MMT330

KONGSBERG

Water in Oil Sensor

Features

- Dual sensor for continuous measurement of moisture in oil and oil temperature
- Ball valve installation
  No need to shut down the process
- Incorporates HUMICAP® Sensor – more than 30 years of field performance
- Ten years of experience in measuring moisture in oil
- Excellent long-term stability
- Easy to calibrate and maintain in the field – compatible with HUMICAP® Hand-Held Moisture for Oil Meter MM70
- Calibration certificate to follow each sensor

Description

Application and general description

The HUMICAP® Moisture and Temperature Transmitter Series for Oil MMT330 enables fast and reliable detection of moisture in oil. The MMT330 can be used in online moisture monitoring and as a control device, allowing separators and oil driers to be started only when needed. Proper monitoring saves both oil and the environment. With the MMT330 it is easy and economical to monitor the effects of moisture in oil.

Reliable HUMICAP® technology

The MMT330 incorporates the latest generation of the HUMICAP® Sensor, which is the result of ten 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.

Indicates the margin to water saturation

The MMT330 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 also independent of oil type and age.

Water content as ppm conversion

In addition to water activity, the MMT330 can output ppm, the average mass concentration of water in oil. This conversion is readily available for mineral transformer oil. For other oils, the oil specific conversion coefficient can be programmed to the transmitter if the water solubility of the oil is known.

Sensor response time

The water in oil sensor element is made of a polymer where water molecules need time to move to and from the polymer according to the water content in the oil. Response time may therefore be up to ten minutes, dependent of the flow speed of the oil (see specification).

Technical specifications

Water activity measurement	
Measurement range:	0…1 a_w
Accuracy (including non-linearity, hysteresis and repeatability):	
0…0.9	±0.02
0.9…1.0	±0.03
Recommended alarm limits:	
High alarm (HA)	0.80 a_w
High-high alarm	0.92 a_w
Response time (90 %) at +20 °C in still oil (with stainless steel filter):	Up to 10 min.
Sensor:	HUMICAP
Temperature measurement	
Probe	-40 to +180 °C. Standard setting 0 to100 °C
Accuracy at +20 °C (+68 °F):	±0.2 °C
Operating temperature	
For probes:	Same as measurement ranges
For transmitter body:	-40 to +60 °C (-40 to +140 °F)
With display:	0 to +60 °C (+32 to +140 °F)
Specifications of probe	
Pressure range:	0 to 40 bar / 0 to 580 psia
Mechanical durability:	Up to 40 bar / 580 psia
Probe length:	252 mm, adjustable depth
Tightening torque of the sliding nut	1/6 turn or 45 ±5 Nm (33 ±4 ft-lbs)
Inputs and outputs	
Operating voltage:	10 to 35 VDC, 24 VAC
Power consumption @ 20 °C (U_{in} 24 VDC)	
I_{out} 2 x 0 to 20 mA:	Max. 60 mA
Display and backlight:	+20 mA
Analog outputs (2 standard)	
Current output, powered from the sensor:	4 to 20 mA, galvanic isolated from power
Accuracy of analog outputs at 20 °C:	±0.05 % full scale
Temperature dependence of the analog outputs:	±0.005 %/°C full scale
Digital outputs:	RS-232, RS-485 (optional)
Relay outputs (optional):	0.5 A, 250 VAC, SPDT (optional)
Display and keypad (for MMT330-8BB only):	LCD with backlight
Mechanics	
Cable bushing:	M20 x 1.5 for cable 8 to 11 mm/0.31 to 0.43”
Cable type:	Standard yard cable
Probe cable lengths:	Standard 5 m
Housing material:	G-AlSi 10 Mg (DIN 1725)
Housing classification:	IP 65 (NEMA 4)
Weight:	
Housing	1400g
Probe	250g

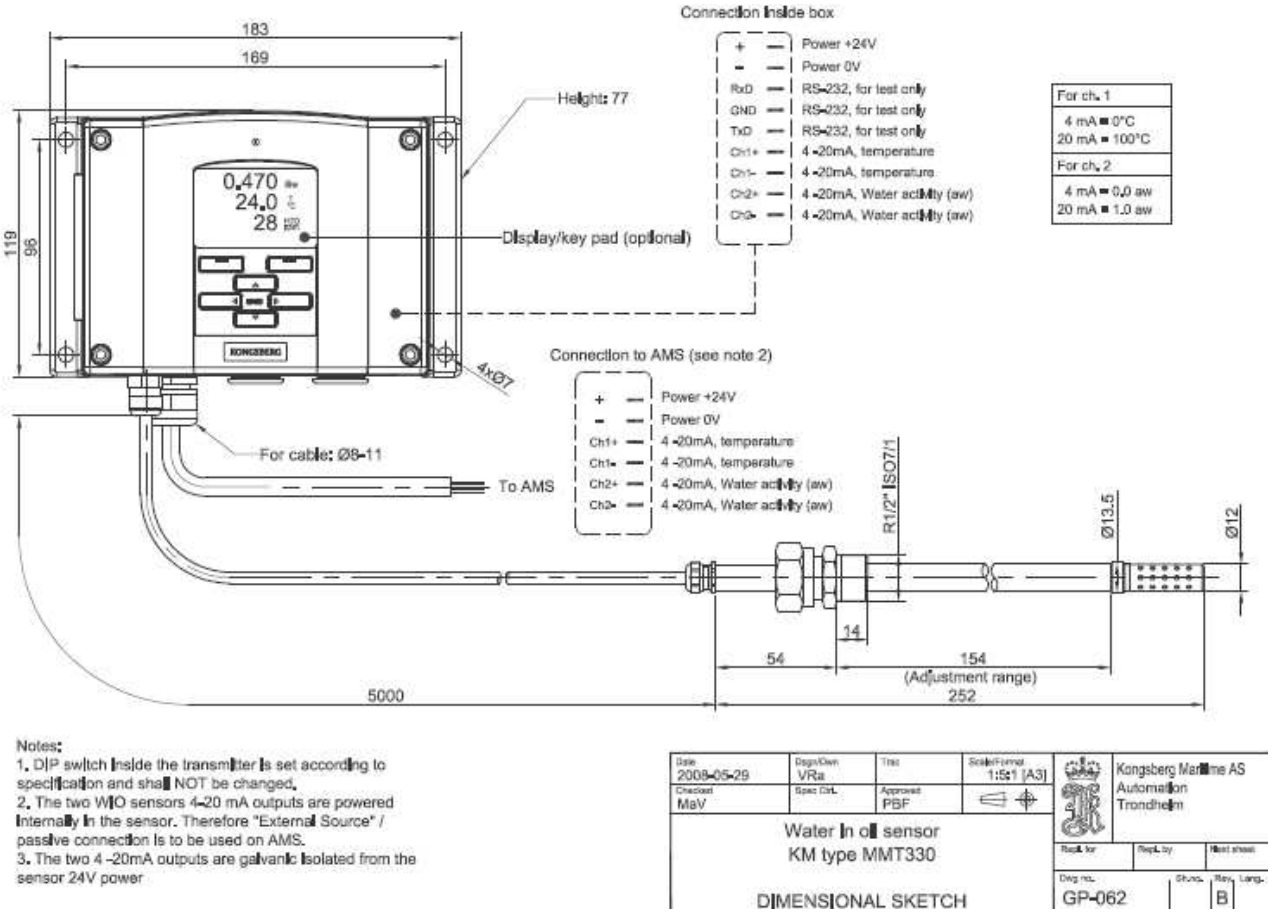

Figure 1. MMT330 Water in Oil Sensor – measures in mm

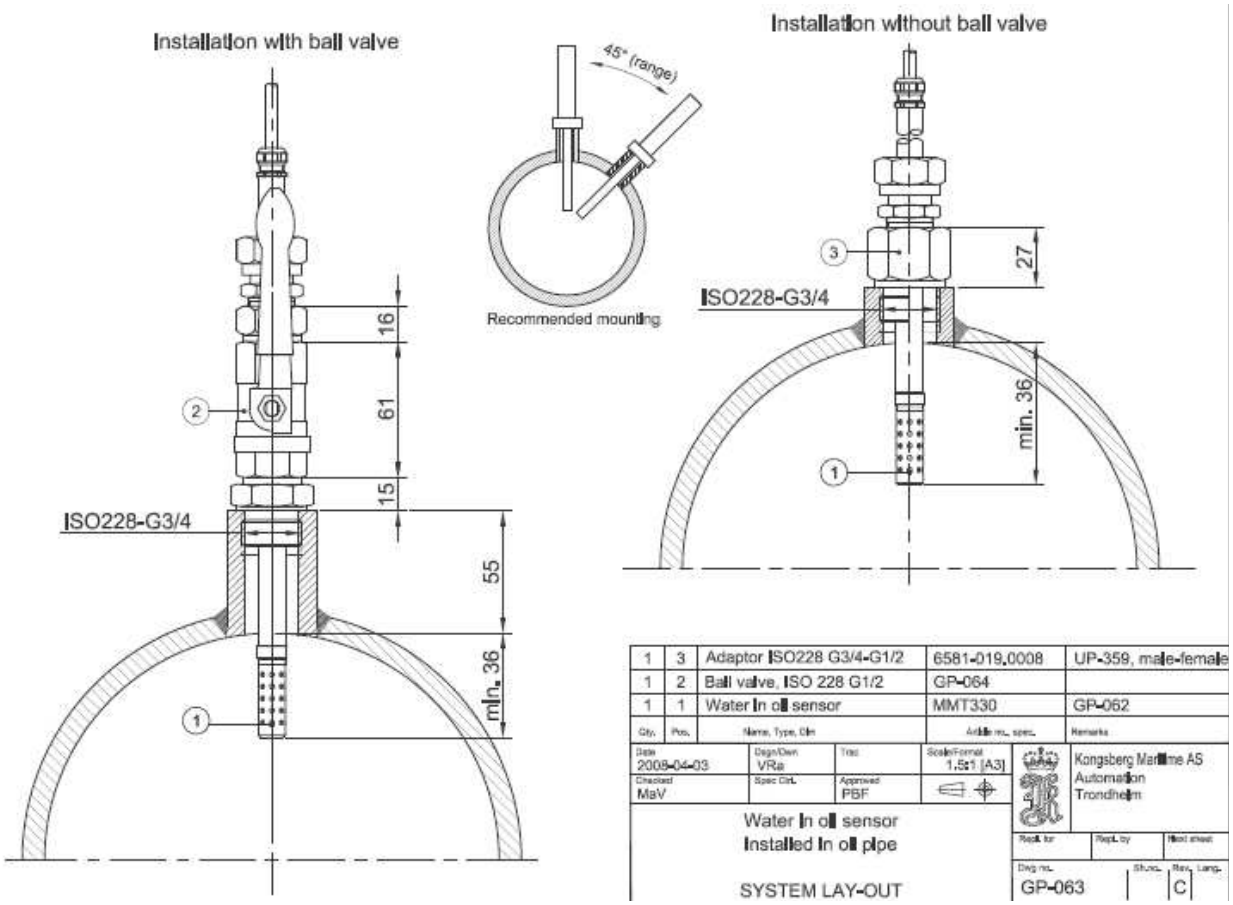

Figure 2. Water in Oil Sensor installed in oil pipe – measures in mm

Order information

Type no.	**WIO Sensor including**
MMT330-8BA/S	Standard sensor without display/keypad
MMT330-8BA/C	CAN based sensor without display/keypad
MMT330-8BB/S	Standard sensor with display/keypad
MMT330-8BB/C	CAN based sensor with display/keypad
	Auxiliary equipment
6581-019.0008	Adaptor ISO228 G3/4-G1/2 (included in all deliveries)
GP-064	Ball valve kit, ISO 228 G1/2
GN-14/C1WX4	CAN based transmitter with 4 inputs
Vaisala DCDC-1	Galvanic isolator for WIO sensor (included in all deliveries)

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