

ToughSonic® Level Sensor/Control

"Teachable" Dual Point Control with Alarm Output

TSL Series

**Sense & Control
Liquid Levels
without
Contact**

TSL Series Level Controls use ultrasonic technology in a stainless steel case for long service life in tough environments.

Typical applications include controlling pumps, valves, motors or controllers to maintain liquid or solid material levels within known ranges. They are excellent in tanks, drums bins or open vessels.

Both Control and Alarm outputs are provided as solid state switches in either sourcing ("PNP") or sinking ("NPN") type, in any Control and Alarm combination.

- **Push-button "Teachable"**
- **Stainless housing**
- **Non-contact**
- **Easy install**



30 ft.

14 ft.

2 ft.

Features

- Sealed for ingress protection rating IP68 for wash down or outdoor applications
- Mounts at top for easy installation - nothing is submersed in liquid or solid material
- Available in several ranges to best match the application
- Simple pushbutton "teachable" setup of all Control and Alarm setpoints using actual targets
- Fill or Empty (sump) mode selection for Control output
- Alarm output if too high, too low or loss of target echo
- Output response filter for unstable environments
- Control & Alarm indicators show operating status
- Target Indicator shows good echo, no echo or too close
- Security "Lock" prevents accidental mis-adjustment

Reliable Operation

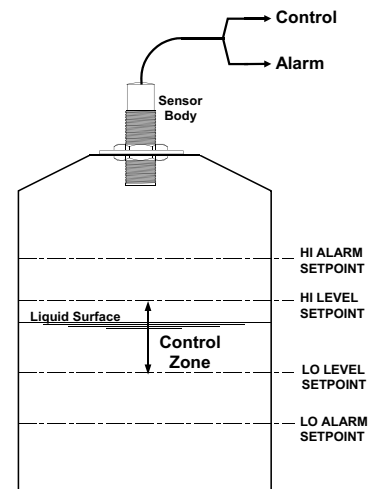
- Heavy duty stainless case, potted electronics, waterproof with IP68 rating
- Unaffected by optical factors like color and transparency
- Stable output if target is lost
- Overload and short circuit protected switch outputs
- Permanently attached cable
- Temperature compensated
- Time delay feature ignores transient events (splash, wave)

Easy Installation

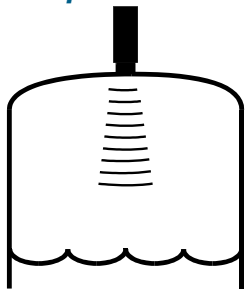
- Installs from top - nothing enters or touches the liquid
- Simple push-button setup - no potentiometers!
- Control is disabled if setpoints not in correct relationship
- Rear indicators display target, fault and output status

Level Function

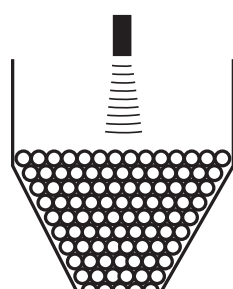
The Control output maintains the level in the Control Zone between the HI Level and Lo Level Setpoints. The Alarm output indicates the level is above the HI Alarm, below the LO Alarm, or loss of signal echo.



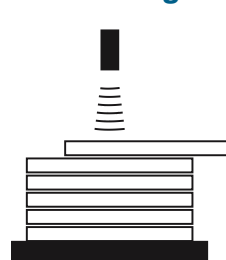
Liquid Levels



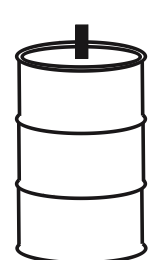
Solid Levels



Stack Height



Drum Levels



ToughSonic® Level Sensor/Control (TSL Series)

Specifications

Range	See models below	Input Power	10-30 VDC @ 68 ma. nominal
Case Material	303 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	30S / 15S: 0.00338 in. (0.086 mm) / 0.0068 in (0.172 mm)		
Repeatability	Nominal 0.1% of range @ constant temp. Affected by target, distance, environment		
Compensation*	Temperature compensation using rear temperature sensor, (teach enabled/disabled)		
Update Rate*	30S models: 20 Hz	15S models: 10 Hz	
Control Output*	Adjustable HI and LO setpoints, fill or empty mode, rear status indicator		
Alarm Output*	Adjustable HI and LO setpoints, alarm on HI, LO or no target, rear status indicator		
Output Ratings	Sinking switches ("NPN"): 150 ma. max @ 40 VDC max. Sourcing switches ("PNP"): 150 ma. max @ power supply voltage		
Time Delay*	5-second time delay prevents control or alarm changes during transient events		

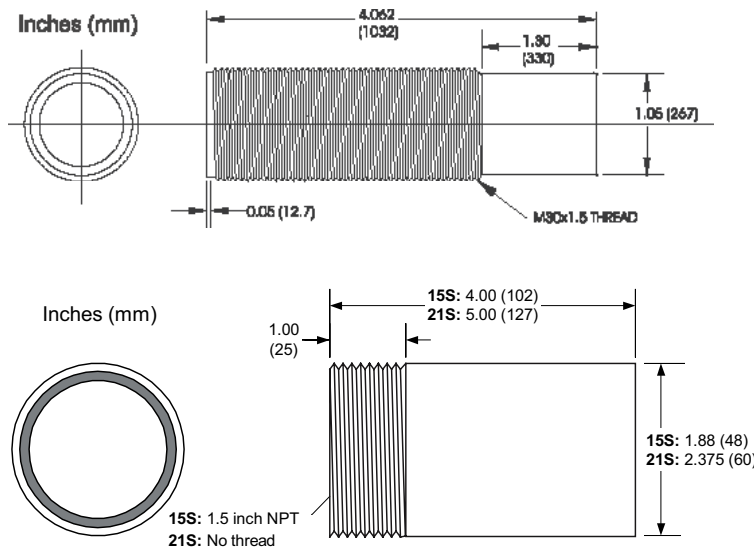
Asterisk (*) indicates user teachable using pushbutton.

Range & Outputs

Range (minimum to maximum)	MODEL	CONTROL	ALARM
1.75 to 24 in. (4 cm to 61 cm)	TSL-30S2-SKSK	Sinking Switch	Sinking Switch
	TSL-30S2-SRSR	Sourcing Switch	Sourcing Switch
	TSL-30S2-SKSR	Sinking Switch	Sourcing Switch
	TSL-30S2-SRSK	Sourcing Switch	Sinking Switch
4 to 168 in. (10 cm to 4.3 meters)	TSL-30S1-SKSK	Sinking Switch	Sinking Switch
	TSL-30S1-SRSR	Sourcing Switch	Sourcing Switch
	TSL-30S1-SKSR	Sinking Switch	Sourcing Switch
	TSL-30S1-SRSK	Sourcing Switch	Sinking Switch
10 in. to 30 ft. (25 cm to 9.1 meters)	TSL-15S-SKSK	Sinking Switch	Sinking Switch
	TSL-15S-SRSR	Sourcing Switch	Sourcing Switch
	TSL-15S-SKSR	Sinking Switch	Sourcing Switch
	TSL-15S-SRSK	Sourcing Switch	Sinking Switch

Max range is less on granular materials; TSL-30S2 series not recommended for granular materials.

Dimensions



TSL-30S1 and TSL-30S2

Dimensions are in inches (mm)

Mounting: 1.2 in. (30.5 mm) hole diameter, or threaded adapters

Sensors have a 6-ft permanently attached rear cable with power, ground, and two switch outputs

TSL-15S

Mounting: 1.5 NPT thread into flange or nipple, or using body mounting bracket