

ToughSonic® Distance Sensors

Waterproof, Two Outputs and Push-Button "Teachable"

TS-15S Series

Non-Contact
Ultrasonic
Air Distance
Measurement

TS-15S 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.

30-ft (9.1 m) range
1.5-in. NPT threads
IP68 housing



Top and bottom mounting threads

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 30-ft (9 m) measurement range
- Short 10-in (25 cm) deadband
- Simple pushbutton "teachable" setup of many features, and calibration using actual targets
- Analog outputs are distance-proportional 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
- Status indicator for each output

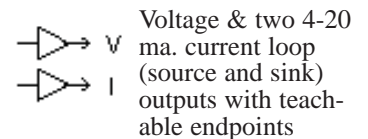
Reliable Operation

- 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, 1.5 in. NPT threaded, potted, waterproof with IP68 rating
- Temperature compensated

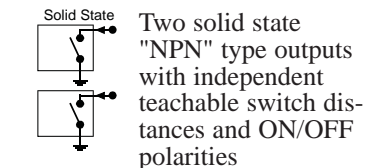
Output Options

Here are 3 common TS-15S output configurations. Eight other output combinations are available (see next page).

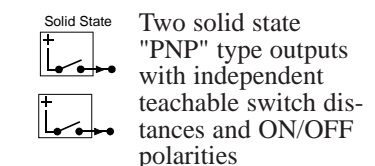
ANALOG V and I



DUAL SINKING SWITCH



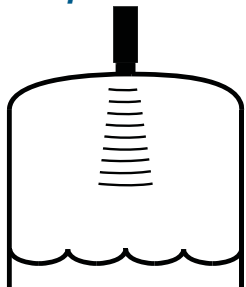
DUAL SOURCING SWITCH



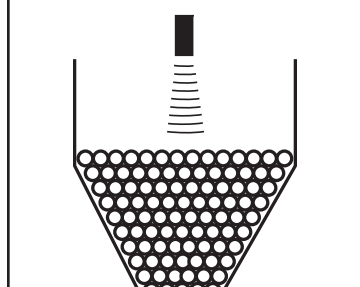
Easy Installation

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

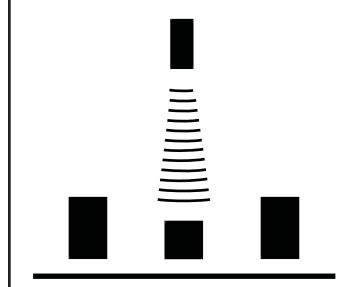
Liquid Levels



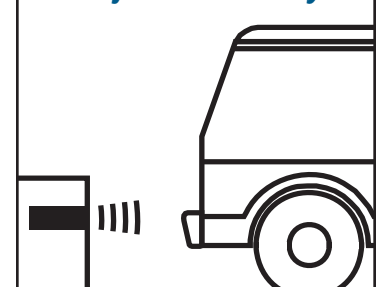
Solid Levels



Dimension/Sort



Object / Security



TS-15S Two Output Teachable Distance Sensors

Target Performance

Color/Transparency

Unaffected by target's 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 Distance

Object	Max Range (ft.)
Liquid surface	30

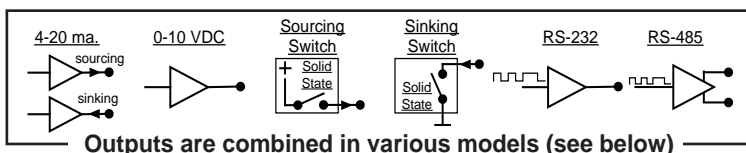
(Performance may be reduced at input voltages less than 18 VDC)

Specifications

Range*	10 inches - 30 feet 254 mm - 9.1 meters	Input Power	10-30 VDC @ 50-70 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	0.0068 in. (.172 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		
Update Rate*	+10 (default), 16, 25 or 100 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		
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 teachable using pushbutton.

Models & Outputs



Outputs are combined in various models (see below)

Wiring (9-wire cable)

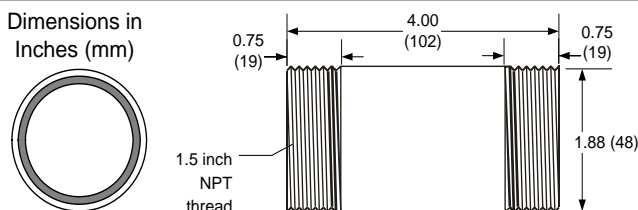
Brown	DC+ IN
Blue	GND
Gray	SYNC(-) or below
Yellow	SYNC(+) or below
Black, White, Violet, Green,	
Orange wires - see below	

MODEL NUMBER	Output #1 (wire color)	Output #2 (wire color)
TS-15S-IV	4-20 ma. current loop (green, org)	0-10 / 0-5 VDC (Violet)
TS-15S-ISK	4-20 ma current loop (green, org)	Sinking Switch (White)
TS-15S-ISR	4-20 ma. current loop (green, org)	Sourcing Switch (White)
TS-15S-SKV	Sinking Switch (Black)	0-10 / 0-5 VDC * (Violet)
TS-15S-SRV	Sourcing Switch (Black)	0-10 / 0-5 VDC * (Violet)
TS-15S-SKSK	Sinking Switch (Black)	Sinking Switch (White)
TS-15S-SRSR	Sourcing Switch (Black)	Sourcing Switch (White)
TS-15S-SKSR	Sinking Switch (Black)	Sourcing Switch (White)
TS-15S-SK232	Sinking Switch (Black)	RS-232 Output (Gray wire)
TS-15S-SR232	Sourcing Switch (Black)	RS-232 Output (Gray wire)
TS-15S-485	RS-485+ Output (Yellow)	RS-485- Output (Gray)

Asterisk (*) indicates user teachable using pushbutton.

Each sensor ships with installation instructions and one UA-CLIC-15 plastic bracket.

Dimensions



Mechanical

Mount: 1.5 in. NPT thread into flange or nipple, top or bottom, or external clamp style bracket

Attached Cable: 6-ft (2 m)
Total Weight: 19.8 oz (0.56 kg)