

ToughSonic® Distance Sensors

Waterproof, Dual Outputs and Push-Button "Teachable"

TS-30S Series

Non-Contact
Ultrasonic
Air Distance
Measurement

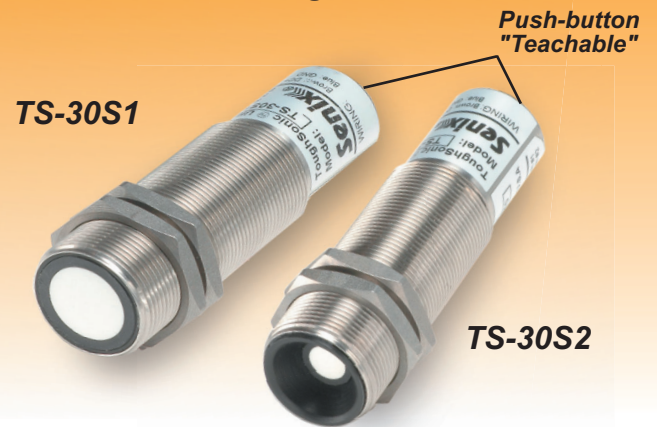
TS-30S ultrasonic distance sensors contain a rugged transducer in a stainless steel case for long service life in tough environments. Typical applications include roll diameter, liquid level, motion control, positioning and dimensioning. They are excellent in tanks, drums and level applications.

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 and RS-232/485 serial data. All outputs are relative to measured distance and adjustable anywhere in the sensor's range.

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
- Simple pushbutton "teachable" setup of many features, and calibration using actual targets
- Analog outputs are distance-proportional and adjustable anywhere in sensor's range
- Several standard analog output ranges, reversible slope
- 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
- All in one small package!

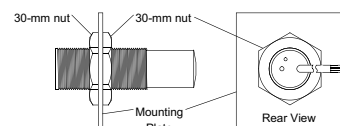
Up to 14-ft (4.25m) range in IP68 rated 30mm threaded housings



Reliable Operation

- Detects solid or liquids
- Unaffected by optical factors like color, transparency, reflectivity or opaqueness
- Stable output if target is lost
- Industrially rated interfaces
- Heavy duty 303 stainless case, 30x1.5 mm threaded, waterproof with IP68 rating

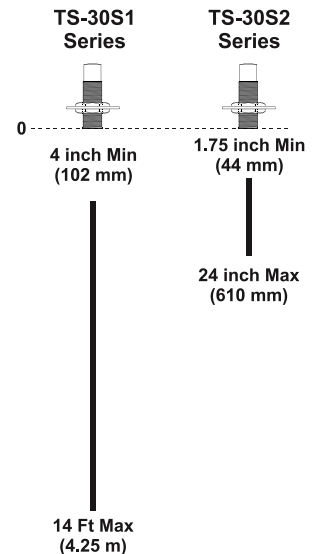
Easy Installation



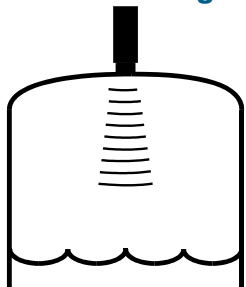
- Quick bolt-in mounting
- Permanently attached cable
- Rear indicator displays output status and fault conditions
- Simple push-button setup - no potentiometers!

Two Ranges

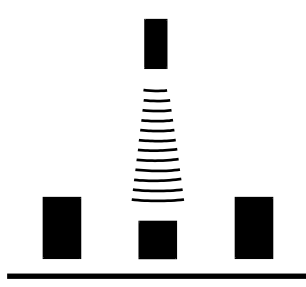
The TS-30S series is available in two ranges. The shorter range model is useful when a small deadband is required due to space limitations.



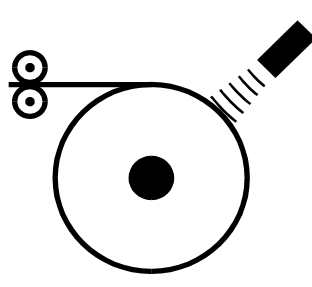
Level or Height



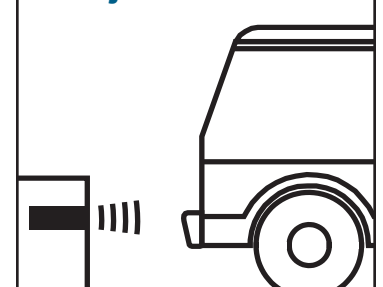
Dimension/Sort



Roll Diameter

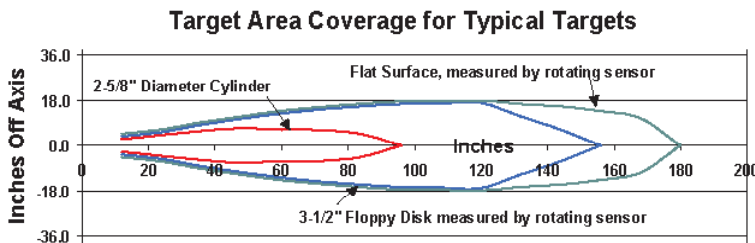


Object Detection



TS-30S Dual Output Teachable Distance Sensors

Target Performance of TS-30S1 Long Distance Model



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.

TS-30S1 Typical Distances

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

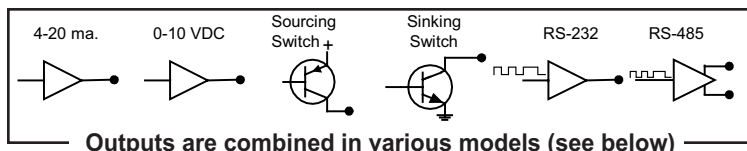
Angle off perpendicular (+/-) vs. distance (ft.), large flat surface	
Ft:	1 2 3 4 5 6 7 8 9 10 11 12 13 14
Deg:	17 13 13 12 12 11 10 10 9 8 6 5 5 4

Specifications

Range	Two ranges (see page 1)	Adjustments	Push-button, permanently stored
Case Material	303 stainless steel	Transducer	Ruggedized piezoelectric
Temperature	-40 to 70 degrees C -40 to 158 degrees F	Input Power	10-30 VDC @ 50-70 ma. nominal 15-30 VDC if using analog output
Protection	NEMA-4X, NEMA-6P, IP68	Humidity	0 to 100% operating
Resolution	0.003384 in. (.086 mm) max.; Analog 12 bits over spanned distance		
Repeatability	Nominal 0.1% of range @ constant temp. Affected by target, distance, environment		
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 switching points and polarity		
RS-232, RS-485	6 bytes, 9600 baud, 8 data bits, 1 stop bit, no parity, transmitted at update rate		
SYNC feature	Permits up to 32 sensors to be wired together for operation in the same area		

Asterisk (*) indicates user configurable using pushbutton.

Models & Outputs



Wiring (6-wire cable)

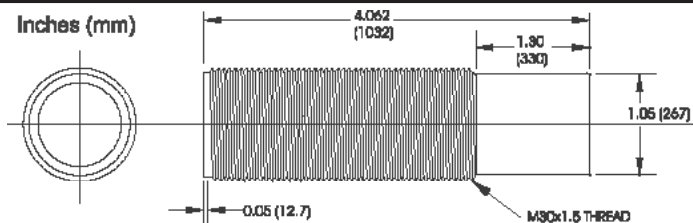
Brown	DC+ IN
Blue	GND
Gray	SYNC out or below
Yellow	SYNC in or below
Black	see below
White	see below

MODEL NUMBER	Output #1 (BLACK wire)	Output #2 (WHITE wire)
TS-30S#-IV	4-20 ma. current loop	0-10 / 0-5 VDC
TS-30S#-ISK	4-20 ma current loop	Sinking Switch
TS-30S#-ISR	4-20 ma. current loop	Sourcing Switch
TS-30S#-SKV	Sinking Switch	0-10 / 0-5 VDC *
TS-30S#-SRV	Sourcing Switch	0-10 / 0-5 VDC *
TS-30S#-SKSK	Sinking Switch	Sinking Switch
TS-30S#-SRSR	Sourcing Switch	Sourcing Switch
TS-30S#-SKSR	Sinking Switch	Sourcing Switch
TS-30S#-SK232	Sinking Switch	RS-232 Output (Gray wire)
TS-30S#-SR232	Sourcing Switch	RS-232 Output (Gray wire)
TS-30S#-485	RS-485+ Output (Yellow wire)	RS-485- Output (Gray wire)

Asterisk (*) indicates user configurable using pushbutton.

* Replace symbol (#) with 1 or 2 depending on the desired range

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)

Ships with instructions and two 30mm SS mounting nuts.
Mounting options available.