Metallic Contamination Sensor Series MCS

Formally Known as "TMS Metallic Contamination Sensor Series"

Features and Benefits

- Early detection of imminent gear unit damage
- Prevention of expensive plant downtime
- Optimal supplement to optical sensors
- Measurement of metallic particles (ferromagnetic and nonferromagnetic) > 70 µm
- Measurement result is not affected by air bubbles or liquid contamination in the liquid

Applications

- Gear boxes for wind energy
- Paper machine bearings
- Wind Turbines
- Marine Thrusters
- Industrial Gear Boxes
- Mobile Drive Systems
- Lubricating Systems
- Flushing Systems
- Test Standards
- Pumps

FluMoS MOBILE

- Compatible with FluMoS Mobile App when connected to the CSI-C-11

Description

The Metallic Contamination Sensor MCS 1000 is used for measuring and recording metallic wear particles in fluids. An inductive measuring method is used to detect and count the particles and classify them according to their size and metallurgical properties (ferromagnetic/non-ferromagnetic). The MCS 1000 is therefore an ideal tool for the continuous condition monitoring of large industrial gearboxes, pumps or bearing systems, and provides early information on any early-stage damage.

The sensor can be used on its own or in combination with other condition monitoring devices such as vibration monitoring systems.

The MCS 1000 can therefore be easily integrated into condition-based or predictive maintenance approaches and it also helps to prevent unscheduled system downtimes.

Comparison

Technical Details	MCS 15xx	MCS 14xx	MCS 13xx
Flow Rate	2.6... 52.8 gpm (10... 200 l/min)	0.5... 10.6 gpm (2... 40 l/min)	0.1... 2.1 gpm (0.4... 8 l/min)
Sensor Orifice Diameter	1" (25.4 mm)	1/2" (12.7 mm)	1/4" (6.3 mm)
Ferromagnetic (Fe) particles	> 200 µm	> 100 µm	> 70 µm
	Particle with volume equivalent to that of a sphere with given Ø		
Non-ferromagnetic (nFe) particles	> 550 µm	> 300 µm	> 200 µm
	Particle with volume equivalent to that of a sphere with given Ø		
Max. Particle Rate (particles/sec.; proportional to flow rate)	8 to 160	9 to 180	0 to 200

CSI-C-11 Compatible Product

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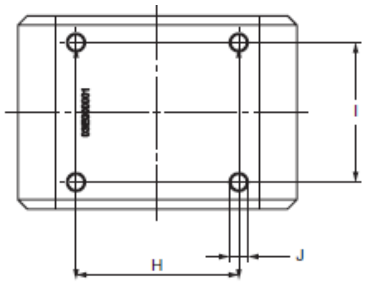
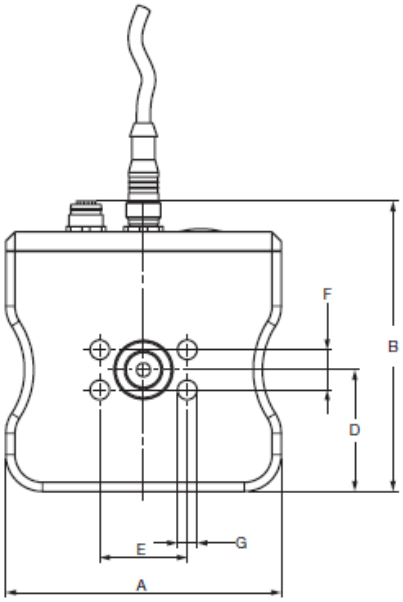
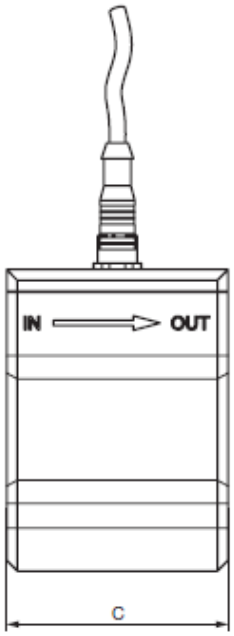
Dimensions

Metric dimensions in ( ).

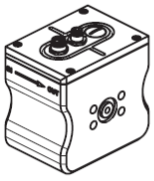
Type	A	B	C	D	E	F	G	H	I	J
13XX-X-1	120	113	83	53	38.1	17.5	ø8	70	60	M8
14XX-X-2	120	113	83	53	47.6	22.2	ø11.5	70	60	M8
15XX-X-3	162	106	83	38.5	52.4	26.2	ø11.5	80	55	M8
15XX-X-5	162	132	83	62	130	77.8	ø17.5	95	60	M8
15XX-X-6	120	106	83	38.5	69.9	35.7	ø13.5	90	35	M8



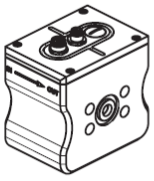




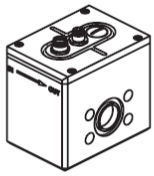
MCS13XX-X-1



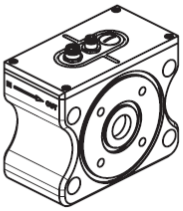
MCS14XX-X-2



MCS15XX-X-3



MCS15XX-X-5



MCS15XX-X-6

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Specifications

General Data:	Ambient Temperature:	-40°F to 158°F (-40°C to +70°C)
	Diameter Sensor Cross-section:	MCS 13xx: 1/4" (6mm) MCS 14xx: 1/2" (13mm) MCS 15xx: 1" (25mm)
	Protection Class to DIN 40050:	IP 67
	Weight:	MCS 13xx: ~6.6 lbs (~3kg) MCS 14xx: ~5.6 lbs (~2.5kg) MCS 15xx: ~7.7 lbs (~3.5kg)
	Environmenal Tests:	Vibration test / Shock test: EN60068-2-2 / -2-64 (vibration) EN60068-2-27 / -2-31 (shock) Climate test: EN60068-2-52 (salt mist) EN60068-2-1 / -2-2 / -2-14 / -2-30 / -2-38 / 2-78 (temperature and humidity)
	Certifications:	Wind power: DNV - Renewables Cert. Marine: DNV - Type Approval
	Self Diagnostics:	Continuous, with error indication via Status LED and general operational readiness via Device-Ready-LED
	CE Mark:	EN61000-6-4 / -6-2 / -6-9 (pulse magnetic field immunity) / -4-29 (voltage dips)
	FC Mark:	FCC – Title 47 CFR Part 15
Hydraulic Data:	Flow Rate:	MCS 13xx: 0.1-2.1 gpm (0.4-8 l/min) MCS 14xx: 0.5-10.6 gpm (2-40 l/min) MCS 15xx: 2.6-52.8 gpm (10-200 l/min)
	Operating Pressure:	290 psi (20 bar)
	Fluid Temperature Range:	-40°F to 185°F (-40°C to +85°C)
	Inlet/Outlet *(flange connection according to ISO 6162-1)*:	MCS 13xx: SAE 1/2" MCS 14xx: SAE 3/4" MCS 15xx: SAE 1", SAE 1-1/2", SAE 2", SAE 4"
	Permissible Fluids:	Hydraulic and lubrication fluids based on mineral oils as well as synthetic oils (e.g. poly-α-olefins – PAO)
External Electrical Data:	Supply Voltage:	18 - 36 VDC, residual ripple < 10%
	Power Consumption:	5 W max.
Internal Electrical Data:	2 Configurable Switching Outputs *(active, normally-open)*:	1 x Ferromagnetic particles (Fe) 1 x Non-ferromagnetic particles (nFe) OR 1 x Ferromagnetic particles (Fe) + Non-ferromagnetic particles (nFe) 1 x Status Signal OR 1x Alarm signal 1x Status signal
	Alarm Relays Capacity:	1.5 A max.
	RS485 Interface:	Physical: 2 wire, half duplex; Protocol: HSI, Modbus RTU
	HSI Interface (proprietary protocol):	Physical: 1 wire, half duplex; Protocols: HSI
	Switching Log:	Active Low or Active High (adjustable)
	Length of Switching Pulse of Particle Signal:	Adjustable, 5 to 200 ms
	Length of Switching Pulse of Alarm Output:	Adjustable, 30 to 86, 400 s, or continuously on to Reset
	Ethernet Interface:	Physical: 10Base-T / 100Base-TX Protocols: HSI TCP/IP, Modbus TCP
	CAN Interface:	Physical: CAN; Protocol: CANopen
	USB Interface *(only for service)*	Physical: mini USB; Protocol: propr

We do not guarantee the accuracy or completeness of this information. The information is based on average working conditions. For exceptional operating conditions please contact our technical department. All details are subject to technical changes.

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Model Number Selection

How to Build a Valid Model Number for a Schroeder MCS:

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9
MCS								

Example: *NOTE: One option per box*

BOX 1	BOX 2	BOX 3	BOX 4	BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	
MCS	1	5	8	0	0	5	2	000	**= MCS1580-0-0-5-2/-000**

BOX 1

Series	
MCS =	Metallic Contamination Sensor

BOX 2

Model	
1 =	1000 Series

BOX 3

Detection Limit/ Sensor Cross-Section	
3 =	Fe particles > 70 µm / 1/4"
4 =	Fe particles > 100 µm / 1/2"
5 =	Fe particles > 200 µm / 1"

BOX 4

Options	
8 =	2x switching output / RS485 (HSI, Modbus RTU) / Ethernet (HSI TCP/IP, Modbus TCP)
9 =	2x switching output / CAN (CANopen) / Ethernet (HSI TCP/IP, Modbus TCP)

BOX 5

Signal Input/ Electrical Interface	
0 =	Without

BOX 6

Fluids	
0 =	Mineral and synthetic oils

BOX 7

Hydraluics Connections	
1 =	Flange Connection, SAE ½" ISO 6162-1 (only for MSC13xx)
2 =	Flange Connection, SAE ¾" ISO 6162-1 (only for MCS14xx
5 =	Flange Connection, SAE 4" ISO 6162-1 (only for MCS15xx)

BOX 8

Electrical Installation	
2 =	M12x1 male connection, 8-pin / Ethernet M12x1, 4-pin, D encoded according to IEC61076-2-101 / mini USB

BOX 9

Modification Number	
000 =	Standard

Scope of Delivery

- Sensor MCS 1000 Series
- O-rings (NBR and FPM)
- Installation and Maintenance Instructions

Hydraulic Accessories

Flange Adapter	Part No.
SAE 4" flange adapters (set) to pipe/hose connection, 42L according to ISO 8431-1 consisting of: - 2x Flange adapters - 2x O-Rings (NBR) - 8x Cheese-head screws - 8x Washers - 8x Spring washers"	3435426
SAE ½" Flange adapters (set) to pipe/hose connection, ½" according to ISO 8431-1 consisting of: - 2x Flange adapters - 2x O-Rings (NBR) - 8x Cheese-head screws"	3788271
SAE ¾" Flange adapters (set) for pipe/hose connection, ½" according to ISO 8431-1 consisting of: - 2x Flange adapters - 2x O-Rings (NBR) - 8x Cheese-head screws"	3588249
Flange adapter plate, SAE 4" – SAE 1 ½"	3442518