

MMT162 Compact Moisture in Oil and Temperature Transmitter for OEM 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 calibration (certificate included)

The MMT162 enables on-line moisture monitoring in oils even in the most demanding applications.

The Vaisala HUMICAP® Moisture and Temperature Transmitter for Oil MMT162 is an excellent economical solution for reliable on-line detection of moisture in oil.

Reliable Vaisala HUMICAP® technology

The MMT162 incorporates the latest generation of the Vaisala HUMICAP® Sensor. The sensor is developed for demanding moisture measurement in liquid hydrocarbons and has been successfully used in oil applications for over a decade. The sensor's excellent chemical tolerance provides accurate and reliable measurement over the measurement range.

Water activity measurement

The MMT162 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

In transformer applications ppm-units are traditionally used. It indicates the average mass concentration of water in oil. The ppm calculation for mineral oil based transformer oil is optional in the MMT162.

For diverse applications and demanding conditions

Lubrication systems, hydraulic systems and transformers are among the typical applications of the MMT162. Its measurements can be used for on-line moisture monitoring and as a control function, allowing dryers and oil purifiers to be started only when necessary.

Several outputs - one connector

The MMT162 has two analog outputs that can be scaled and the measurement ranges changed. Additionally, the transmitter has an RS-485 serial output. The signals and the unit power travel in the same cable.

An optional LED-cable enables a visual alarm.

Compact, rugged and intelligent

Due to its compact size, the MMT162 is quickly and easily installed in tight spaces. Units are delivered fully assembled, however, you can re-configure them to suit your needs.

MM70

In combination with an MM70 indicator, the MMT162 provides an ideal tool for on site calibration. The MI70 indicator can be used as a display, communication, and data-login device for the MMT162.



The Vaisala HUMICAP® Hand-held Moisture Meter for Oil MM70 is ideal for confirming the performance of the MMT162 in the field.

Technical Data

Measured Values

Water activity

Measurement range	0 ... 1 aw
Accuracy (including non-linearity, hysteresis and repeatability)	± 0.02
0 ... 0.9	± 0.02
0.9 ... 1.0	± 0.03
Response time	<1 min (dry-wet)
in oil flow (typical)	

Moisture

Calculated moisture content in ppm for mineral transformer oil

Temperature

Accuracy at +20 °C (+68 °F)	± 0.2 °C (0.36 °F)
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Operating Environment

Operating temperature	-40 ... +60 °C (-40 ... +140 °F)
Oil temperature	-40 ... +80 °C (-40 ... +176 °F)
Pressure range	
metal version	up to 200 bar
plastic version	up to 40 bar
Oil flow	some flow recommended

Outputs

Analog outputs (two channels)

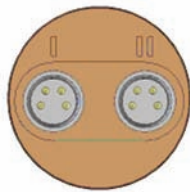
current output	0 ... 20 mA, 4 ... 20 mA
voltage output	0 ... 1 V, 0 ... 5 V, 0 ... 10 V

Alarm level indication by analog signal

user selectable
RS-485

Digital outputs

Pin	I	II
1	Vsupply	Vsupply
2	Ch 1	RS-485 - /B
3	GND	GND
4	Ch 2	RS-485 + /A



General

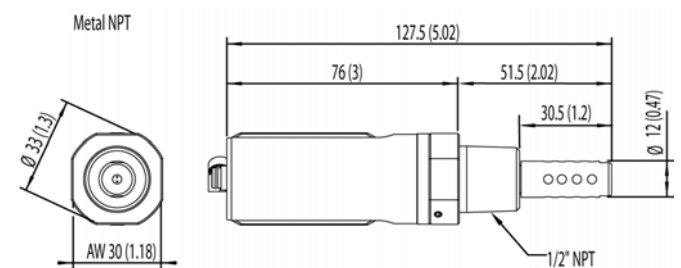
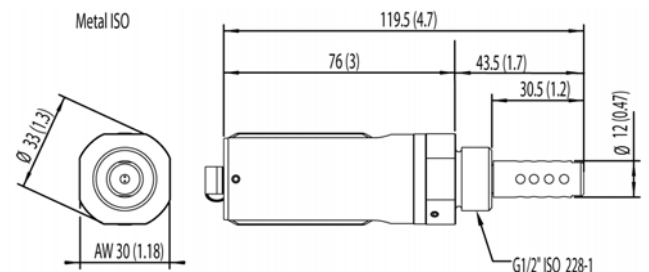
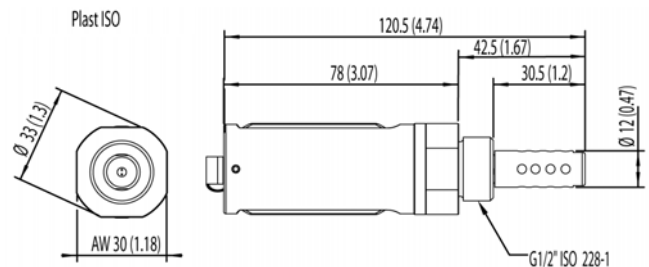
Sensor	HUMICAP®
Cable connections (2 ports)	M8, 4 pin
Minimum operating voltage with RS-485 output	14 ... 28 VDC
voltage output	16 ... 28 VDC
current output	22 ... 28 VDC
Supply current	
normal measurement	20 mA + load current
External load for	
voltage output	min. 10 kOhm
current output	max. 500 Ohm
Housing material	
metal	AISI 316L
plastic	PPS + 40% GF
Mechanical connections with bonded seal ring (washer)	
metal version	G 1/2" ISO or NPT 1/2"
plastic version	G 1/2" ISO
Housing classification	IP65 (NEMA 4)
Storage temperature range	-40 ... +80 °C (-40 ... +176 °F)
Weight	
with plastic housing	65 g (2.3 oz)
with metal housing	200 g (7 oz)
Complies with EMC standard EN61326-1, Electrical equipment for measurement control and laboratory use - EMC requirements;	
Industrial environment	

Options and accessories

Stainless steel filter (standard)	221494SP
Stainless steel filter for high flow (>1 m/s)	221493SP
Connection cable for MM70 hand-held meter	219980
USB serial interface cable	219690
Sealing ring set (U-seal) ISO G1/2, 3 pcs	221525SP
Sealing ring set (copper) ISO G1/2, 3 pcs	221524SP
ISO 1/2" plug	218773
NPT 1/2" plug	222507
Sampling cell	DMT242SC
Sampling cell w. Swagelok connectors	DMT242SC2
100 ... 240 VAC external power supply (not IP65)	POWER-1
Connection cable	
2 m (6.5 ft), M8 snap-on	211598
0.32 m (1 ft) Shielded, M8 threaded	HMP50Z032
3.0 m (9.8 ft), Shielded, M8 threaded	HMP50Z300
5.0 m (16.4 ft), Shielded, M8 threaded	HMP50Z500
10 m (32.8 ft), Shielded, M8 threaded	HMP50Z1000
3 m, Shielded, connector 90° angle	221739
5 m, Shielded, connector 90° angle	221740
M8 threaded, Ch1 signal + Ch2 LED	MP300LEDCBL

Dimensions

Dimensions in mm (inches)



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