

# GWR-1000

## Guided Wave Radar

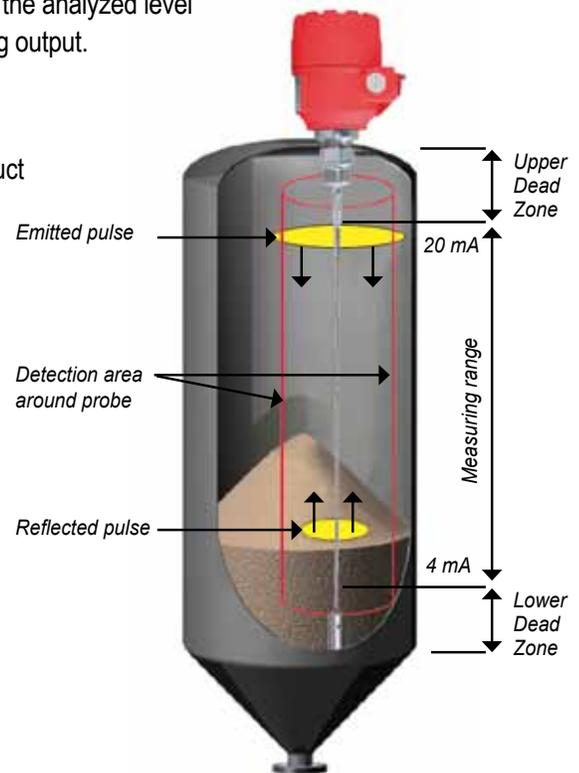
### Reliable, Accurate, Continuous Level Measurement

BinMaster's GWR-1000 guided microwave level transmitter utilizes time domain reflectometry (TDR) to continuously measure the distance, level and volume of powders, granules and solids in bins, tanks and silos. It is also suitable for use in a variety of liquids. 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. The transmitter emits a low power microwave signal guided along the cable. When the pulse reaches the surface of the medium being measured, the pulse energy is reflected up the probe to circuitry that then calculates the level based on the time difference between the pulse being sent and the reflected pulse received. The sensor can output the analyzed level as a continuous measurement reading via an analog output.

The GWR radar signal has a large detection area – 360° and extending out around the probe. When the electromagnetic pulse comes in to contact with product on the probe, the signal is returned and analyzed to see whether it reflects the true level. Because the true level always has a larger return signal than the return signal generated from the smaller mass sticking to the probe, the sensor can easily identify the true surface of the material.

### GWR Features

- 2-wire TDR technology
- 4-20 mA with HART communication
- Accuracy of  $\pm 0.2$  inches (5 mm)
- Temperature range of -22°F to 195°F
- HT model maximum temperature 392°F
- Local graphical display optional



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

The GWR-1000 is suitable for 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. It measures reliably and accurately and is immune to dust, humidity, temperature, pressure and bulk density changes as well as noise that might be present during filling or emptying, even in chunky materials like rock or stone. BinMaster offers standard GWR models for process temperatures from -22°F to 195°F (-30°C to 90°C) and the high temperature GWR-HT models for temperature extremes from -22°F to 392°F (-30°C to 200°C).

## Simple Installation and Worry-Free Operation

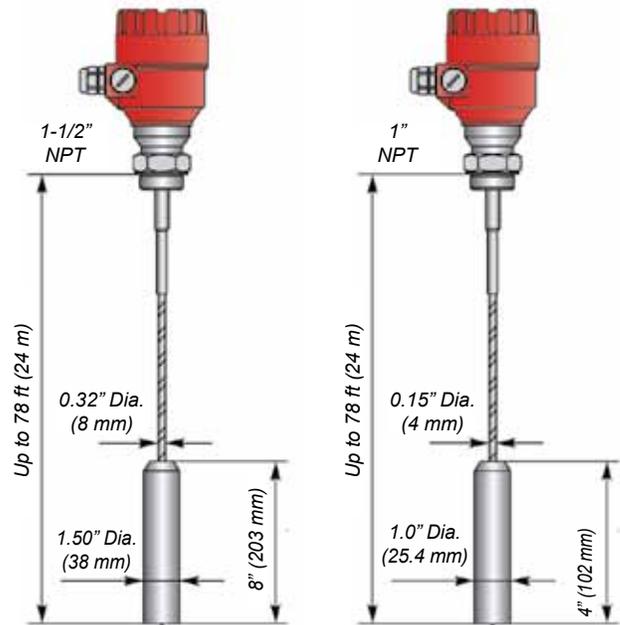
BinMaster's GWR-1000 comes from our factory calibrated, configured, and ready to use. Installation is quick, simple and can be done by plant personnel, which helps minimize costs. The cable comes custom-made to the length needed for the vessel. It installs easily through an existing or new 1 or 1-1/2" NPT opening. BinMaster offers both powder coated carbon steel and stainless steel mounting plates should one be needed.



The GWR-1000 can be retrofit 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 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-1000 Technical Specifications

Application	Continuous level measurement
Materials	Powders, granules, bulk solids, and liquids
Dielectric Constant	≥ 2.1
Measured Values	Distance, level, volume
Measuring Range	Up to 78'
Housing	Aluminum with red epoxy paint
Enclosure Type	IP65
Weight	3.3 lb. (1.5 kg) without cable and probe
Cable Type	Flexible 0.32" (8 mm) or 0.15" (4 mm) 316 stainless steel mono cable
Probe Type	Stainless steel
Pressure	Up to 232 psi
Temperature	-22°F to 195°F (-30°C to 90°C) Standard model; -22°F to 392°F (-30°C to 200°C) High Temperature model
Connection	1-1/2" NPT with .032" (8 mm) cable 1" NPT with 0.15" (4 mm) cable
Power Supply	18-35 VDC
Output Signal	4-20 mA
Communication Protocol	HART
Approvals (optional)	II 1G Ex ia IIC T6...T3; II 1D iaD; A20/A21 IP65 T100°C



**GWR-1000**  
8 mm cable used in liquids and heavier bulk solid materials

**GWR-1000L**  
4 mm cable used in liquids and lighter bulk solid materials

# BINMASTER®

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