

The Insider

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...because it's what's inside that counts

NEW! BinMaster Guided Wave Radar Reliable, Accurate Continuous Level Sensor

It's about time (domain reflectometry) that BinMaster added Guided Wave Radar to its ever-growing line of level measurement devices. The GWR-1000 is a natural addition to the wide variety of level measurement technologies offered in the BinMaster product line. It provides highly accurate, continuous level measurement in all types of powders, granules, solids and many liquids and can be used in vessels of most any shape or diameter, including narrow tanks in a variety of industries including food, grain, seed, feed, cement, asphalt, minerals, quarries, steel, chemicals, and power generation. The sensor's TDR-based technology is

immune to dust, humidity, temperature, pressure and bulk density changes as well as noise that might be present when filling or emptying the vessel, so the GWR-1000 can perform reliably under conditions where ultrasonic and open-air radar devices may be inaccurate or unreliable.

Measures Powders, Bulk Solids & Liquids in Vessels up to 78'

BinMaster's GWR-1000 guided microwave level transmitter utilizes time domain reflectometry (TDR) to continuously measure the distance, level and volume of powders, bulk solids, and many liquids in bins, tanks and silos up to 78' tall. The transmitter is mounted on the top of the vessel in an unobstructed area through a 1" or 1-1/2" NPT opening. A single, flexible stainless steel cable with a counter weight – custom made to the height of the vessel – is suspended from the transmitter to the bottom of the vessel. An 8 mm cable with a 1-1/2" NPT is offered for use in liquids and heavier bulk solid materials and a 4 mm cable with a 1" NPT can be used in lighter powders and bulk solids. The transmitter emits a low power microwave signal down the cable, which serves as a conductor. When the signal reaches the material surface, it is reflected back to the transmitter. The electronics then process the signal and calculate the distance to the material surface based upon the time of flight.

Simple Installation and Worry-Free Operation

The BinMaster GWR-1000 features advanced two-wire TDR measurement technology with a low dead band (hysteresis) and accuracy of ± 0.2 inches (5 mm). The measurement data is converted to a 4-20 mA output with HART communication and can be viewed via a graphical display on the device or an optional local display using the SAP-300 plug-in display unit. BinMaster offers standard models for process temperatures from -22°F to 195°F (-30°C to 90°C) and high temperature models for temperature extremes from

-22°F to 392°F (-30°C to 200°C) for harsh environments. BinMaster's GWR-1000 comes from BinMaster's factory calibrated, configured, and ready to use. Installation is quick, simple and can be done by plant personnel, which helps minimize costs. The cable comes custom-made to the length needed for the vessel. It installs easily through an existing or new 1" or



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What's Inside



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Measurements in ESP.**
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NEW! BinMaster Guided Wave Radar

1-1/2" NPT opening. BinMaster offers both powder coated carbon steel and stainless steel mounting plates should one be needed. The GWR-1000 can be retrofitted in existing vessels or installed in new vessels and does not require special configuration to compensate for structural or environmental conditions that might be present



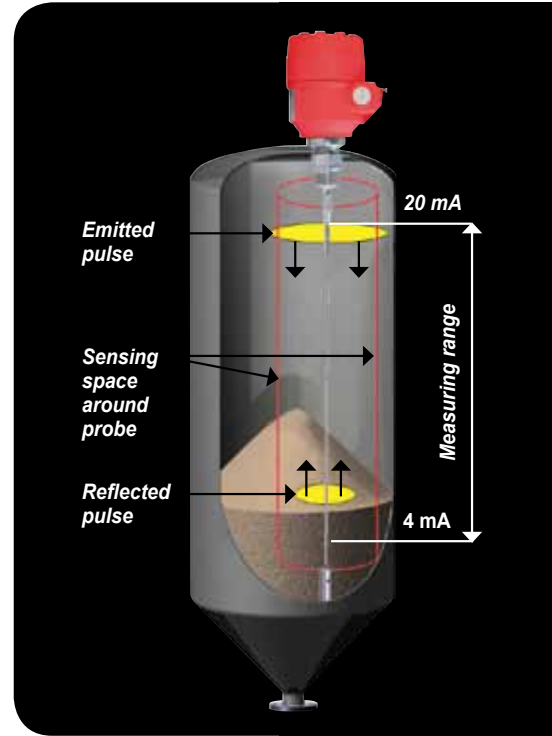
SAP-300 Display

in the vessel. Installation can be performed while the vessel is in service, if needed. Once power is applied, the measurement data is converted to a 4-20 mA with HART

for simple connection to an existing control system or display module. HART communication software is also available. With the help of the SAP-300 plug-in display, basic parameters of measurement and output can be set. The large LCD screen displays the measured values in numerical and bar graph form.

GWR Features

- Reliable 2-wire TDR technology
- Measures powders, solids and liquids
- 4-20 mA with HART communication
- Accuracy of ± 0.2 inches (5 mm)
- Temperature range of -22°F to 195°F
- HT model maximum temperature 392°F
- Graphical display and optional local display
- Low dead band (hysteresis)



3D Takes on Tough Applications

The BinMaster 3DLevelScanner has been addressing the challenges associated with tough-to-measure materials in a wide variety of industries. It's proven in dusty cement and concrete manufacturing. Tackled wood chip storage in pulp and paper making. Taken on the harsh environment in salt and detergent production.

Measured massive silos in alumina and steel production. Brought much needed measurement accuracy to ethanol facilities.

Here's a few examples of how this non-contact, continuous level measurement device addresses measurement challenges around the world.

CHEMICALS



Detergent Production

3D Solution: Measure dry ingredients in storage silos,

material for rework in the reject/recycle silo, and the detergent in the finished product silo.

CEMENT



Concrete Production

3D Solution: Monitoring the level of cement in storage silos and

aggregate silos to ensure sufficient on-hand inventory for the production process.

FOOD & BEVERAGE



Cereal Production

3D Solution: Measuring grains in storage silos, monitoring the

level of cooked grain in temper silos, and the level of sugar in silos prone to buildup.

METALS



Alumina Production

3D Solution: Monitoring the inventory of bauxite ore, measuring

and mapping the contents of alumina powder using the optional 3D visualization tool.

ENERGY



Ethanol Production

3D Solution: Accurate measurement of the inventory of corn

in large storage silos, monitoring the level in silos containing dried distiller's grains (DDG).

Take a look at <http://www.binmaster.com/3DLevelScanner/case.html> to view a complete and growing index of 3D applications to find out how the 3DLevelScanner might work to solve your bin level measurement challenges.

New SmartBob AO with 4-20 mA Output to your PLC

Customers asked and we listened! Now you can send a 4-20 mA analog output directly from a SmartBob sensor to your PLC. The new SmartBob AO (analog output) sensor was designed for use by facilities that prefer using an analog output to their PLC for monitoring bin level measurement data. BinMaster's engineers designed a simple "on board" push-button user interface into the SmartBob AO circuitry to configure the sensor settings. Once a simple, seven-step setup is complete, measurement data is sent directly from the SmartBob AO sensor to a PLC, with all settings for the bin saved in the non-volatile memory of the SmartBob AO.

The SmartBob AO with built-in 4-20 mA output can easily replace any 4-20 device on a vessel by simply installing the SmartBob on the top of the bin and wiring the sensor to the existing 4-20 input. When the SmartBob AO measurement data is sent directly to your PLC, it eliminates the need for a C-100 or RSU control console or eBob software, as the programming interface and controls are built in to the SmartBob AO circuit board. There is one analog output per SmartBob, with this one-to-one relationship requiring a dedicated connection from each individual SmartBob AO to the PLC.

To get the best measurement performance, mount the SmartBob AO level sensor one-sixth from the outer perimeter of the bin

to account for the angle of repose and connect it to standard 115 VAC or 230 VAC power.

There are two current source options for supplying power to the loop. The recommended option is to use an isolated 4-20 mA current loop which uses the PLC to provide power. Alternatively, a non-isolated 4-20 mA current loop can utilize the SmartBob sensor to provide power for the loop.

Not One, but Two Configurable Relays

Unlike competitive devices that offer only a single relay option, the SmartBob AO features two relays that are configurable by the user. This makes the SmartBob AO more feature rich and flexible by providing additional status data to the user. There are four different relay options that can be selected in any combination including measurement status (measurement in process), high level alarm, low level alarm or error alarm (Bob did not take a measurement). Other benefits of the SmartBob AO include the output of a 22 mA error signal if the SmartBob AO should encounter a "stuck top" or "stuck bottom"

condition and a soft start feature that reduces wear and tear on the motor.

Two Configurable Relays

Select any two!

1. Measurement status
2. High level alarm
3. Low level alarm
4. Error alarm

Push-Button Programming

To configure the SmartBob AO, the user opens the SmartBob AO to access the keypad and steps through a series of push-button settings. The interval timer is used to program the SmartBob AO to initiate a measurement in predetermined time intervals such as every two, four or eight hours. An external start input can be used to initiate a measurement on demand. Additionally, an override input feature can be used to turn the measurement feature off, disabling the measurement function. The override feature is useful when filling tanks to avoid burying the SmartBob probe with material or to stop measurements when a bin is undergoing maintenance or cleaning.



Seven Simple Settings

Takes just minutes!

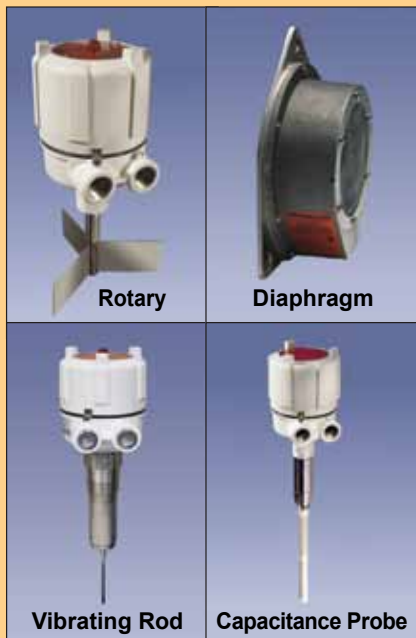
1. Interval timer
2. Units of measure
3. 4 mA drop distance
4. 20 mA drop distance
5. Maximum drop distance
6. Relay 1 function
7. Relay 2 function

SmartBob2 AO with 4-20 mA Output Features

- 4-20 mA analog output direct to a PLC
- Alternative to using consoles or software
- Simple user interface to configure the sensor
- Measures bins automatically in timed intervals
- Two relays configurable with four different options
- Initiate measurements via interval timer or external start input
- Two current source options for supplying power to 4-20 current loop



BIN LEVELS *without CLIMBING!*



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Bin Level Indicators

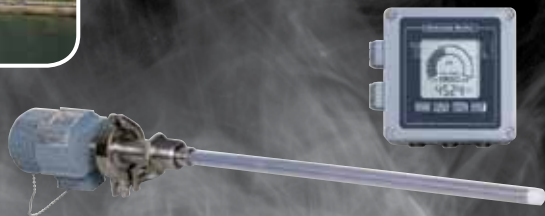
Dangerous Dust? Filthy Fly Ash?

BinMaster...tough enough to take them on.



BM30-LGX Particulate Monitor

Emissions monitoring
and baghouse leak
detection



3D Measurement in Dusty Materials

Measures and maps
with 3D visualization
of contents



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BINMASTER LEVEL CONTROLS

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