Moisture Sensor Range

MS100, MS150

Cost Effective Moisture Detection

MS100 Moisture Sensor

Features & 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.
- M12, IP68, 5 way moulded cable.
- +8 to +30 Vdc supply voltage.
- Adjustable alarm limit.
- A purpose designed tee adaptor allows for easy installation into an existing fluid system.
- The MS100 can also be specified with a bench top wand offering the end user greater flexibility.

Typical Applications

- Pulp and paper plants
- Marine hydraulics
- Power transmission & distribution
- Oil reclamation
- Industrial hydraulics
- Earth moving applications
- Agricultural

In-Line Moisture Measurement of Hydraulic & Lubricating Oils.

Parkers MS100 Moisture Sensor offers fast, reliable and accurate in-line detection of moisture in fluids. The MS100 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.

Specification

Pressure:
Maximum allowable operating pressure.
(MAOP): 420 bar (6000 psi).

Operating temperature:
Maximum: 85°C (185°F).
Minimum: -15°C (-5°F) – dependent on seal material.

Flow through sensor cell:
Installed in active flowstream.

Fluid compatibility:
Mineral oils and petroleum-based phosphate ester – Skydrol option available.

Viscosity range:
Unlimited.

Thread form connections:
See ordering information.

Outputs:
0 - 5 Vdc (0.85 – 4.05 Vdc dynamic range).

Maximum alarm output lead:
0.5 amps (maximum continuous lead).

Supply voltage:
8 - 30 Vdc/30mA.

Calibration accuracy:
+/- 2% RH.

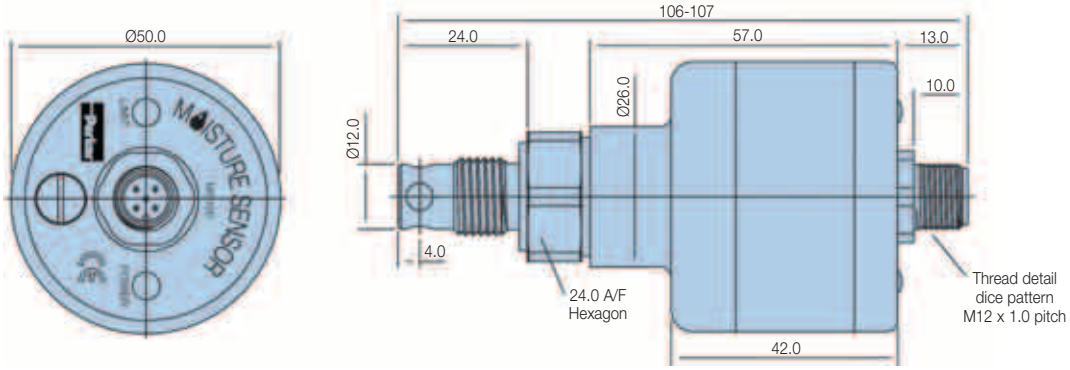
Compensated thermal stability:
+/- 1% RH (+10°C to +80°C).

Materials:
Stainless steel 316511.

Sensor size/weight:
107mm x ø50mm/0.3kg.

IP rating:
IP68 (with specified moulded cable).

Installation Details



Usage Specifications

Interpreting the data

Oil type: Texaco Rando 46.
Saturation point: 400ppm @ 65ºC (150ºF).
At the above operating condition, the meter displays 100% saturation. As the meters scale indicates a reduction in the saturation percentage, there is also a corresponding reduction in PPM at a constant temperature. In the example above, a meter reading of 50% saturation could be interpreted as 200ppm at 65ºC (150ºF).

Sensor

Using only the sensor as a go/no-go device, a red LED will indicate when the oils water concentration reaches 80% saturation and trigger a corresponding voltage output. The unit also features an analogue output proportional to % saturation with a dynamic range of 0.85 to 4.05 volts.

%RH	Under 0	0	10	20	30	40	50	60	70	80	90	100	Over 100
Vdc	<0.85	0.85	1.17	1.49	1.81	2.13	2.45	2.77	3.09	3.41	3.73	4.05	>4.05

Cost Effective Moisture Detection

MS100 Moisture Sensor

Visual Indicators Specifications

Bar Graph Indicator (PBG.8341A)

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:
Polarised.

Weight:
29gms.

Description	DDU1001	DDU1002
Power supply	22 - 55 Vdc	110 - 240 Vdc
Accuracy	± 0/01% typical	± 0.1% typical
Sample rate	10 per second	2.5 per second
Operating temp (°C)	0 - 55	0 - 50
Storage temp (°C)	-10 to +70	-10 to +70
Display	5 digit LED	3½ digit LED
Power output (Vdc)	24	24
Weight (kg)	0.21	0.30
Panel cutout (mm)	92x48 ±/0.5	93x45 ±/0.5
Dimensions (mm)	48x96x100	48x96x93

PBG8341A

DDU1001

DDU1002

The MS100 Moisture Sensor has a maximum cable length of 10 meters, before the output starts to degrade. The MS100 extension box boosts all the outputs from the MS100 Moisture Sensor. This enables the outputs to go another 10 meters.

Features

- IP67 rated container (120mm x 100mm x 60mm)
- Integrated 10 meter PVC cable already fitted.
- Complete with wall mounting kit.
- No additional power supply required.
- Universal box means it can be positioned in any orientation.

Ordering Information

Standard products table - moisture sensors

Product number	Supercedes	Model	Thread form	Seal option
MS1001P	MS100-1P	MS100	1/4" BSP with bonded seal	P
MS1005P	MS100-5P	MS100	9/16 - 18UNF 2A (SAE J514)	P
MS1002P	MS100-2P	MS100	1/4" BSP with integral seal	P
MS1003P	MS100-3P	MS100	R1/4" BSPT	P
MS1004P	MS100-4P	MS100	1/4" NPT	P
MS1006P	MS100-6P	MS100	Handheld version	P
MS1007P	MS100-7P	MS100	Inline tee version	P

Note 1: Part numbers featured with bold highlighted codes will ensure a 'standard' product selection.
Note 2: Alternate displayed part number selection will require you to contact Parker Filtration for availability.

Standard products table - accessories/panel displays

Product Number	Supercedes	Description
P9732PVC02	P.9732PVC-02	2 meter M12 IP68 PVC coated cable
P9732PVC05	P.9732PVC-05	5 meter M12 IP68 PVC coated cable
DDU1002	DDU-1002	+110 to +240 Vac process indicator
PBG8341A	PBG.8341.A	+11 to +30 Vdc bar graph indicator
P9732PVC10	P.9732PVC-10	10 meter M12 IP68 PVC coated cable
P9732PUR02	P.9732PUR-02	2 meter M12 IP68 PUR coated cable
P9732PUR05	P.9732PUR-05	5 meter M12 IP68 PUR coated cable
P9732PUR10	P.9732PUR-10	10 meter M12 IP68 PUR coated cable
S970400	N/A	12 Vdc power supply
S970410	N/A	10 meter extension box
P973200	N/A	IP67 Re-wireable M12 connector
DDU1001	DDU-1001	+22 to +55 Vdc process indicator

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Cost Effective Moisture Detection

MS150 Moisture Sensor

Features & Benefits

- Return line low pressure rating: Up to 10 bar (145 PSI)
- Results reported as a "% saturation" of water in your oil
- Variable signal output options
  - (+1 to +5 Vdc) (+4 to +20mA) RH%
  - (0 to +5 Vdc) Temperature
- Compatible with Parker Digital Display Units (DDU1001, DDU1002 and the bar graph indicator PBG8341A)
- Simple dynamic installation into a flow path
- Temperature compensated results
- Two thread forms (1/4" BSPT & 1/4" NPT)
- Easier and more flexible cable connection
- Independent temperature output
- 2 alarm point option with alarm module (PAM8342)

Parkers MS150 Moisture Sensor is the easy-to-fit, lightweight and cost-effective solution to accurately measure the % moisture present in operating fluids.

MS150 provides an effective early warning device when connected to an array of monitoring options to ensure continuous system protection and fluid integrity.

Typical Applications

- Earth moving machinery
- Forestry
- Agricultural (harvestors, tractors)
- Industrial factory (pulp & paper processes)
- Marine (hydraulic stabilizer systems)
- Test rig stands (critical test machines)
- Ground support vehicles (military)
- Fluid transfer systems (skids)
- Commercial aerospace and ground support systems (skids)

Detect water contamination before it shuts your application down

Dynamic moisture monitoring for todays demanding mobile hydraulic systems. The new lightweight MS150 moisture sensor is designed to produce accurate, **real time** moisture indications in petroleum - based, synthetic oils and phosphate ester (aggressive fluids) below fluid saturation levels.

Specification

Pressure:
Maximum allowable operating pressure. (MAOP): 10 bar (145 PSI).

Operating temperature:
Minimum: -20°C (-4°F).
Maximum: +85°C (+185°F).

Flow through sensor cell:
Installed in active flowstream.

Fluid compatibility:
Mineral oils, petroleum-based and Phosphate ester.

Viscosity range:
Unlimited.

Port connections:
1/4" BSPT or 1/4" NPT.

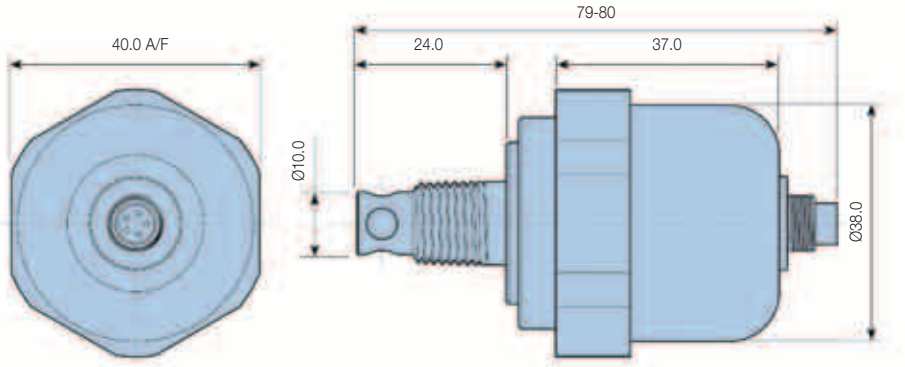
Outputs:
Variable - see sensor outputs.

Supply voltage:
+8 to +30 Vdc.

Sensor size/weight/material:
80mm x 43mm/0.1kg/Aluminium

IP ratings:
IP54

Installation Details



All dimensions in millimetres (mm)

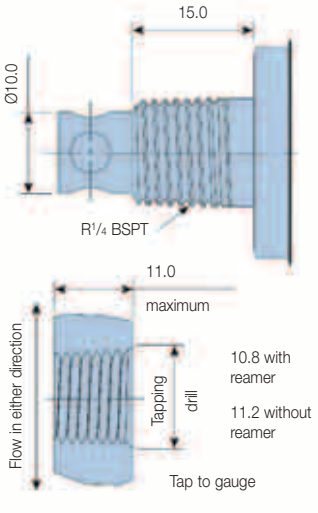
Dimensions are for reference only

MS150

Water enters hydraulic and lubricating systems from a variety of sources. Atmospheric ingression of water vapor, as well as internal heat exchanger leaks, create unfavorable operating conditions. The MS150 Moisture Sensor eliminates the guesswork by providing real time condition monitoring. It is designed to work well in petroleum/synthetic hydraulic and lubricating oil applications.

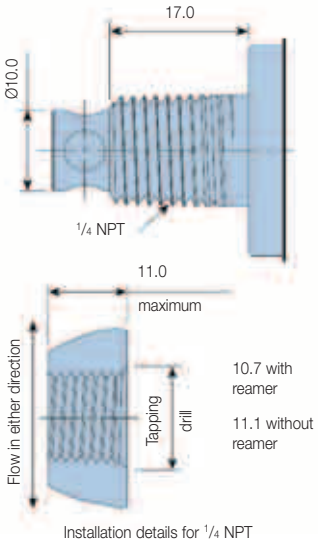
Thread Form Options

BSPT



Installation details for R1/4 BSPT taper

NPT



Installation details for 1/4 NPT

For alternative thread forms please contact Parker Filtration

Cost Effective Moisture Detection

MS150 Moisture Sensor

Interpreting Data

The Parker MS150 Moisture Sensor is designed to provide real time accurate and repeatable results reported as % saturation of water. Percent saturation is a useful measurement that offers the user a simple, quantitative method in determining how wet or dry a hydraulic or lubricating system may be. In contrast, PPM and % water by volume measurements provide little information about a fluid's free or dissolved water condition. % saturation can now easily be converted to PPM as long as the fluid's saturation point is known using the MS150 temp output.

Example
Oil type: Texaco Rando 46
Saturation point: 400ppm @ +65°C (+150°F)

At the above operating condition, the meter displays 100% saturation. As the meter's scale indicates a reduction in the saturation percentage, there is also a corresponding reduction in PPM at a constant temperature. In the example above, a meter reading of 50% saturation could be interpreted as 200ppm at +65°C (+150°F)

Sensor Outputs

MS150 moisture sensor pin designations			
Pin	**Designation**	**I/O**	**Description**
1	Supply	Input	Supply voltage (+8 to +30Vdc)
2	%RH	Output	% Saturation out (+1 to +5Vdc)
3	%RH	Output	% Saturation out (+4 to +20mA)
4	Temperature	Output	Temperature out (0 to +5Vdc)
5	Common	Input	Common (0Vdc) ground from power supply (not chassis ground)

Indicator Options

For specifications on the process indicator options see page 268 and 269 for ordering information.

DDU1001

DDU1002

Description	DDU1001	DDU1002
Power supply	22 - 55 Vdc	110 - 240 Vdc
Accuracy	± 0/01% typical	± 0.1% typical
Sample rate	10 per second	2.5 per second
Operating temp (°C)	0 - 55	0 - 50
Storage temp (°C)	-10 to +70	-10 to +70
Display	5 digit LED	3½ digit LED
Power output (Vdc)	24	24
Weight (kg)	0.21	0.30
Panel cutout (mm)	92x48 ±/0.5	93x45 ±/0.5
Dimensions (mm)	48x96x100	48x96x93

Ordering Information

Standard products table

Product number	Supercedes	Description
MS1503	MS150-3	¼" BSPT moisture sensor
DDU1002	DDU-1002	+110 to +240 Vac process indicator
MS1504	MS150-4	¼" NPT moisture sensor
DDU1001	DDU-1001	+22 to +55 Vdc process indicator
PBG8341A	PBG.8341.A	Bar graph indicator
PAM8342	PAM.8342	Alarm module

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