

icountMS Range

Moisture Sensors



Fast, reliable and accurate inline detection of moisture in fluids

MS moisture sensors provide fast, reliable and accurate inline detection of moisture in fluids. Technology developed for preventative maintenance programmes. MS200 is the 'Programmable' sensor monitoring and reporting relative humidity (RH), moisture content in oils. MS300 'Intrinsically safe' sensor ATEX certified for use in hazardous Zone 0 environments.



Product Features

- MS moisture sensors provide fast, reliable and accurate inline detection of moisture in fluids.
- Technology developed for preventative maintenance programs.
- MS200 'Programmable' sensor monitoring and reporting relative humidity (RH), moisture content in oils. 6,000 PSI (420 bar) MAOP.
- MS300 'Intrinsically safe' sensor ATEX certificated for use in hazardous Zone 0 environments. 6,000 PSI (420 bar) MAOP.
- Temperature Outputs on all versions.

icountMS Range

Features and Benefits

- Continuous, online moisture indication, for hydraulic and lubricating systems.
- Reporting of % relative humidity of water content, giving the user information on how close to the fluids real saturation point.
- Reliable data on the rate of water absorption.
- Sensing cell technology using a laser trimmed thermoset polymer, for capacitive sensing that is capable of absorbing water molecules due to its micro porous structure.
- Uses a thermistor for temperature compensation correction. Offering total confidence in reporting the %RH relative humidity over the sensors temperature range.
- A purpose designed tee adaptor allows for easy installation into an existing fluid system.
- The MS200 can also be specified with a bench top wand offering the end user greater flexibility.

Typical Applications

- Ground support vehicles
- Pulp and paper plants
- Marine hydraulics
- Power transmission & distribution
- Forestry
- Industrial hydraulics
- Earth moving applications
- Agricultural
- Hazardous Areas (Zone II)
- Simulators



In-Line Moisture Measurement of Hydraulic & Lubricating Fluids.

Parker's Moisture Sensor Range offers fast, reliable and accurate in-line detection of moisture in fluids. The MS transducer type technology has been especially designed with the preventative maintenance programme environment in mind.

The industry accepted sensing cell device will monitor and report Relative Humidity (RH), moisture content in oils. The water content measurement technique offers the end user benefits over the current standard form of water content reporting (PPM).

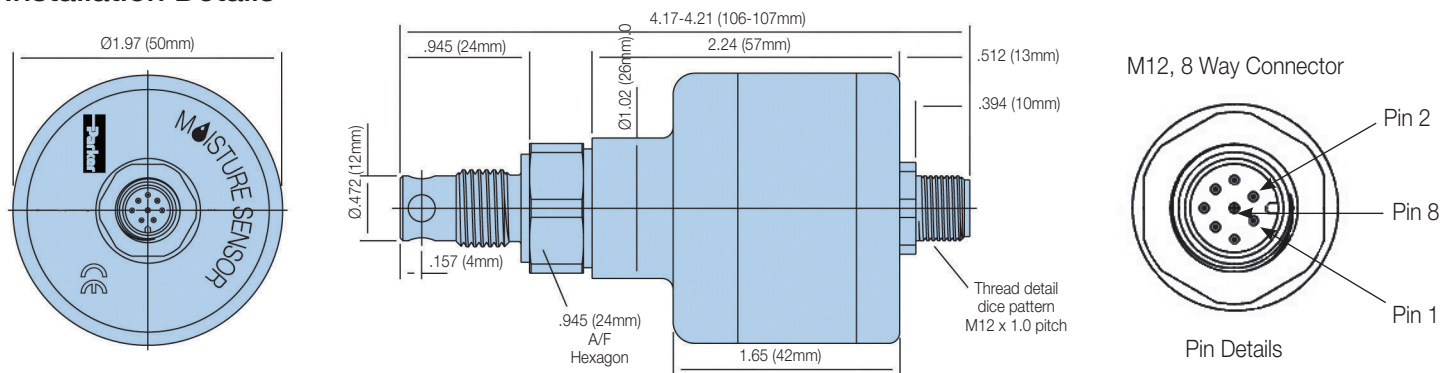
This allows for real time preventative maintenance to be undertaken and corrective actions to be made. By knowing that the water contamination is still within the oils absorbing range, less than 100%, reclaiming fluid properties before additive damage occurs can initiate calculable cost savings.

MS200 Moisture Sensor

Specifications

% Saturation Calibration Accuracy:	+3% RH
Temperature Calibration Accuracy:	±1°C
Thermal Stability:	±1% RH (over compensated temperature range +10 to +80°C)
Stability:	±0.2% RH typical at 50% RH in 1 year
Linearity:	±0.5% RH typical
Analog Output Hysteresis:	±0.5% RH Full Scale
Switched Output Hysteresis:	2% RH
Operating Temperature Range:	-40°F to +185°F (-40°C to +85°C)
Operating Humidity Range:	5 to 100% RH (non condensing)
Response Time:	60 sec in slow moving air at 25°C
Maximum Rated Pressure:	6,000 PSI (420 Bar)
Maximum Torque:	22 ft-lbs
Seal Material (depending on MS):	Fluorocarbon, EPDM, Perfluoroelastomer
Material:	Stainless Steel 303
Connector Details:	M12x1, 8 Way, IP67 Connector (IP68 when mated with molded cable)
Maximum Cable Length:	33 ft (10 m) with Voltage Output, 330 ft (100 m) with current output
Output:	SEE ORDERING INFORMATION

Installation Details



Moisture Sensor Wiring and Pin Designations

dimensions in inch (mm)

Pin	Wire Color	Designation	I/O	Description
1	White	Alarm Switch	Output	Alarm Switch. Constant 5Vdc when in normal operation. Switch to 0Vdc when in alarm condition. Red LED illuminates when Sensor is in an alarm condition.
2	Brown	Analogue	Output	Temperature - Degí Celsius. User Select Output (0-3Vdc, 0-5Vdc, 1-6Vdc and 4-20mA).
3	Green	Alarm Limit	Output	Alarm Limit (0-6V). Output that directly corresponds to the alarm set point.
4	Yellow	Analogue	Output	% Saturation. User Select Output (0-3Vdc, 0-5Vdc, 1-6Vdc and 4-20mA).
5	Grey	Receive	Input	RS232 Communication. 9 pin d shell. 9.3
6	Pink	Send	Output	RS232 Communication. 9 pin d shell. 9.2
7	Blue	Common	Input	Common (0Vdc). 9 pin d shell. 9.5 Ground from power supply.
8	Red	Supply	Input	Supply Voltage (+8 to +30Vdc). Green LED illuminates when power is properly applied.

MS300 Intrinsically Safe

Specifications

Pressure:

(MAOP): 6,000 PSI (420 bar)

Operating temperature:

Minimum: -40°F (-40°C) - dependent on seal material

Maximum: +185°F (+85°C)

Flow through sensor cell:

Installed in active flowstream

Fluid compatibility:

Mineral oils, petroleum-based and Phosphate ester-Skydrol option available

Viscosity range:

Unlimited

Thread form connections:

See ordering information

Outputs:

4-20mA (current loop)

Calibration accuracy:

+/- 5% RH

Compensated thermal stability:

+/- 1% RH (+ 50°F to +176°F)

Materials:

Stainless steel 303

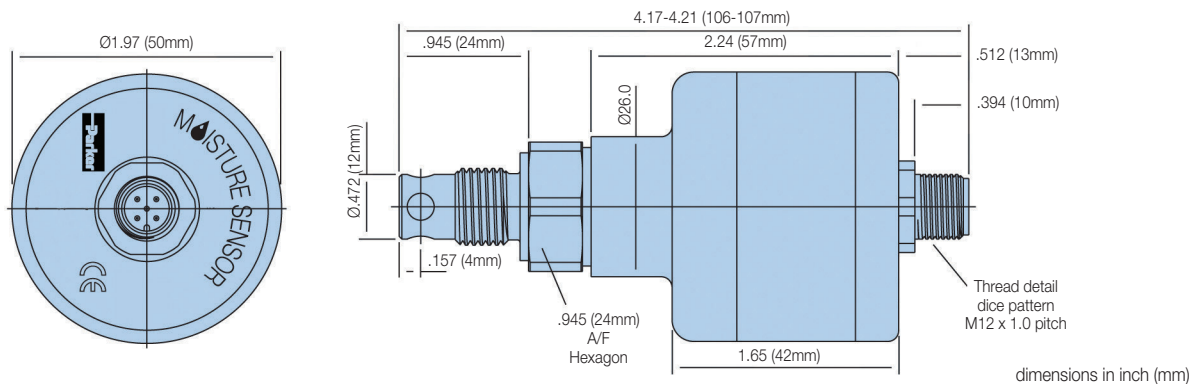
Sensor size/weight:

4.21in x ø1.97in/0.66 lb (107mm x ø50mm/0.3Kg)

IP ratings:

IP68 (with specified molded cable)

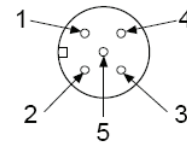
Developed in association with Triteq Ltd.



Ex II 1G
Ga Ex ia IIB T4
Sira 07ATEX2255
IECEx SIR 07.0089

Moisture Sensor Connection Diagram

- | | |
|---------------------------|---------|
| 1. Supply (4-20 mA - IN) | - Brown |
| 2. Signal (4-20 mA - OUT) | - White |
| 3. Not Used | - Blue |
| 4. Not Used | - Black |
| 5. Not Used | - Grey |



The MS300 has been certified as Intrinsically Safe Electrical Apparatus and offers fast, reliable and accurate in-line detection of moisture in fluids for use in hazardous areas.

ATEX Certification allows the MS300 into areas of a potentially explosive atmosphere, that have previously not been allowed without permits, it is intended for use in Zone 0 hazardous areas requiring the use of category 1G equipment and has been designed for use with galvanic isolators to the specified values stated below:

The electrical parameters: U_i : 28V I_i : 93mA P_i : 0.65W C_i : 380nF L_i : 0

The following instructions apply to MS300 - 4-20mA Current Loop Moisture Sensor covered by certificate number Sira 07ATEX2255:

1. The equipment may be located where flammable gases of Group I may be present. The equipment is only certified for use in ambient temperatures in the range -4°F to +104°F (-20°C to +40°C) and should not be used outside this range.
2. The equipment has not been assessed as a safety-related device (as referred to by Directive 94/9/EC Annex II, clause 1.5).
3. Installation of this equipment shall be carried out by suitably trained personnel in accordance with the applicable code of practice.
4. Repair of this equipment shall be carried out by the manufacturer or in accordance with the applicable code of practice (IEC 60079-19).

Moisture Sensor Displays

Specifications

Bar Graph Indicator (PBG8341A)

Construction:

Housing – nylon 6/6, window – acrylic,
bezel/board supports – ABS,
pins – phosphor bronze

Power supply:

11 – 30 Vdc

Signal input: (By dipswitch configuration)

Off – differential up to 5V

A – single signal (Ref. 0V) up to 5V

B – single signal (Ref. 1V) up to 6V

Cut out size:

45.6mm x 45.6mm

Fixing:

Push fit panel thickness 0.9mm to 3.2mm

Sealing:

Designed to IP50 standard.

(Front face may be silicon sealed after LED configuration)

Scale:

Supplied 0 to 100% in horizontal

Other scales, in volume, consult Parker Hannifin

Scaling factors:

10% to 100% range. Fully adjustable

Lamp intensity:

4mcd each

Front viewing:

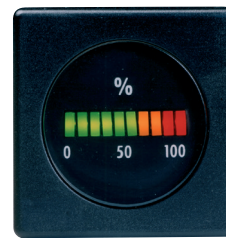
Polarized

Weight:

29gms

Alternative Indicator

Description	DDU1001	DDU1002
Power supply	11 – 30 Vdc	110 – 240 Vdc
Accuracy	± 0.1% typical	± 0.1% typical
Sample rate	2.5 per second	2.5 per second
Operating temp (°C)	0 – 50	0 – 50
Storage temp (°C)	-10 to +70	-10 to +70
Display	N3.5 digit LEDA	3 1/2 digit LED
Power output (Vdc)	24	24
Weight (kg)	0.30	0.30
Panel cutout (mm)	93x45 ± 0.5	93x45 ± 0.5
Dimensions (mm)	48x96x93	48x96x93



PBG8341A



DDU1001/DDU1002

Product accessories part numbers

Product Number	Supersedes	Description
DDU1001	P.9732PVC-10	Digital display unit 22-55 Vdc
DDU1002	P.9732PVC-05	Digital display unit 110-240 Vdc
PBG8341A	PBG.8341.1A	Bar Graph Indicator (+11 to +30 Vdc)
PAM8342	PAM.8342	Bar Graph alarm module
ACC6NF000	B97200	5 meter M12, 8 pin molded cable (IP68)
ACC6NF001	P973200	M12, 5 pin rewirable connector (IP65)
ACC6NF002	S970410	10 meter extension box
ACC6NE008	S970400	UK 12 volt power supply
ACC6NE009	S970400	European 12 volt power supply
ACC6NE010	S970400	US 12 volt power supply
ACC6NF003	N/A	5 meter M12, 5 pin molded cable (IP68)

Moisture sensor output setting

The Moisture sensor reports on the saturation levels of the fluid passing through the sensing cell. The output is a linear scale, reporting within the range of 5% saturation to 100% saturation.

Saturation	4–20mA	0–3Vdc	0–5Vdc
5%	4.8	0.15	0.25
25%	8	0.75	1.25
50%	12	1.50	2.50
75%	16	2.25	3.75
100%	20	3.00	5.00

Ordering Information

MS200 - Product Configurator

Key	Model		Fluid Type		Output Options		Thread Forms		Connector		Future Option	
MS	2	Programmable	2	Mineral	01	0 - 3 Vdc	1	G 1/4" BSP Bonded Seal	1	M12 8 Way	0	No
				Aggressive	02	0 - 5 Vdc	2	G 1/4" BSP Integral Seal				
					03	1 - 6 Vdc	3	R 1/4" Taper				
					04	4 - 20 mA	4	1/4" NPT Taper				
							5	9/16 - 18 UNF 2A Integral Seal				
							6	Hand Held Unit				
							7	G 3/8" BSP Female Swivel Equal T Adaptor				

MS300 - Product Configurator

Key	Model		Fluid Type		Output Options		Thread Forms		Connector		Future Option	
MS	3	Programmable	2	Mineral	04	4 - 20 mA	1	G 1/4" BSP Bonded Seal	1	5 Way	0	No
			6	Aggressive			2	G 1/4" BSP Integral Seal				
							3	R 1/4" Taper				
							4	1/4" NPT Taper				
							5	9/16 - 18 UNF 2A Integral Seal				
							6	G 3/8" BSP Female Swivel Equal Tee				