



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[®] SE** 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[®] SE** 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_{Ex} 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).





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) |
| Measurement Rate: | 1.0ft/sec (typical) (0.3 m/s) | (H x W x D) | |
| Accuracy: | ± 0.25% of distance reading | Enclosure Rating: | NEMA 4X / ENCLOSURE TYPE 4X, IP66 |
| Repeatability: | 0.1ft (30 mm) | Approvals: | |
| Resolution: | 0.01ft (0.12in/3mm) | Ordinary Location: | CSA _{US/C} , CE Mark |
| Conduit Entry: | (2) 3/4" NPT | Hazardous Location: | CSA _{US/C} Class II, Groups E, F & G; Class III ATEX II 1/2 Dc T 75°C |
| 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.

Teflon® is a registered trademark of Dupont Chemical Co.

Information on this sheet is subject to change without notice.

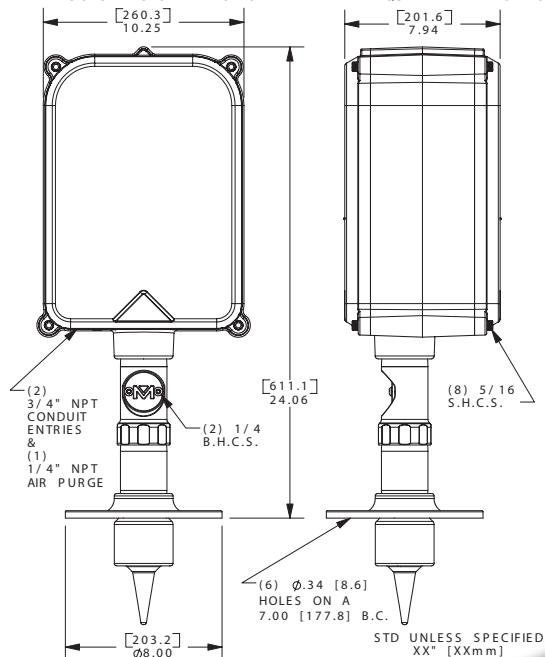


Scan this with a smartphone QR-Code app for more product details.



MECHANICALS

DIMENSIONS ARE SHOWN IN INCHES WITH MILLIMETER EQUIVALENT IN BRACKETS



ISO 9001:2008 Certified

MONITOR TECHNOLOGIES, LLC

44W320 Keslinger Road ▼ P.O. Box 8048
Elburn, IL 60119-8048 USA

Tel: 1-630-365-9403 ▼ In US/CAN 1-800-766-6486
Fax: 1-630-365-5646 ▼ monitor@monitortech.com

www.monitortech.com ▼ www.flexar.info

Blog: www.monitortech.typepad.com