VAISALA www.vaisala.com

# MMT162 Compact Moisture in Oil and Temperature Transmitter for OEM Applications



The MMT162 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 calibration (certificate included)

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. The ppm calculation for mineral oil based transformer oil is optional in the MMT162.

### 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 reconfigure 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 datalogin device for the MMT162.

### **Technical data**

#### **Measured Values**

WATER ACTIVITY

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

Calculated moisture content in ppm for mineral transformer oil **TEMPERATURE** 

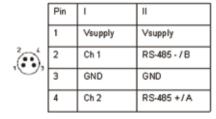
Accuracy at +20 °C (+68 °F) ± 0.2 °C (0.36 °F)

### **Operating Environment**

-40+60 °C (-40+140 °F)
-40+80 °C (-40+176 °F)
up to 200 bar
up to 40 bar
some flow recommended

### **Outputs**

Analog outputs (two channels) 0 ... 20 mA, 4 ... 20 mA current output voltage output 0 ... 5 V, 0 ... 10 V Alarm level indication by analog signal user selectable RS-485 Digital outputs





General	
Sensor	HUMICAP®
Cable connections (2 ports)	M8,4 pin
Minimum operating voltage with	
RS-485 output	1428 VDC
voltage output	1628 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 bo	onded 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 EN	9 \ /

for measurement control and laboratory use - EMC requirements; Industrial environment

### **Options and accessories**

- priorio arra accessorito	
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
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
	·



For more information, visit us at sales@vaisala.com