



Practical solutions... at every level!



SiloPatrol® SMU

FEATURES & ADVANTAGES

- ▼ **Weight and cable-based “Smart” level sensor** is unaffected by material composition.
- ▼ **Innovative Hall-effect sensor array** helps to eliminate the plumb bob from getting stuck in material by providing data to the microprocessor which in turn controls the amount of power to the robust direct-drive gear motor so it can pull the plumb bob harder if needed.
- ▼ **On-demand measurement** that can be triggered in addition to any automatic measurements.
- ▼ **Electronic lock-out** to inhibit sensor from initiating a measurement cycle during filling operations.
- ▼ **Split-compartment enclosure** isolates all electrical and electronic components from the process environment to ensure long-term reliable operation.
- ▼ **Uniquely designed wiper seal compartment** for fast, easy servicing or replacement if necessary.
- ▼ **Virtually maintenance free** means that just a simple periodic “visual inspection” is recommended.
- ▼ **Measuring range up to 150 feet (46m)** for powder bulk solids material levels in bins and silos. Works for some liquid & slurry applications with optional ball float plumb bob.

Practical Tip
SiloPatrol provides reliable long-range measurement of materials with low dielectric constants such as plastics.

PRINCIPLE OF OPERATION

The heart of the **SiloPatrol® ** Inventory Management System is an industry-leading cable-based “Smart” sensor called the Silo Monitoring Unit (SMU ) that is designed to perform in some of the harshest and most dynamic level measurement conditions. The SMU  with its state-of-the-art sensors including Hall-effect technology can be combined with a variety of operator interface and auxiliary output options to provide a practical vendor / remote managed inventory system designed for your specific requirements.

When a measurement cycle is initiated, either manually or automatically, the **SiloPatrol® ** sensor (SMU ) motor control system deploys a plumb bob, that is attached to a heavy-duty stainless steel cable, for descent into the vessel. The motor control circuitry regulates an optimal speed of descent that helps to eliminate cable slack, maximizes motor life and ensures that the plumb bob will stop when it contacts the material surface. The SMU  measures the amount of cable deployed during descent via its unique optical sensing system. Once the optical encoder determines that the plumb bob has reached the material surface, the microcontroller reverses the direction of the motor and transmits the distance value. During the ascent of the plumb bob, the SMU  measures the amount of cable retrieved in order to reconfirm the distance measurement.

PRACTICAL APPLICATIONS

- ▼ Use when target material characteristics may change thereby eliminating need for re-calibration.
- ▼ Great economical choice when accuracy is important and periodic measurements are sufficient.
- ▼ Measuring technique provides peace-of-mind without concern of spurious reflections associated with other technologies.
- ▼ Typical applications include, but are not limited to:
Grains, Feeds, Powders, Coal, Bulk Chemicals, Cement, Rocks, Sand, Limestone, Plastic Pellets, Plastic Re grind, Slurries, Liquids and Oils.

For more detailed information, please contact a Monitor representative or visit Monitor’s website at http://www.monitortech.com/product_c_c_sp.shtml

OPTIONS

- ▼ Three models to choose from:
 - ▼ Smart RS-485 version for use with **HMI²** local operator interface or **SiloTrack™** inventory management software.
 - ▼ Analog output version for use as a standalone transmitter that provides an updated analog signal each time a new measurement is made.
 - ▼ Pulse output version generates AC or DC pulses in response to a request for a measurement from a contact input. This output can be used to provide direct input into a PLC.
- ▼ Choice of 0°, 5° or 10° freeze-resistant mounting flange.
- ▼ Available in ordinary location, CSA_{US/C} hazardous location or ATEX[®] hazardous location.
- ▼ Affordable Wireless Sensor interface is available.
- ▼ Optional independent analog & relay outputs are offered for RS-485 systems using an Auxiliary Output Enclosure (AOE).





Visit www.monitortech.com

SPECIFICATIONS

More product specifications can be found on Monitor's Web site.

Power Requirements:	115VAC or 230VAC, 50/60 Hz	Output Signal:	
Power Consumption:	6VA continuous, 50VA intermittent	Standard "Smart":	RS-485 half-duplex, isolated, proprietary protocol
Process Temperature:	-40° F to 300° F (-40° C to 149° C)	Pulse:	1 pulse per 1/10ft or dm, isolated, dry contact, selectable: 0.1ft - 12Hz, time-on 40mS, time-off 45mS dm - 4Hz, time-on 40mS, time-off 210mS AC Pulse - 70mA max @ 24-250VAC DC Pulse - 70mA max @ 24VDC Relay Output - 5A @ 250VAC max, isolated, dry contact
Ambient Operating Temp.:	-40° F to 150° F (-40° C to 65° C)	Analog:	4-20mA, reversible to 20-4mA, isolated; 500 Ohms maximum loop resistance Relay Output - 5A @ 250VAC max, isolated, dry contact
Max Internal Bin Temp.:	Up to 300°F (149°C) with use of bare stainless steel cable; Up to 200°F (93°C) with use of nylon or polyethylene jacketed cables	Enclosure:	Cast aluminum w/ powder coat finish
Measurement Range:	150 feet maximum (45.7 m)	Overall Dimensions:	24.06" x 10.25" x 7.94" (611mm X 260mm X 202mm) (H x W x D)
Measurement Rate:	1.0ft/sec (typical) (0.3 m/s)	Enclosure Rating:	NEMA 4X / ENCLOSURE TYPE 4X, IP66
Accuracy:	± 0.25% of distance reading	Approvals:	
Repeatability:	0.1ft (30 mm)	Ordinary Location:	CSA _{US/C} , CE Mark
Resolution:	0.01ft (0.12in/3mm)	Hazardous Location:	CSA _{US/C} Class II, Groups E, F & G; Class III ATEX II 1/2 Dc T 75°C
Conduit Entry:	(2) 3/4" NPT		
Mounting:	Freeze-Resistant "K" flange, 8" dia w/ 7" bolt circle		
Air Purge Connection:	1/4" NPT		
Shipping Weight:	35lbs (15.6kg)		
Wiring Distance ("smart"):	4,000ft (1,220m) maximum		

ORDERING INFORMATION

SiloPatrol® SE Silo Monitoring Unit (SMU SE)							
Select	Output						
1	Standard "Smart" RS-485 communications						
2	Pulse (retro) output						
3	4-20mA analog output						
Select	Environment						
1	Ordinary locations						
2	Hazardous locations - CSA us/c (North America)						
3	Hazardous locations - ATEX						
Select	Mounting Flange						
1	Standard K-flange						
2	5° K-flange						
3	10° K-flange						
Select	Cable Type						
(Customer Specified Length up to 150ft [46m])							
1	Nylon jacket						
2	Stainless steel						
3	Polyethylene jacket						
Select	Operating Voltage						
1	115 VAC						
2	230 VAC						
6 - 8	5	X	X - X	X	X	2	Order Number

ACCESSORIES ¹:

Part #	Description
6-2190	Digestible Plumb Bob
6-2021	Cast Epoxy Plumb Bob
6-3123	Cast Aluminum with Teflon® Coating
6-3136	316 Stainless Steel
6-4106	316 Stainless Steel Inverted Cone
6-4126	Teflon®-Coated 316 Stainless Steel Inverted Cone
6-4108	316 Stainless Steel Ball Float
6-4128	Teflon®-Coated 316 Stainless Steel Ball Float
6-3125	5° Mounting Flange
6-3128	10° Mounting Flange
R0514-22001 ²	Belden® 9322 RS-485 communication cable (Overall Beldfoil® Shield - 100% Coverage, PVC Insulation, Chrome PVC Jacket, Nominal OD is .201" [5.10mm])

NOTES:

- 6-3103 cast aluminum plumb bob is included with each SMU SE.
- R0514-22001 cable is not for plenum installations. Consult local electrical codes.

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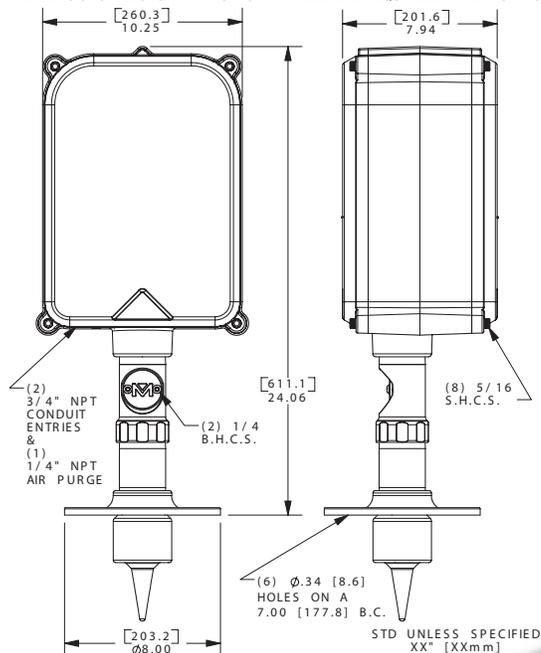


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MECHANICALS

DIMENSIONS ARE SHOWN IN INCHES WITH MILLIMETER EQUIVALENT IN BRACKETS



ISO 9001:2008
Certified

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