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MMT318 Compact Moisture and Temperature Transmitter for Oil

The MMT318 enables on-line moisture monitoring in oils even in the most demanding applications.

Features/Benefits

- Continuous measurement of moisture in oil
- Measures in lubrication, hydraulic and transformer oils
- Excellent pressure and temperature tolerance
- Vaisala HUMICAP® Sensor - proven in the field since 1973
- Measures water activity - ppm-calculation available for transformer oil
- Small size, easy to integrate
- NIST traceable (certificate included)

Example applications

- Lubrication systems monitoring (e.g. ships, pulp and paper industry)
- Transformer oil monitoring
- Oil tank monitoring
- Non-explosive fuel oil monitoring
- Food oil processing

The Vaisala HUMICAP® Moisture and Temperature Transmitter for Oil MMT318 is a fast and reliable on-line detector of moisture in oil.

Reliable Vaisala HUMICAP® technology

The MMT318 incorporates the latest generation of the Vaisala HUMICAP® Sensor. The sensor is developed for demanding moisture measurement in liquid hydrocarbons. The sensor's excellent chemical tolerance provides accurate and reliable measurement over the wide measurement range.

Water activity measurement

The MMT318 measures moisture in oil in terms of the water activity (aw) and temperature (T).

Water activity directly indicates whether there is a risk of free water formation. The measurement is independent of oil type, age and temperature.

Water content as ppm calculation for transformer oils

Ppm-units are traditionally used in transformer applications. It indicates the average mass concentration of water in oil. The ppm calculation for mineral oil based transformer oil is optional in the MMT318.

For diverse applications and demanding conditions

The MMT318 can be used in lubrication systems, hydraulic systems and transformers. It can be used for on-line moisture monitoring and as a control function, allowing separators and oil purifiers to be started only when necessary.

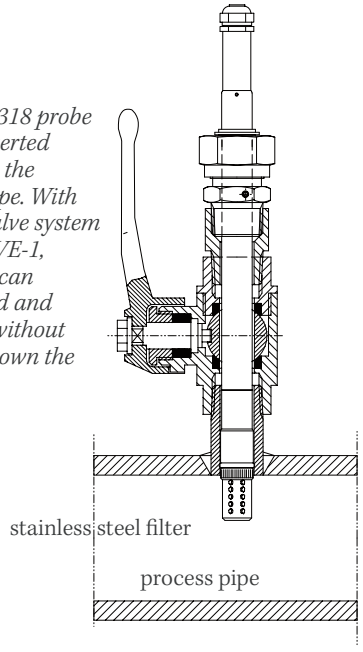
Flexible installation options

The MMT318 has two adjustable probe lengths. The transmitter can be ordered with a ball valve set that enables the insertion and removal of the moisture probe for calibration, without the need to empty the oil system.

Several outputs - one connector

The MMT318 has two analog outputs and an RS232 serial output. The signals and the unit power travel in the same cable, the only cable connected to the unit.

The MMT318 probe can be inserted directly in the process pipe. With the ball valve system BALLVALVE-1, the probe can be inserted and removed without shutting down the process.



Technical Data

Measured values

Water activity

Measurement range a_w	0...1
Accuracy (including nonlinearity, hysteresis and repeatability)	
0...0.9	±0.02
0.9...1.0	±0.03
Response time (90%) at +20 °C in still oil (with stainless steel filter)	10 min.
Sensor	Vaisala HUMICAP®

Temperature

Measurement range	-40...+180 °C (-40...+356 °F)
Typical accuracy at +20 °C	±0.1 °C (±0.18 °F)
Typical temperature dependence of electronics	±0.005 °C/°C (±0.005 °F/°F)
Sensor	Pt 100 IEC 751 1/3 class B

Electrical connections

Two analog outputs, selectable and scalable	0...20 mA or 4...20 mA
Typical accuracy of analog output at +20 °C	±0.05% full scale
Typical temperature dependence of analog output	0.005% / °C (0.003% / °F) full scale
Serial output	RS232C
Connections	8-pole connector with RS232C, current outputs (two channels) and U_{in}
Operating voltage U_{in}	24 VDC (10.... 35 VDC)
Minimum operating voltage U_{in}	
with RS232C	10 VDC
I_{out} 0...20mA, 4...20 mA	11 VDC + (R_{load}/60) VDC
Power consumption @ 20 °C, U_{in}=24VDC	
with RS232C	20 mA
I_{out} 2 x 0...20mA	60 mA

General

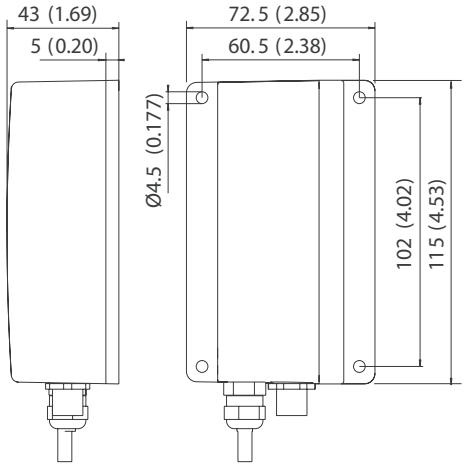
Operating temperature range for electronics	-40...+60 °C (-40...+140 °F)
Storage temperature range	-55...+80°C (-67...+176 °F)
Pressure range for probe	0...40 bar
with ball valve up to 120 °C	0...40 bar
Material	
transmitter housing	G-AlSi10Mg
transmitter base	ABS/PC
Housing classification	IP65 (NEMA 4)
Cable feed through alternatives	8-pole connector with 5 m cable, female 8-pin connector screw joint for cable diameter 4...8 mm
Sensor protection	stainless steel grid
Probe cable length	2, 5 or 10 meters

Complies with EMC standard EN61326-1, Industrial environment.

NOTE: When using the current output, the RF-field susceptibility level according to standard EN 61000-4-3 with frequency band 110... 165 MHz, is only 3V/m (generic environment) with the specified accuracy.

Dimensions

Dimensions in mm (inches).



probe with large mounting plate

small mounting plate