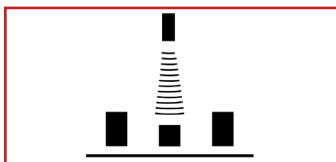


ToughSonic sensors and SensorView™ software put the power of ultrasonics in your hands. Quickly adjust, optimize, save and clone your setups without calibration!

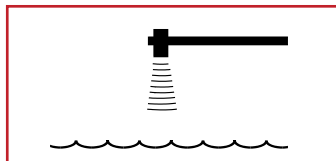
These sensors are housed in a single small potted enclosure for environmental durability and long life. They mount at a distance from a liquid or solid material and measure distance to the surface.

Sensor outputs respond to that measured distance. Applications exist in many industries, and include pump control, bulk inventory, high/low level alarms, river level for flood detection and much more.

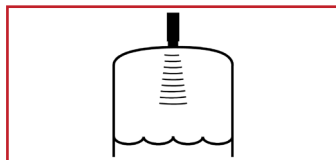
### Non-Contact Ultrasonic Distance & Level Measurement (2.5 Inch NPT)



Distance-Proximity



Environmental



Level or Volume



Object Detection

## Features

### Distance Measurements

- Long range, short dead band
- Continuous and point level
- Water or non-caustic materials
- Adjustable by computer (PC) software, locally or remotely
- Narrow beam with adjustments to optimize performance

### Packaging & Performance

- Survives submersion
- Temperature compensation for improved accuracy
- Short & overload protected I/O
- Adjustable sensitivity
- Rear status indicators (3)

### Free Functionality

Free Functionality using adjustable interface features like switch hysteresis and time delays to build complete solutions such as pump or material flow controllers. Save cost by eliminating PLCs, delay circuits and time delay relays!



## PC Setup Power!

### PC Programming Software

Use SensorView™ software (see separate data sheet) to select and adjust all interfaces, timing parameters, filters and modes. Then view, analyze or log data to optimize your application.



### Flexible Configuration

Flexible configuration means fewer parts to stock and quick duplication! Application setups can be stored on your PC and later recalled. Using a single inventory part you can quickly clone replacement sensors for any number of applications with re-calibration!

## Multiple Outputs

In addition to the model's RS-232 or RS-485 serial data interface there are five simultaneous out-puts. All have SensorView™ configurable features including ranges, target responses and time delays.

### Analog Outputs (3)

These include voltage (0-10 VDC) and two current loops (4-20 mA sinking and sourcing).

The analog slope can increase or decrease value with distance. The analog output limits can be set any distance, and have user-selected voltage/current values.

### Switches (2)

Two switches are SensorView™ configurable as either "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 for ultimate flexibility.

**Specifications**

<b>Optimum Range</b>	33 ft. (10 m)	<b>Max Range</b>	14 feet (4.3 meters)
<b>Deadband</b>	Typ. < 12 inches (30.3 cm)	<b>Adjustment</b>	Button "teach"
<b>Case Material</b>	PVC, 2-1/2" NPT THD front & rear	<b>Configuration</b>	Stored in non-volatile memory
<b>Temperature</b>	-40 to 158 F (-40 to 70 C)	<b>Outputs</b>	Two selectable, plus serial data
<b>Humidity</b>	0 to 100% operating	<b>Transducer</b>	Ruggedized piezoelectric
<b>Compensation</b>	Temperature compensated	<b>Protection</b>	NEMA-4X, NEMA 6P, IP68
<b>Resolution</b>	Serial data: 0.0135 in. (0.3438 mm); Analog steps: 4099 (0-10 VDC), 3279 (4-20 mA)/mmA)		
<b>Repeatability</b>	Nominal 0.2% of range @ constant temp. Affected by target, distance, environment		
<b>Update Rate</b>	5 Hz (200 ms), SensorView™ adjustable; affected by SensorView™ filter selections		
<b>Voltage Output</b>	0-10, 0-5 VDC or PC customized; 10 mA max. (*)		
<b>Current Loop #1</b>	Current sourcing 4-20 mA or SensorView™ adjustable, max. loop 450Ω (*)		
<b>Current Loop #2</b>	Current sinking 4-20 mA or SensorView™ adjustable, max. loop 450Ω (*)		
<b>Sinking Switch</b>	150 mA max. @ 40 VDC max., adjustable set point & polarity, fault indication		
<b>Sourcing Switch</b>	150 mA max. @ input voltage, adjustable set point & polarity, fault indication		
<b>RS-232, RS-485</b>	Modbus protocol, 9600-115200 baud (selectable), 8 data bits, 1 stop, no parity		
<b>SYNC feature</b>	Permits up to 32 sensors to operate in close proximity without interaction		
<b>Target Requirements</b>			
<b>Objects</b>	Detects flat or curved objects. Surface must reflect ultrasound back to sensor.		
<b>Max. Distance</b>	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		
<b>Orientation</b>	Flat surfaces should be oriented perpendicular to sensor output beam		
<b>Optical</b>	Unaffected by target color, transparency, light, or other optical characteristics		

**Connections**

Cable Connection	Wire	Description
<b>Power</b>	Brown	10-30 VDC @ 70 mA maximum; Typical: 45 mA @ 24 VDC (**)
<b>Ground</b>	Blue	Power and interface common
<b>Voltage Output *</b>	Violet	0-10 VDC, 0-5 VDC, or SensorView™ adjustable voltage end values
<b>Current Loop Output *</b>	Green	4-20 mA sourcing (SensorView™ adjustable current end values)
<b>Current Loop Output *</b>	Orange	4-20 mA sinking (SensorView™ adjustable current end values)
<b>Switch #1 Output</b>	Black	Sinking ("NPN") or Sourcing ("PNP"), user selected
<b>Switch #2 Output</b>	White	Sinking ("NPN") or Sourcing ("PNP"), user selected
<b>RS-232 out / RS-485-</b>	Gray	Serial data connection (depends on model - see model selection)
<b>RS-232 in / RS-485+</b>	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 end values. The maximum loop resistance is derated below 15 VDC input voltage.

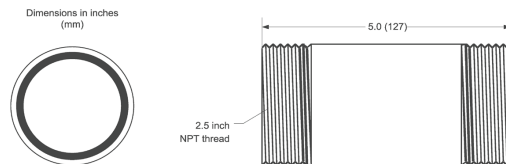
(\*\*) At default update rate. Output currents not included.

**Part Numbers**

Model Number	Description
<b>TS-100.50F102M</b>	Maximum range: 50 ft (15.2m), Connection: 2.5" NPT front & rear mount, Communication: RS-485 & Analog (6 or 9 Wire), Cable Length: 6.5 ft (2m) standard.
<b>TS-100.50F202M</b>	Maximum range: 50 ft (15.2m), Connection: 2.5" NPT front & rear mount, Communication: RS-485 Only (4 Wire), Cable Length: 6.5 ft (2m) standard.

\* Models with "A" suffix have only serial data; Analog & switch outputs, pushbutton and interface LEDs are removed. BinMaster also offers interconnection, communications, mounting and display accessories.

**Dimensions**



**Mechanical**

- Lower Mounting: 2-1/2 in. NPT
- Upper Mounting: 2-1/2 in. NPT
- Attached Cable: PUR jacket, 6.5ft (2m) long
- Weight: 29.1 oz (0.82 kg)