

# MMT318 Compact Moisture and Temperature Transmitter for Oil



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

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.

## 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)

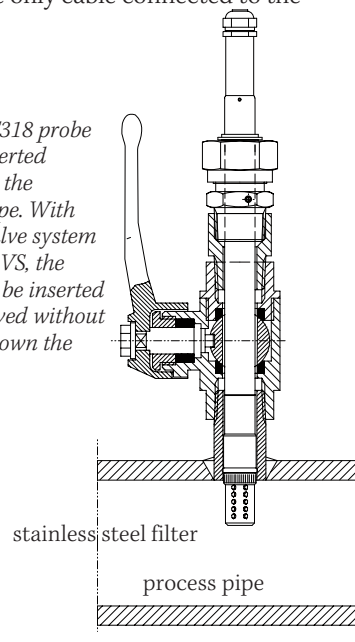
## Example applications

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

## 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 DMP248BVS, the probe can be inserted and removed without shutting down the process.*



## Measured values

### Water activity

Measurement range	0...1 a <sub>w</sub>
Accuracy (including nonlinearity, hysteresis and repeatability)	
When calibrated against salt solutions (ASTM E104-85):	
0...0.9	±0.02
0.9...1.0	±0.03

Maximum achievable accuracy when calibrated against high-quality, certified humidity standards:

0...0.9	±0.01
0.9...1.0	±0.02

Response time (90%) at +20 °C in still oil (with stainless steel filter) 10 min.

Sensor Vaisala HUMICAP®

### Temperature

Measurement range	-70...+180 °C (-94...+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

Typical accuracy of analog output at +20 °C	0...20 mA or 4...20 mA ±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 <sub>in</sub>

Operating voltage U<sub>in</sub> 24 VDC (10... 35 VDC)

Minimum operating voltage U<sub>in</sub>

with RS232C	10 VDC
I <sub>out</sub> 0...20mA, 4...20 mA	11 VDC + (R <sub>load</sub> /60) VDC

Power consumption @ 20 °C, U <sub>in</sub> =24VDC	
with RS232C	20 mA
I <sub>out</sub> 2 x 0...20mA	60 mA

## General

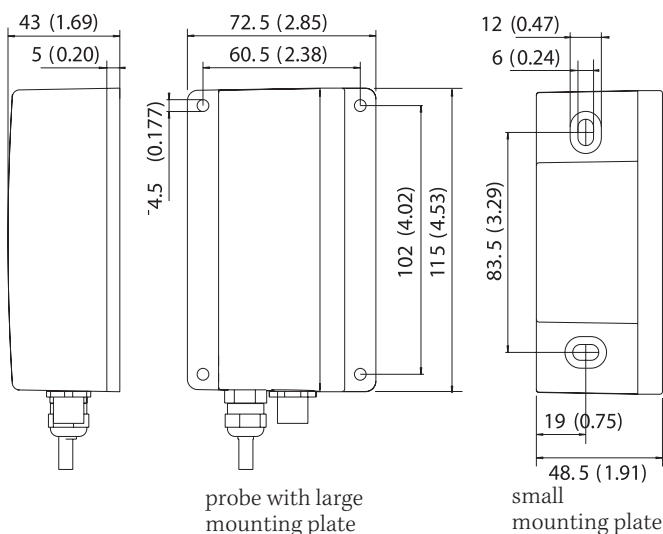
Operating temperature range for electronics	-40...+60 °C (-40...+140 °F)
Storage temperature range	-55...+80 °C (-67...+176 °F)
Pressure range for probe	0...40 bar
Material	
transmitter housing	G-AlSi10Mg
transmitter base	ABS/PC
Housing classification	IP65 (NEMA 4)
Cable feed through alternatives	8-pole 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 EN 61326-1:1997 + Am1:1998 + Am2:2001; Electrical equipment for measurement, control and laboratory use - EMC requirements; 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.

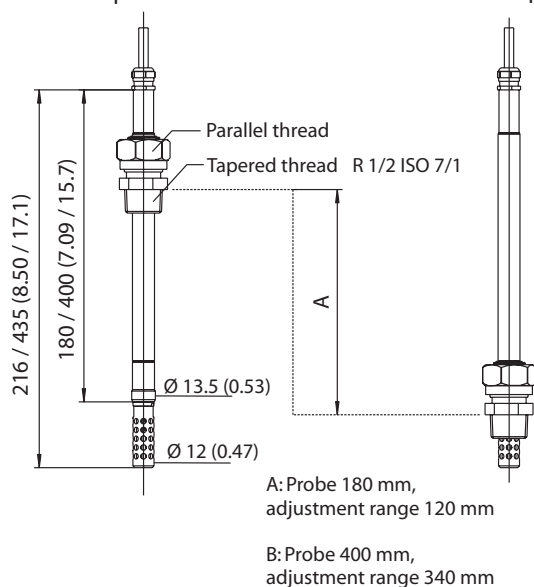
## Dimensions

Dimensions in mm (inches).



Probe pushed down

Probe up



A: Probe 180 mm, adjustment range 120 mm

B: Probe 400 mm, adjustment range 340 mm

Reptame Equipment Inc.

[www.reptame.com](http://www.reptame.com)

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