

MSM400 Ultrasonic Suspended Solids Monitoring and Control System

- *Continuous sludge discharge monitor for up to 50% suspended solid*
- *The MSM400 system contains a control unit and either a tank mounted sensor or pipe section with integral sensors*
- *Rugged 316 stainless steel sensors for in-tank or pipe section mounting*
- *Simple keypad operation, and intuitive menu based programming*
- *Dual operating frequency sensors 1MHz to 3.3MHz*



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MSM400

MSM400 Control Unit and Sensors



MSM400 Control Unit and Sensors

- Measuring range up to 50% solids
- Configurable display and output functions
- 4–20 mA HART output, and 2 x SPDT control relays
- Automatic de-sludge control routines

Additional Information

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TABLE 1. MSM400 Control Unit Ordering Information

★The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Model	Product Description	
Standard		Standard
MSM400	Control unit, ATEX intrinsically safe certified, IP65	★
Typical Model Number: MSM400		

TABLE 2. MSM400 Sensors Ordering Information

★The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Model	Product Description	
Standard		Standard
MSM433	Tank mount	★
MSM448	Pipe mount	★
Approval		
Standard		Standard
A	Intrinsically safe (ATEX)	
Size⁽¹⁾		
Standard		Standard
100T	1 / 3.3 MHz 4 in. (100 mm) gap tank sensor	★
150T	1 / 3.3 MHz 6 in. (150 mm) gap tank sensor	★
200T	1 / 3.3 MHz 8 in. (200 mm) gap tank sensor	★
300T	1 / 3.3 MHz 12 in. (300 mm) gap tank sensor	★
450T	1 / 3.3 MHz 18 in. (450 mm) gap tank sensor	★
100	1 / 3.3 MHz flanged PN10/PN16 DN100 pipe sensor	★
150	1 / 3.3 MHz flanged PN10/PN16 DN150 pipe sensor	★
200	1 / 3.3 MHz flanged PN10 DN200 pipe sensor	★
A10	1 / 3.3 MHz flanged ASME B16.5 Class 150 4 in. (100 mm) pipe sensor	★
A15	1 / 3.3 MHz flanged ASME B16.5 Class 150 6 in. (150 mm) pipe sensor	★
A20	1 / 3.3 MHz flanged ASME B16.5 Class 150 8 in. (200 mm) pipe sensor	★
Spray Valve		
Standard		Standard
V	Spray valve (pipe section only)	★
P	No spray valve (pipe section only)	★
Cable		
Standard		Standard
7	23 ft. (7 m) cable	★
D	Customer specified cable length up to 330 ft. (100 m) – <i>length must be clearly stated on order</i>	★
Typical Model Number: MSM448 A 150 V 7		

(1) Sensor size is specified depending on the application. Please contact the sales office to ensure that the size is suitable for the application.

Product Data Sheet

IP257, Rev CB
January 2012

MSM400

Specifications

CONTROL UNIT

General	
Product	Wall Mounted MSM400 Control Unit
Connections	
Conduit Entry	3 x M20 glands and 2 x M16 glands
Cable Termination	Captive screw terminal block. Maximum cable size 2.5mm ² / 12 AWG
Sensor Frequency	1 MHz or 3.3 MHz auto selection
Current Input	4–20mA
Trigger Input	Volt free contact 5V logic
mA Output	4–20mA into 1000 ohms max.
Relay output	2 x SPDT rated up to 5 A, 250 Vac resistive
Electrical	
External Power Supply	115 or 230 Vac (50/60Hz), or 24 Vdc
Environment	
Operating Temperature	–22 to 130 °F (–30 to 55 °C)
Enclosure Rating	IP65
Approval	
Hazardous Area	ATEX II (1) G, EEx ia IIC

MSM433 SENSOR

General	
Product	MSM433 Tank Mounted Gap Sensor, 316 Stainless steel
Connections	
Mounting connection	¾-in. BSPT. Gap size 4, 6, 8, 12, or 18 in (100, 150, 200, 300, or 450 mm)
Sensor Cable	23 ft. (7m) dual screened twisted pair (<i>others upon request</i>) Cable junction box: Sensor IP68
Environment	
Operating Temperature	–40 to 130 °F (–40 to 55 °C) -- 212 °F (100 °C) <i>upon request</i>
Operating Pressure	1522 psi (105 bar)
Approval	
Hazardous Area	ATEX II 1 G EEx ia IIC T6

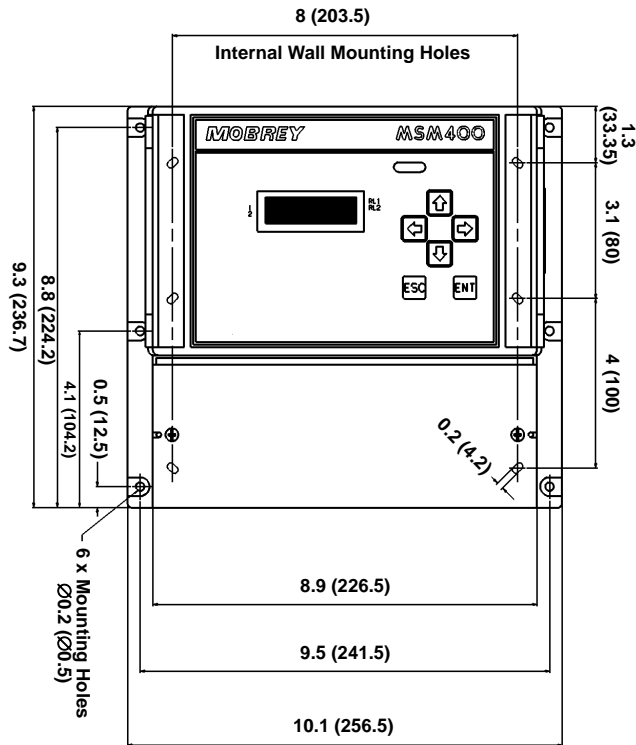
MSM448 SENSOR

General	
Product	MSM448 Pipe Section Gap Sensor
Pipe Section Material	Epoxy coated carbon steel
Drain Fitting	1-in. NPT
Connections	
Mounting connection	Flanged in-line installation DN100, DN150, DN200 to BS4772, PN10 rated or 4 in., 6 in., 8 in. ASME B16.15 Class 150
Sensor Cable	23 ft. (7m) from junction box, oil hose protected, dual screened twisted pair (<i>others upon request</i>)
Cable Junction Box	IP65 Aluminium alloy
Environment	
Operating Temperature	–40 to 158 °F (–40 to 78 °C)
Operating Pressure	145 psi (10 bar)
Approval	
Hazardous Area	ATEX II 1 G EEx ia IIC T6

Dimensional Drawings

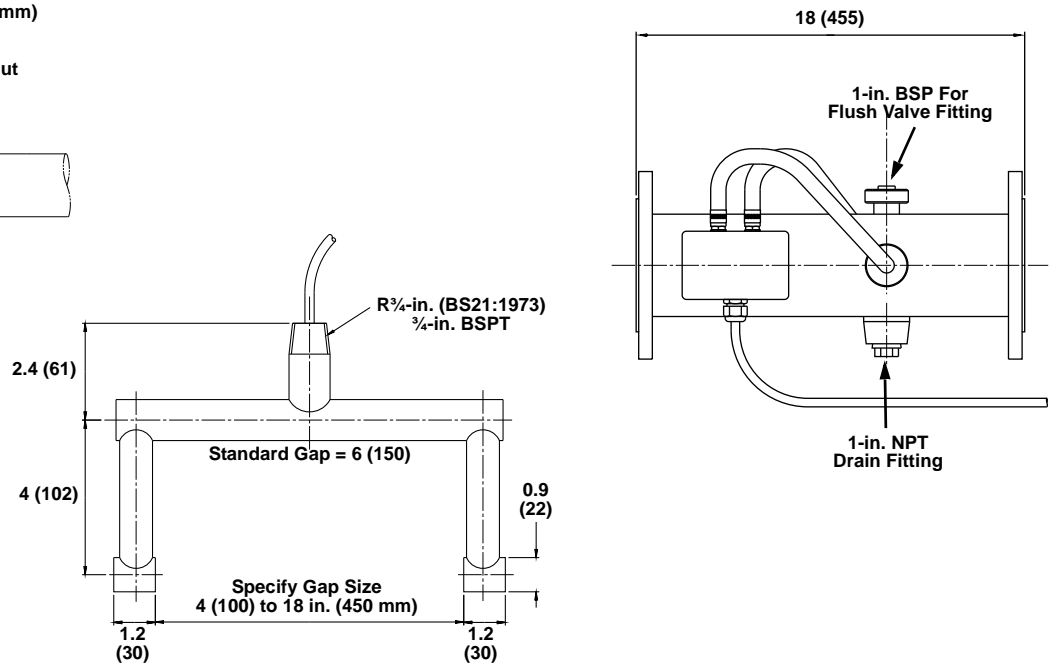
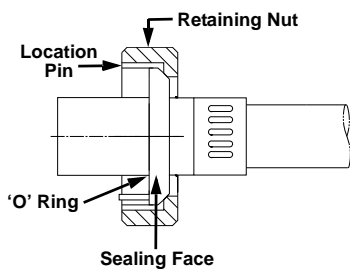
CONTROL UNIT

Note: Dimensions are in inches (mm)



SENSORS

Note: Dimensions are in inches (mm)



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Mobrey Level Solutions

Emerson provides a wide range of Mobrey products for level measurement applications.

POINT LEVEL DETECTION**Vibrating Fork Liquid Level Switches**

For high and low alarms, overflow protection, pump control, including wide pressure and temperature requirements, and hygienic applications. Flexible mounting. Immune to changing process conditions and suitable for most liquids.

- Mobrey Mini-Squing (Compact)
- Mobrey Squing 2 (Full-featured)

Ultrasonic Gap Sensor Liquid Level Switches

For use in non-hazardous industrial processes to detect high or low liquid levels and liquid interface. Immune to changing density, and wide dielectric and pH variations. Suitable for use in most clean and non-aerated liquids, with options for sludges and slurries.

Float and Displacer Liquid Level Switches

Mobrey electromechanical float and displacer level switches are ideal for alarm and pump control duties, especially in critical applications or hazardous areas.

- Mobrey Horizontal Level Switches
- Mobrey Vertical Level Switches

Chambers are available for external mounting of these level switches on process vessels.

Dry Products Level Switches

For high and low level alarms. Including threaded mounting connections, extended lengths, high temperature capability, and multiple detection techniques. Suitable for a wide variety of powders, granules, and free flowing solids with wide variations in bulk densities.

- Mobrey VLS Series – Vibrating Rod Level Switch
- Mobrey PLS Series – Paddle Level Switch
- Mobrey CLS Series – Capacitance Level Switch

CONTINUOUS MEASUREMENT**Ultrasonic Continuous Level Transmitters and Controllers**

Top mounted, non-contacting for simple tank and open-air process level measurements. Unaffected by fluid properties such as density, viscosity, dirty coating, and corrosiveness. Intrinsically Safe versions are available for operating in hazardous areas.

- Mobrey MSP Series Ultrasonic Level and Flow Transmitters
- Mobrey MCU900 Series Universal Controllers

Ultrasonic Sludge Density Blanket Monitoring and Control

Ultrasonic in-line pipe or tank mounted sensors for sludge density measurement and control, and top mounted ultrasonic sensors for continuous measurement of sludge blanket level in Industrial and Municipal effluent treatment processes.

- Mobrey MSM400 – Sludge Density Monitor
- Mobrey MSL600 – Sludge Blanket Level Monitor

Displacer Continuous Level Measurement

Top mounted in a vessel or externally mounted in a vertical chamber. For use in hazardous areas.

- Mobrey MLT100 – Displacer Level Transmitter

Hydrostatic Continuous Level Transmitter

For level measurements in non-pressurized tanks where in-tank problems such as foaming, vapor layers, and temperature gradients prohibit the use of other instrumentation.

- Mobrey 9700 Series hydrostatic electronic level transmitters

SPECIALIZED CONDUCTIVITY**Conductivity Water and Steam Interface Monitoring**

Steam/water interface level gauges using specialized, high performance conductivity probes in external columns and manifolds, ideal for steam plants where reliable and redundant indication of boiler water level and turbine protection is critical.

- Hydratect 2462 – Water/Steam detection Systems
- Hydrastep 2468 – Water/Steam Monitoring Systems

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