

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

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.



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

Description

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

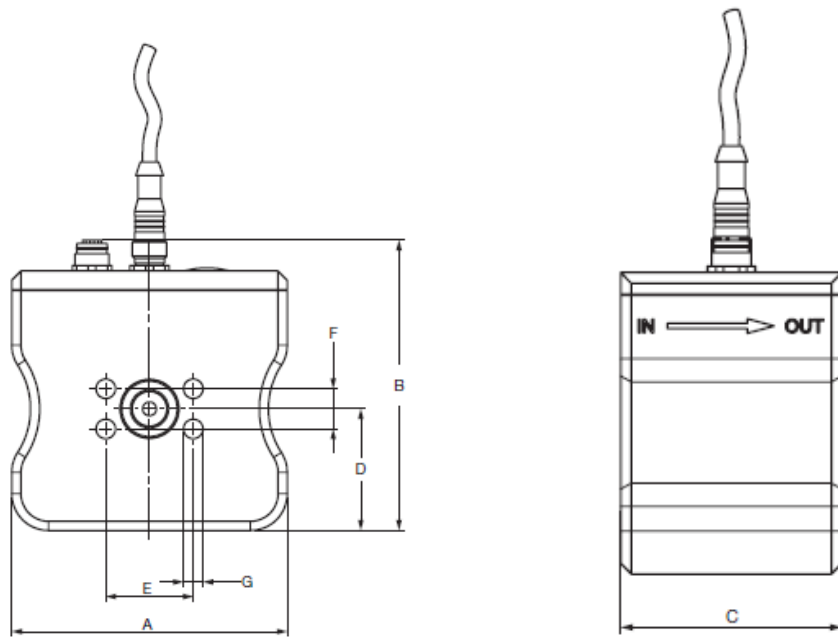
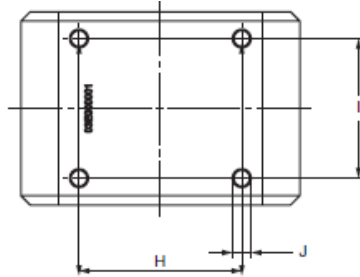
- CS 1000
- CS 1939
- CSI-C-11
- HY-TRAX*
- RBSA
- CSM
- TFL
- TFH
- FCU
- MCS**
- AS
- SMU
- CTU
- EPK
- Trouble Check Plus
- HMG2500
- HMG4000
- ET-100-6
- HTB
- RFSA
- HFS-BC
- HFS-15
- MFD-BC
- MFS, MFD
- HY-TRAX* Retrofit System
- MFD-MV
- MFS-HV
- AMS, AMD
- FS
- AMFS
- KLS, KLD
- MCO
- AKS, AKD
- LSN, LSA, LSW
- X Series
- OLF Compact
- OLF
- OLF-P
- NxTM
- VEU
- IXU
- Triton-A
- Triton-E
- NAV
- SVD01
- SVD
- OXS

Formally Known as "TMS Metallic Contamination Sensor Series"

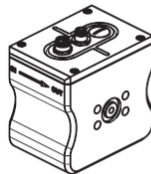
Dimensions

Metric dimensions in ().

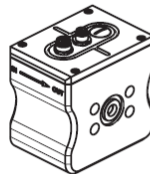
Type	A	B	C	D	E	F	G	H	I	J
13XX-X-1	120	113	83	53	38.1	17.5	ø8	70	60	M8
14XX-X-2	120	113	83	53	47.6	22.2	ø11.5	70	60	M8
15XX-X-3	162	106	83	38.5	52.4	26.2	ø11.5	80	55	M8
15XX-X-5	162	132	83	62	130	77.8	ø17.5	95	60	M8
15XX-X-6	120	106	83	38.5	69.9	35.7	ø13.5	90	35	M8



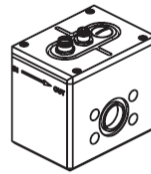
MCS13XX-X-1



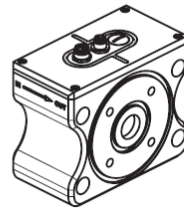
MCS14XX-X-2



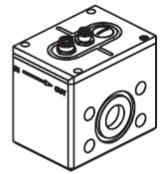
MCS15XX-X-3



MCS15XX-X-5



MCS15XX-X-6



Metallic Contamination Sensor Series

MCS

Formally Known as "TMS Metallic Contamination Sensor Series"

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)
	Environmental 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 EN61000-6-4 / -6-2 / -6-9 CE Mark: (pulse magnetic field immunity) / -4-29 (voltage dips) FCC 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: 1 x Ferromagnetic particles (Fe) Switching: 1 x Non-ferromagnetic particles (nFe) Outputs: OR (active, normally-open): 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

Specifications

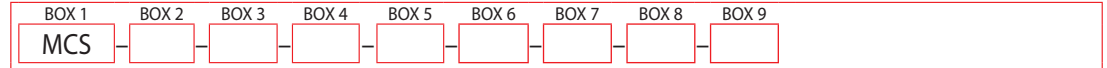
CS 1000
CS 1939
CSI-C-11
HY-TRAX™
RBSA
CSM
TFL
TFH
FCU
MCS
AS
SMU
CTU
EPK
Trouble
Check Plus
HMG2500
HMG4000
ET-100-6
HTB
RFS
HFS-BC
HFS-15
MFD-BC
MFS, MFD
HY-TRAX™
Retrofit System
MFD-MV
MFS-HV
AMS, AMD
FS
AMFS
KLS, KLD
MCO
AKS, AKD
LSN, LSA, LSW
X Series
OLF Compact
OLF
OLF-P
NXTM
VEU
IXU
Triton-A
Triton-E
NAV
SVD01
SVD
OX
Appendix

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.

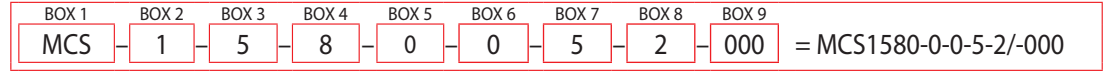
Formally Known as "TMS Metallic Contamination Sensor Series"

Model Number Selection

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



Example: NOTE: One option per box



BOX 1	BOX 2	BOX 3	BOX 4
Series	Model	Detection Limit/ Sensor Cross-Section	Options
Metallic MCS = Contamination Sensor	1 = 1000 Series	3 = Fe particles > 70 µm / 1/4" 4 = Fe particles > 100 µm / 1/2" 5 = Fe particles > 200 µm / 1"	2x switching output / RS485 8 = (HSI, Modbus RTU) / Ethernet (HSI TCP/IP, Modbus TCP) 2x switching output / CAN 9 = (CANopen) / Ethernet (HSI TCP/IP, Modbus TCP)

BOX 5	BOX 6	BOX 7
Signal Input/ Electrical Interface	Fluids	Hydraulic Connections
0 = Without	0 = Mineral and synthetic oils	1 = Flange Connection, SAE 1/2" ISO 6162-1 (only for MSC13xx) 2 = Flange Connection, SAE 3/4" ISO 6162-1 (only for MCS14xx) 5 = Flange Connection, SAE 4" ISO 6162-1 (only for MCS15xx)

BOX 8	BOX 9
Electrical Installation	Modification Number
M12x1 male connection, 8-pin / Ethernet 2 = M12x1, 4-pin, D encoded according to IEC61076-2-101 / mini USB	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 1/2" Flange adapters (set) to pipe/hose connection, 1/2" according to ISO 8431-1 consisting of: - 2x Flange adapters - 2x O-Rings (NBR) - 8x Cheese-head screws"	3788271
SAE 3/4" Flange adapters (set) for pipe/hose connection, 1/2" 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 1/2"	3442518