

# ToughSonic®/PC Distance Sensor

Windows PC Setup, Waterproof, Multiple Outputs

**TS**PC-21S Series

**TS**PC sensors and SenixVIEW software put the power of ultrasonics in your hands. Quickly adjust, optimize, save and clone your setup and calibration!

These sensors are housed in a stainless steel enclosure and potted for environmental durability and long life. They mount above the material surface and measure distance downward without contact. Outputs respond to that measured distance.

Typical applications include pump control, bulk inventory, batch processing, water management and high/low level alarms.

## PC Configured Non-Contact Ultrasonic Level Measurement

### Features

#### Distance Measurements

- Water or non-caustic materials
- Continuous & point level
- Unaffected by optical factors like color and transparency
- Adjustable by computer (PC) software, locally or remotely

#### Packaging & Performance

- Survives submersion
- Short & overload protected I/O
- Adjustable filters compensate for tank mixers or turbulence
- Temperature compensation for improved accuracy
- Adjustable sensitivity
- Simplify wiring with optional interconnection accessories

#### Free Functionality

Build a level control using adjustable interface features like switch hysteresis and time delays. Save cost by eliminating PLCs or other external parts!

Up to 50-ft. (15.2 m) maximum range in IP68 rated cylindrical housing



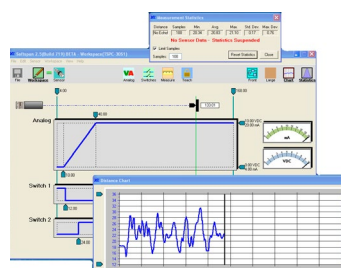
**SenixVIEW PC**  
Software included!

Optional  
Bracket



### PC Setup Power!

Use SenixVIEW software (see separate data sheet) to adjust all sensor features. View, analyze or log data to optimize your application. Disconnect and the sensor retains the setup.



#### Copy without Calibration

Application setups can be saved for future recall. From a single inventory part you can quickly clone sensors, without recalibration, for any number of different field installations.

### Multiple Outputs

In addition to the model's serial data interface there are five simultaneous outputs. All have SenixVIEW configurable features including ranges, target responses and time delays.

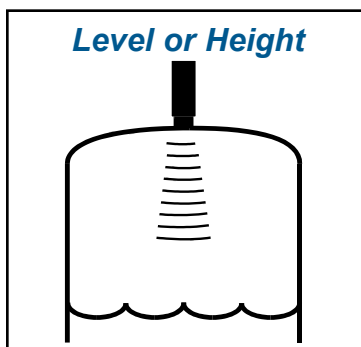
#### Analog Outputs (3)

These include voltage (0-10 VDC) and two current loops (4-20 mA sinking and sourcing). The analog slope can increase or decrease value with distance. The analog end points can be set any distance, and have user-selected voltage/current values.

#### Switches (2)

Two switches are SenixVIEW configurable as either "PNP" or "NPN" type (sourcing or sinking). Each has adjustable set point, hysteresis, window, initial conditions, ON delay, OFF delay and loss of target response for ultimate flexibility.

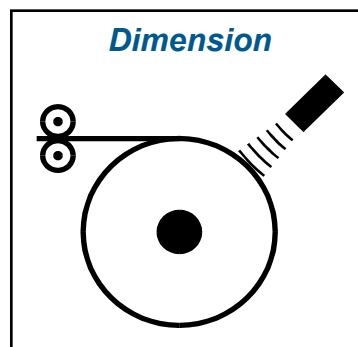
#### Level or Height



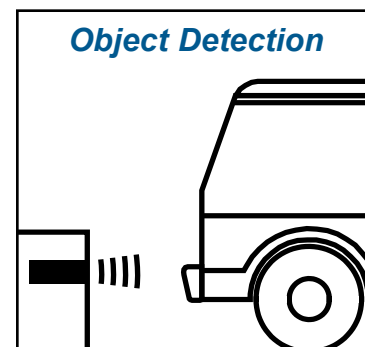
#### Distance-Proximity



#### Dimension



#### Object Detection





# Senix® TS<sup>PC</sup>-21S ToughSonic® Distance Sensor

## Specifications

<b>Optimum Range</b>	1 ft. - 33 ft. (30.5 cm - 10 m)	<b>Max Range</b>	50 ft. (15.2 meters)
<b>Case Material</b>	316 stainless steel	<b>Adjustment</b>	SenixVIEW software (included)
<b>Temperature</b>	-40 to 158 F (-40 to 70 C)	<b>Configuration</b>	Stored in non-volatile memory
<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: 4099 steps (over full 0-10 VDC or 4-20 mA)		
<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		

### Target Requirements

<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)
<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
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. Sensitivity reduced below 15 VDC input voltage.

## Part Numbers

Model Number	Description
TSPC-21S-232	Serial RS-232 interface (PC COM port compatible)
TSPC-21S-485	Serial RS-485 interface (allows addressable multi-sensor networks)
Senix also offers interconnection, communication, mounting, and display components	

## Dimensions

