

ToughSonic® Distance Sensors

Waterproof, Two Outputs and Push-Button "Teachable"

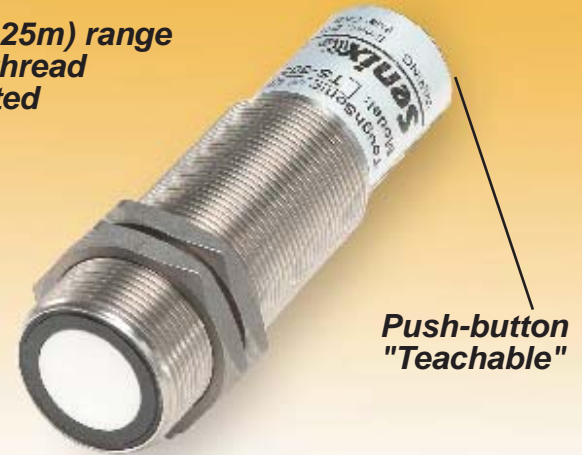
TS-30S1 Series

Non-Contact
Ultrasonic
Air Distance
Measurement

TS-30S1 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 in tanks, drums and level applications.

Two 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.

14-ft (4.25m) range
30mm thread
IP68 rated



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 (4.25 m) measurement range
- Short 4-in (10 cm) deadband
- Simple pushbutton "teachable" setup of many features, and calibration using actual targets
- Analog outputs are distance-proportional and 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 303 stainless case, 30x1.5 mm threaded, potted, waterproof with IP68 rating
- Temperature compensated

Output Options

Here are 3 common TS-30S1 output configurations. Eight other output combinations are available (see next page).

Two Analogs

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

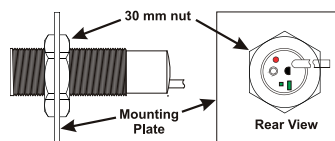
Two Sinking Switches

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

Two Sourcing Switches

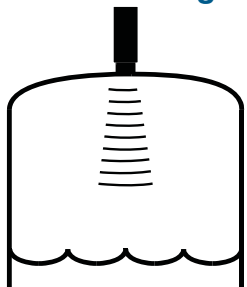
Two solid state "PNP" type outputs with independent teachable switch distances and ON/OFF polarities

Easy Installation

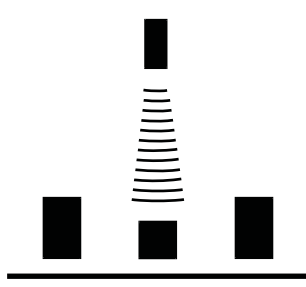


- Quick bolt-in mounting
- Permanently attached cable
- 3 rear LED's display target, fault and output status
- Simple push-button setup - no potentiometers!

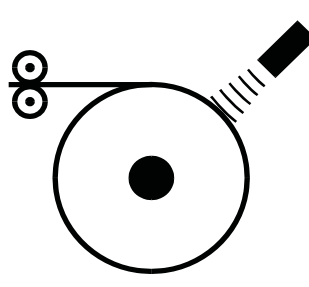
Level or Height



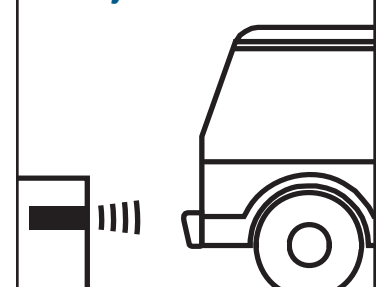
Dimension/Sort



Roll Diameter

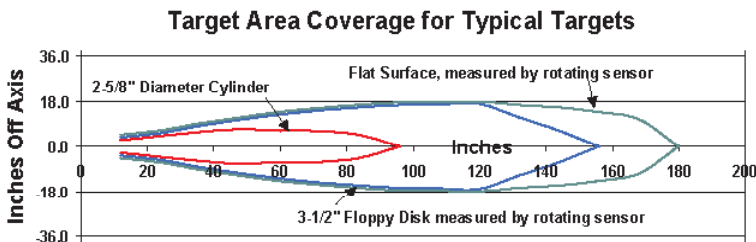


Object Detection



TS-30S1 Two Output Teachable Distance Sensors

Target Performance



Color/Transparency
Unaffected by color, transparency or optical characteristics.

Orientation
Detects flat or curved objects. Surface must reflect back to sensor. Flat surfaces are best when perpendicular to beam axis, and may not be detected at high angles of incidence.

Typical Distances

Angle off perpendicular (+/-) vs. distance (ft.), large flat surface	
Ft:	1 2 3 4 5 6 7 8 9 10 11 12 13 14
Deg:	17 13 13 12 12 11 10 10 9 8 6 5 5 4

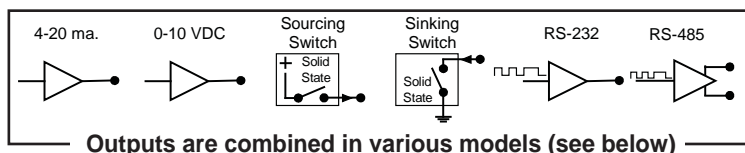
Object	Max Range (ft.)
2-5/8-in. diam. cylinder	7
3.5-in. floppy disk	10
Liquid surface	14

Specifications

Range	4-168 in. (102mm - 4.25 m)	Input Power	10-30 VDC @ 70 ma. nominal 15-30 VDC if using analog output
Case Material	303 or 304 stainless steel	Transducer	Ruggedized piezoelectric
Temperature	-40 to 70 C (-40 to 158 F)	Adjustments	Push-button, permanently stored
Protection	NEMA-4X, NEMA-6P, IP68	Humidity	0 to 100% operating
Resolution	0.003384 in. (.086 mm) max.; Analog 12 bits (4095 steps) over spanned distance		
Repeatability	Nominal 0.1% of range @ constant temp. Affected by target, distance, environment		
Compensation*	Temperature compensated, rear temperature sensor		
Update Rate*	20 (default), 33, 50 or 200 per second, selectable* output response time filter		
Voltage Output*	0-10 and 0-5 VDC (user selectable), 10 ma. max., reversible teachable endpoints		
Current Loop*	4-20 ma. (sourcing), 500Ω max. @ >15 VDC, reversible teachable endpoints		
Switch Outputs*	150 ma. max, sinking 40 VDC max., teachable setpoint and polarity, fault indication		
SYNC feature*	Permits up to 32 sensors to be wired together for operation in the same area		

Asterisk (*) indicates user teachable using pushbutton.

Models & Outputs



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
Black	see below
White	see below

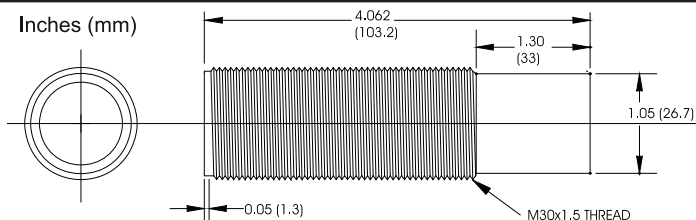
MODEL NUMBER	Output #1 (BLACK wire)	Output #2 (WHITE wire)
TS-30S1-IV	4-20 ma. current loop	0-10 / 0-5 VDC
TS-30S1-ISK	4-20 ma current loop	Sinking Switch
TS-30S1-ISR	4-20 ma. current loop	Sourcing Switch
TS-30S1-SKV	Sinking Switch	0-10 / 0-5 VDC *
TS-30S1-SRV	Sourcing Switch	0-10 / 0-5 VDC *
TS-30S1-SKSK	Sinking Switch	Sinking Switch
TS-30S1-SRSR	Sourcing Switch	Sourcing Switch
TS-30S1-SKSR	Sinking Switch	Sourcing Switch

Asterisk (*) indicates selection is user teachable using pushbutton.

(NOTE: For serial data RS-232 and RS-485 see Senix TSPC family of sensors)

Each sensor ships with installation instructions and two 30mm SS mounting nuts. Options available.

Dimensions



Dimensions

Dimensions are in inches (mm)

Mounting Hole: 1.2 in. (30.5 mm) diameter

Attached Cable: 6-ft (2 m)
Total Weight: 12.7 oz (0.36 kg)

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