ToughSonic®/PC Distance Sensor

Computer and Teach Setup, Waterproof, Multiple Output

TSPC-21S Series

PC Configured Non-Contact Ultrasonic Distance Measurement

TSPC sensors and SenixVIEW software put the power of ultrasonics in your hands yet retain the simplicity of push-button TEACH setup. You can quickly adjust, optimize, save and clone your applications quickly without calibration!

ToughSonic sensors contain a rugged transducer in a stainless steel sealed housing for long life.

Outputs are proportional or controlled by measured distance. Damage is eliminated because nothing touches your materials.

Numerous applications exist in all industries. Contact Senix today to discuss your specific needs.



Features

Distance Measurements
- Long range, short dead band
- Unaffected by optical factors like color and transparency
- PC or button “teachable” setup
- Narrow beam with adjustments to optimize performance
- Temperature compensated

Packaging & Performance
- Clamp mounted
- Durable sealed housing for wet or dirty applications
- Short & overload protected I/O
- Multi-sensor synchronization
- Adjustable sensitivity
- Rear status indicators (3)

Create "Mini" Systems
With user-adjustable interface features like switch hysteresis and time delays you can create complete systems such as pump controllers or material flow controls. Save cost by eliminating separate controllers, delay circuits and time delay relays!

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.



Several push-button "teach" features also provide common adjustments without the PC.

Stock, repairs, OEMs
Flexible configuration means fewer parts to stock and quick duplication! Higher volume OEM options are available.

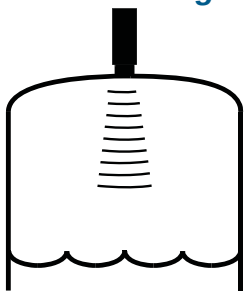
Multiple Outputs

In addition to the model's serial data interface there are five outputs. All have SenixVIEW configured features including distance adjust, initial and no-target response, and time delays.

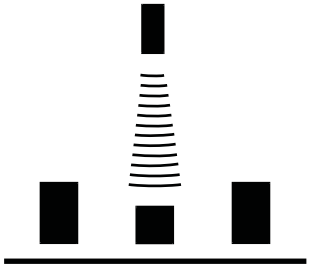
Analog Outputs
These include voltage (0-10 VDC) and two current loops (4-20 mA sinking and sourcing). The analog slope may be positive or negative with distance and the analog range limits can be set to custom values.

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

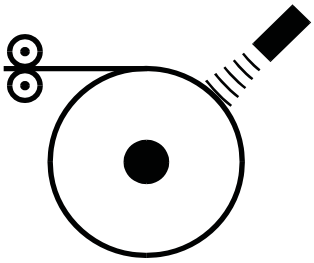
Level or Height



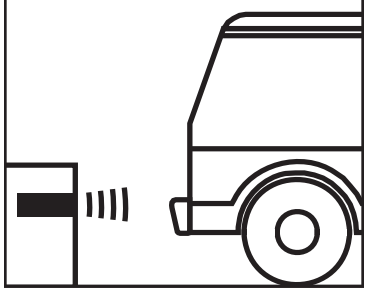
Distance-Proximity



Dimension



Object Detection



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Senix® Distance Measurement

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Senix® TS-21S ToughSonic®/PC Distance Sensor

Specifications

Optimum Range	30.5 cm - 10 mtr. (12 in. - 33 ft.)	**Max Range**	15.2 meters (50 feet)
Case Material	303 stainless steel	**Adjustment**	Button "teach" or SenixVIEW
Temperature	-40 to 70 C (-40 to 158 F)	**Configuration**	Stored in non-volatile memory
Humidity	0 to 100% operating	**Transducer**	Ruggedized piezoelectric
Compensation	Temperature compensated	**Protection**	NEMA-4X, NEMA-6P, IP68
Resolution	Digital: 0.0135 in. (0.3438 mm); Analog:4099 steps (over full 0-10 VDC or 0-20 mA)		
Repeatability	Nominal 0.2% of range @ constant temp. Affected by target, distance, environment		
Update Rate	200 ms, SenixVIEW adjustable; affected by SenixVIEW 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 500Ω (*)		
Current Loop #2	Current sinking 4-20 mA or PC customized, max. loop 500Ω (*)		
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 Performance

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)
Orientation	Flat surfaces should be oriented perpendicular to sensor output beam
Optical	Unaffected by target color, transparency or other optical characteristics

Connections

Cable Connection	Wire	Description
Power	Brown	10-30 VDC @ 70 mA nominal (sensitivity reduced below 15 VDC)
Ground	Blue	Power and interface common
Voltage Output *	Violet	0-10 VDC, 0-5 VDC or custom range values between 0 and 10 VDC
Current Loop Output *	Green	4-20 mA sourcing (adjustabled range values between 0 and 20 mA)
Current Loop Output *	Orange	4-20 mA sinking (adjustabled range values between 0 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)

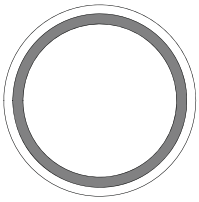
(*) All 3 analog outputs share the same distance endpoints. The endpoints are adjusted using Teach or SenixVIEW PC software. The 0-10 VDC output range limits are SenixVIEW adjustable. The two 4-20 mA output range limits are shared and are SenixVIEW adjustable.

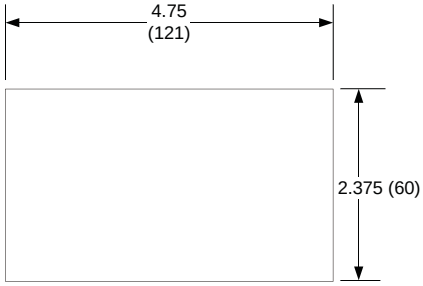
Part Numbers

Model Number	Description
TSPC-21S1-232	Serial RS-232 interface (PC COM port compatible)
TSPC-21S1-485	Serial RS-485 interface (allows addressable multi-sensor networks)

Dimensions

Inches (mm)





Mechanical

Mounting: Senix UA-MB-SS bracket or other body clamp

Attached Cable: 6-ft (2 m)
Total Weight: 25.9 oz (0.73 kg)

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This product is not recommended for applications with hazardous or explosive materials, or as a primary device for personal safety.
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