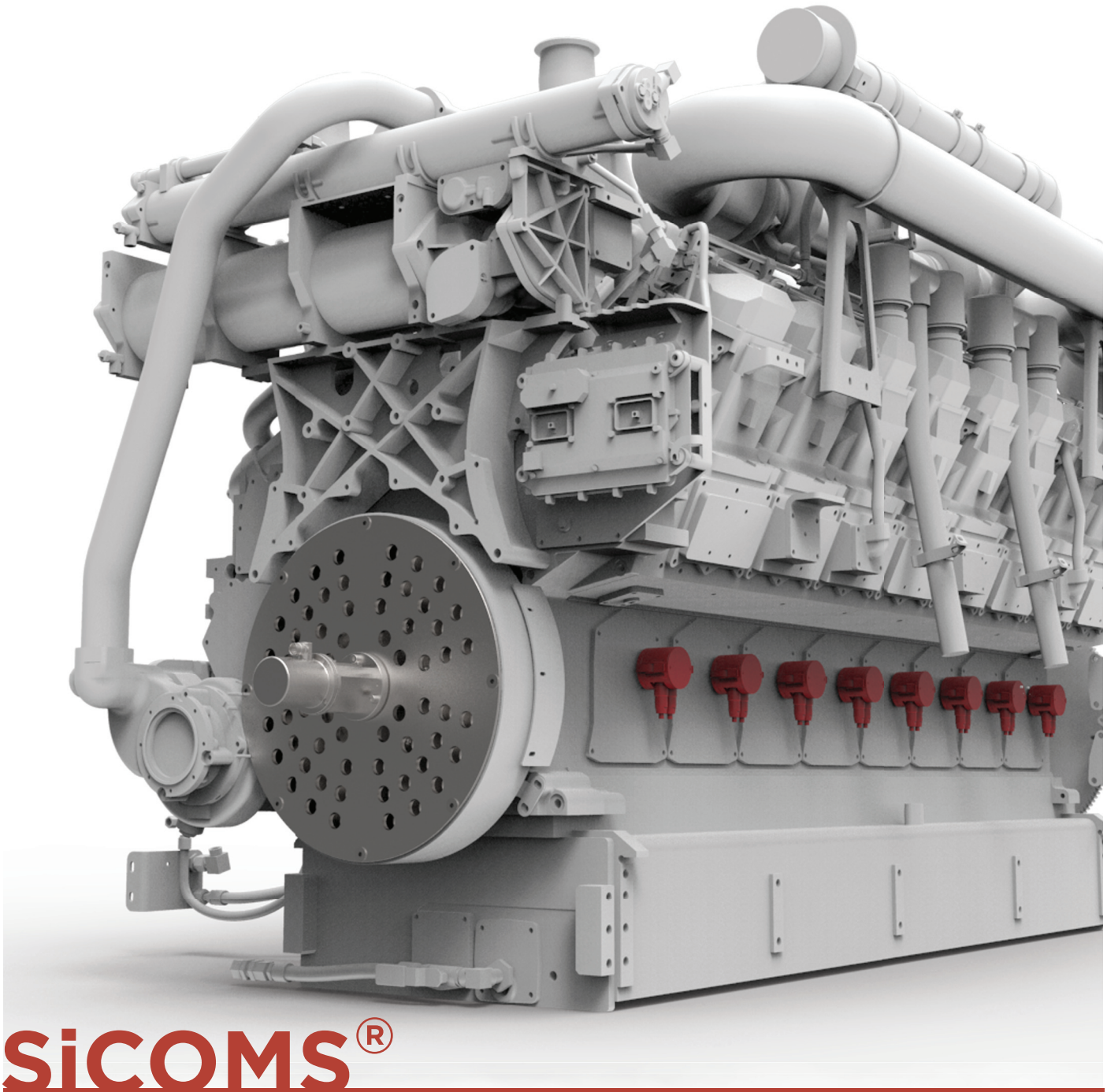
mot com
Condition Monitoring Safety

Installation Manual



SiCOMS®

Single Compartment Oil Mist Online Detection System
Diesel- and Ex-Version

Part No.:2 900 00 00001
Release:130114
(revision 210330)

Contents

1. Safety instructions

Note: **This Installation Manual is applicable for SiCOMS® and OCom.**
To simplify this manual we offen named figures and pictures with OCom, but always follow the instruction and information for SiCOMS too.

This Installation manual has to be read before assembling, commissioning or maintainance by the assigned personal. The OCom User Manual is part of the installation instructions. References have to be followed in any case! The specific instructions given in this manual have to be carried out. Non-observance of this installation manual will be followed by losing any warranty claim against motcom GmbH.

1.1. Safety instructions

1.1.1 Only qualified and accordingly instructed personal may assemble commission or maintain a OCom system.

1.1.2 Work at electronic parts may only be done by certified electricians according to DIN EN 50110/1.

1.1.3 SiCOMS® / OCom may only be used within the specifications given in technical documents of motcom GmbH:

SiCOMS® / OCom	=	for HFO- or diesel operation
SiCOMS®Ex / OCom Ex	=	for Dual-Fuel and Gas operating engines (and diesel engines)

1.1.4 Safety and Monitoring devices may not be removed, bypassed or disabled in any way.

1.1.5 SiCOMS® / OCom may be operated only if in faultless condition. Malfunctions and damages which affect or could affect the safety, have to be repaired immediately by qualified personnel.

1.1.6 Damaged components in modules have to be replaced by original motcom GmbH spare parts.

2. Standards and Specifications

SiCOMS® / OCom complies to the following standards:

Diesel- and Ex-Versions	EN 55011:2018-05/CISPR 11:2015 mod.+A1:2017	
	EN 55032/CISPR 22	
	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4	
	EN 61000-4-5, EN 61000-4-6, EN 61000-4-8	
Ex - Version only	EN IEC 60079-0	
	VDE 0170-1:2019-09	(General requirements)
	EN IEC 60079-11:2012	(Intrinsic safety)

IACS Type Approval by:

American Bureau of Shipping
Bureau Veritas
China Classification Society
DNV
Lloyd's Register EMEA
ATEX Approval by DEKRA EXAM GmbH, Bochum

This installation manual has to be kept in safe custody and has to be read before installing the device.

3. System Description

3.1. SOG (Splash Oil Guard)

The SOG will be installed inside of the engine and protects the sensor against splash oil.

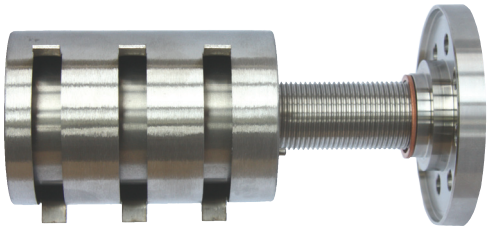


Fig. 3.1.SOG for diesel engines with counter nut and seal ring

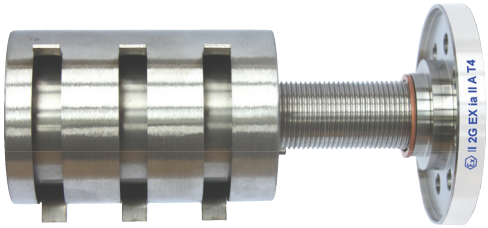


Fig. 3.2.SOG for Ex-Installation with counter nut and seal ring

Attention: Pay attention to the different marking, since **different** SOG are used for Diesel- and Ex-version.

3.2. OCom Sensor

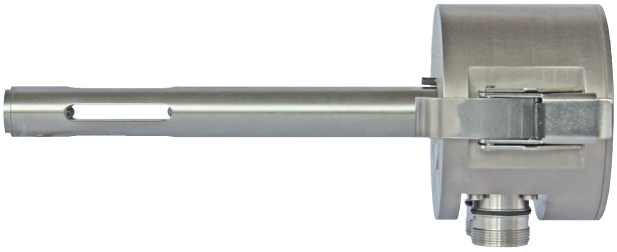


Fig. 3.3. OCom sensor for diesel engines

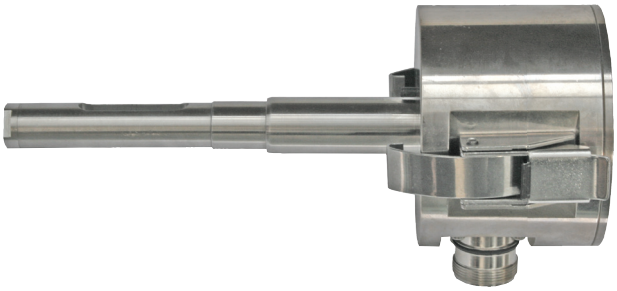


Fig. 3.4.. OCom sensor for Ex-Installations

Attention: Pay attention to the different marking, since **different** sensors are used for Diesel- and Ex-version.

3.3. OCom Evaluator

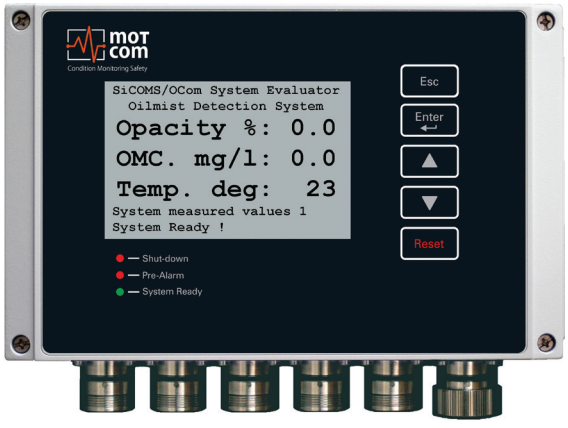


Fig. 3.5..OCom Evaluator

Note: OCom Evaluator for both versions (Diesel and Ex)

4. Installation

The position for the installation of sensors and of the SOG in the engine wall must be selected carefully.

The splash oil inside the engine follows the rotation of the crank shaft. Due to this rotation discoidal zones with very high splash oil concentrations (also called “splash discs”) appear.

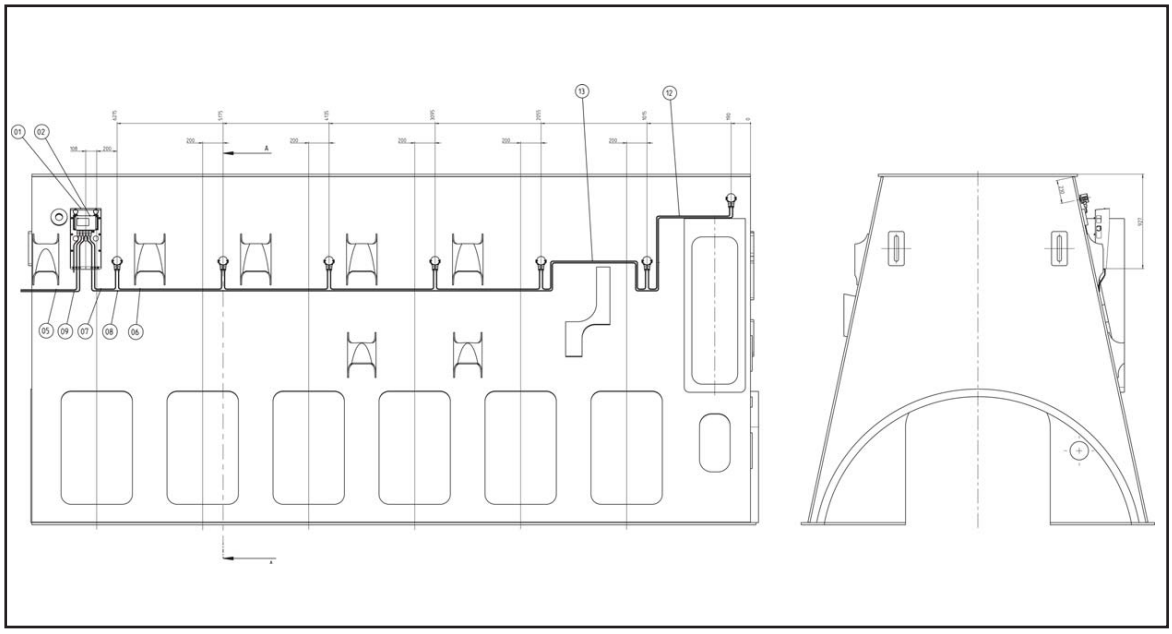
In an in-line engine two “splash discs” appear between the con-rod and the crankweb. In a V engine a third “splash disc” appears between two con-rods.

It is important to choose the installation position outside the “splash discs”!

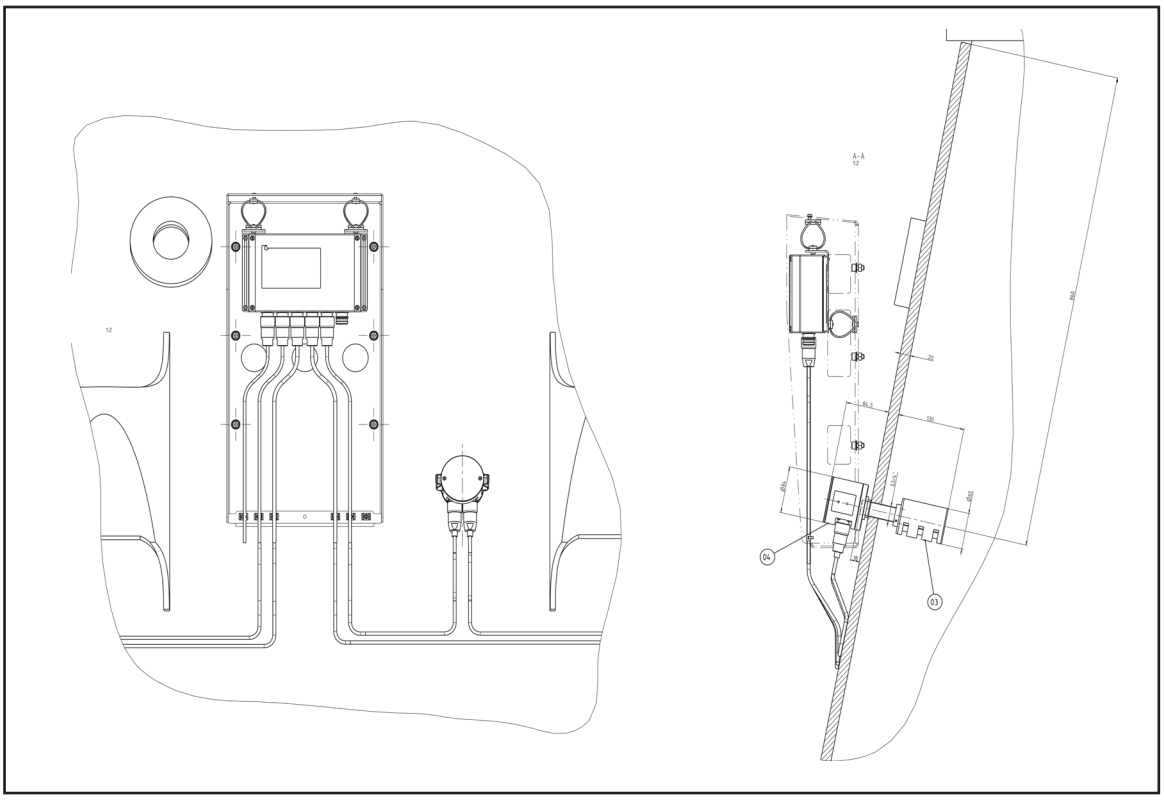
In a four stroke engine, you have to pay attention to install the sensors on the side with the splash oil hitting the sensors on the top.

This does not apply to two stroke engines since the nominal speed as well as the splash oil creation is much lower.

A mounting diagram, which will be developed by motcom GmbH and the engine manufacturer, is needed prior the installation to determine the best installation position of the OCom sensors.



Example 1: Sensor installation positions on a 2 stroke engine



Example 2: Sensor installation position at the engine wall of a 2 stroke engine

On the basis of these drawing, authorized and qualified personnel have to drill tap holes (G3/4“ DIN ISO 228-1) on site for mounting the sensors.

When reconditioning, refer to:
OCom User Manual, chapter 8.2: Installation Procedure of Mechanical Components

4.1. Mounting the components (Refer to OCom User Manual, chapter 8)

- Take the SOG and screw it from the inner side of the crankcase into the hole until 16mm of the thread overlap the outer surface

  Attention: The inlet faces down, the TOP mark (a notch) faces up (Fig. 4.1.)

Fig. 4.1. Top mark

- Use Loctite 2701 on four turns of the counter nut and screw the nut and the copper seal ring 27x32x1,5 DIN 7603A onto the outstanding 16mm (refer to Fig. 3.2., page 3.1)

- Use the counter support (hook wrench or adjustment tool) on the inside and the V-wrench on the outside to tighten the installation (Fig. 4.2., 4.3. and 4.4.)

Fig. 4.2. Installation kit, Part. No. 2 600 20 40000 (for SOG 65 delivered up to May 2018)

Fig. 4.3. Installation kit, Part No. 2 600 20 40010 (for all SOG 53 and for SOG 65 delivered from May 2018)

Fig. 4.4. Use of the installation kit

- Insert the OCom sensor by using the O-ring 36x2mm into the SOG and lock it with the retaining clips (refer to example 2, page 8), also refer to OCom User Manual, chapter 8.2, Fig. 8.12 to Fig. 8.19
- Mount the OCom Evaluator according to the customer's preference;
  An optional (and recommended) vibration damping feature is available when mounting onto the engine, Part. Nr. 9 020 20 00000

  The mounting of the OCom Evaluator has to be done in a way, that the displayed values are readable and the use of the Evaluator is safe and without any risk of an injury in any operating condition of the engine.

Pay special attention to the following cabling information:

- Only cable which meet the certification requirements may be used (i.e. Scherer Kabel 12x AWG 20 C UL, black), please also refer to the User Manual, chapter 1.1.3.4. on page 1.11
- The length of the connection cable between the sensor-chain and the Evaluator may not exceed 500 meters! The same applies to the connection cable between the Evaluator and the Remote Monitoring Unit.
- The connection cable may not contact any hot parts!
- The connection cable has to be layed in a vibration-free cable duct.
- The connection cable may not be layed parallel to a high voltage current power line to prevent inductive influences!
- To avoid any intrusion of dirt and dust, the coupling nut has to be tightened after plugging the connector!

4.2. Electrical wiring

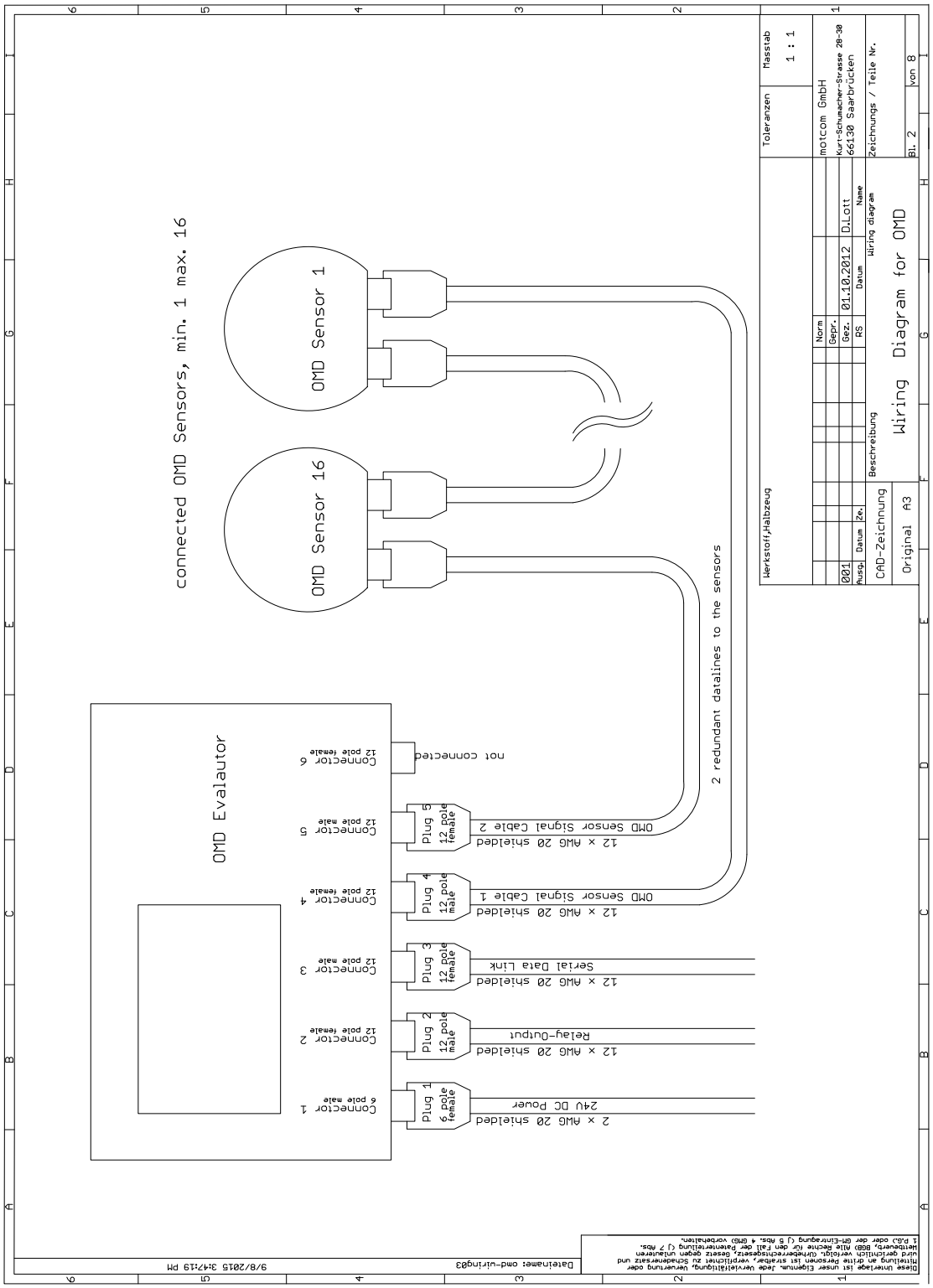


Fig. 4.5. Wiring diagram OCom

4.3. Laying of the sensor wiring

The data cables from the Evaluator to the first sensor and from the last sensor back to the Evaluator as well as the cables between each sensor with correct lengths are typically included in the OCom mounting set.

It is possible that cables have to be assembled on site as described in the attachment “12pol connection cable male-female connector” to these instructions and as described in the OCom User Manual, chapter 8, page. 8.3.

The lengths of the cables have to be taken on site. Please keep in mind that the required cable is 12 x AWG 20 C UL black

Wiring diagram, Fig.4.5:

- Connect connector 4 with first sensor
- Connect each sensor to another
- Connect last sensor with connector 5
- Connect the 24V power supply of the Evaluator (refer to attachment 2)

  When installing a OCom Ex system, take care, that the 24V power supply requires a U_m of 30V. If you are using a 230V to 24V power converter, make sure that it includes a galvanic isolation.

- Connect the ready- and alarm-relays from connector 3 of the Evaluator to the control- and operating system of the engine, refer to the wiring diagram, sheets 2-6

Make sure each cable is installed in a way that it does not get damaged by vibrations. Pay attention, that every connection is tightened. Securely fasten the coupling nuts!

Unused plugs in the Evaluator must be closed with a blind cover to ensure that IP protection class is fulfilled!

5. Commissioning

- Turn on 24V power supply ---> Evaluator starts
- Wait until the Evaluator shows the opacity value; possible error messages can be ignored at the moment
- Open the Setup CPU as described in the OCom User Manual page 3.14
- Navigate to the “PIN for Setup” display by using the UP and DOWN buttons, also see OCom user Manual page 3.15, Fig. 3.10
- Enter the PIN (the PIN is known by the operator)
- After entering the correct PIN go to “Parameter setup” and then to “Number of sens”.
- Set up number of sensors with UP and DOWN buttons
- Go to “OMC Alarm-Level” and set up the requiered alarm level (1-10), see OCom User Manual, page 3.10

  Attention: The IACS M67 requires, that an alarm has to be raised as soon as an oil mist concentration of 2.5 mg/l has been reached, which matches an alarm level of 7. More sensitive values are allowed. Higher alarm levels may be used at diesel or gas engines within power plants.

- Go to “OMC PreAlm-Level” and set up the requiered Prealarm-Level in % of the “OMC Alarm-Level” (Range 40-100%)
- Optional set up the temperature main- and pre-alarm in “Tmp-Alarm-Level” and “Tmp-PreAlm-Level”
- Range of “Temp-Alarm-Level”: 0°C-125°C in steps of 10°C, where 0°C turns off the temperature alarm
  Range of “Tmp-PreAlm”: 20°C-125°C
- Press the ESC-button several times until the Evaluator reboots
- The Evaluator initialises and addresses all connected sensors, as well as it retrieves the measured values of every connected sensor. After the successful initialisation the Ready-LED and the Ready-Relays turn on, the system is ready.
  The text “System Ready!” has to be shown in the display.
- The current measurements can be shown by using the buttons on the Evaluator

6. Maintenance

Since the sensor is installed inside the engine, the optical measuring section can be polluted depending on the operating condition of the engine. This pollution will be compensated automatically by an electronic circuit.

If the pollution is too high and the automatic compensation doesn't function, a manual cleaning of the optical measuring section of the OCom sensor is needed. An appropriate message will be shown on the display of the Evaluator.

- Go to "Sensor values" / "Measured values sensor" (refer to the OCom User Manual, page 3.7
- Check the values of each sensor; a dirty sensor will have a message "Dirty"
- Disconnect the sensor
- The sensor will be removed from the monitoring chain automatically by the Evaluator
- Dismount the sensor by opening the retaining clips
- Clean the optical measuring section with the Cleaning Kit, Part. Nr. 2 600 01 90000. It must be ensured that only Isopropyl alcohol concentration greater than 90% is used as cleaning fluid.

- After cleaning, mount the sensor again and lock it with the retaining clips. Make sure the O-ring is present and undamaged. Replace it with Gasket Set for SOG Part. Nr.2 600 20 50000 if necessary
- Reconnect the cables
- Press the ESC-button until the Evaluator reboots
- The Evaluator initialises and addresses all connected sensors, as well as it retrieves the measured values of every connected sensor. After the successful initialisation, the Ready-LED and the Ready-Relays turn on, the system is ready. The text "System Ready!" has to be shown in the display

7. Repair and Troubleshooting

Occurring failures will be automatically detected by the Evaluator and shown, refer to OCom User Manual chapter 5 “Troubleshooting”.

Communication errors can be caused due to damaged or incorrectly fastened connectors or due to damaged communication cables.

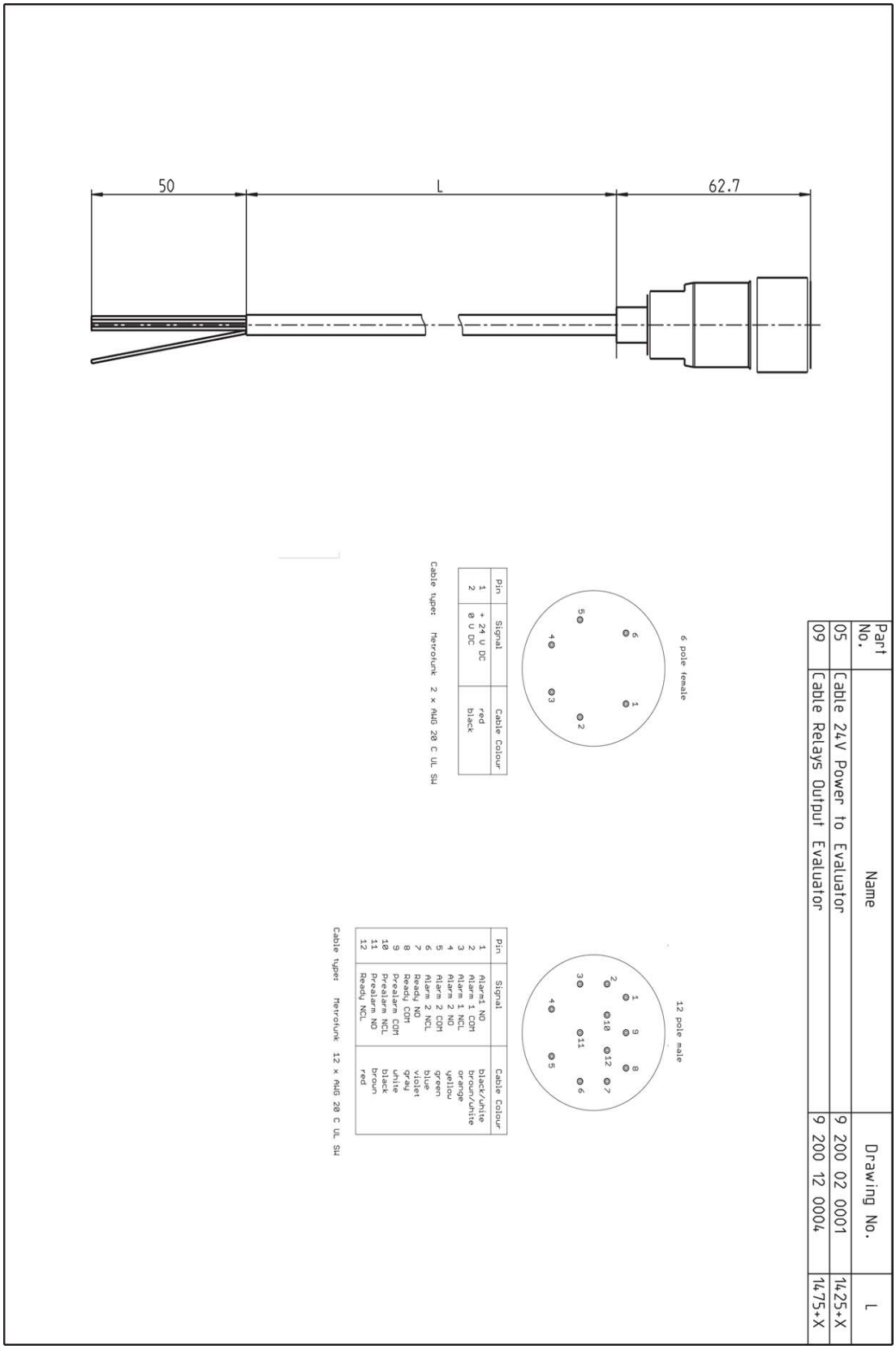
Solution:
Make sure each connector is fastened correctly, check each cable for damages and replace cables if necessary.

Usage of cables or connectors which do not apply to the given specifications may cause malfunctions of the system and thus is prohibited.

Damaged sensors or Evaluators have to be sent back to motcom GmbH including an error report. Repairs may only be done by motcom GmbH; also refer to OCom User Manual, chapter. 6 “Repair”.

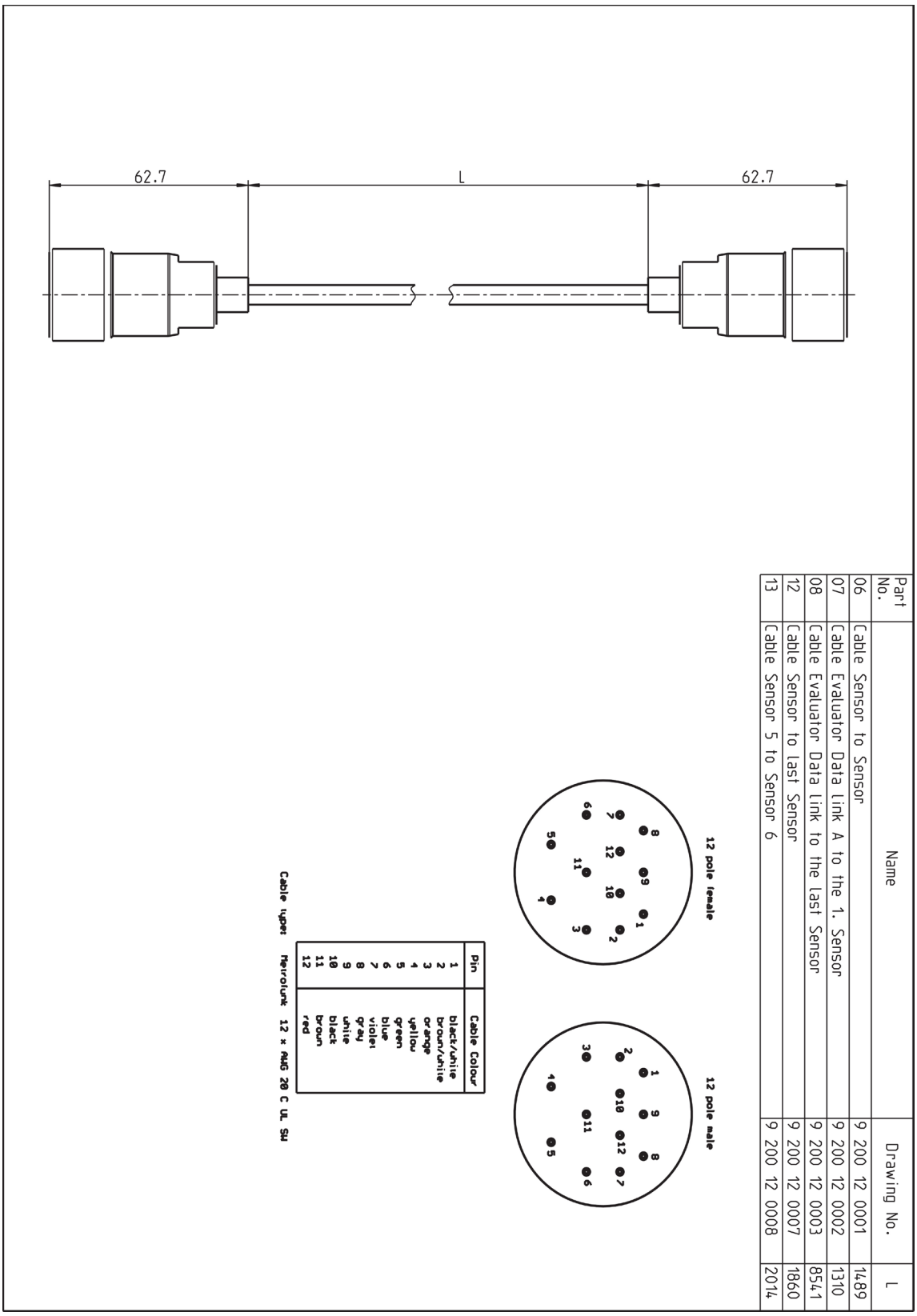
Attachment 1

12 pol. connection cable male-female connector



Attachment 2

2 pol. connection cable (open end)
12 pol. connection cable (open end)



Part No.	Name	Drawing No.	L
06	Cable Sensor to Sensor	9 200 12 0001	1489
07	Cable Evaluator Data Link A to the 1. Sensor	9 200 12 0002	1310
08	Cable Evaluator Data Link to the last Sensor	9 200 12 0003	8541
12	Cable Sensor to last Sensor	9 200 12 0007	1860
13	Cable Sensor 5 to Sensor 6	9 200 12 0008	2014

motcom GmbH
Kurt-Schumacher-Str.28-30
D-66130 Saarbrücken

Phone +49 (0) 681 – 8837904-0
Fax +49 (0) 681 – 8837904-19
eMail info@motcomgmbh.com
Internet www.motcomgmbh.com