ToughSonic® CHEM 14 Level Sensor

CHEM series sensors and SenixVIEW software put the power of ultrasonics in your hands. Adjust, optimize, save and clone your applications quickly without calibration!

These sensors are contained in a rugged, chemically inert PVDF sealed housing for long life. They mount above the material surface and measure distance downward without contact. All outputs respond simultaneously to the measured distance.

Applications include pump control, bulk inventory, flumes/weirs, batch processing, water management and high/low level alarms.

Non-Contact Ultrasonic Distance & Level Measurement

TOUGHSONIC®
Tough. Smart. Connected.

Features

Level Measurement

- Long and short measurement
- Temperature compensation
- Unaffected by liquid color, density and transparency
- Remotely adjustable via PC

Packaging & Performance

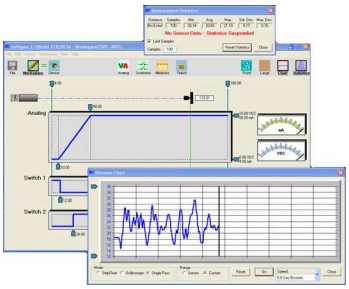
- Durable housing for long life
- Top and bottom thread mounts
- Short & overload protected I/O
- Adjustable filters compensate for tank mixers or turbulence
- Adjustable sensitivity

Functionality Beyond Sensing

Adjustable interface features like switch hysteresis and time delays offer solutions for basic level alarms and pump controls without additional hardware.

PC Setup Power!

Use SenixVIEW software (see separate data sheet) to adjust all sensor features. View, analyze or log data to optimize your application. Setups are unaffected by power interruption.



Copy without Calibration

Application setups can be saved for future recall. From a single sensor inventory part you can quickly clone sensors, without recalibration, for any number of different field installations.

Connections

Serial Data Interface

Used for SenixVIEW setup or user device communication. Choose either an RS-232 or RS-485 model.

Analog Outputs (3)

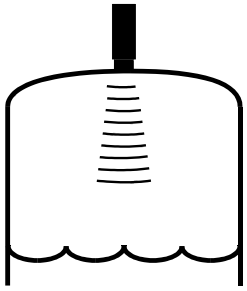
Includes voltage (0-10 VDC) and two current loops (4-20 mA sinking and sourcing). Both output types have user-selectable voltage/current ranges and endpoints for best resolution. The output slope is easily inverted.

Switches (2)

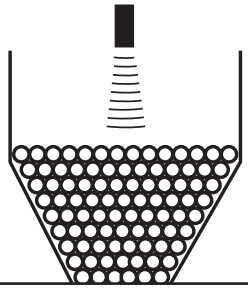
Each switch is configurable as "PNP" or "NPN" type (sourcing or sinking), with adjustable set point, hysteresis, window, initial conditions, ON delay, OFF delay and loss of target response. These are commonly used for level controls and alarms.

All interfaces operate concurrently.

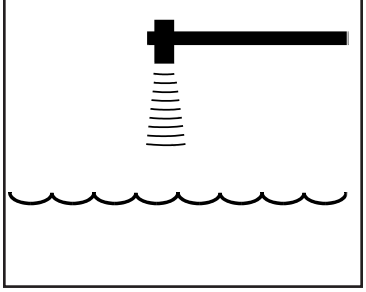
Level or Height



Solids Level



Environmental



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ToughSonic® CHEM 14 Level Sensor

Specifications

Optimum Range	10 ft. (3 m)	**Max Range**	14 ft. (4.3 m)
Deadband	Typ. < 3.5 in. (89 mm)	**Adjustment**	SenixVIEW software
Case Material	PVDF	**Configuration**	Stored in non-volatile memory
Temperature	-40 to 158 F (-40 to 70 C)	**Outputs**	Five selectable, plus serial data
Humidity	0 to 100% operating	**Transducer**	Rugged piezoelectric
Compensation	Temperature compensated	**Protection**	NEMA-4X, NEMA-6P, IP68
Resolution	Digital: 0.0034 in. (0.086 mm); Analog: 4099 steps (0-10 VDC), 3279 steps (4-20 mA)		
Repeatability	Closer than 50 in. (1.3m) ±0.008 in. (±0.2 mm); farther ±0.015% of range (flat perpendicular target)		
Update Rate	20 Hz (50 ms), SenixVIEW adjustable; affected by SenixVIEW filter selections		
Input Power	10-30 VDC, 50 mA maximum, not including switch and analog output currents when used		
Voltage Output	0-10, 0-5 VDC or PC customized; 10 mA max. (*)		
Current Loop #1	Current sourcing 4-20 mA or PC customized, max. loop 450Ω (*)		
Current Loop #2	Current sinking 4-20 mA or PC customized, max. loop 450Ω (*)		
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		
RS-232, RS-485	Modbus and ASCII protocols, 9600-115200 baud (selectable), 8 data bits, 1 stop, no parity		
	Target Requirements		
Target	Detects flat or irregular surfaces. Target surface must reflect sound back to sensor.		
Max. Distance	Affected by size, shape, orientation of target (sound level reflected back to sensor), environment Restrict use to Optimum Range when using over a wide range of environmental conditions		
Granular Solids	De-rate ~~max~~ range by 50%; range affected by material density and orientation		
Optical	Unaffected by target color, light level, transparency or other optical characteristics		

Connections

Cable Connection	Wire	Description
Power	Brown	10-30 VDC, 50 mA maximum; Typical: 45 mA @ 24 VDC (**)
Ground	Blue	Power and interface common
Voltage Output *	Violet	0-10 VDC, 0-5 VDC or custom end values between 0 and 10 VDC
Current Loop Output *	Green	4-20 mA sourcing (adjustable end values between 4 and 20 mA)
Current Loop Output *	Orange	4-20 mA sinking (adjustable end values between 4 and 20 mA)
Switch #1 Output	Black	Sinking ("NPN") or Sourcing ("PNP"), user selected
Switch #2 Output	White	Sinking ("NPN") or Sourcing ("PNP"), user selected
RS-232 out / RS-485-	Gray	Serial data connection (depends on model - see model selection)
RS-232 in / RS-485+	Yellow	Serial data connection (depends on model - see model selection)

(*) Analog outputs share common distance endpoints. Both 4-20 mA outputs share the same adjustable max / min values. The maximum loop resistance is derated below 15 VDC input voltage.

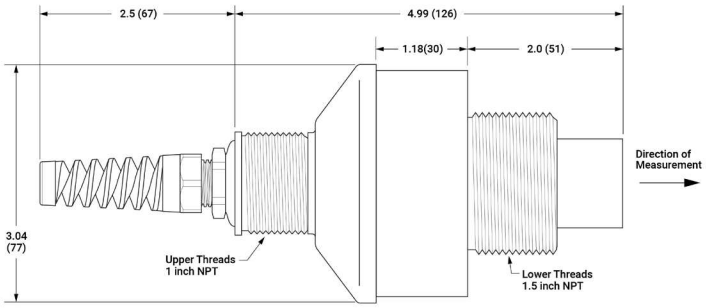
(**) At default update rate. Output currents not included. Sensitivity reduced below 15 VDC input voltage.

Part Numbers

Model Number	Description
LVL-140-232	RS-232 serial data interface
LVL-140-485	RS-485 serial data interface (allows addressable multi-sensor networks)
LVL-140-485A	RS-485 serial data only (allows addressable multi-sensor networks)

Senix offers accessories and special assembly options for OEM customers to suit specific needs.

Dimensions



Mechanical

Mounting Threads:

Lower: 1.5 in. NPT
Upper: 1 in. NPT

Attached Cable:

PUR jacket, 6.5 ft. (2 m), strain relieved

Weight:

21.2 oz. (0.60 kg)

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