

ToughSonic® TS-100-14 Level & Distance Sensor

PC or Button Setup, Waterproof, Two Selectable Outputs
Non-Contact Ultrasonic Distance & Level Measurement

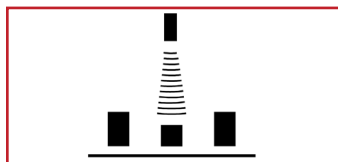
ToughSonic sensors with SensorView™ software put the power of ultrasonics in your hands yet retain the simplicity of push-button TEACH setup. You can quickly adjust, optimize, save and clone your applications without calibration!

ToughSonic sensors contain a rugged transducer potted in a stainless-steel housing for long life.

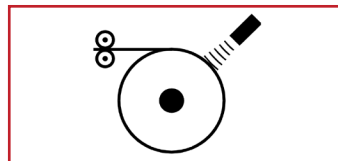
Outputs respond to measured distance and non-contact technology means nothing touches your materials. Many applications exist in all industries.

Contact BinMaster today to discuss your specific needs.

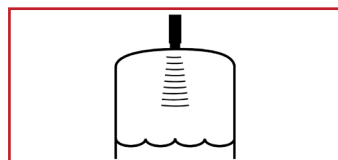
Non-Contact Ultrasonic Distance & Level Measurement (30mm Thread)



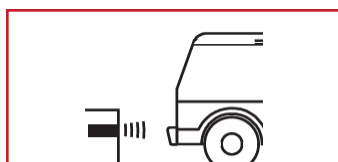
Distance-Proximity



Dimension



Level or Volume



Object Detection

Features

Distance Measurements

- Long range, short dead band
- Unaffected by optical factors like color and transparency
- PC or button “teachable” setup
- Narrow beam with adjustments to optimize performance
- Temperature compensated

Packaging & Performance

- Quick mounting
- Durable sealed housing for wet or dirty applications
- Short & overload protected I/O
- Multi-sensor synchronization
- Adjustable sensitivity
- Rear status indicators (3)

Free Functionality

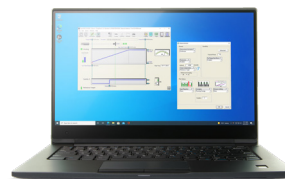
Free Functionality using adjustable interface features like switch hysteresis and time delays to build complete solutions such as pump or material flow controllers. Save cost by eliminating PLCs, delay circuits and time delay relays!



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! Higher volume OEM options are available.

Push Button “Teach”

Push-button “teach” features provide for several common adjustments when a PC is not available.

Output Selection

In addition to the model's RS-485 serial data interface there are two SensorView™ selected outputs to suit your application. All outputs have configurable endpoints, setpoints, event responses and time delays.

Voltage & Current Loop

Voltage & Current Loop are both provided simultaneously in standard (0-10 VDC, 4-20 mA) or custom ranges. They are fully configurable and can either rise or fall with increasing distance.

Switches

Switches can be selected in lieu of one or both analogs and set to either “PNP” or “NPN” type (sourcing or sinking). Each has independently adjustable set point, hysteresis, window, initial conditions, ON delay, OFF delay and loss of target response for ultimate flexibility.

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Specifications

| | | | |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------|
| Optimum Range | 10 Feet (3 meters) | Max Range | 14 feet (4.3 meters) |
| Deadband | 0-4 in (0-102 mm) | Adjustment | Button "teach" |
| Case Material | 316 stainless steel, M30x1.5 threaded | Configuration | Stored in non-volatile memory |
| Temperature | -40° to 158° F (-40° to 70° C) | Outputs | Two selectable, plus serial data |
| Humidity | 0 to 100% operating | Transducer | Ruggedized piezoelectric |
| Compensation | Temperature compensated | Protection | NEMA-4X, NEMA 6P, IP68 |
| Resolution | Serial data: 0.0034 in. (0.086 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 | 20 Hz (50 ms), SensorView™ adjustable; also affected by SensorView™ filter selections | | |
| Output Selection | Voltage & 4-20 mA current loop (defaults), switches, or a combination; see Connections below | | |
| Voltage Output | 0-10, 0-5 VDC or PC customized, 10 mA max; also push-button teachable endpoints | | |
| Current Loop | 4-20 mA or PC customized, current sourcing, max. loop 450Ω, teachable endpoints | | |
| 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 to 115200 baud, 8 data bits, 1 stop, no parity | | |
| SYNC feature | Permits up to 32 sensors to operate in close proximity without interaction | | |
| Target Requirements | | | |
| Objects | Detects flat or curved objects. Surface must reflect ultrasound 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 | | |
| Orientation | Flat surfaces should be oriented perpendicular to sensor output beam | | |
| Optical | Unaffected by target color, light, transparency or other optical characteristics | | |

Connections

| Cable Connection | Wire | Description |
|-----------------------------|---------|--------------------------------------------------------------|
| Power | Brown | 10-30 VDC @ 60 mA maximum; Typical: 45 mA @ 24 VDC (**) |
| Ground | Blue | Power and interface common |
| Voltage Output | White * | 0-10 VDC, 0-5 VDC or custom end values between 0 and 10 VDC |
| Current Loop Output | Black * | 4-20 mA or user adjusted 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 part numbers) |
| RS-232 in / RS-485+ | Yellow | Serial data connection (depends on model - see part numbers) |

(*) Outputs on the black and white wires are SensorView™ selected. The black wire options are 4-20 mA current loop or switch. White wire options are 0-10 VDC or switch. Switches can be sourcing or sinking. Max current loop resistance is derated below 15 VDC input voltage.

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

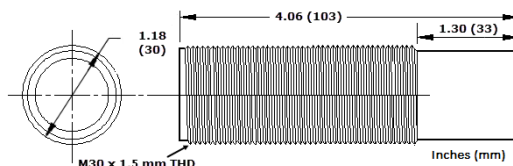
Part Numbers

| Model Number | Description |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| TS-100.14A102M | Maximum range: 14 ft (4.3m), Connection: 30mm Threaded, Communication: RS-485 & Analog (6 or 9 Wire), Cable Length: 6.5 ft (2m) standard. |
| TS-100.14A202M | Maximum range: 14 ft (4.3m), Connection: 30mm Threaded, Communication: RS-485 Only (4 Wire), Cable Length: 6.5 ft (2m) standard. |

These products are also available with 1-inch NPT threads. See ToughSonic 14 NPT data sheet.

BinMaster also offers interconnection, communications, mounting and display accessories.

Dimensions



Mechanical

- Dimensions are in inches (mm)
- Hole diameter: 1.2 in. (30.5 mm)
- Standard Cable: 6.5ft (2m)
- Ships with instructions and two 30mm stainless mounting nuts (other options available)
- Total Weight: 10.4 oz (0.29 kg)