GYDAD INTERNATIONAL



MetallicContamination Sensor MCS 1000 series

Description

The MetallicContamination Sensor MCS 1000 monitors solid metallic particle contamination in lubrication fluids. The particles are detected by inductive measurement whereby a coil system is the core element of the sensor. It detects metallic particles (ferromagnetic Fe and non-ferromagnetic nFe) in the > 70 μ m size range.

The MCS 1000 continuously monitors the condition of the system and provides information on any early-stage damage. The sensor is therefore a reliable tool for condition-based maintenance.

As an option the MCS 1000 series can be supplied with an Ethernet interface. This means that the sensors can easily be connected to existing networks.

Certified by Germanischer Lloyd Industrial Service



GL Wind Order No. 4800/08/41043/254

Advantages

- Detection of early-stage damage, for example, in a gearbox
- Avoidance of expensive system breakdowns
- The perfect complement to visual sensors
- Measurement of metallic particles (ferromagnetic Fe and non-ferromagnetic nFe) > 70 μm
- Condition monitoring systems in wind power plants which have already been certified by GL do not lose their certification if the MCS 1000 is built into the system after certification, as the component itself is certified.

Technical details

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Hydraulic specifications	MCS 15xx	MCS 14xx	MCS 13xx
Flow rate	10 to 200 l/min	2 to 40 l/min	0.4 to 8 l/min
Operating pressure	20 bar max.		
Fluid temperature range	-40 to 85 °C		
Inlet/outlet	Flange connection	Flange connection	Flange connection
	SAE 4"	SAE 3/4"	SAE 1/2"
	to ISO 6162-1	to ISO 6162-1	to ISO 6162-1
Electrical data			
Supply voltage	9 to 36 V DC, residual ripple < 10 %		
Power consumption	Max. 5 W		
Electrical data			
Two configurable switch	1 x ferromagnetic particles (Fe)		
outputs	1 x non ferromagnetic particles (nFe)		
(n-switching Power	or 1 x ferromagnetic (Fe) + non ferromagnetic (nFe) particles 1 x status signal		
MOSFET, normally open)			
Switching logic	Active Low or Active High		
Length of switching pulse	Can be set from 5 to 200 ms		
Switch outputs	Max. 1.5 A		
RS485 interface	2 wire, half duplex		
HSI	1 wire, half duplex		
(HYDAC Sensor Interface)			
Ethernet interface	10 Base-T / 100 Base-Tx		
General data			
Ambient temperature		-40 to 70 °C	
Diameter sensor cross-	1"	1/2"	1/,"
section	1	/2	/4
Protection class to DIN	IP 67		
40050	0.51	0.51	0.01
Weight	≈ 3.5 kg	≈ 2.5 kg	≈ 3.0 kg
Dimensions (L x W x H)	83 x 162 x	83 x 120 x	83 x 120 x
Vibratian	140 mm	120 mm	120 mm
10_58 Hz	0.75 mm (amplitude)		
58–500 Hz	10 g (acceleration)		
Shock	40 a		
Detection limits			
Ferromagnetic (Fe)	> 200 um	> 100 um	> 70 um
particles	(particle with volume equivalent to that of a sphere of give		
		Ø)	
Non-ferromagnetic (nFe)	> 550 µm	> 300 µm	> 200 µm
particles	(particle with volume equivalent to that of a sphere of given		
	Ø)		
Particle rate	> 25/s		
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Scope of delivery

- MCS 1000 series
- O-rings (NBR and FKM)
- Installation and Maintenance Instructions

Equipment

- SAE 4" flange adapter set, for pipe or hose connection, 42L according to ISO 8431-1 Consisting of: 2x flange adapters 2x O-rings 8x hex. head screws 8x washers 8x spring washers Part no.: 3435426
- SAE ¾" flange adapter set, for pipe or hose connection, ½" according to ISO 8431-1 consisting of: 2x flange adapters 2x O-rings 8x hex. head screws Part no.: 3588249
- Flange adapter plate, SAE 4" – SAE 1 ½" Part no.: 3442518
- Female connector with 2 m cable, screened, 8-pole, M12x1 Part no.: 3281220
- Female connector with 5 m cable, screened, 8-pole, M12x1 Part no.: 3281239
- Extension cable 5 m, female connector 8-pole, M12x1 / male connector 8-pole, M12x1, Part no.: 3281240
- Female connector with screw terminal, 8-pole, M12x1 Part no.: 3281243

Model code



TTV = external O-rings in low temperature FKM (Viton[®])

Dimensions for MCS 15xx (in mm)

Flange connection, SAE 4" to ISO 6162-1









Dimensions with Ethernet connection for MCS 15xx (in mm)







Dimensions with Ethernet connection for MCS 151x-6 (in mm)









Dimensions with Ethernet connection for MCS 157x-6 (in mm)









Dimensions for MCS 14xx (in mm)

Flange connection, SAE ³/₄" to ISO 6162-1





MCS with accessory flange adapter for pipe or hose connection $\frac{1}{2}$ " to ISO 8431-1





Certified by Germanischer Lloyd Industrial Service

The Metallic Contamination Sensor was certified in February 2010 as an "add-on" for condition monitoring systems in wind power turbines.

The certification was carried out by Germanischer Lloyd Industrial Services GmbH.

GL Renewables certification

GL is one of the leading certification authorities in the wind energy sector, performing tests, certification procedures and appraisals for wind power turbines and their components.



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What is the basis of the certification?

The Guideline for the Certification of Condition Monitoring Systems (CMS) for Wind Turbines, Edition 2007

This guideline states that the sensors must be capable of distinguishing between ferromagnetic and nonferromagnetic particles and that installation in the cooling filtration circuit must be upstream of the filter.

Dimensions with Ethernet connection for MCS 14xx (in mm)











Note

The information in this brochure relates to the operating conditions and applications described.

applications described. For applications and operating conditions and o For applications and operating conditions not described, please contact the

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