

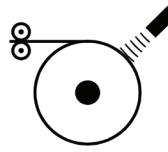
ToughSonic ultrasonic distance sensors contain a rugged transducer in a stainless steel case for long service life in tough environments. Typical applications include roll diameter, liquid level, motion control, positioning and dimensioning. They are excellent for tanks, drums and level applications.

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.

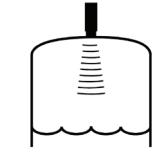
Non-Contact Ultrasonic Distance & Level Measurement (30mm Thread)



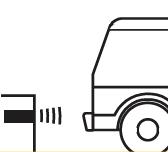
Distance-Proximity



Dimension



Level or Volume



Object Detection

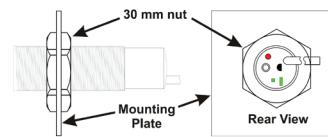
Features

- 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 14-ft (4.3 m) maximum measurement range
- Short 4-in (10 cm) deadband
- Simple pushbutton "teachable" setup of many features, and calibration using actual targets
- Analog outputs are adjustable 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
- Status indicator for each output



Reliable Operation

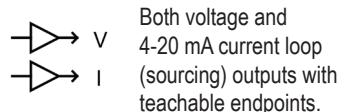
- Unaffected by optical factors like color and transparency
- Stable output if target is lost
- Overload and short circuit protected switch & analog outputs
- Heavy duty 316 stainless case, 30x1.5 mm threaded, potted, waterproof with IP68 rating
- Temperature compensation



Output Options

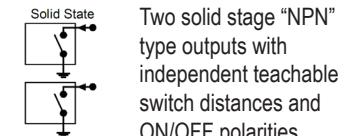
Below are 3 common TS family output configurations. Other output combinations are available (see next page).

Two Analogs



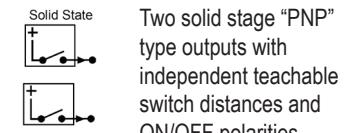
Both voltage and 4-20 mA current loop (sourcing) outputs with teachable endpoints.

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.

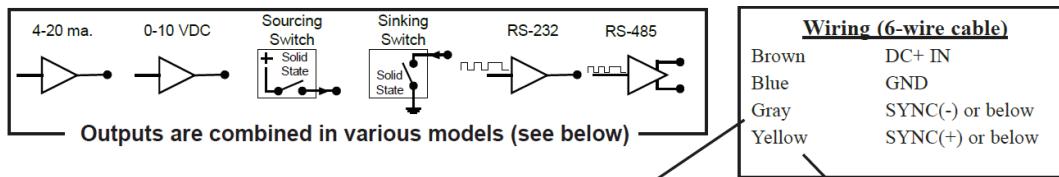
Specifications

Optimum Range	4 in. - 10 ft. (102 mm - 3 meters)	Max Range	14 Feet (4.3 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: 0.0034 in. (0.086 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*	20 (default), 40, 100, or 200 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		
Output Select	Defaults are voltage & current loop; see Connections below for additional info		
RS-232, RS-485	See the Senix TSPC and LVL product families for digital data features		
SYNC feature*	Permits up to 32 sensors to operate in close proximity without interaction		
Input Power	10-30 VDC @ 60 mA max (see below); Typical 45 mA @ 24 VDC		

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.

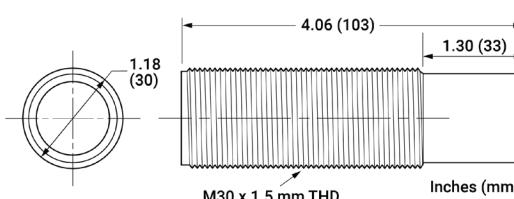


Model Number	Output #1 (Black Wire)	Output #2 (White Wire)
TS-100.14A1X.007FC (Legacy: TS-30S1-IV)	4-20 mA current loop	0-10 / 0-5 VDC
TS-100.14A1X.007FJ (Legacy: TS-30S1-ISK)	4-20 mA current loop	Sinking Switch
TS-100.14A1X.007FK (Legacy: TS-30S1-ISR)	4-20 mA current loop	Sourcing Switch
TS-100.14A1X.007FL (Legacy: TS-30S1-SKV)	Sinking Switch	0-10 / 0-5 VDC *
TS-100.14A1X.007FM (Legacy: TS-30S1-SRV)	Sourcing Switch	0-10 / 0-5 VDC *
TS-100.14A1X.007FH (Legacy: TS-30S1-SKSK)	Sinking Switch	Sinking Switch
TS-100.14A1X.007FF (Legacy: TS-30S1-SRSR)	Sourcing Switch	Sourcing Switch
TS-100.14A1X.007FG (Legacy: TS-30S1-SKSR)	Sinking Switch	Sourcing Switch

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

Each sensor ships with installation instructions and two 30mm SS mounting nuts.
Senix also offers interconnection, communication, mounting, and display components.

(*) Indicates button teachable features.



Mechanical

- Dimensions are in inches (mm)
- Standard Cable: 6.5ft (2m)
- Ships with instructions and two 30mm stainless mounting nuts (other options available)

Part Numbers

Dimensions