description
TSPC-21S-232	Clamp mounted, SS, serial RS-232 interface (PC COM port compatible)
TSPC-21S-485	Clamp mounted, SS, serial RS-485 interface (allows multi-sensor networking)
TSPC-21SRM-232	Rear mount threads, 1.5" NPT, Stainless Steel, serial RS-232 interface
TSPC-21SRM-485	Rear mount threads, 1.5" NPT, Stainless Steel, serial RS-485 interface
TSPC-25P-232	Threaded 2.5" NPT front and rear, PVC, serial RS-232 interface
TSPC-25P-485	Threaded 2.5" NPT front and rear, PVC, serial RS-485 interface
Senix also offers interconnection, communication, mounting, and display components	

### Dimensions

Model	Length x Diameter	Weight
TSPC-21S	4.8 in (122 mm) x 2.312 in (59mm)	29.9 oz (0.82 kg)
TSPC-21SRM	5.9 in (150 mm) x 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