



Features

- Continuous online measurement of moisture in oil
- Ball-valve installation – no need to shut down the process or drain the oil
- Proven Vaisala HUMICAP® sensor, used for over 15 years in oil applications
- Analog outputs, RS-232/485, LAN
- Modbus protocol support (RTU/ TCP)

Vaisala HUMICAP® Moisture and Temperature Transmitter Series for Oil MMT330 enables the fast and reliable detection of moisture in oil. MMT330 series transmitters can be used in online moisture monitoring and as control devices, allowing separators and oil driers to be started only when needed.

Benefits

- Easy field calibration and maintenance – compatible with Vaisala HUMICAP® Hand-Held Moisture Meter for Oil MM70
- Approved for installation in MAN Diesel & Turbo Two-Stroke Diesel Engines lubrication systems

Proper monitoring saves both oil and the environment. With the MMT330 series it is easy and economical to monitor the changes of moisture in oil.

Reliable Vaisala HUMICAP® Technology

The MMT330 series incorporates the latest-generation Vaisala HUMICAP® sensor, which is the result of over 15 years of field experience. It was developed for demanding moisture measurement in liquid hydrocarbons. The sensor's excellent chemical tolerance provides accurate and reliable measurement over a wide measurement range.

For Diverse Applications and Demanding Conditions

With a wide variety of probes, the transmitter can be used in lubrication systems, hydraulic systems, and transformers.

Indicates the Margin to Water Saturation

MMT330 measures moisture in oil in terms of the water activity (a_w), relative saturation (%RS), and temperature (T). Water activity or relative saturation indicate directly whether there is a risk of free-water formation. The measurement is independent of oil type and age.

Water Content as ppm Conversion

In addition to water activity, MMT330 can output ppm, the average mass concentration of water in oil. Vaisala has this conversion readily available for mineral transformer oil.

For other oils, the oil-specific conversion coefficients can be programmed into the transmitter if the water solubility of the oil is known.

Graphical Display of Measurement Data and Trends for Convenient Operation

MMT330 features a large numerical and graphical display with a multilingual menu and keypad. It allows users to easily monitor operational data, measurement trends, and access measurement history for the past 12 months.

The optional data logger, with real-time clock, makes it possible to generate over four years of measurement history and zoom in on any desired time or time frame.

The display alarm allows any measured parameter to be tracked, with freely configurable low and high limits.



The display shows measurement trends, real-time data, and measurement history.

Versatile Outputs and Data Collection

MMT330 can support up to three analog outputs; an isolated galvanic power supply and relay outputs are also available.

For serial interface the USB connection, RS-232, and RS-485 can be used.

In addition to the analog outputs, MMT330 provides Modbus RTU and TCP/IP communication protocol.

The data recorded by the data logger can be viewed on the local display or transferred to a PC with Microsoft Windows® software. The transmitter can also be connected to a network with an optional LAN interface, which enables a Ethernet connection. A USB service cable makes it easy to connect the MMT330 to a PC via the service port.

Easy Installation

With multiple options to choose from, the instrument can be tailored to meet the specific needs of each individual application and is delivered installation-ready and pre-configured for each delivery. Quick delivery time and global service network make MMT330 a perfect choice for any project.



Vaisala HUMICAP Hand-Held Moisture for Oil Meter MM70 is designed for field-checking MMT330 transmitters.

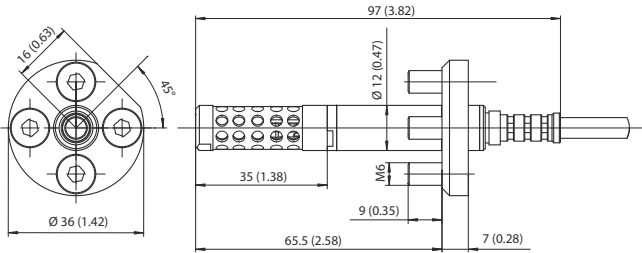
Installation Options



The MMT332 probe is installed using a flange. It is designed for high-pressure applications.

MMT332 for High Pressure Installations

Pressure range	0 ... 250 bar / 0 ... 3625 psia
Probe diameter	12 mm (0.5")
Installation flange	36 mm (1.4")
Temperature measurement range	-40 ... +180 °C (-40 ... 356 °F)



MMT332 Dimensions in mm (inches)



The MMT338 is ideal for installation into pressurized processes where the probe needs to be able to be removed while the process is running. The probe depth is adjustable.

MMT338 with Probe for Pipeline Installations

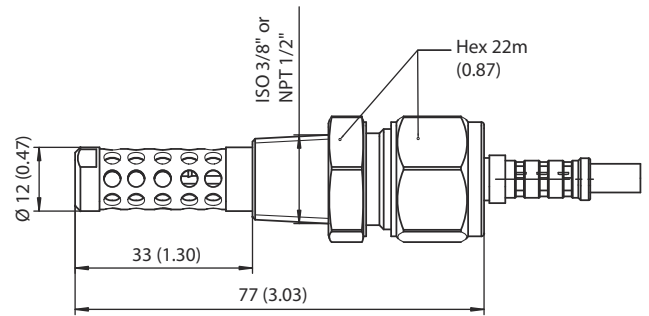
Pressure range with ball-valve	0 ... 40 bar / 0 ... 580 psia Up to 120 °C (248 °F) and 40 bar
Adjustable length	35 ... 157/379 mm (1.37 ... 6.2 /14.9")
Temperature measurement range	-40 ... +180 °C (-40 ... 356 °F)
Installation	
Fitting body	R1/2" ISO
Fitting body	NPT 1/2"
Ball-valve set	BALLVALVE-1
Sampling cell	DMT242SC2



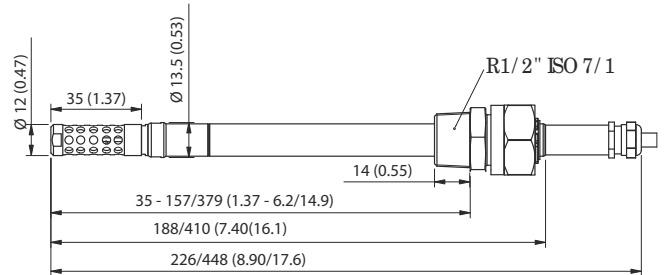
The MMT337 probe, with optional Swagelok connector, is ideal for tight spaces with a thread connection. The small probe is designed for integration into small diameter lines.

MMT337 with Small-Sized Probe

Pressure range	0 ... 10 bar / 0 ... 145 psia
Probe diameter	12 mm (0.5")
Temperature measurement range	-40 ... +180 °C (-40 ... 356 °F)
Installation	
Fitting body	R 3/8" ISO
Fitting body	1/2" ISO
Fitting body	NPT 1/2"



MMT337 Dimensions in mm (inches)



MMT338 Dimensions in mm (inches)

Technical Data

Measurement Performance

Water Activity

Measurement range a_w	0 ... 1
Response time (90%) at +20 °C in still oil (with stainless steel filter)	10 min.
Sensor	HUMICAP® 180 _L 2
Accuracy (Including Non-linearity, Hysteresis and Repeatability):	
0 ... 0.9	±0.02
0.9 ... 1.0	±0.03

Temperature

Measurement range	-40 ... +180 °C (-40 ... +356 °F)
Accuracy at +20 °C (+68 °F)	± 0.2 °C (0.36 °F)

Operating Environment

EMC compliance	EN61326-1, Industrial environment ¹⁾
Pressure range for probes	See probe specifications

Operating Temperature

For probes	Same as measurement ranges
For transmitter body	-40 ... +60 °C (-40 ... +140 °F)
With display	0 ... +60 °C (+32 ... +140 °F)

¹⁾ Note: Transmitter with display test impedance of 40 Ω is used in IEC61000-4-5 (Surge immunity)

General

Display	LCD with backlight, graphical trend display of any parameter
Menu languages	English, Chinese, Finnish, French, German, Japanese, Russian, Spanish, Swedish

Optional Data Logger with Real-time Clock

Logged parameters	Max. four with trend/min/max values
Logging interval	10 sec. (fixed)
Max. logging period	4 years, 5 months
Logged points	13.7 million points per parameter
Battery lifetime	Min. 5 years

Inputs and Outputs

Operating voltage	10 ... 35 VDC, 24 VAC ± 20 %
Operating voltage with optional power supply module	100 ... 240 VAC 50/60 Hz

Power Consumption at 20 °C (U_{in} 24 VDC)

RS-232	Max. 25 mA
U_{out} 2 x 0 ... 1 V / 0 ... 5 V / 0 ... 10 V	Max. 25 mA
I_{out} 2 x 0 ... 20 mA	Max. 60 mA
Display and backlight	+ 20 mA

Analog Outputs (2 Standard, 3rd Optional)

Current output	0 ... 20 mA, 4 ... 20 mA
Voltage output	0 ... 1 V, 0 ... 5 V, 0 ... 10 V
Accuracy of analog outputs at 20 °C	± 0.05 % full scale
Temperature dependence of the analog outputs	± 0.005 %/°C full scale

External Loads

Current outputs	$R_L < 500 \Omega$
0 ... 1V output	$R_L > 2 \text{ k}\Omega$
0 ... 5V and 0 ... 10V outputs	$R_L > 10 \text{ k}\Omega$
Max. wire size	0.5 mm ² (AWG 20) stranded wires recommended

Digital outputs	RS-232, RS-485 (optional)
Protocols	ASCII commands, Modbus RTU
Service connection	RS-232, USB
Relay outputs	0.5 A, 250 VAC, SPDT, potential-free (optional)

Ethernet Interface (Optional)

Supported standards	10BASE-T, 100BASE-TX
Connector	8P8C (RJ45)
IPv4 address assignment	DHCP (automatic), static
Protocols	Telnet, Modbus TCP/IP

WLAN Interface (Optional)

Supported standards	802.11b
Antenna connector type	RP-SMA
IPv4 address assignment	DHCP (automatic), static
Protocols	Telnet, Modbus TCP/IP
Security	WEP 64/128, WPA

Authentication / Encryption

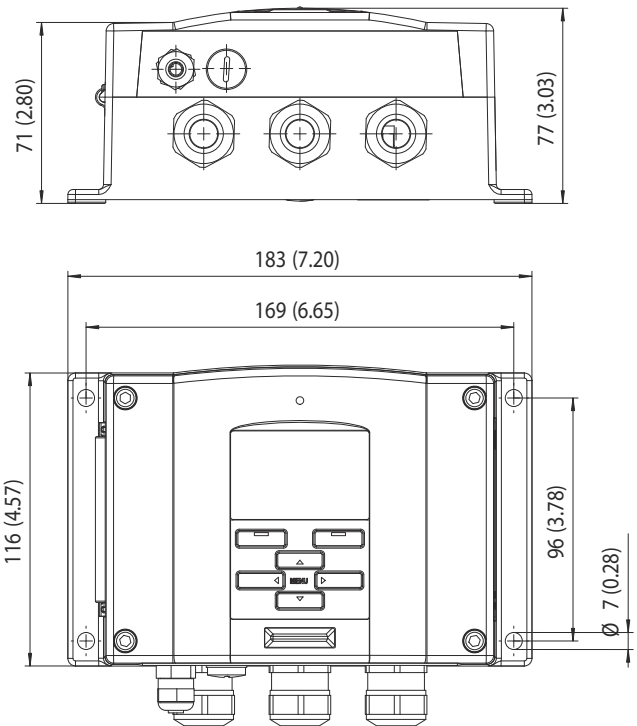
- Open / no encryption
- Open / WEP WPA
- Pre-shared key / TKIP WPA
- Pre-shared key / CCMP (a.k.a. WPA2)

Mechanical Specifications

Weight	1.0 - 3.0 kgs (depends on selected probe, cable, and modules)
Sensor protection	Stainless steel grid standard filter/ Stainless steel grid filter for high flow rates (> 1 m/s)
Cable bushing	M20x1.5 for cable diameter 8 ... 11 mm (0.31 ... 0.43")
Conduit fitting	1/2" NPT
USB-RJ45 Serial Connection Cable (incl. MI70 Link software)	219685
Probe cable diameter	5.5 mm (0.2 in)
Standard probe cable lengths	2 m, 5 m or 10 m (6.6 ft, 16.4 ft, 32.8 ft) (Additional cable lengths available, please see order forms for details)
Housing material	G-AlSi 10 Mg (DIN 1725)
Interface cable connector (optional)	M12 series 8-pin (male)
Option 1	Female plug with 5 m (16.4 ft) black cable
Option 2	Female plug with screw terminals

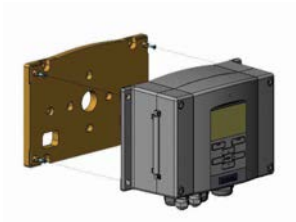
Compliance

IP rating	IP66
IP rating with local display	IP65
NEMA rating with local display	4X

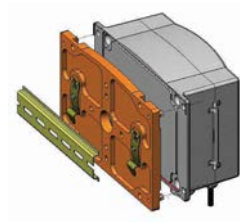


Dimensions in mm (inches)

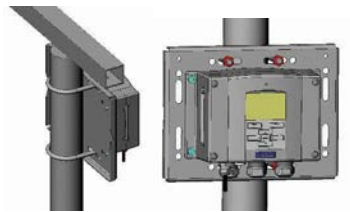
Mounting Options



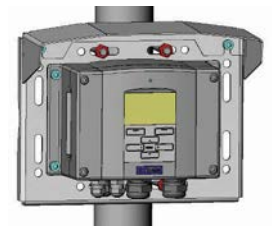
Mounting with Wall Mounting Kit



Mounting with DIN Rail Installation Kit



Pole Installation with Installation Kit for Pole or Pipeline



Mounting Rain Shield with Installation Kit





Features

- Continuous measurement of moisture in oil
- Proven Vaisala HUMICAP® sensor, over 15 years in oil applications
- Measurements in lubrication, hydraulic and transformer oils
- Excellent pressure and temperature tolerance
- Measuring water activity - ppm calculation for transformer oil
- Small size, easy to integrate
- Traceable calibration for measurement and analog outputs (certificates included)
- Applications: e.g. monitoring of transformer oil and of lubrication systems in marine and paper industry

Vaisala HUMICAP® Moisture and Temperature Transmitter Series for Oil MMT310 is a fast and reliable online detector for moisture in oil.

Reliable Vaisala HUMICAP® Technology

The MMT310 series incorporates the latest generation of the Vaisala HUMICAP® sensor, developed for demanding moisture measurement in liquid hydrocarbons. The sensor's excellent chemical tolerance provides accurate and reliable measurement over the wide measurement range.

Measuring Water Activity

MMT310 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.

Water Content as PPM Calculation for Transformer Oils

PPM units are traditionally used in transformer applications. They indicate the average mass concentration of water in oil. The ppm calculation for mineral oil based transformer oil is optional in the MMT310 series.

Diverse Applications and Demanding Conditions

MMT310 can be used in lubrication and hydraulic systems as well as in 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.

Installation Options

MMT310 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.

MMT317 has a small pressure-tight probe with optional Swagelok fittings.

An optional rain shield is available for outdoor installations.

Several Outputs, One Connector

MMT310 transmitters have two analog outputs and an RS-232 serial output. The output signals and the supply power travel in the same cable, the only cable connected to the unit.

Technical Data

Measurement Performance

Water Activity

Measurement range a_w (%RS)	0 ... 1 (0 ... 100 %)
Accuracy (Including Non-Linearity, Hysteresis, and Repeatability):	
0 ... 0.9 (0 ... 90 %)	±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® 180L2

Temperature

Measurement range	-40 ... +180 °C (-40 ... +356 °F)
Typical accuracy at +20 °C (68 °F)	±0.2 °C (±0.36 °F)
Sensor	Pt100 RTD Class F0.1 IEC 60751

Mechanical Specifications

IP rating	IP66
Weight example: MMT317 with 2 m cable (Weight depends on selected probe and cable)	476 g
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 standard filter Stainless steel grid filter for high flow rates (> 1 m/s)

Materials

Transmitter housing	G-AISI 10 Mg
Transmitter base	PPS

Probe Cable Length

MMT317	2 m, 5 m, or 10 m
MMT318	2 m, 5 m, or 10 m

Probe installation MMT317

Swagelok®	NPT 1/2", ISO 3/8" or ISO 1/2"
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Probe installation MMT318

Fitting bodies	ISO 1/2", NPT 1/2"
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Spare Parts and Accessories

Rain shield	ASM211103
USB cable	238607
Stainless steel filter	HM47453SP
Stainless steel filter (high flow rate)	220752SP
Ball-Valve Set	BALLVALVE-1

Operating Environment

Operating temperature for electronics	-40 ... +60 °C (-40 ... +140 °F)
Storage temperature	-55 ... +80 °C (-67 ... +176 °F)
Pressure range for MMT318 with ball-valve up to 120 °C	0 ... 40 bar
Pressure range for MMT317	0 ... 10 bar
EMC compliance	EN61326-1, Industrial environment

Inputs and Outputs

Two analog outputs, selectable and scalable	0 ... 20 mA or 4 ... 20 mA 0 ... 5 V or 0 ... 10 V 1 ... 5 V available through scaling
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
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Serial output	RS-232C
Connections	8-pole connector with RS232C, current/ voltage outputs (two channels) and U_{in}

Operating voltage	10 ... 35 VDC
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External load	$R_L < 500 \Omega$
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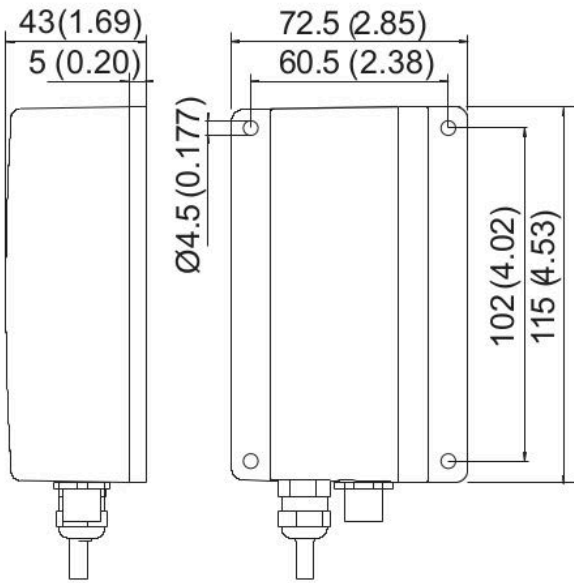
Startup time after power-up	3 s
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Minimum Operating Voltage

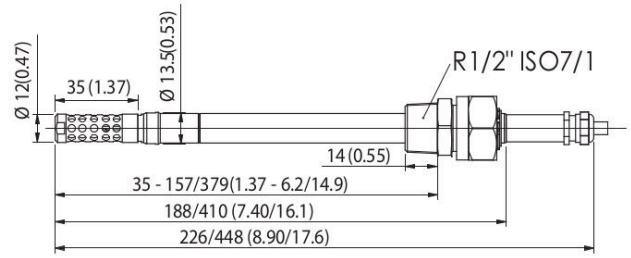
RS232C output	10 VDC
Analog output	15 VDC
Pressures above 10 bara (145 psia)	24 VDC

Power Consumption

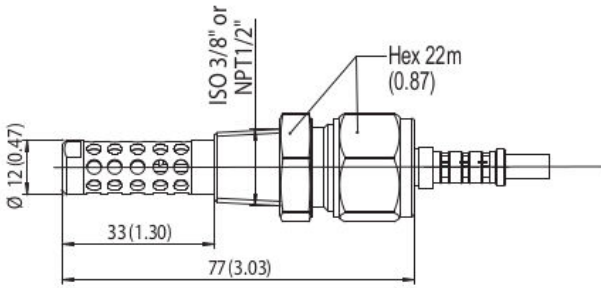
RS232C	12 mA
U_{out} 10 V (10 k Ω)	12 mA
Channel 1 & channel 2	
I_{out} 20 mA (load 511 Ω)	50 mA
Channel 1 & channel 2	



Transmitter body, dimensions in mm (inches)



MMT318 probe, dimensions in mm (inches)



MMT317 probe, dimensions in mm (inches)



MMT162 Moisture in Oil and Temperature Transmitters

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 hand-held moisture and temperature meter, the MMT162 provides an ideal tool for on-site calibration. The MI70 hand-held indicator (included in the MM70 package) can be used as a display, communication, and datalogging device 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	± 0.02 a _w
0.9 ... 1.0 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)
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Moisture

Calculated moisture content in ppm for mineral transformer oil

Operating Environment

EMC compliance	EN61326-1, Industrial 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, metal version	Up to 200 bar
Pressure range, plastic version	Up to 40 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

Spare Parts and Accessories

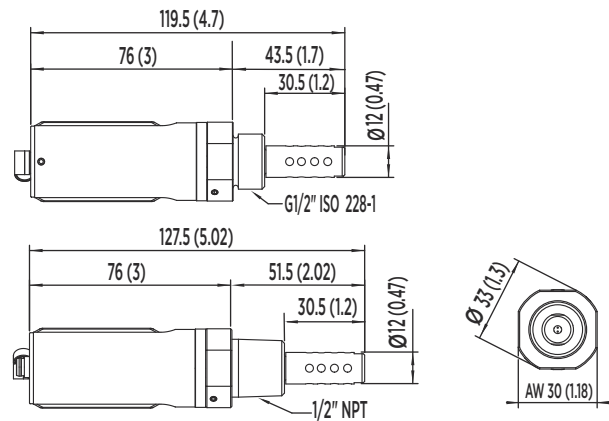
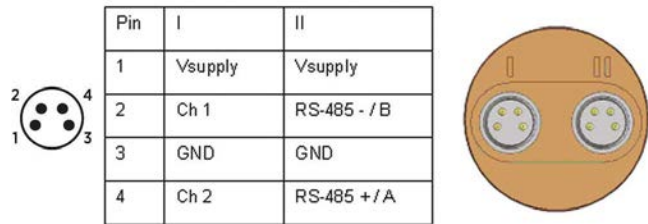
Stainless steel filter (standard)	225356SP
Stainless steel filter for high flow (> 1 m/s)	221494SP
Connection cable for MM70 hand-held meter	219980
USB serial interface cable	219690
Sealing ring set (U-seal) ISO G1/2, 3 pcs	221525SP
Sealing ring set (copper) ISO G1/2, 3 pcs	221524SP
ISO 1/2" plug	218773
NPT 1/2" plug	222507
Sampling cell	DMT242SC
Sampling cell 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

Mechanical Specifications

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 kΩ
Current output	Max. 500 Ω
Housing Material	
Metal	AISI 316L
Plastic	PPS + 40 % GF
IP rating	IP66 (IP65 with plastic housing)
Mechanical Connections with Bonded Seal Ring (Washer)	
Metal version	G 1/2" ISO or NPT 1/2"
Plastic version	G 1/2" ISO
Weight	
With plastic housing	65 g (2.3 oz)
With metal housing	200 g (7 oz)



Dimensions in millimeters (inches)



Features

- Measurement independent of oil type, age and temperature
- In-line process checking through ball valve, no need to drain the oil
- Rugged and reliable construction
- Excellent pressure and temperature tolerance
- Data can be logged and transferred to a PC
- Proven Vaisala HUMICAP® Sensor: over 15 years in oil applications
- Compatible with Vaisala's fixed oil moisture instruments
- No reference oil needed for recalibration
- Traceable calibration (certificate included)

Vaisala HUMICAP® Handheld Moisture Meter for Oil MM70 enables reliable detection of moisture in oil. The probe can be inserted directly into the process pipe through a ball valve without draining the oil in the system.

MM70 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.

PPM Calculation Included

MM70 has an embedded model for expressing moisture as ppm in mineral transformer oil. The customer can enter up to three other oil models into the meter's memory.

Numerical and Graphical Display

MM70 features a multilingual, menu-based user interface and a backlit LCD display. The measurement parameters can be numerically and graphically displayed and logged into the meter's memory at the same time. An analog output option is also available.

Vaisala HUMICAP® Technology

MM70 incorporates the latest generation of the Vaisala HUMICAP® Sensor, developed for demanding moisture measurements in liquid hydrocarbons. The sensor's excellent chemical tolerance provides accurate and reliable measurement over the measurement range.

Speedy Service - Once a Year

The meter can be recalibrated by sending the probe to Vaisala Service, or customers can calibrate the instrument themselves using a standard relative humidity calibration.

Multi-Probe Operation

One or two probes can be connected simultaneously. Maintenance teams can use additional Vaisala dew point or relative humidity probes for other tasks. For example, a dew point probe is ideal for checking the moisture inside washed and dried oil tanks.

Connection to PC

The optional MI70 Link Windows® software in combination with a USB connection cable is used to transfer logged data and real time measurement data from the MM70 to a PC.

Technical Data

Measurement Performance, MMP78 Probe

Water Activity

Measurement range a_w	0 ... 1
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 (including nonlinearity, hysteresis and repeatability) 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 (+68 °F) in still oil (with stainless steel filter)	10 min
Sensor	Vaisala HUMICAP® 180L2
Recommended recalibration interval	1 year
Typical long-term stability	better than 0.01 a_w / year
Temperature	
Measurement range	-40 ... +100 °C (-40 ... +212 °F)
Typical accuracy at +20 °C	± 0.2 °C (± 0.36 °F)
Sensor	Pt100 RTD Class F0.1 IEC 60751

Probe Operating Environment

Operating temperature for electronics	-40 ... +60 °C (-40 ... +140 °F)
Operating pressure range	max. 20 bar
Operating pressure range during installation through ball valve	max. 10 bar
Oil flow range	max. 1 m/s
Typical temperature dependence of electronics	± 0.005 °C/°C (± 0.005 °F/°F)
EMC compliance	EN61326-1, Portable Equipment

Probe Mechanical Specifications

Housing classification	IP65 (NEMA 4)
Probe material	Stainless steel (AISI316L)
Housing material	APS/PC Blend
Cable length between probe and indicator	1.9 m, 10 m extension available
Weight	506 g

MI70 Measurement Indicator

Operating Environment

Operating temperature	-10 ... +40 °C (+14 ... +104 °F)
Operating humidity	0 ... 100 %RH, non-condensing
Storage temperature	-40 ... +70 °C (-40 ... +158 °F)

Inputs and Outputs

Max. no of probes	2
Power supply	Rechargeable NiMH battery pack with AC adapter or 4xAA size alkalines, type IEC LR6
PC interface	MI70 Link software with USB or serial port cable

Analog Output	
Scale	0...1 VDC
Output resolution	0.6 mV
Accuracy	0.2 % full scale
Temperature dependence	0.002 %/°C (0.01 %/°F) full scale
Minimum load resistor	10 kΩ to ground

Mechanical Specifications

Housing classification	IP54
Housing materials	ABS/PC blend
Weight	400 g (14 oz)

Compatibility

EMC compliance	EN61326-1, Portable Equipment
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Other

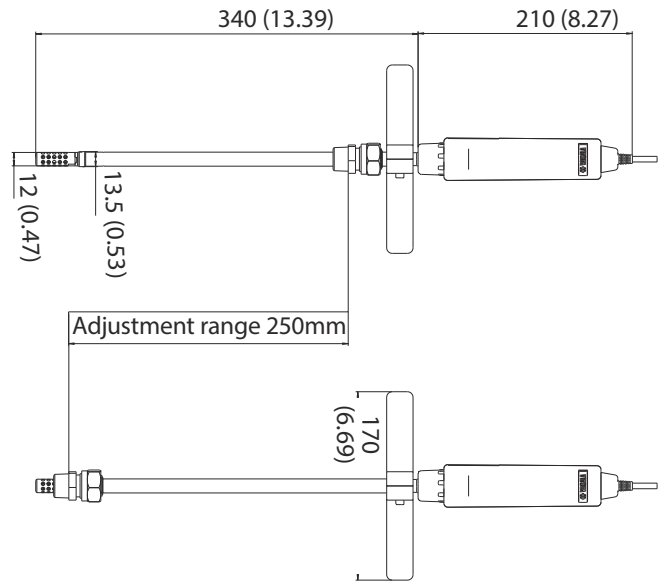
Menu languages	English, Chinese, Spanish, Russian, French, Japanese, German, Swedish, Finnish
Display	<ul style="list-style-type: none"> LCD with backlight Graphic trend display of any parameter Character height up to 16 mm (0.63 in)
Alarm	Audible alarm function
Data logging capacity	2700 real time data points
Logging interval	1 s to 12 h
Logging duration	1 min ... memory full
Resolution	0.01 %RH, 0.01 °C/°F, 0.01 hPa, 0.01 a_w , 10 ppm / 0.01 %CO ₂

Battery Operation Time

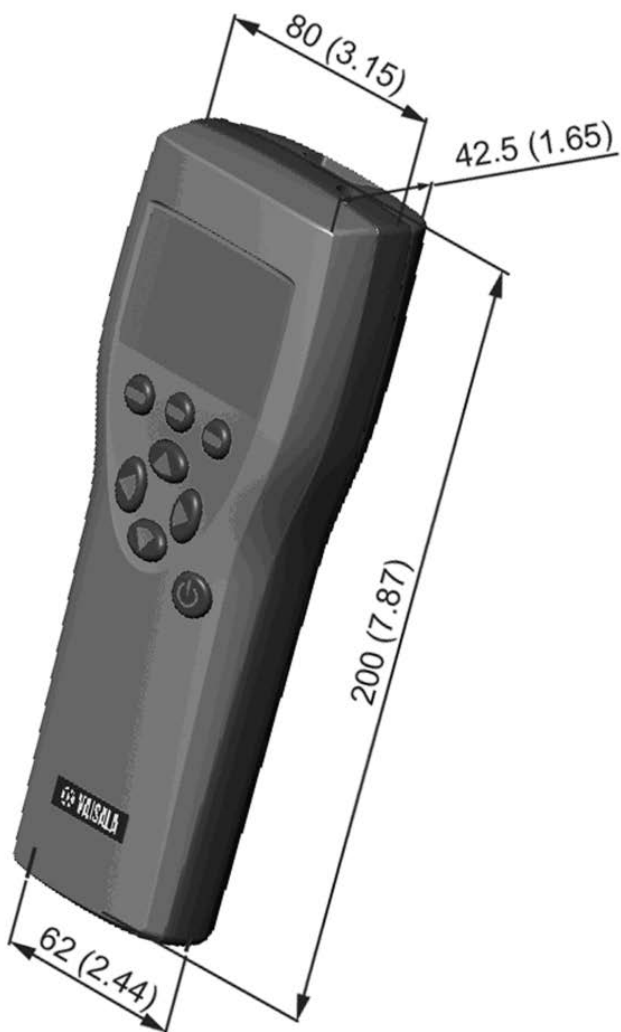
Typical charging time	4 hours
Operation Times	
Continuous use	48 h typical at +20 °C (68 °F)
Data logging use	Up to a month

Spare Parts and Accessories

Weatherproof Carrying Case	MI70CASE4
Ball valve set (incl. fitting body & blanking plug)	HMP228BVS
Probe cable extension, 10 m	213107SP
MI70 Link software with USB cable	219687
MI70 Link software with serial port cable	MI70LINK
Analog output cable	27168ZZ
Sensor protection	HM47453SP
Dew point measurement probes	DMP74A/B
Relative humidity measurement probes	HMP75, HMP76, HMP77
Transmitter Connection Cables	
MMT162	219980SP
MMT310	DRW216050SP
MMT330	211339



Probe dimensions in mm (inches)



Indicator dimensions in mm (inches)