Apollosense®

Senix ToughSonic® CHEM 20 Level Sensor

Liquids or Solids in Chemically Aggressive Environments

LVL-300 Series

Non-Contact Ultrasonic Distance & Level Measurement

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

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

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

Features

Level Measurements

- Long or short measurements
- Unaffected by optical factors like color and transparency
- Computer (PC) software allows remote adjustment

Packaging & Performance

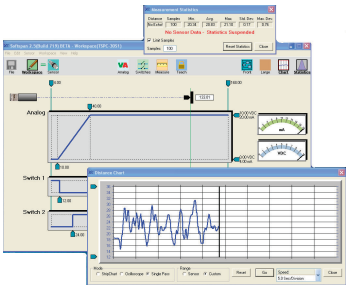
- Durable housing for long life
- Bottom and top thread mounts
- Short & overload protected I/O
- Adjustable filters compensate for tank mixers or turbulence
- Temperature compensation for improved accuracy
- Adjustable sensitivity

Free Functionality

Use adjustable interface features like switch hysteresis and time delays to build complete solutions such as pump controls to maintain level. Save cost by eliminating PLCs, delay circuits and time delay relays!

PC Setup Power!

Use SenixVIEW software (see separate data sheet) to adjust all sensor features. You can view, analyze or log data to optimize your application. Disconnect and the sensor retains the setup.



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.

Multiple Outputs

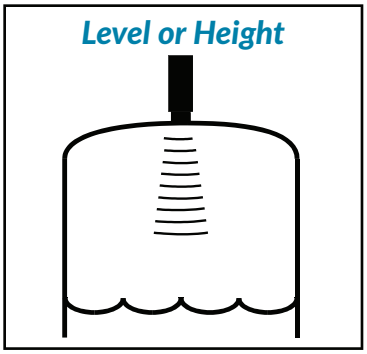
In addition to the model's serial data interface there are five simultaneous outputs, fully configurable with SenixVIEW.

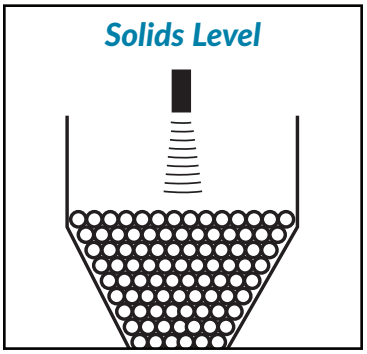
Analog Outputs (3)

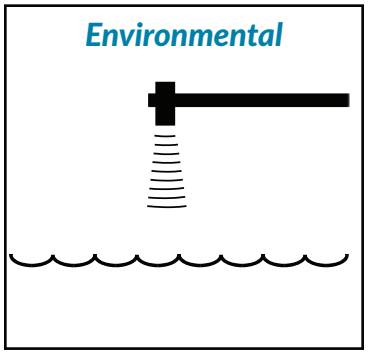
These include voltage (0-10 VDC) and two current loops (4-20 mA sinking and sourcing). Both output types have user-selectable voltage/current ranges and endpoints for best resolution. Easily invert the analog output slope.

Switches (2)

Two switches are SenixVIEW configurable as "PNP" or "NPN" type (sourcing or sinking). Each has adjustable set point, hysteresis, window, initial conditions, ON delay, OFF delay and loss of target response to easily create controls and alarms!







TOUGHSONIC®
Tough. Smart.

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ToughSonic® CHEM 20 Level Sensor

Specifications

Optimum Range	13 ft. (4 m)	**Max Range**	20 feet (6.1 m)
Deadband	Typ. < 8 in. (20.3 cm)	**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: 0.0068 in. (0.172 mm); Analog:4099 steps (0-10 VDC), 3279 steps (4-20 mA)		
Repeatability	Nominal 0.2% of range @ constant temp. Affected by target, distance, environment		
Update Rate	5 Hz (200 ms), SenixVIEW adjustable; affected by SenixVIEW filter selections		
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 protocol, 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		
Orientation	Orient sensor beam perpendicular to target surface for best performance		
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)

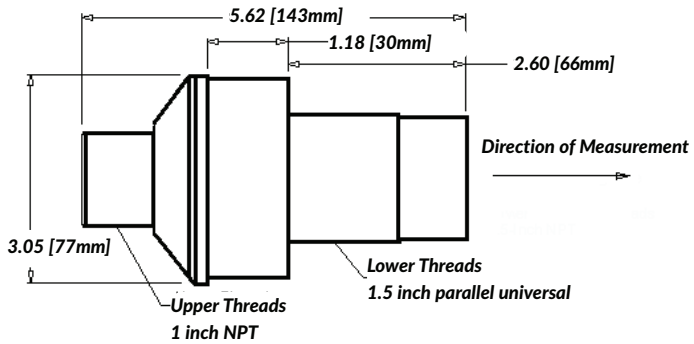
(*) Analog outputs share common distance endpoints. Both 4-20 mA outputs share the same adjustable max / min values. The max. loop resistance is derated below 15 VDC input voltage.

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

Part Numbers

Model Number	Description
LVL-300-232	Serial RS-232 interface (PC COM port compatible)
LVL-300-485	Serial RS-485 interface (allows addressable multi-sensor networks)
Senix also offers interconnection, communication, mounting, and display components	

Dimensions



Mechanical

Mounting Threads:

Lower 1-1/2-in. Parallel
Upper 1-in. NPT
(1 in. BSP tapered, or M32 x 1.5 metric by special order)

Attached Cable:

PUR jacket, 6.5ft (2 m) long

Weight: 21.78 oz. (0.62 kg)

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