MONITOR TECHNOLOGIES LLC

Celebrating 60 Years

Level Measurement and Process Control Instrumentation For Powders / Bulk Solids

Continuous Level Measurement

Point Level Indication

Solids Flow

Moisture Measurement

Dust Monitoring

Bin Aeration

Visit www.monitortech.com

BULLETIN 112

Continuous Level & Inventory Management

RadarRight™

Flexar®

SiloPatrol®

	NON-CONTACT RADAR	GUIDED WAVE RADAR	CABLE-BASED SMART SENSOR
FEATURES	▼ Non-contact, Continuous Level Measurement...Nothing to "Touch" the Process ▼ Proven Pulse Radar Technology ▼ Small Beam Angle to Concentrate Energy for High Accuracy and Reliability ▼ Small "Dead Band" ("Blanking Zone") for Optimum Measurement In Vessel ▼ Advanced Micro-processor and Unique Echo Processing Technology ▼ No Moving Parts to Wear; Low Maintenance ▼ Easy Set-up / Configuration with LCD Push Button Display Module (Included)	▼ Real-Time Continuous Output ▼ Focused / Directed Energy Field ▼ TDR Technology Unaffected by Dust, Bulk Density and Temperature ▼ No Moving Parts to Wear; Low Maintenance ▼ Smart RS-485 and/or Analog Output ▼ Measuring Range (Dependent on Target Material Dielectric Constant): ● Up to 100 ft (30m) for Solids ● Up to 200 ft (60m) for Liquids	▼ Sensor Performance Unaffected by Material Composition...Works in Tough and Dusty Conditions ▼ Intuitive, wireless set-up / configuration using a free app on an Android™-based device with Bluetooth® ▼ Modbus™ connectivity ▼ Continuous or On-Demand Measurements with Lock Out Override ▼ Easy to Install & Virtually Maintenance Free ▼ Smart Sensing Reliability Combining Optic and Hall-Effect Technologies ▼ Measuring Range Up to 150 ft (46m)
OPTIONS	▼ Models Available for Various Applications ● ***Series 400*** - For Powders & Bulk Solids in Vessels Up To 100 ft (30m) High ● ***Series 200*** - For Liquids Up To 100 ft (30m) ▼ Variety of Antenna (Horn) Sizes ▼ Selection of Flanges ▼ Dust protection options (air purge or dust shield) for *Series 400* ▼ HMI² Operator Interface Control Panel for RS-485 Version ▼ 4-20mA Analog or Smart RS-485 (Modbus Comp.)	▼ Flexible or Rigid Probe Variations ▼ Split Architecture Configuration for High Temperatures or High Vibration ▼ Local Indication (HMI²) ▼ PC Based Server / Client Software (**SiloTrack**™) with Multi-user Access via LAN or Internet ▼ **WirelessEZ** Communication Interface	▼ Hazardous Location Approvals for Dust ▼ 0º, 5º or 10º Freeze-Resistant Mounting Flange ▼ Outputs: Smart RS-485 with Modbus Connectivity or 4-20mA Analog ▼ Local Indication (HMI²) ▼ **WirelessEZ** Communication Interface ▼ PC Based Server / Client Software (**SiloTrack**™) with Multi-user Access via LAN or Internet ▼ Auxiliary Output Enclosure (AOE) with Relay and/or Analog Outputs
PRACTICAL APPLICATIONS	▼ Use when it is important that the level instrument does not contact your process. ▼ Reliable choice for most powders & bulk solids. ▼ For real-time level measurements. ▼ Gimbal (swivel) mounting on *Series 400* to aim sensor for optimal measurements and to avoid vessel obstructions. ▼ *Series 200* is designed for liquid applications. **Practical Tip** Non-contact radar can be used to monitor the height of material on an open area conveyor belt system.	▼ Use when instantaneous level measurement is required. ▼ Focused / directed energy will prevent undesired detection of obstructions within the vessel. ▼ Perfectly suited for a variety of liquid level measurements. **Practical Tip** Flexar's capability to penetrate dust clouds makes it suitable for applications using pneumatic conveying such as flour, cement and flyash.	▼ Use when target material characteristics may change thereby eliminating need for re-calibration. ▼ Reliable inventory management system. ▼ Great economical choice when accurate yet occasional measurements are required. **Practical Tip** SiloPatrol provides reliable long-range measurement of materials with low dielectric constants such as plastics.
BASIC SPECS	**Power:** 24VDC (16~26 VDC) **Ambient Temp:** -40 to +150°F (-40 to +65°C) **Frequency Range:** 26 GHz **Measurement Accuracy:** Series 400: ±0.39in (±10mm); Series 200: ±0.12in (±3mm) **3dB Beam Angle:** 3" (78mm) Dia. Antenna: 12°, 4" (78mm) Dia. Antenna: 8° ,5" (98mm) Dia. Antenna: 6°, **Dead Band:** 12" to 30" (305mm to 762mm) - Antenna Dependent **Signal Output:** Smart RS-485 / Modbus RTU (2-wire); 4-20mA Analog (2-wire, loop powered) **Mounting:** Gimbal/Swivel (*400*) or 1-1/2" NPT (*200*); K-Flanges and ANSI Flanges **Approvals:** CE Mark; TUV Rheinland US/C, Ordinary Loc. **Housing Enclosure:** Die cast aluminum, ENCLOSURE TYPE 4X, IP66	**Power:** 100-240 VAC; 24 VAC/DC **Ambient Temp:** -5° to +120°F (-20° to +50°C) **Int. Bin Temp:** Ordinary Locations -20° to +300°F (-30 to +150°C); **Output:** RS-485; Analog 4-20mA **Mounting:** 1-1/2" NPT, 1-1/2" BSP, ANSI or DIN Flanges **Pressure:** 580 PSI (40 bar) **Approvals:** Ordinary Locations; CE Mark; **Enclosure Protection:** NEMA 4; IP66	**Power:** 115 VAC; 230 VAC ±15% **Ambient Temp:** SMU: -40° to +150°F (-40° to 65°C); HMI²/AOE: -4° to +131°F (-20° to 55°C) **Int. Bin Temp:** Up to 300°F (149°C) **SMU Output:** Smart: RS-485 half-duplex, isolated Analog: 4-20 mA, isolated **Mounting:** Flange with 7.0" (177.8mm) bolt circle **Approvals:** **CSA$_{US/C}$:** Ordinary Locations; **CSA$_{US/C}$:** Class II & III; **ATEX:** Ex II 1/2 D c Ex tb IIIC T75°C Db IP66 (Ta -40°C to +65°C) **IECEx**: Ex tb IIIC T75°C Db IP66 (Ta -40°C to +65°C); **CE Mark** **Enclosure Protection:** NEMA 4X; IP66
AVAILABLE DOCUMENTS	▼ Product Bulletins - 363P (*200*) and 363R (*400*) ▼ Installation & Operation Manual - 364A	▼ Product Bulletins - 353P (Flexar), 393P (SiloTrack™), 393Q (HMI²), 393R (AOE), 393S (WirelessEZ) ▼ Installation & Operation Manuals - 354A (Flexar), 344B (HMI²), 344F (AOE), 344H (WirelessEZ), 344J (SiloTrack™)	▼ Product Bulletins - 343P (SMU), 393P (SiloTrack™), 393Q (HMI²), 393R (AOE), 393S (WirelessEZ) ▼ Installation & Operation Manuals - 344A (SMU), 344N (Modbus Map), 344B (HMI²), 344F (AOE), 344H (WirelessEZ), 344J (SiloTrack™)

Point Level

SafePoint®

ROTARY PADDLE, FAIL-SAFE

- Self–Validating "TRUE" Fail-Safe Design with Microcontroller-Based Reliability
- Patented Magnetic Sensing Technology
- Maximized Sensor Life via Motor Shut-Off Feature
- Externally Viewable LED Sensor Status Indicator (Except Hazardous Location Units)
- Independent Sense and Fault Outputs
- Enclosure Provides Ample Wiring Access and a Twist ON/OFF Cover

- Hazardous Location Approvals for Gases and Dust
- Variety of Paddle Designs for Material Detection and Sensor Longevity
- High Temperature Unit (Top Mount)
- Pipe Extension Models
  - 144" (365cm) Maximum Length
- Field Adjustable Cable Extension
  - 78" (2m) Maximum Length

- Use "true" fail-safe product if undetected sensor failure could result in catastrophic process problem.
- LED provides means for personnel to view sensor status without visiting control room.
- Capable of sensing materials as light as 5 lbs/ft^3 (80kg/m^3).

Practical Tip
SafePoint's independent "sense" and "fault" outputs can be wired in series to simplify wiring while still providing "true" fail-safe performance.

Power: 115 VAC; 230 VAC; 24 VAC/DC
Ambient Temp: -40° to +150°F (-40° to +65°C)
Int. Bin Temp: to 250°F (121°C)
With Hi-Temp Unit:
250-500°F (121-260°C) without air-cooling
500-750°F (260-400°C) with air-cooling [0.5 psig / 2.14 CFM]
Sense Output: SPDT, 5A @ 250 VAC/30 VDC
Fault Output: SPDT, 5A @ 250 VAC/30 VDC
Mounting: 1-1/4" NPT or R 1-1/2" (BSPT)
Pressure: 30 PSI (2 bar) max
Approvals: **CSA$_{us/c}$:** Ordinary Locations; **CSA$_{us/c}$:** Class I & II; **ATEX:** Ex II 1/2 D c T 85°C, ExtD A20/A21 T 85°C, (Ta -40°C to +65°C), IP6x; **IECEx:** DIP A21 IP6X T_A 100°C, -40°C to +65°C; **CE Mark**
Enclosure Protection: NEMA 4; IP66

- Product Bulletin - 253
- Installation & Operation Manual - 254

KA, KAX

ROTARY PADDLE

- Basic Electro-Mechanical Operation
- Maximized Sensor Life via Motor Shut-Off Feature
- DC Powered Models Use Longer Life AC Motor
- Economical and Versatile
- Enclosure Provides Ample Wiring Access and a Twist ON/OFF Cover

Practical Tip
Rugged, aluminum enclosure is superior in applications where a fragile plastic enclosure is vulnerable to harsh installation conditions.

- Hazardous Location Approvals for Gases and Dust (Model KAX)
- Variety of Paddle Designs for Material Detection and Sensor Longevity
- High Temperature Unit (Top Mount)
- Pipe Extension Models
  - 144" (365cm) Maximum Length
- Field Adjustable Cable Extension
  - 78" (2m) Maximum Length

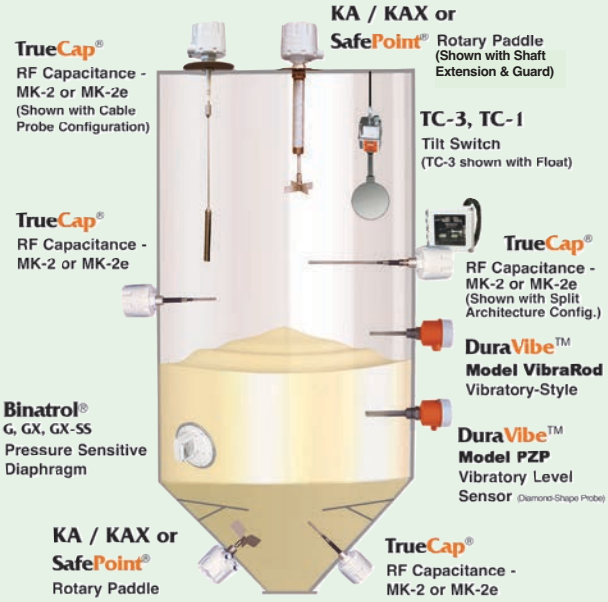
- Excellent when facility personnel are expected to perform in-field troubleshooting and maintenance with virtually no prior training.
- Low-cost and long-life can be achieved by specifying a DC powered model. A voltage converting circuit permits use of a reliable AC motor.
- Capable of sensing materials as light as 5 lbs/ft^3 (80kg/m^3).

Power: 115 VAC; 230 VAC; 24 VAC; 48 VAC; 12/24 VDC
Ambient Temp: -40° to +200°F (-40° to +93°C)
Int. Bin Temp: to 300°F (150°C)
Hi-Temp Unit: 300-500°F (150-260°C) without air-cooling, 500-750°F(260-400°C) with air-cooling[0.5 psig / 2.14 CFM]
Output: 2-Circuit Config - Two SPDT 15A @ 250 VAC ea. max; 3-Circuit Config - One SPDT 15A @ 250 VAC max, One DPDT 10A @ 250 VAC max
Mounting: 1-1/4" NPT or R 1-1/2" (BSPT)
Pressure: 30 PSI (2 bar) max
Approvals: **KA - UL & CSA:** Ordinary Loc.; **CE Mark**
KAX - UL & CSA: Class I & II; **CE Mark**;
ATEX: Ex II 1/2 D c T 100°C, ExtD A20/A21 T 100°C, (Ta -40°C to +93°C), IP6x; **IECEx:** DIP A21 IP6X T_A 100°C, -40°C to +93°C; **Enclosure Prot:** NEMA 4; IP66

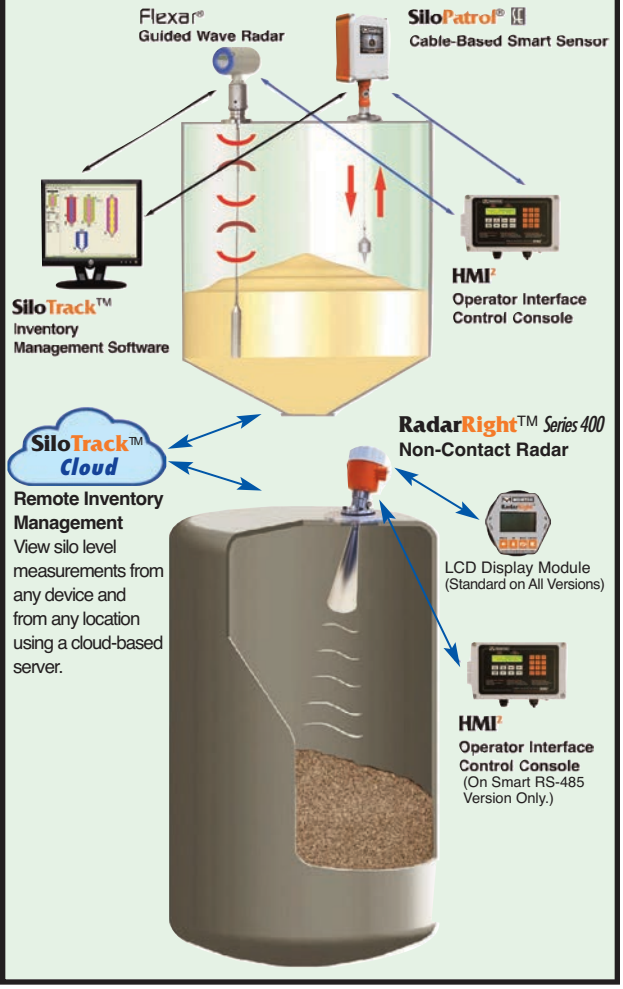
- Product Bulletin - 213
- Installation & Operation Manual - 214

Level Sensor Location Overview

Point Level



Continuous Level



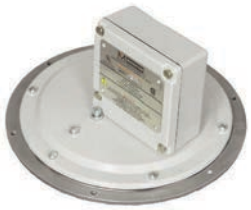
Point Level

	TrueCap® MK-2	TrueCap® MK-2e	PROXIMITY SWITCH
	RF CAPACITANCE		
FEATURES	▼ Maximized Reliability via Smart Sensing Algorithms Including "Self-Validating" Fail-Safe Protection ▼ Simple, Convenient Push-Button Calibration and Test ▼ Driven Shield Technology Overcomes Material Build-up ▼ Externally Viewable LED Sensor Status Indicator (Ordinary Loc. Unit) ▼ Universal Power Supply ▼ Superior 0.5pF Sensitivity ▼ Enhanced Temp. Compensation	▼ Economical Design ▼ Potentiometer-Adjusted Calibration / Sensitivity and Delay ▼ Driven Shield Technology Overcomes Material Build-up ▼ Externally Viewable LED Sensor Status Indicator (Ordinary Loc. Unit) ▼ Superior 0.5pF Sensitivity ▼ Temperature Compensation	▼ Compact Potted Packaging ▼ Versatile Application Sensing ▼ Electronic Solid State Outputs ▼ AC Model (PAC-30U) in 2-Wire Series Configuration ▼ DC Models (PDC-30) in 3-Wire Sinking / Sourcing Configurations ▼ Field Selectable Normally Open or Normally Closed ▼ Economical ▼ LED Status Indicator ▼ Adjustable Calibration
OPTIONS	▼ Hazardous Location Approvals for Gases and Dust ▼ Split Architecture Model for High Temperatures or High Vibration ▼ Quick-Connect Tri-Clamp Process Connection ▼ Variety of Probe Variations for Chemical Compatibility, Food Grade, Abrasion Resistance	▼ Hazardous Location Approvals for Gases and Dust ▼ Split Architecture Model for High Temperatures or High Vibration ▼ Quick-Connect Tri-Clamp Process Connection ▼ Variety of Probe Variations for Chemical Compatibility, Food Grade, Abrasion Resistance	▼ Mounting Well Converts 30mm to 1 1/4" NPT, Delrin® ▼ PDC-30 DC Models: 10-40 VDC ● NPN (Current Sinking) Output ● PNP (Current Sourcing) Output ▼ PAC-30U AC Model: 20-265 VAC
	Practical Tip Use RF capacitance sensors where a residual material build-up on probe would otherwise indicate a false material level indication.		*Practical Tip* Proximity Switch is ideal when mounting space is limited. Potted electronics protects circuitry in high vibration applications.
PRACTICAL APPLICATIONS	▼ Smart sensing maximizes reliability with material having low dielectrics and applications with wide temperature swings. ▼ LED provides means for personnel to view sensor status without visiting control room. ▼ Excellent performance in solids over 15 lbs/ft^3 (240kg/m^3).	▼ Perfect for tight budgets where excellent performance is still required but without the advanced features that increase the cost. ▼ LED provides means for personnel to view sensor status without visiting control room. ▼ Excellent performance in solids over 15 lbs/ft^3 (240kg/m^3).	▼ Use for sensing materials that are solid, liquid, conductive, non-conductive, in direct contact or non-contact, slow moving or in part counting mode. ▼ A good choice when the output is required to be electronic, bounceless, long-life, and easily interfaced to other electronic equipment.
BASIC SPECS	**Power:** Universal 48-240 VAC, 24-48 VDC **Ambient Temp:** -40° to +150°F (-40° to +65°C) **Int. Bin Temp:** Alum mount: to +176°F (80°C); SS mount: to 400°F (204°C); Split architecture probe: to 450°F (232°C) **Output Relay:** DPDT, 5A @ 250 VAC or 30 VDC **Mounting:** 1-1/4" NPT or 1-1/2" BSPT alum, Optional 3/4" NPT 316SS **Pressure:** 50-150 PSI (3.5 - 40 bar) **Approvals:** CSA$_{US/C}$: Ordinary Locations; CSA$_{US/C}$: Class I & II; CE Mark **Enclosure Protection:** NEMA 4; IP66	**Power:** 115 VAC; 230 VAC; 24 VDC **Ambient Temp:** -40° to +150°F (-40° to +65°C) **Int. Bin Temp:** Alum mount: to +176°F (80°C); SS mount: to 400°F (204°C); Split architecture probe: to 450°F (232°C) **Output Relay:** SPDT, 5A @ 250 VAC or 30 VDC **Mounting:** 1-1/4" NPT or 1-1/2" BSPT alum, Optional 3/4" NPT 316SS **Pressure:** 50-150 PSI (3.5 - 40 bar) **Approvals:** CSA$_{US/C}$: Ordinary Locations; CSA$_{US/C}$: Class I & II; CE Mark **Enclosure Protection:** NEMA 4; IP66	**Power:** PAC-30U: 20-265 VAC; PDC-30: 10-40 VDC **Ambient Temp:** -13° to +176°F (-25° to 80°C) **Output:** PAC-30U: N.O./N.C. field selectable; PDC-30: NPN or PNP **Mounting:** 30mm thread **Load Current:** PAC-30U: 10-500mA; PDC-30: 0-200mA **Approvals:** UL & CSA: Ordinary Locations (PAC-30U Only); CE Mark **Enclosure Protection:** NEMA 4; IP67
AVAILABLE DOCUMENTS	▼ Product Bulletin - 413 ▼ Installation & Operation Manual - 434	▼ Product Bulletin - 413 ▼ Installation & Operation Manual - 464	▼ Product Bulletin - 453 ▼ Installation & Operation Manual - 454

Point Level

DuraVibe™ Model PZP

DuraVibe™ Model VibraRod



G, GX, GX-SS

TC-1, TC-3

VIBRATORY

- Unaffected by Changes in Environment and Materials
- Exceptional Sensitivity with No Calibration Required
- ***Industry-Leading Probe Strength:*** Stainless Steel Diamond Shape Single-Probe with Gusset Reinforced Design
- Universal Power Supply
- Fail-Safe on Power Failure
- Adjustable Sensitivity
- Bi-color LED Status Indication

- Probe Extensions Available:
  - Cable Extension
  - Pipe Extension
- Remote Electronics Design for High Vibration or High Temperatures (Probe up to 302˚ F (150˚ C) Process Temp.)

Practical Tip
PZP's exceptional sensitivity can reliably sense lightweight material such as expanded polystyrene beads and fumed silica (Aerosil®).

- Ideal choice when material properties or environmental conditions are variable
- Excellent sensitivity for materials down to 1.5 lbs/ft^3 (24 kg/m^3)
- Tip sensitive probe eliminates false signals caused by product bridging between probe and vessel wall.
- Ordinary and Hazardous location approvals; Intrinsically safe probe

Power: 22-27VDC (±10%); 22-232VAC (±10%), 50/60 Hz
Ambient Temp: -22˚ to 149˚ F (-30˚ to 65˚ C)
Process Temp: -22˚ to 176˚ F (-30˚ to 80˚ C); High Temp. Probe: -22˚ to 302˚ F (-30˚ to 150˚ C)
Output Relay:
VAC: SPDT isolated; 3A @ 250VAC max
VDC: SPDT isolated; 3A @ 30VDC max
Process Connect: 1-1/2" NPT
Pressure: 145 PSI (10 bar)
Approvals (Integral Unit): CSA$_{US/C}$: Ordinary Loc; Class II, Div. 1 & 2, Groups E, F, G; Class III Hazardous Locations with Intrinsically Safe Probe
ATEX: Ex II 2D Ex tb [ia Da] IIIC T75˚C Db
IECEx: Ex tb [ia Da] IIIC T75˚C Db

- Product Bulletin - 563
- Installation & Operation Manual - 564

- Economical, Yet Versatile Design
- Unaffected by Changes in Environment and Materials
- Good Sensitivity with No Calibration Required
- Stainless Steel Single-Probe Design
- Universal Power Supply
- Fail-Safe on Power Failure
- Adjustable Sensitivity for Optimum Performance
- Bi-color LED Status Indication

- Pipe Extension Probes Available

Practical Tip
Ideal level probe for materials, like powders, that may normally get packed in a "tuning fork" style probe which could cause false signalling.

- Economical vibratory solution
- Ideal choice when material properties or environmental conditions are variable
- Good sensitivity for materials down to 10 lbs/ft^3 (160 kg/m^3)
- Tip sensitive probe eliminates false signals caused by product bridging between probe and vessel wall.
- Ordinary and Hazardous location approvals; Intrinsically safe probe

Power: 22-27VDC (±10%); 22-232VAC (±10%), 50/60 Hz
Ambient Temp: -22˚ to 149˚ F (-30˚ to 65˚ C)
Process Temp: -4˚ to 176˚ F (-20˚ to 80˚ C)
Output Relay:
VAC: SPDT isolated; 3A @ 250VAC max
VDC: SPDT isolated; 3A @ 30VDC max
Process Connect: 1-1/4" NPT
Pressure: 145 PSI (10 bar)
Approvals: CSA$_{US/C}$: Ordinary Locations; Class II, Div. 1 & 2, Groups E, F, G; Class III Hazardous Locations with Intrinsically Safe Probe
ATEX: Ex II 2D Ex tb [ia Da] IIIC T75˚C Db
IECEx: Ex tb [ia Da] IIIC T75˚C Db

- Product Bulletin - 553
- Installation & Operation Manual - 554

DIAPHRAGM TYPE

- Basic Pressure-Sensing Operation
- Electrically-Passive Sensing Method
- Reliable, Durable, and Low Maintenance Operation
- Low-Profile, Non-Intrusive Mounting
- Adjustable Sensitivity
- Over-Pressure Protection

- Hazardous Location Approvals for Dust
- Ultra-Sensitive Switch Option
- Choice of Neoprene®, Teflon®, or Stainless Steel Diaphragm
- Hycar® Diaphragm Cover For Abrasive Materials

Practical Tip
G/GX is an ideal choice when minimizing ownership cost is the primary objective.

- Excellent when facility personnel are expected to perform in-field troubleshooting and maintenance with virtually no prior training.
- Provides "green" operation with no power consumption
- Low-profile eliminates need for internal baffles.
- Good performance in solids from 10 - 60 lbs/ft^3 (160 - 960 kg/m^3)
- Plugged chute applications

Int. Bin Temp:
Neoprene: -40˚ to +180˚F (-40˚ to 82˚C)
Teflon®: -40˚ to +250˚F (-40˚ to 121˚C)
321SS: -40˚ to +250˚F (-40˚ to 121˚C)
Output: SPDT, 15A @ 250 VAC
Mounting: Flange with 7.5" (190.5mm) bolt circle
Pressure: Atmospheric only
Approvals: CSA$_{US/C}$: Ordinary Loc. (G); UL & CSA: Class II (GX, GX-SS); CE Mark
Enclosure Protection: NEMA 4/ENCLOSURE TYPE 4, IP66 (Model G only); IP65 (Model GX and GX-SS)

- Product Bulletin - 623
- Installation & Operation Manual - 624

TILT SWITCHES

- Basic Angular-Sensing Operation
- Electrically-Passive, Mercury-Free Sensing Method
- Durable, Low Maintenance and Low-Cost Performance
- No Calibration Required...Output Switch Closes When Tilted Approximately 17˚
- Easily Adjustable Sensing Point by Repositioning Hanging Height

- Ball Type Actuators available to limit material contact with tilt switch enclosure and provide increased "tilt" sensitivity (TC-3 only)

Practical Tip
Keep hanger for tilt switch as short as possible to maintain 17˚ detection sensitivity.

- Basic operation and minimal parts create a low-cost and easily maintained solution.
- Provides environmentally-safe, "green" operation with no power consumption
- **TC-3:** 15 - 60 lb/ft^3 (240-960 kg/m^3)
- **TC-1:** 45+ lb/ft^3 (>720 kg/m^3)
- Ideal for high level detection
- Works for open stock piles

Operating Temp:
TC-3: -40˚ to +175˚F (-40˚ to 80˚C)
TC-1: -40˚ to +250˚F (-40˚ to 121˚C)
Output:
TC-3: SPDT, 10A @ 250 VAC
TC-1: SPDT, 15A @ 250 VAC
Mounting:
TC-3: suspend by chain, 3/4" (19mm) ID eyebolt
TC-1: suspend by chain, 1-3/32" (27.7mm) ID eyebolt
Approvals: Ordinary Locations; CE Mark
Enclosure Protection: NEMA 4; IP56

- Product Bulletin - 633
- Installation & Operation Manual - 634

Dust Monitoring

Bin Aeration

In-Line Mass Flow & Moisture Sensor Location Overview

DustAlarm® ES
DustTrend™ ES

ADVANCED TRIBOELECTRIC

AIR PAD / EVASSER

BIN AERATION

FEATURES

- Easy Auto Set-up Button to Automatically Configure Parameters / Alarms
- Exceptional and Reliable Sensitivity via Proven AC Triboelectric Technology with Advanced Algorithms to Filter Out Noise
- Excellent Repeatability Not Affected by Variations in Relative Humidity, Process Temperature or Pressure

DustTrend™ ES *Adds...*

- Continuous Trend Measurements
- 4-20mA Analog Output and/or Enhanced Modbus(RS-485) output

- Aeration Alternative to Vibration
- Quiet, Inexpensive, Non-Electrical Aeration Solution
- Simple Designs Facilitate Trouble-Free Operation
- Evasser Provides An Air Flow That Tends to Sweep the Vessel Wall
- Air Pad Comes in the Industry-Standard Low-Profile Footprint

OPTIONS

- Connect with the Free **DustConfig™** Software to Set Custom Alarm Points, View Live Activity Within the Duct, or Review Data History for up to a 24-hour Period
- Customer Specified Stainless Steel Probe Lengths from 4.75" (120mm) to 20" (508mm)
- Available Probe Extensions to Provide up to an Additional 2" (51mm) to 24" (610mm) of Probe Length
- Quick-Connect Mounting Kits

Practical Tip
Ideal for detecting early failure of a filter within a baghouse before a catastrophic tear creates an environmental disaster.

- Multiple Configurations Available
- Boot Options for Evasser:
  - White, Food Grade
  - Black, General Purpose
- Rectangular Air Pads:
  - Cotton or Fiberglass Diffuser

Practical Tip
Aerators can be used to fluidize material in place of a mechanical vibrator which can cause material to settle and increase the material's density.

PRACTICAL APPLICATIONS

- Provides monitoring of dust levels where it is critical to safety, maintenance, equipment operation, plant efficiency, environment, etc.
- Ideal for exhaust ducts on dust collectors, baghouses and cyclones.
- Use triboelectric technology as a cost-effective alternative to opacity monitoring.
- Exceptional sensitivity is capable of detecting minute amounts of material (less than what is visible by the human eye).

- Air-based solutions eliminate potential damage to surrounding equipment (such as level controls) that could be inflicted by pneumatic or electric vibrators.
- Aerators can reduce installation and maintenance expense associated with mechanical vibration systems.
- Solve problems such as arching, bridging, and rat-holing which reduce discharge flow.

BASIC SPECS

Power: 95-240VAC (±10%), 50/60 Hz; 18-28VDC (±10%)
Starting Ambient Temp: 4° to 140°F (-20° to 60°C)
Running Ambient Temp: -40° to 140°F (-40° to 60°C)
Process Temp: Max: 300°F (150°C) at probe loc.
Output (DustAlarm ES): Relay(2 Isolated SPDT) and/or RS-485(Modbus)
Output (DustTrend ES): 4-20mA, Relay(2 Isolated SPDT) and/or RS-485(Modbus)
Mounting: 1" Tri-Clamp Quick-Disconnect, 316 SS
Pressure: 40 psi maximum
Approvals: CE Mark
Enclosure Protection: NEMA 4X, ENCLOSURE TYPE 4X, IP66

Int. Bin Temp:
Air Pads:
to +180°F (82°C) w/external mounting kit;
to +650°F (343°C) w/internal mounting kit with fiberglass diffuser
Evasser:
Neoprene Boot: to +175°F (80°C);
Bronze Insert: to +900°F (480°C)
Pressure Range: Typically 3-5 PSI (0.2-0.35 bar)
Air Consumption: dependent on application (Consult Factory)

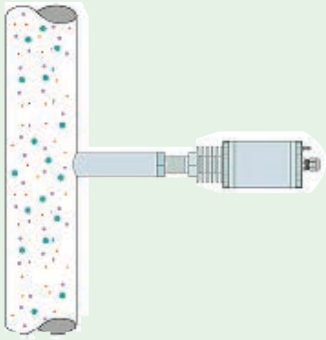
AVAILABLE DOCUMENTS

- Product Bulletins - 763 (DustAlarm ES) / 773 (DustTrend ES)
- Installation & Operation Manuals- 764A, 764B / 774A, 774B / 764C (DustConfig™)

- Product Bulletins - 933 (Air Pad) / 943 (Evasser)
- Installation & Operation Manuals - 934B (Air Pad) / 944A (Evasser)

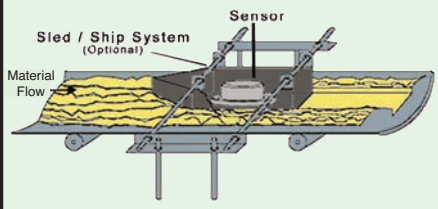
QuantiMass™
In-Line Mass Flow Measurement

Sensor location should be in an area where the sensor's measurement energy will be exposed only to target materials that are fully suspended in the conveying air stream (pneumatic [dilute phase] or gravity conveying). Solid particulates should be evenly distributed in the air stream.

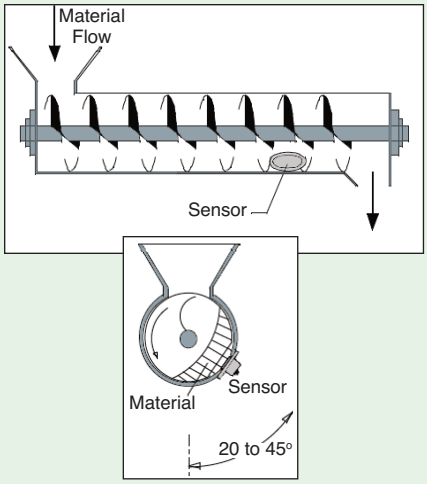


HumiCore™
In-Line Moisture Measurement

The sensor is designed to be installed in the production flow stream at a location that ensures the bulk material to be measured is fed over the sensor at a constant layer height.



Example - Sensor Location on Conveyor Belt



Example - Sensor Location on Screw Conveyor

	Solids Flow Detection	Mass Flow Measurement	Moisture Measurement
			
	SFD-2 & SFI	**QuantiMass™**	**HumiCore™**
	MICROWAVE	MICROWAVE DOPPLER	HIGH FREQUENCY FIELD
FEATURES	▼ Non-Contact Flow Detection ▼ Non-Intrusive Flush Mounting ▼ Excellent Sensitivity ▼ Externally Viewable LED Sensor Status Indicator (SFD-2) ▼ Maintenance Free - No Moving Parts ▼ Relay Output (SFD-2) or Analog Output (SFI) ▼ Hazardous Location Approvals for Dust (Sensors Only)	▼ Continuous In-Line Mass Flow Measuring Without the Use of Weight Scales ▼ Measure Flow of Quantities in Pneumatic Conveying & Free-Falling Processes ▼ Microwave Doppler Effect Technology ▼ Sturdy, Non-Intrusive Design Minimizes Maintenance ▼ Compact Size for Easy Installation Into Existing Processes ▼ Fast Measuring & Adjustable Sensitivity ▼ Polyamide 6.6 Sensor Process Face	▼ Continuous In-Line Moisture Measurement System Provides Real-Time Data ▼ Ensure Product Quality Through Moisture Control...Provide Optimal Moisture Content for Finished Product ▼ High Frequency Field Technology ▼ Measures Moisture Inside the Material Core...Not Just the Surface ▼ Compact Size; Easy Installation and Calibration ▼ Integrated Temperature Compensation
OPTIONS	▼ Electrical Enclosure for SFD-2 PS/Conditioning Board ▼ Saddle Clamp and Gasket ▼ 1 1/2" Mounting Adapters ▼ Tri-Clamp Adapters ▼ 1 1/4" NPT Lock Nut *Practical Tip* SFI has an analog output providing a "general indication" of flow consistency. It is not intended to measure flowrate.	▼ Choose from ***Ultra*** Version with a Controller for Local Interface & Data Logging or **PRO** Version with DIN-Rail Transmitter ▼ Standard or High Temperature Styles ▼ 304 SS or 316 SS Sensor Housing Construction *Practical Tip* QuantiMass is ideal for monitoring material flow rates to verify blending mixture ratios.	▼ Choose from ***Ultra*** Version with a Controller for Local Interface & Data Logging or **PRO** Version with DIN-Rail Transmitter ▼ 115 VAC / 24 VAC/DC -or- 230 VAC / 24 VAC/DC ▼ Polyacetal or Ceramic Process Surface ▼ Variety of Sled Plates *Practical Tip* HumiCore is ideal for automating the drying or moisturizing processes to minimize energy costs and maximize profit.
PRACTICAL APPLICATIONS	▼ Use in flow applications where the non-contact attributes of microwave technology can eliminate challenges associated with temperature, light, acoustics and pressure. ▼ Non-intrusive mounting will allow natural flow of material, and will eliminate any risk of material being damaged by striking a sensing probe. ▼ Senses Flow / No Flow conditions in gravity chutes and pneumatic lines.	▼ Monitor for variable flow quantities due to disturbances like different densities. ▼ Measure for proper mixing of additives. ▼ Non-contact, in-line mass flow measurement system for most bulk solids and many dusts (Ex. coal dust, saw dust). ▼ Suitable for powders, dust, pellets, and granular up to 0.75 inch (2cm).	▼ Installation locations include: conveyor belts, screw conveyors, silos, funnels, etc. ▼ Suitable for grain, feed, seed, cereal, flour, sugar, coal, sand, wood shavings, dried food, fertilizer, tobacco, powder, pigments, plastic granules, sand, cement & more. ▼ Limit dusty areas by monitoring & controlling material moisture levels to reduce cleaning and/or filtering costs.
BASIC SPECS	**Either Sensor:** **Ambient Temp:** -40˚ to +185˚F (-40˚ to 85˚C) **Process Temp:** to +250˚F (121˚C) **Pressure:** Teflon®: 75 PSI (5bar) intermittent Ryton® (or equiv.): 300 PSI (20 bar) **Mounting:** 1-1/4" NPT **Approvals:** $CSA_{US/C}$, Class II, Div. 1, E,F,G **Enclosure Protection:** NEMA 4; IP66 **SFD-2 Power Supply:** **Power:** 100-240 VAC **Operating Temp:** -40˚ to +158˚F (-40˚ to 70˚C) **Output Relay:** DPDT, 5A @ 250 VAC, 30 VDC **Approvals:** $CSA_{US/C}$: Ordinary Loc.; CE Mark **SFI Only:** **Output:** Analog 4-20mA, Detection range based on application	**Process Data:** **Pipe Diameter:** 1" to 12" (25mm to 300mm) **Particle Size:** .001 micron to 0.75" (1nm to 20mm) **Moisture:** Depending on the product **Pressure:** Up to 6 bar **Temperature:** -4 to +194°F (-20 to +90°C) (Higher temperatures on request) **Sensor Data:** **Material-touched Parts:** Polyamide 6.6 & 304SS or 316SS **Housing Material:** 304 SS or 306 SS **Protection Class:** IP 65 **Sensor Dimensions:** 11.06"L x 2.36"W x 2.36"H (281 x 60 x 60mm) **Accuracy:** 1 to 3% typical **Power:** Controller - 115 VAC / 24 VAC/DC; 230 VAC / 24 VAC/DC. Transmitter - 24 VAC/DC	**Process Data:** **Process Temperature:** +14 to +194°F (-10 to +90°C); up to +284°F (140°C) with cooling **Sensor Data:** **Measuring Surface:** Polyacetal or Ceramic **Housing Material:** 304 SS **Protection Class:** IP67 **Sensor Dimensions:** 4.57" dia. x 2.02" H (116mm dia. x 51.5mm) **Accuracy:** 0.1 to 0.3% typical **Interconnection:** 4 wires, RS-485, 3,280 ft (1,000m) max **Power:** Controller - 115 VAC / 24 VAC/DC; 230 VAC / 24 VAC/DC. Transmitter - 24 VAC/DC
AVAILABLE DOCUMENTS	▼ Product Bulletin - 813 ▼ Installation & Operation Manuals - 824 (SFD), 834 (SFI)	▼ Product Bulletins - 843P (Pro), 843R (Ultra) ▼ Installation & Operation Manuals - 844	▼ Product Bulletins - 753P (Pro), 753R (Ultra) ▼ Installation & Operation Manuals - 754

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MONITOR TECHNOLOGIES LLC

www.monitortech.com

44W320 Keslinger Road ▼ Elburn, IL 60119 USA

Tel 1-630-365-9403 ▼ Toll Free 1-800-766-6486 (US/CAN) ▼ Fax 1-630-365-5646

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Craig Russell
President, Monitor Technologies LLC