MMT162 Moisture and Temperature Transmitter for Oil

For OEM applications



Features

- Continuous measurement of moisture in oil
- Measures in lubrication, hydraulic, and transformer oils
- Excellent pressure and temperature tolerance
- Proven Vaisala HUMICAP® sensor: over 20 years in oil applications
- Measures water activity - ppm calculation available for transformer oil
- Digital output RS-485 with Modbus
- Traceable calibration (certificate included)

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

Benefits

- Reliable
- Durable
- Small size, easy to integrate

Reliable Vaisala HUMICAP® technology

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 two decades. The sensor's excellent chemical tolerance provides accurate and reliable measurement over the measurement range.

Water activity measurement

MMT162 measures moisture in oil in terms of the water activity (a_w) and temperature (T). Water activity indicates directly whether there is a risk of free water formation. The measurement is independent of oil type, age, and temperature. The ppm calculation for mineral oil based transformer oil is optional in MMT162.

Several outputs - one connector

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, MMT162 is quickly and easily installed in tight spaces. Units are delivered fully assembled - however, you can reconfigure them to suit your needs.

MM70 moisture and temperature meter

In combination with an MM70 Handheld Moisture and Temperature Meter, the MMT162 provides an ideal tool for on-site calibration. MI70 Handheld Measurement Indicator (included in the MM70 package) can be used as a communication and datalogging device and display for the MMT162.

Technical data

Measurement performance

Water activity	
Measurement range	0–1 a_w
Accuracy (including non-linearity, hysteresis, and repeatability):	
0–0.9 a_w 0.9–1.0 a_w	± 0.02 a_w ± 0.03 a_w
Response time in oil flow (typical)	< 1 min (dry-wet)
Temperature	
Accuracy at +20 °C (+68 °F)	± 0.2 °C (0.36 °F)
Moisture	
Calculated moisture content in ppm for mineral transformer oil	

Operating environment

Operating temperature	−40 ... +60 °C (−40 ... +140 °F)
Storage temperature	−40 ... +80 °C (−40 ... +176 °F)
Oil temperature	−40 ... +80 °C (−40 ... +176 °F)
Oil flow	Some flow recommended
Pressure range	Up to 200 bar

Inputs and outputs

Alarm level indication by analog signal	User selectable
Digital outputs	RS-485, non-isolated, Vaisala protocol, Modbus RTU protocol
Analog current output	0–20 mA, 4–20 mA
Analog voltage output	0–5 V, 0–10 V

Compliance

EU directives and regulations	EMC Directive (2014/30/EU) RoHS Directive (2011/65/EU) amended by 2015/863
Electromagnetic compatibility (EMC)	IEC/EN 61326-1, industrial environment [1)]
Compliance marks	CE, China RoHS, RCM, UKCA

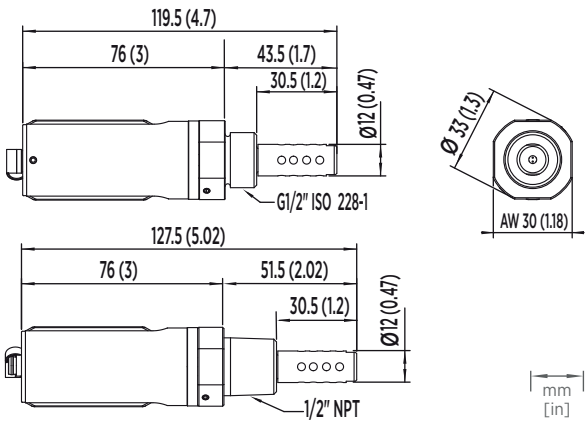
1) Temperature output may deviate in industrial environments of 80–700 MHz.

Mechanical specifications

Sensor	HUMICAP®
Cable connections (2 ports)	M8 4-pin male
Mechanical connections with bonded seal ring (washer)	G 1/2" ISO or NPT 1/2"
Weight	200 g (7 oz)
Minimum operating voltage with	
RS-485 output	14–28 V DC
Voltage output	16–28 V DC
Current output	22–28 V DC
Supply current	
Normal measurement	20 mA + load current
External load for	
Voltage output	Min. 10 kΩ
Current output	Max. 500 Ω
Housing	
Probe body material	Stainless steel (AISI 316L)
IP rating	IP66

Spare parts and accessories

Stainless steel filter (standard)	225356SP
Stainless steel filter for high flow (> 1 m/s)	221494SP
Connection cable for MM70 handheld 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 with Swagelok connectors	DMT242SC2
Connection cables	
0.32 m (1 ft) shielded, M8 threaded	HMP50Z032
3.0 m (9.8 ft), shielded, M8 threaded	HMP50Z300SP
5.0 m (16.4 ft), shielded, M8 threaded	HMP50Z500SP
10 m (32.8 ft), shielded, M8 threaded	HMP50Z1000SP
3 m, shielded, connector 90° angle	231520SP
5 m, shielded, connector 90° angle	231521SP
M8 threaded, Ch1 signal + Ch2 LED	MP300LEDCBL



MMT162 dimensions

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