



OMD SERIES

OIL MIST DETECTOR



DESCRIPTION

OMD is an atmospheric oil mist detection instrument for marine and industrial applications, developed for installation in machinery room, pump room, etc. in commercial, naval, ro-ro ships as requested by the actual international IMO marine regulations (circ.1086).

The OMD detector is an independent measuring and transmitting system with 4÷20mA+HART® and photorelays output, proportional to the concentration of oil mist in the sampled air.

OMD oil mist measuring is based on the physical principle of optical scattering. Infrared light emitted from a LED is received from two photodiodes for measure and reference purpose; by the comparison between the photodiodes output, the presence of oil mist can be detected. The typical flammability level of the oil mist is 50 mg/l; the alarm level is set to 2.5% of lower flammability level and is calibrated to 1.2 mg/l. The detector must be calibrated by the manufacturer with a certified oil mist generator, as stated by IMO recommendations. OMD is based on digital electronics for signal analysis, including fault detection and photodiodes degrading monitoring system.

APPLICATIONS

- Suitable for Oil & Gas, Marine Industries
- Engine rooms
- Pump rooms
- Compressor rooms
- Diesel generator rooms

SPECIAL FEATURES

- Calibration on site
- Easy cleaning
- Very easy maintenance
- Integration with HMI "Human Machine Interface"

APPROVALS



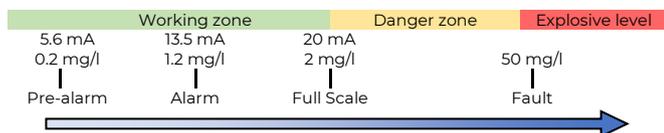


DEFINITIONS

Normal: when there is an oil concentration into ambient less than 0.2 mg/l.

Pre-alarm: when there is an oil concentration into ambient between 0.2 mg/l and 1.2 mg/l.

Alarm: when there is an oil concentration into ambient above 1.2 mg/l.



OMD STATUS	LED		FOTORELAY		
	LEFT	RIGHT	FLT	PRE	ALM
NORMAL	G	-	OP	CL	CL
PREALARM	G	Y	OP	OP	CL
ALARM	G	R	OP	CL	OP
FAULT	Y	Y	CL	OP	CL
TEST	G	R	OP	CL	OP

LED: G = green, Y = yellow, R = red
 Photorelay: OP = open, CL = closed
 Max 50Vdc, 100mA for channel

ELECTRICAL PARAMETERS

Supply: 3 wires 24 Vdc±20%

Output signal: 4 ÷ 20 mA + Hart®

Photorelays: alarm, pre-alarm, fault
 50 Vdc, 100 mA max load

Measured value update frequency:

4 ÷ 20 mA + Hart®: ≈ 1 s

Hart® output only: ≈ 500 ms (On request)

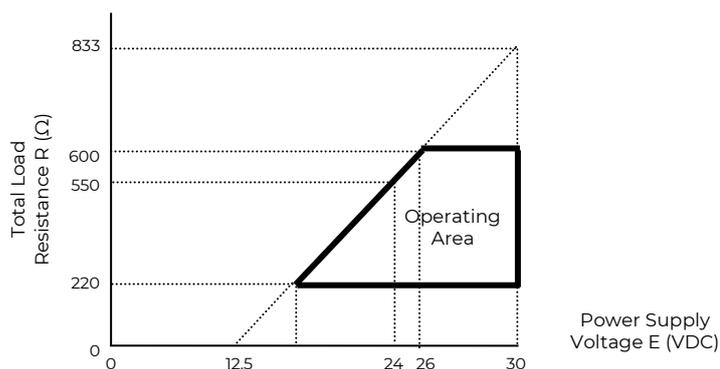
Polling time:

4 ÷ 20 mA + Hart®: ≈ 800 ms

Hart® output only: ≈ 500 ms (On request)

Load resistance: 220 Ω < RL < 600 Ω (Hart®)

The total load resistance includes both the line resistance of the connection cable and the load resistance of the reading or receiving units



The equation used is:

$$R = \left(\frac{V - 12,5}{21} \right) * 1000$$

Where:

- R is the Load resistance in Ω
- V is the power supply voltage in V

TERMINAL CONFIGURATION

MEASUREMENT PERFORMANCE

Total accuracy: <±13% of measure (*)

Resolution: 0.01%FS (0.0002 mg/l)

Detected particle diameter: 0.4 ÷ 10 μm

Oil mist density measuring field: 0 ÷ 2 mg/l

Pre-alarm level: 0.2 mg/l – 5.6 mA

Alarm level: 1.2 mg/l – 13.5 mA

Full scale: 2 mg/l – 20 mA

Fault value: 21 mA

Self-test: yes

(*)0.026 mg/l in PRE-ALARM condition @ 0.2 mg/l

ENVIRONMENTAL CONDITIONS

Ambient Temperature: -20 ÷ +70°C

Storage Temperature: -40 ÷ +75°C

PHYSICAL SPECIFICATIONS

Housing:

- Anticorodal aluminium 6082 and SS AISI316.

Covers O-ring: EPDM.

Nameplate: Stainless Steel, firmly fixed or engraved on housing.

Electrical connections: one cable entry on electronic housing; M20 x 1.5 and cable gland PG 13.5 for 7 to 12 mm diameter cable as a standard.

Terminal board: 6 terminals for signal wiring up to 2.1 mm² (14 AWG). Connection for ground and cable shield.

Dimensions: 175 x 165 mm

Weight: 2.7 Kg

APPROVALS

Marine type approval

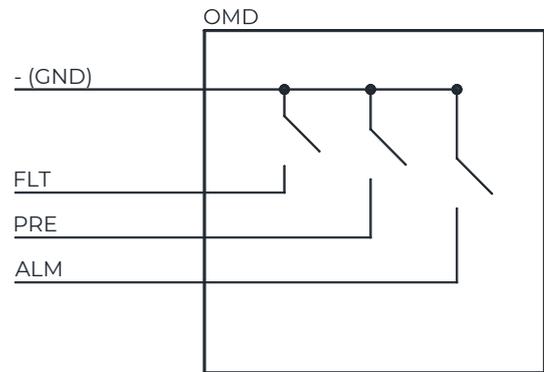
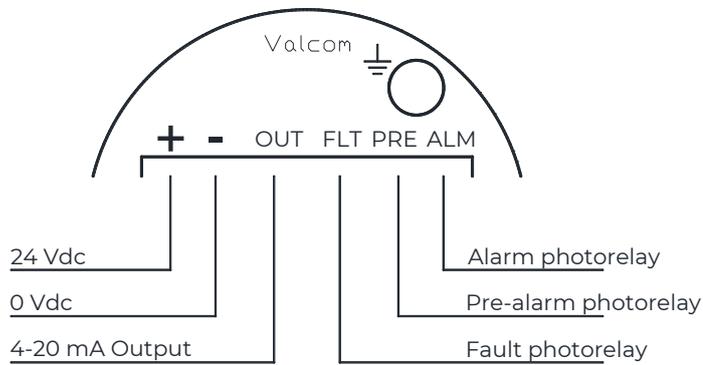
In compliance with applicable requirements of RINA type approval system

Directive 2014/30/EU (EMC)

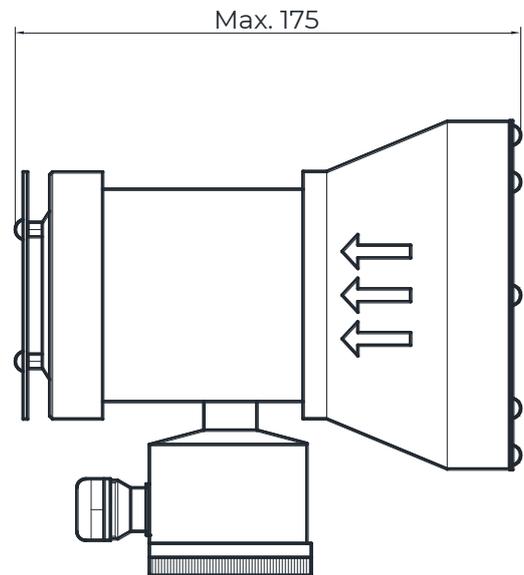
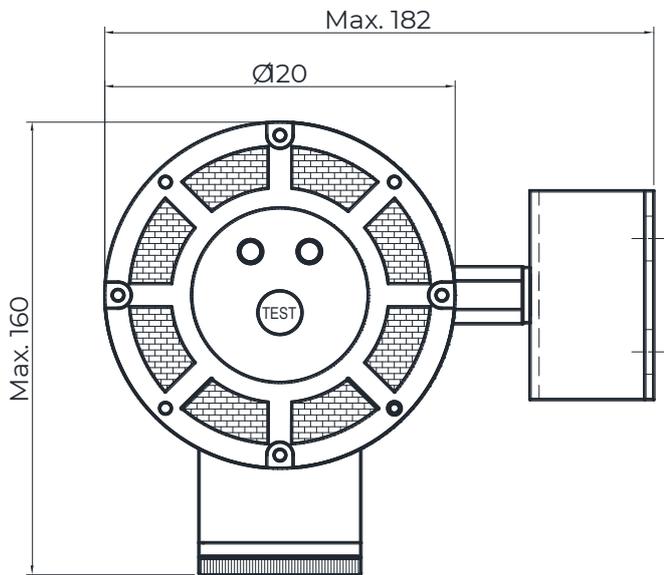
Adequate level of electromagnetic compatibility



Transmitters are protected against reverse polarity and the electronics has an isolation from earth of at least 500Vdc. The recommended wiring cable is a screened signal cable, with wires of min. section area of 0.2 mm² (AWG24) and shielding > 80 %.



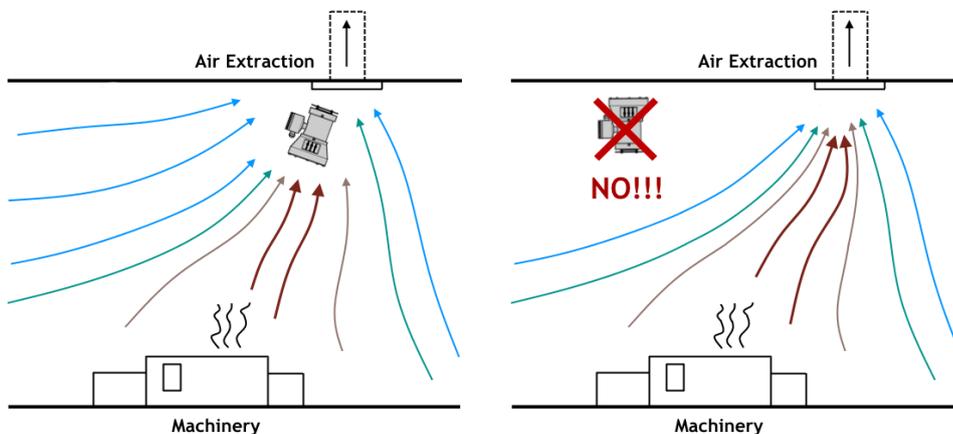
DIMENSIONAL DRAWINGS



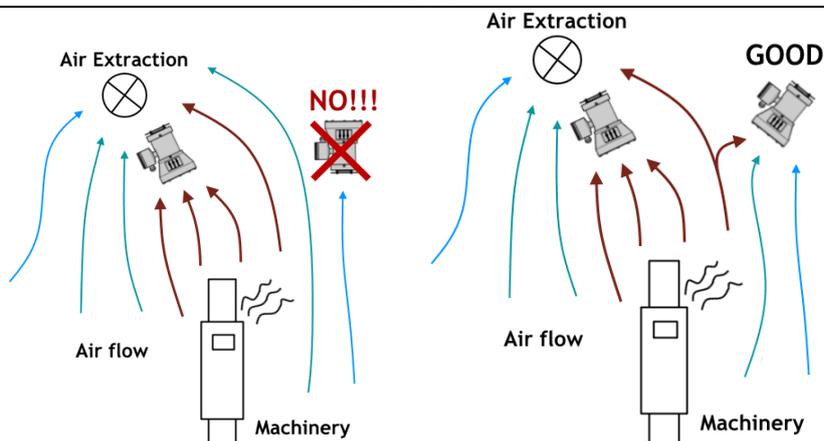


INSTALLATION EXAMPLES

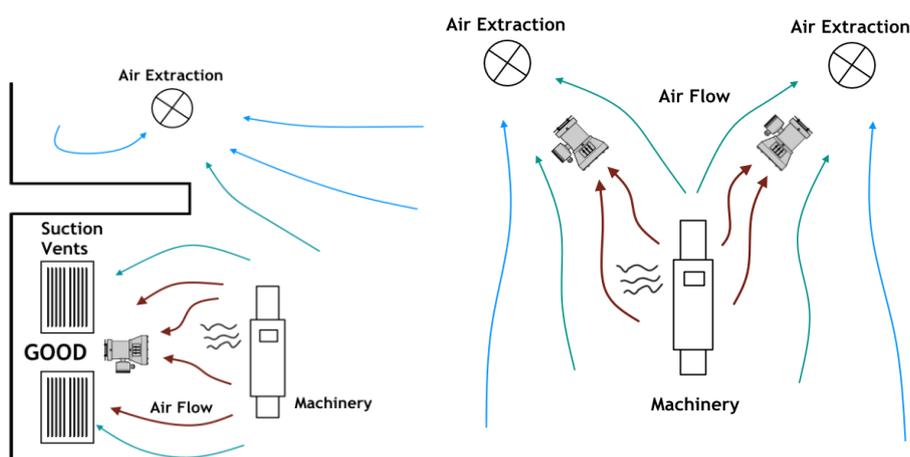
The best position to install OMD is in front of the room air extraction vents, with the frontal side (identified by the LED presence) looking towards the machinery to be monitored. Example of installation are reported in the below pictures.



Side view



Top view



Top view

It is mandatory checking the air flow in the room where the OMD must be installed in order to identify the best installation point for measuring the Oil Mist.
 Installation areas in which there is the possibility of concentration of oil must be kept under control.



CODIFICATION

00 SERIES

OMD	Oil Mist Detector
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01 TYPE OF MEASURE

H	Oil mist percentage
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02 SENSOR TYPE

OP	Optical
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03 MEASURING RANGE

E01	0 ÷ 100%
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04 FILLING OIL

N	No filling
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05 PROCESS TEMPERATURE LIMITS

A	-10 ÷ 60°C
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06 HOUSING MATERIAL AND TYPE

D03	SS AISI 316 + Aluminum
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07 PROCESS CONNECTION

NN	None
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08 EXTENSION LENGHT

N00	No extension
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09 SENSOR MATERIAL

X	None
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10 PROCESS GASKET MATERIAL

N	None
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11 OTHER WETTED PARTS MATERIAL

0	Not present
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12 ELECTRICAL CONNECTION

03	1 x Screwed 1/2" NPT-F
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04	1 x Screwed M20 x 1.5
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21	1 x AISI 316 SS Gland PG9 IP67 for cable ø 5÷7 mm
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13 ELECTRICAL OUTPUT

B	Current 4-20 mA + HART + photorelays
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14 EX TYPE APPROVAL

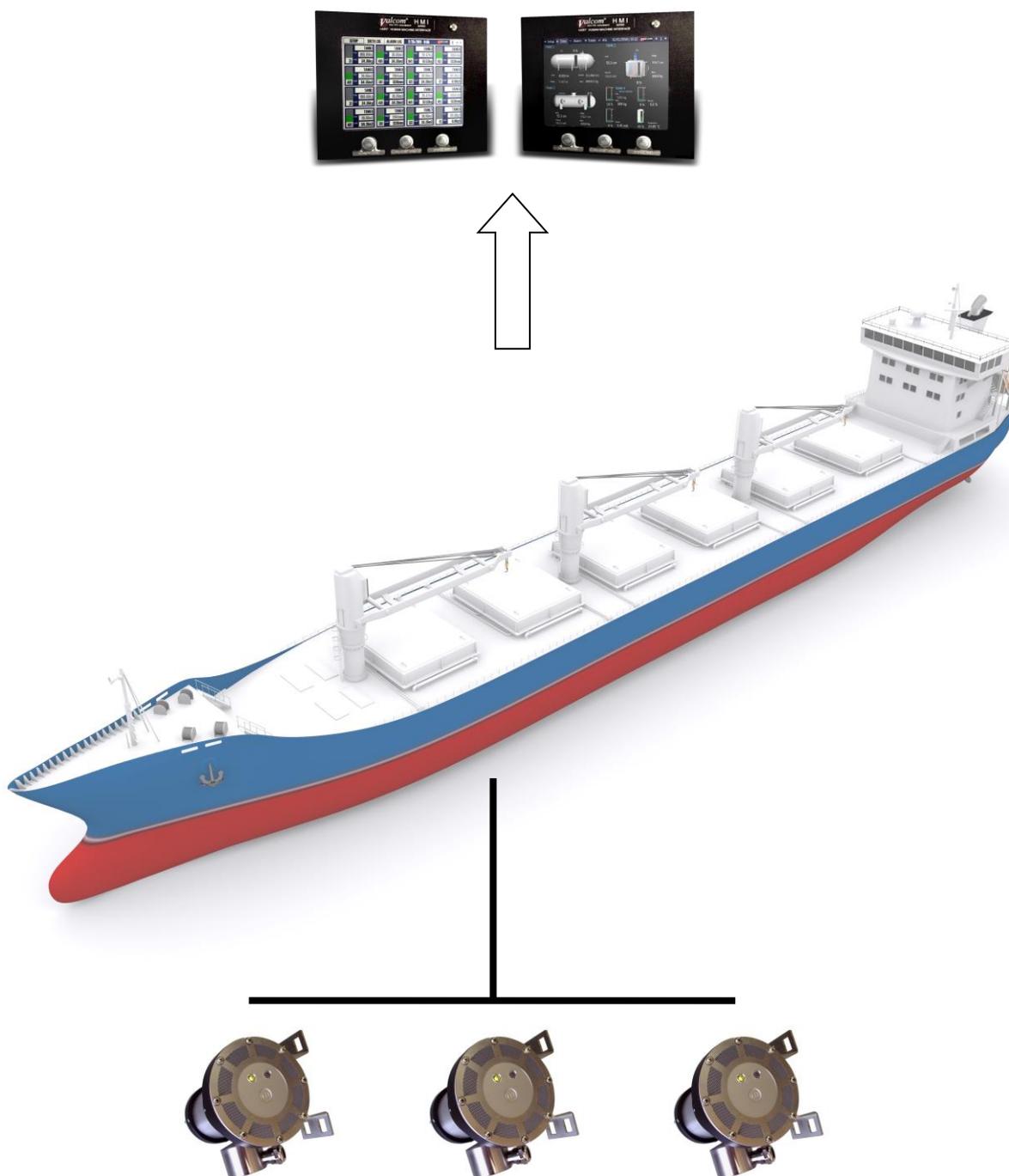
NN	None
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15 EX TYPE APPROVAL

S6	Staffa per montaggio a parete / Wall mounting bracket
S8	Staffa zincata per montaggio su tubo 2" / Zinc plated wall mounting bracket
R0	Marine type approval
TD	Test device
Z9	Speciale / Special
NN	Nessuna opzione / No options

SPECIAL FEATURE: INTEGRATION WITH HMI "HUMAN MACHINE INTERFACE"





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