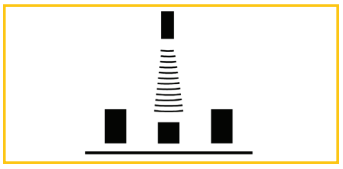
ToughSonic® TS-15S Level & Distance Sensor

PC or Push Button Setup, Waterproof, Two Selectable Outputs

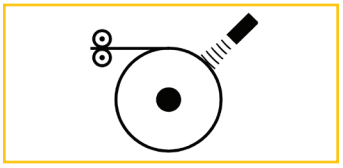
ToughSonic ultrasonic distance sensors contain a rugged transducer in a stainless steel case for long service life in tough environments. Typical applications include roll diameter, liquid level, motion control, positioning and dimensioning. They are excellent for tanks, drums and level applications.

Outputs are available in many combinations, including analog 0-10/0-5 VDC, 4-20 mA current loop, PNP (sourcing) switches, NPN (sinking) switches. All outputs are relative to measured distance, any slope and anywhere in the sensor's range.

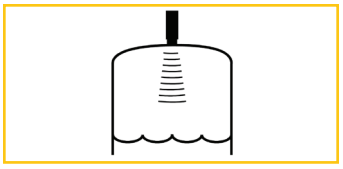
Non-Contact Ultrasonic Distance & Level Measurement (1.5" NPT Thread)



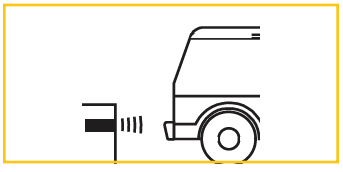
Distance-Proximity



Dimension



Level or Volume



Object Detection

Features

- Sealed for ingress protection rating IP68 for washdown or outdoor applications like food processing or car washes
- Narrow ultrasonic beam to avoid unwanted obstacles
- Long 30ft (9 m) maximum measurement range
- Short 10 in. (25 cm) deadband
- Simple pushbutton "teachable" setup of many features, and calibration using actual targets
- Analog outputs are distance-proportionable and reversible, anywhere in sensor's range
- Switch outputs have adjustable distance and polarity
- Output response filter for
- stability with poor targets
- Sync connection for several sensors in close proximity
- Security "Lock" prevents
- accidental mis-adjustment

Reliable Operation

- Unaffected by optical factors like color and transparency
- Stable output if target is lost
- Overload and short circuit protected switch & analog outputs
- Heavy duty 316 stainless case, dual 1.5" NPT threads, potted, waterproof with IP68 rating
- Temperature compensation

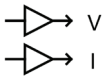
Easy Installation

- Standard 1.5 inch NPT threads
- Dual threaded for top or bottom mounting
- Thread into flange or nipple, or use and external clamp bracket
- Permanently attached cable
- 3 rear LEDs display target, fault and output status
- Simple push-button setup - no potentiometers or tools!

Output Options

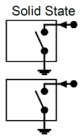
Below are 3 common TS family output configurations. Other output combinations are available (see next page).

Two Analogs



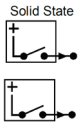
Both voltage and 4-20 mA current loop (sourcing) outputs with teachable endpoints.

Two Sinking Switches



Two solid stage "NPN" type outputs with independent teachable switch distances and ON/OFF polarities.

Two Sourcing Switches



Two solid stage "PNP" type outputs with independent teachable switch distances and ON/OFF polarities.

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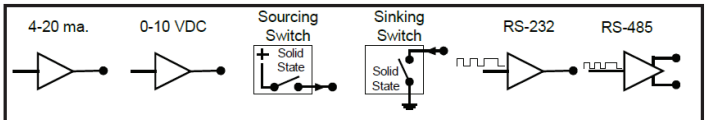
PC or Push Button Setup, Waterproof, Two Selectable Outputs

Specifications

Optimum Range	10 in. - 20 ft. (25.4 cm - 6m)	**Max Range**	30 Feet (9.1 meters)
Case Material	316 stainless steel	**Adjustment**	Button “teach”
Temperature	-40 to 158 F (-40 to 70 C)	**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: 0.0068 in. (0.172 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*	10 (default), 20, 50 or 100 per second, selectable* output response time filter		
Voltage Output*	0-10 and 0-5 VDC (user selectable), 10 mA max; reversable teachable endpoints		
Current Loop*	4-20 mA (sourcing), 450Ω max. @ >15 VDC, reversable teachable endpoints		
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		
Input Power	10-30 VDC @ 70 mA max (see below); Typical 45 mA @ 24 VDC		
SYNC feature*	Permits up to 32 sensors to operate in close proximity without interaction		
RS-232, RS-485	See the Senix TSPC and LVL product families for digital data features		
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)		
Orientation	Flat surfaces should be oriented perpendicular to sensor output beam		
Optical	Unaffected by target color, transparency or other optical characteristics		

(*) Indicates button teachable features.

Part Numbers



Outputs are combined in various models (see below)

Wiring (6-wire cable)

Brown	DC+ IN
Blue	GND
Gray	SYNC(-) or below
Yellow	SYNC(+) or below

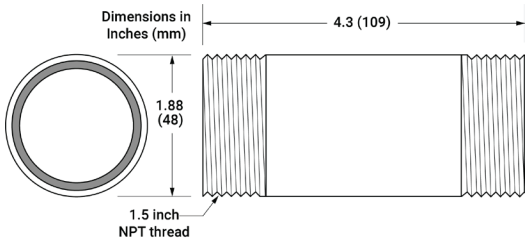
Model Number	Output #1 (Wire Color)	Output #2 (Wire Color)
TS-100.30C1X.007FC (Legacy: TS-15S-IV)	4-20 ma. current loop (green, org)	0-10 / 0-5 VDC (violet)
TS-100.30C1X.007FJ (Legacy: TS-15S-ISK)	4-20 ma current loop (green, org)	Sinking Switch (white)
TS-100.30C1X.007FK (Legacy: TS-15S-ISR)	4-20 ma. current loop (green, org)	Sourcing Switch (white)
TS-100.30C1X.007FL (Legacy: TS-15S-SKV)	Sinking Switch (black)	0-10 / 0-5 VDC * (violet)
TS-100.30C1X.007FM (Legacy: TS-15S-SRV)	Sourcing Switch (black)	0-10 / 0-5 VDC * (violet)
TS-100.30C1X.007FH (Legacy: TS-15S-SKSK)	Sinking Switch (black)	Sinking Switch (white)
TS-100.30C1X.007FF (Legacy: TS-15S-SRSR)	Sourcing Switch (black)	Sourcing Switch (white)
TS-100.30C1X.007FG (Legacy: TS-15S-SKSR)	Sinking Switch (black)	Sourcing Switch (white)

(NOTE: For serial data RS-232 and RS-485, see the Senix TSPC or LVL product families)

Each sensor ships with installation instructions.
Senix also offers interconnection, communication, mounting, and display components.

(*) Indicates button teachable features.

Dimensions



Mechanical

- Dimensions are in inches (mm)
- Mount: 1.5 in. NPT thread into flange or nipple, top or bottom
- Attached Cable: 6.5ft (2m) pigtail
- Weight: 22.6 oz. (0.64 kg)