



## Inventory Measurement System

### Compact. Reliable. Affordable.

- New compact and lightweight design for vessels up to 60 feet
- Weighs less than 10 pounds
- Compatible with the SmartBob2 system consoles and software
- Measures solids, powders, liquids or slurries
- Minimal contact with stored material
- Built-in wireless communication option
- Service and maintenance-friendly
- Trouble-free mounting on angled or flat roofs
- Scalable communication capabilities to meet your operational needs

# SMART **Bob** TS1

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Real-Time Inventory Tracking Software  
The future of inventory tracking

# SmartBob-TS1 Introduction

## Designed for smaller vessels

The SmartBob-TS1 sensor is an economical and compact inventory tracking system that has been designed for use in smaller tanks and silos. The small yet rugged design allows you to use SmartBob-TS1 in vessels up to 60 feet tall.

## Reliable under difficult conditions

The SmartBob-TS1 delivers reliable level data in applications where other technologies simply won't work. SmartBob-TS1 has become widely accepted as the standard measuring technology for reliable measurement of bulk solids. The SmartBob-TS1 measuring principle combines reliability with simplicity in a wide variety of applications.



## Real smart

The SmartBob-TS1 is compatible with its predecessor the SmartBob2, which can be used in bins up to 180 feet tall. This allows you to combine the two sensors into one common system. We've made the best inventory measurement system even better, providing the most cost-effective and easiest-to-implement solution for maximizing your inventory control.

## And versatile, too

SmartBob-TS1 can handle the demands of virtually any application and vessel type. With numerous sensor probe styles, the SmartBob-TS1 effectively measures solids, powders, liquids, or slurries. With a variety of mounting accessories, SmartBob-TS1 can be used with almost any configuration of silo, bin, or other bulk storage vessels.

## Proven applications

Whether it's ground feed in a silo on a farm or fine granular solids in a plastic processor's material storage silo, SmartBob-TS1 has the power and flexibility to handle it. Airborne dust, filling noise, steam, temperature, or steep coned bottoms pose no problem to SmartBob-TS1. It's capable of measuring all your liquids, large granular, powders and dry bulk solids.

*SmartBob-TS1 tank sensor provides years of maintenance-free service in vessels up to 60 feet.*



- High resolution microcontrolled optical sensing system
- Heavy duty direct drive reversible motor with electronic torque control provides maximum pull strength
- Optional built-in 900 MHz wireless modem
- Dual-sided idler arm eliminates any slack in cable and stops cable from jumping off pulleys
- Braided nylon cable, designed for the toughest applications
- Rotational molded polyethylene housing
- Fully sealed compartments protect the electronics from dust, debris, condensation and other contaminants

## How SmartBob-TS1 works

When a SmartBob-TS1 positioned on the top of a vessel is asked to take a measurement, a rugged motor releases a nylon cable from the supply pulley and a weighted sensor probe descends to the surface of the material.

During the descent, the SmartBob-TS1 measures the cable dispensed by counting pulses with a high resolution microcontrolled optical sensing system. When the sensor probe touches the material surface, pulses are momentarily stopped and measurement information is transmitted. The absence of pulses also causes the motor to reverse and retract the sensor probe. A second confirming measurement is taken as the probe retracts and is compared to the descend measurement.

As the probe is retracted, motor torque is automatically reduced during the last 12" of the retract cycle resulting in a "soft retract seating" which extends the life of the SmartBob-TS1 and ensures proper cable spooling.



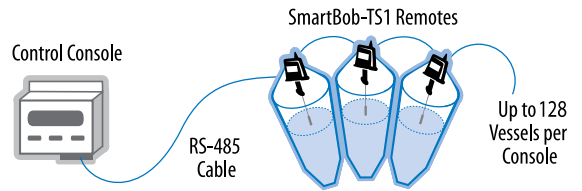
Remotely initiate and view vessel measurements.

# Communication Accessories

## Control Console (C-100)

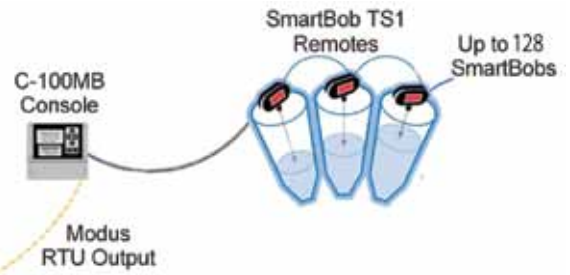


This compact, manually operated console can control up to 128 SmartBob-TS1 sensors with the push of a button. Individual bin heights are programmed to the console and measurements are displayed as distance to product, height of product, and percent full.



## Modbus Control Console (C-100MB)

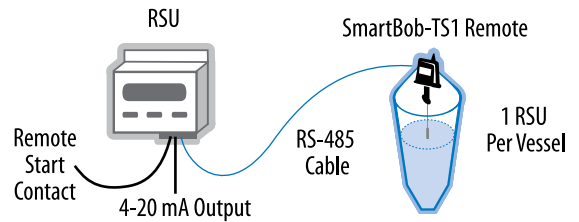
The BinMaster C-100MB is a compact control console that allows control of a SmartBob sensor network via a Modbus interface, simplifying bin inventory management for organizations that utilize the Modbus communication protocol routinely in their operations. The C-100MB console provides an RTU (remote terminal unit) output to a PLC (programmable logic controller) or HMI (human machine interface).



## Remote Start Unit (RSU)



The RSU provides an external start input, a 4-20 mA current loop output, and a remote read-out of the measurement. The RSU allows for a simple interface between the SmartBob-TS1 sensor and a PLC or DCS system. The PLC/DCS initiates the measurement by providing a dry contact closure and then can retrieve the measurement from a 4-20 mA output.

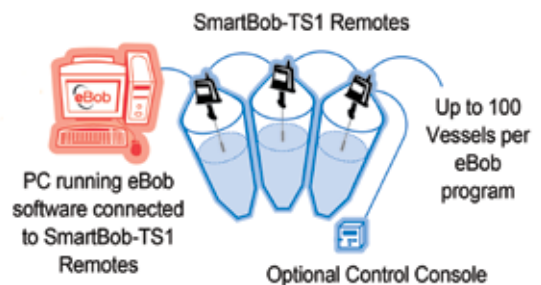


## eBob Software



The eBob software allows convenient inventory tracking from a PC inside an office. The eBob software gathers data from up to 100 SmartBob-TS1 sensors. The powerful software provides an unsurpassed graphical representation of critical inventory data, including:

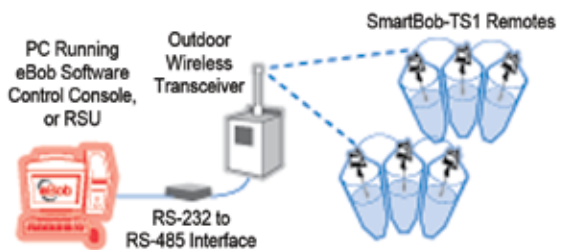
- Vessel number
- Contents and title
- Headroom
- Height of product
- Percent full
- Product weight
- Product volume
- Status
- Date/time of measurement



## Wireless Data Transmitter



Eliminates the need for running long spans of communication cable by providing two-way wireless data communication between SmartBob-TS1 sensors mounted on top of storage vessels and the control source on the ground. A wireless modem can be installed in one SmartBob-TS1 per group and the remainder of the sensors hardwired. Or, wireless modems can be installed in all SmartBob-TS1 sensors.



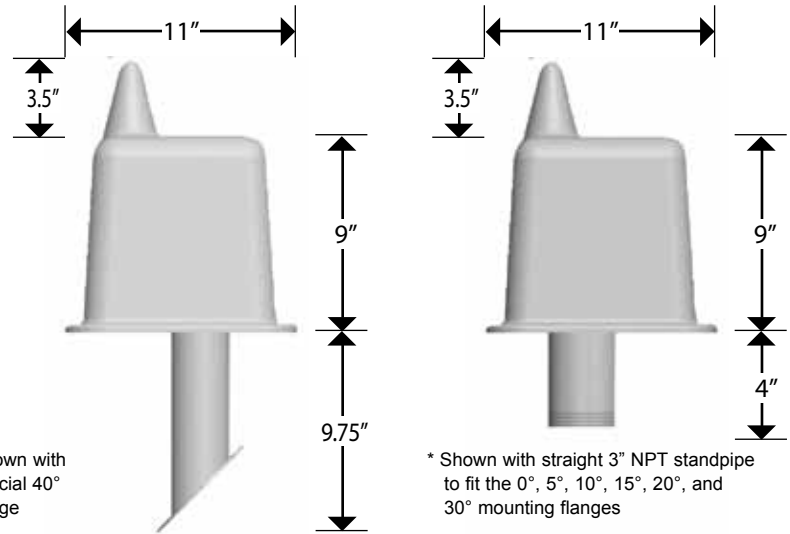
# Specifications/ Accessories



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**Power Requirements:** 115 VAC 60Hz  
**Power Consumption:** 21 VA Continuous 37 VA intermittent  
**Current Draw:** @115VAC: 0.18 A Continuous 0.32 A intermittent  
**Temperature:** -20° F to +140° F (-28° C to 60° C)  
**Measurement Range:** 60 feet maximum  
**Accuracy:** ± 0.25% distance measurement accuracy  
**Resolution:** 0.1 ft (0.03 m)  
**Communication:** RS-485 Half Duplex  
**Wiring Distance:** 4,000 ft (1220 m)  
**Enclosure:** Rotational molded polyethylene  
**Mounting:** Special bolt on and 3" NPT  
**Conduit Entry:** Two 3/4"  
**Weight:** 9.6 lbs  
**Cable:** Braided nylon



\* Shown with special 40° flange

\* Shown with straight 3" NPT standpipe to fit the 0°, 5°, 10°, 15°, 20°, and 30° mounting flanges

## 30° & 40° mounting flange



SmartBob-TS1 sensors can be ordered with special mounting brackets to easily install on smaller feed bins with steep angled roofs. These flanges can be bolted directly to the roof. The flanges are available in 30° and 40°.

## Flat & angled mounting flange



SmartBob-TS1 sensors can be ordered with flat or an angled mount flange for mounting on sloped roof vessels. The flanges are available in 0°, 5°, 10°, 15°, 20° and 30°.

## Digestible bottle



Polyethylene bottles can be purchased empty or filled with materials compatible with the material stored in the vessel, or filled at the factory with a food grade paraffin wax. It's called a "digestible" bottle because it can pass easily through a rotary valve or screw conveyor.

## Pipe extension



The pipe extension is an optional feature that is attached to the SmartBob-TS1 mount. The pipe extension keeps the sensor probe from being pulled up into a standpipe, functions as a bushing, and keeps the cable from fraying on sharp objects. The extension pipes are available in CPVC, galvanized, or stainless steel.

## 6" stainless steel float



This hollow inverted stainless steel sphere is designed for use in liquids or light, bulk solids and powders with a bulk density greater than 3 lb./cu. ft. This sensor probe works well in corrosive materials and foodstuffs.

## Gearbox motor heater



SmartBob-TS1 can be ordered with a motor gearbox heater and thermostat when the SmartBob-TS1 sensor will be exposed to temperatures below 32° F. The heater will assure the motor operates at 100% efficiency.

## Polyethylene weighted spike



This spike is designed for solid materials with a bulk density greater than 20 lb./cu.ft.

**BINMASTER**

**SMART Bob TS1**

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**For more information  
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