

The Insider

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

A PROCAP Probe for Every Purpose

A capacitance probe is a point level indicator, commonly used for high or low level detection in a bin, tank or silo. Like other point level devices, such as rotaries, vibrating rods and pressure switches, a capacitance probe can enhance safety at the workplace by eliminating the need to climb bins to check levels. It helps operations save time, and requires less staff to monitor the inventory in multiple vessels. Equipping each vessel with a capacitance probe or other point level indicator improves inventory management by optimizing storage capacity and allowing for timely replenishment that can reduce shutdowns of production due to empty



Capacitance probes are a versatile point level indicator.

vessel conditions. Preventing overflowing, and the resulting costly spills and cleanup are just a few of the benefits of using these economical devices on your bins, tanks and silos.

Simple Installation, Easy Operation

Capacitance probes are popular because they are simple to install and operate and require minimal maintenance, as they have no moving parts and the probes are resistant to buildup. Plus, they are highly cost effective – being inexpensive to purchase and consume very little power when operating. Capacitance probes are popular with operations that want a solid state alternative to a mechanical rotary. While a rotary often requires going into the bin to attach the paddle upon installation, the sleek construction of the capacitance probe allows for easy insertion through a standard

$\frac{3}{4}$ " or 1-1/4" NPT opening. Capacitance probes can be used in heavy and lump material that could bend or otherwise damage a rotary. Plus, while a rotary can only be extended 12' down into a vessel, a capacitance probe can be extended 35' into the vessel in top mounting applications. An added benefit is that an extended capacitance probe can be less expensive than an extended rotary.

Capacitance probes do have their limitations and are not the best point level indicator for every application. For example, if the vessel is used for a variety of different materials, the capacitance probe may need to be re-calibrated for different product types or characteristics. Avoid using capacitance probes in environments where steam is present, as the probes are highly conductive and the steam will cause false signals. Some plastics and oils have low dielectric constants that can make it difficult for the probe to sense the material. Also, avoid using a capacitance probe in super high



Multiple capacitance probes can be used in a single vessel.

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A PROCAP Probe for Every Purpose

temperatures, since temperatures above 1000°F will damage sensors. Sticky materials – like molasses – can also be difficult to measure with a capacitance probe, so it's probably best to select an alternative device.

A Mountain of Mounting Options

Versatility is one of the greatest advantages of a capacitance probe. They can be used for high, mid and low level indication in a variety of vessels and in many types of powders, bulk solids and some liquid materials.

A capacitance probe may be mounted vertically on the top of a vessel, horizontally on the side of the vessel, or on a 30° angle if the probe is rigid. For top mount installations,

BinMaster offers flexible probes cut to custom lengths up to 35' for high, mid or low level detection. Flexible probes are ideal for use in aggregates, coal, or other lump materials that might damage a rigid probe. A rigid probe is appropriate for granulars, pellets, slurries and liquids and can be customized in lengths up to 8' long. Flush

mounted probes that sense material along the sidewall are ideal for space-constrained areas or where material flow or bridging may damage a standard probe that protrudes into the vessel. Use caution when mounting a capacitance probe through pipes or thick walls, as a probe that comes into contact with the pipe or wall can cause problems and false readings, if the incorrect probe is used.

More Versatility from BinMaster

BinMaster offers PROCAP capacitance probes that can be custom configured to meet the challenges presented by different materials, vessels and operating conditions. All PROCAP models feature interference-free detection without the use of RF signals, Class II, Groups E, F & G approvals for dust, a convenient screw-off cover, dual conduit entries for easy wiring, selectable high-low fail-safe operation and "quick-set" calibration. The latest standard feature on PROCAP probes is dual time delay – which



PROCAP I & II

allows for a flexible time delay for covered and uncovered conditions. BinMaster offers a variety of power packs to meet the needs of specific applications and technical requirements, and are available with a wide variety of probes for many types of materials and challenges that can be present inside a vessel.

The standard PROCAP I & II carries all of BinMaster's extensive probe features. Its visual LED indicates a covered, uncovered or failed condition sensor status. Simple "quick-set" calibration is performed by simply adjusting two potentiometers conveniently located under the screw-off lid of the device. This triple thread screw-off cover also provides easy access to electronics for

setting flexible time delays of up to 30 seconds for both covered and uncovered conditions to minimize the occurrence of false signals. Because BinMaster PROCAP capacitance probes operate below the FCC level of 6 KHz, they won't interfere with RF signals in the plant. The PRO-Shield covering guards against buildup on the probe, allowing for use in dusty, sticky or clinging materials, while fail-safe protection alerts to a power failure.

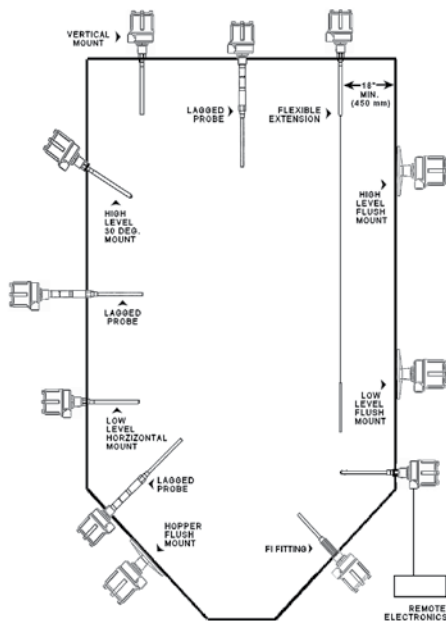
Hazardous Location Options

For hazardous locations where explosive gas and vapor

may be a threat, the PROCAP IX & IIX models have all of the features of the PROCAP I & II, but also have explosion proof approvals for both Class I, Groups C & D and Class II, Groups E, F & G. These models for use in hazardous locations are available with either standard probes or the flush mount sensing probe option for space-constrained locations. Another option for hazardous locations is the PRO-REMOTE, which is designed for hostile applications such as those with high temperatures or vibration present. The probe and electronics are housed in separate enclosures, with the "split" configuration allowing for the electronics to be safely mounted up to 75' from the probe.



PROCAP IX & IIX



3-A and USDA Approved

For sanitary applications such as in the food and pharmaceutical industries, the PROCAP I 3-A & II 3-A models can be used in environments requiring 3-A and USDA compliance and food grade safety. These sanitary probes have no threads that material can become lodged in and cause contamination. They also have a tri-clamp connection for easy cleaning and are designed for operation in clean-in-place (CIP) applications in the food industry.



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Tight Space Constraints

The PROCAP I-FL & II-FL are designed for small, narrow vessels or space constrained areas. The FL models are ideal in applications when material flow



may damage standard probes and conveniently mount flush on a vessel wall, conveyor housing or chute. The probe does not intrude into the vessel, which eliminates the risk of a probe breaking and contaminating material. Another option for tight spaces is a bendable probe that can be bent to avoid obstructions in the vessel, while still allowing for adequate surface area to detect whether material is present or absent. One popular use is in smaller mixers or containers for food processing applications.

Calibration takes just seconds with the PRO AUTO-CAL model. This unique model allows for simulation of either covered or uncovered conditions without accessing the probe assembly or the electronics. Calibration is performed quickly and easily through the unit's cover with the use of a magnet.

Volume Accuracy in Big Bins

Companies across many industries such as mining, agriculture, food processing and bioenergy are dealing with high value material, commodity and ingredient costs. While level measurement is essential to keeping an adequate supply of raw material on hand, volume measurement has become increasingly valuable in managing inventory and calculating the value of material on hand, for both production personnel as well as financial management. Many powders and bulk solids don't always flow freely, creating an irregular material topography or are stored in large vessels with multiple filling and emptying points that make a single-point measuring device inadequate for estimating the volume of material on hand.

Multiple-point Measurement

Utilizing dust-penetrating, multiple-point, acoustics-based technology, the BinMaster 3DLevelScanner MVL system is the only solution on the market today that can measure, map, and visualize the material surface in bins with irregular topography and very

wide bins. For each customer application, the size of the bin and the customer's desired level of accuracy are taken into account to determine the optimal number of scanners that need to be installed in the bin and their installation location on top of the bin to generate the desired inventory accuracy. Dependent on the number of scanners installed, volume accuracy can be 3% or even better in very large vessels – far

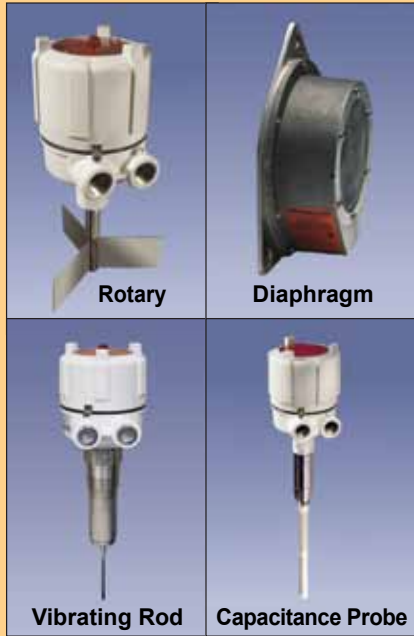
surpassing the accuracy of any radar or other single-point measurement device.

Mapping & 3D Visualization

Unique to the MVL system is its ability to create a color visualization that depicts the contents of the vessel, indicating the location of high and low spots in the vessel. Using the X, Y and Z coordinates for each measurement, the software calculates the volume of material in the vessel while the data helps manage filling and emptying points in very large vessels. The MVL is proven to perform in challenging powders and solid materials such as alumina, bentonite, fly ash, potash, frac sand, cement, woody biomass, and detergents that are prone to buildup and irregular topography that can make monitoring inventory difficult.



BIN LEVELS *without CLIMBING!*



BINMASTER

Bin Level Indicators

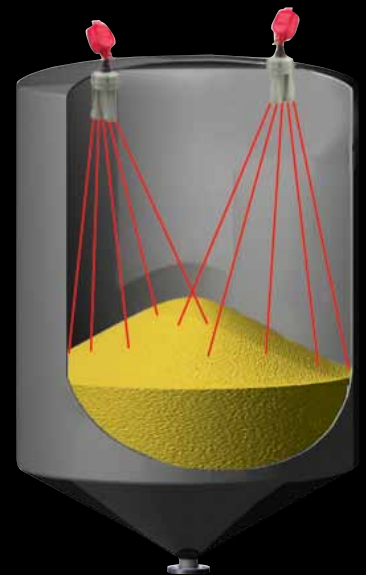
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3D Level Scanner

Accurate, Non-Contact Volume Measurement

- True volume measurement for big bins
- Works reliably in high levels of dust
- Accurate, multiple-point measurement
- Measures and maps bin topography
- Eliminates climbing for employee safety



BINMASTER

BINMASTER LEVEL CONTROLS

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