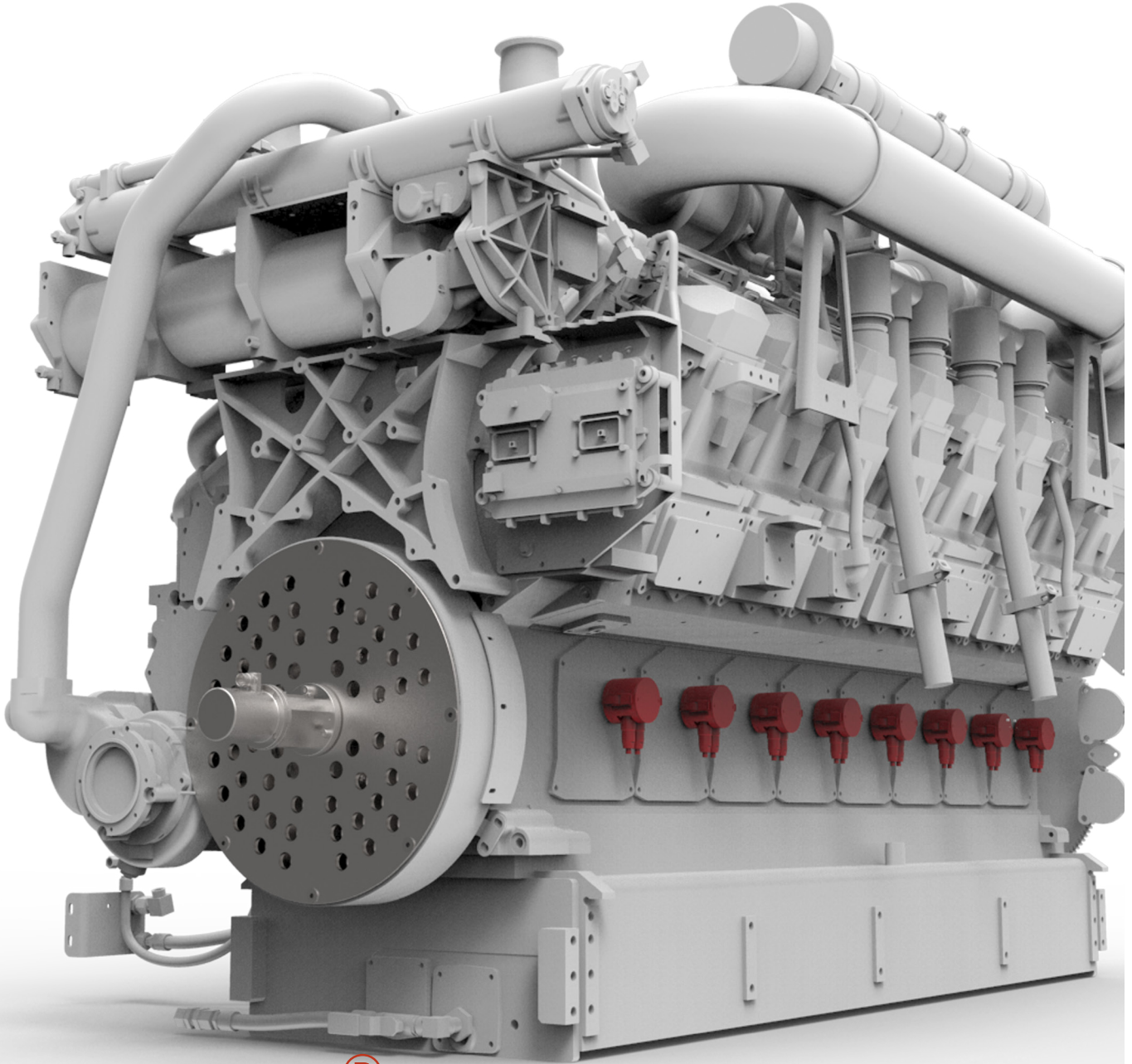


# InstallationManual



## **SiCOMS<sup>®</sup>**

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

Part No.: 2 900 00 00001  
Release: 251030

## Table of revision

| Version | Chapter | Changes          | Release    |
|---------|---------|------------------|------------|
| 01      |         | Original edition | 2025-10-30 |
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## Imprint

### Address of Manufacturer

motcom GmbH  
Kurt-Schumacher-Str.28-30  
66130 Saarbrücken / Germany

Tel +49 (0) 681 8837904-0  
Fax +49 (0) 681 8837904-19

Email [info@motcomgmbh.com](mailto:info@motcomgmbh.com)  
Internet [www.motcomgmbh.com](http://www.motcomgmbh.com)

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## 1 General

### 1.1 About this User Manual

This manual describe the installation for SiCOMS® and SiCOMS® EX. By means of the nameplates of each items the SiCOMS® / SiCOMS® EX system can be clearly identified.

The installing instructions are to be kept available with the SiCOMS® system at all times.



The instructions contain important notes regarding system operation which are intended to ensure safe, appropriate and economical system operation at all times.

The installing instructions must be completely read by each operator before starting assembling, commissioning or maintainance. The operator has to ensure that all operating personnel has fully understood the contents of these Installation Manual.



The SiCOMS® 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.

The Single Compartment Oil Mist online Monitoring System is sold under the names SiCOMS® / SiCOMS® EX and OCom / OCom EX.

**For simplification, only SiCOMS® is used troughout this manual.**



## 1.2 Warranty

It is mandatory to read this manual before commencing the repair, assembly or commissioning of the Single Compartment Oil Mist online Monitoring System.



### Caution:

The manufacturer's warranty will become void

- If any of the instructions presented within this manual are not followed!
- Use of inadmissible operating media,
- faulty connection,
- preceding work that is not included in the scope of supplies and services,
- non-use of original spare parts and accessories,
- failure to perform required maintenance work.



Please see our Terms and Conditions of Delivery and Performance, available online at: [www.motcomgmbh.com](http://www.motcomgmbh.com).

## 1.3 Copyright

These installing instructions may be used only by authorised personnel. They may only be given to third parties with the written consent of motcom GmbH.

All documents are protected under copyright law.

Forwarding and duplication of documents, in whole or in part, is not permitted unless authorised in writing.

All documents, drawings, data, and programs remain the exclusive property of motcom GmbH.

They are provided for the agreed purpose only and must not be used for any other purpose.

## 1.4 Safety instructions

Operation, maintenance and repair of the system and its components may only be carried out by authorised and qualified personnel.



The qualified personnel must have been trained to become:

Technical officer / chief engineer  
Engine / Ship mechanic

or possess an equivalent level of training.

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

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

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

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

SiCOMS® 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.

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

Notes regarding system operation which are intended to ensure safe, appropriate and economical system operation at all times.



These notes contain important information and serve to ensure trouble-free functionality.



## 1.5 Declaration of Conformity

**EMC-Directives:** 2014/30/EU (Diesel- and -Version)  
2014/34/EU (-Version only)

**Manufacturer** motcom® GmbH  
Kurt-Schumacher-Str. 28-30  
D - 66130 Saarbrücken / Germany  
Phone +49 681 8837904-0  
Fax: +49 681 8837904-19

We declare on our own responsibility, that the products

**Product description** SiCOMS®  
Single Compartment Oil Mist Online Detection System

**Type designations** SiCOMS®  
SiCOMS® Ex only with sensors type SiSe/OC\*\*EX

are in compliance with following norms:

**Diesel- and -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

** - Version only** EN IEC 60079-0:2018  
VDE 0170-1:2019-09 (General requirements)  
EN 60079-11:2012 (Intrinsic safety)

**Notified body** DEKRA Testing and Certification GmbH  
Dinnendahlstr. 9  
44809 Bochum / Germany  
Phone +49 234 3696-105

**Certificate** BVS 13 ATEX E 116 X

66130 Saarbrücken, Germany, the 30<sup>th</sup> of October 2025



Dipl.-Ing. Dieter Lott  
Managing Director



## **1.6 Standards and Specifications**

SiCOMS® complies to the following standards:

IACS Type Approvals by:

ABS American Bureau of Shipping

BV Bureau Veritas

CCS China Classification Society

DNV Det Norske Veritas

LR Lloyd's Register EMEA

ATEX Approval by DEKRA Testing and Certification GmbH



## 2 System Description

The main components of a SiCOMS® system are:

### 2.1 SOG (Splash Oil Guard)

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

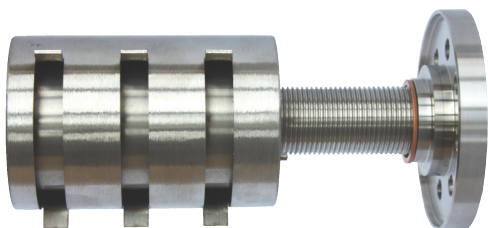


Fig. 2.1 SOG for diesel engines with counter nut and seal ring

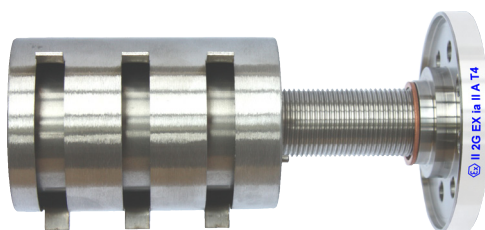


Fig. 2.2 SOG for Ex-Installation with counter nut and seal ring

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



## 2.2 SiCOMS® Sensor



Fig. 2.3 SiCOMS® sensor for diesel engines

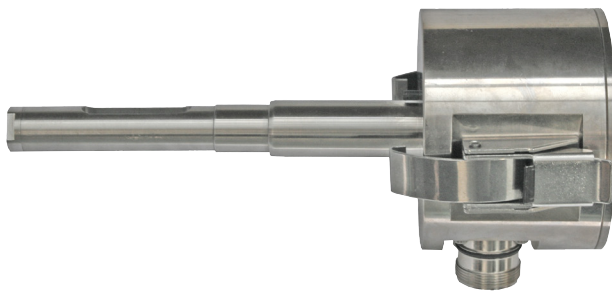


Fig. 2.4 SiCOMS® sensor for Ex-Installations



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

## 2.3 SiCOMS® Evaluator

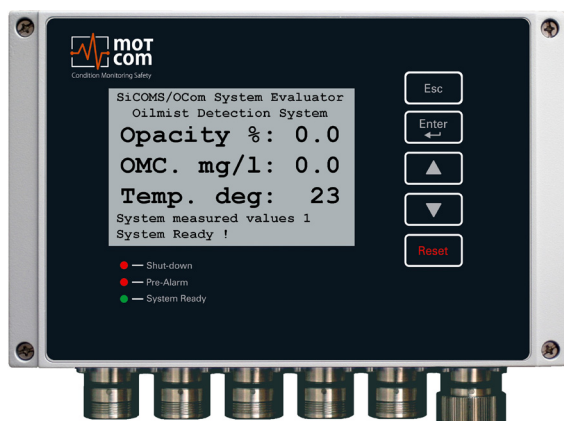


Fig. 2.5 .SiCOMS® Evaluator



**Note:** SiCOMS® Evaluator for both versions (Diesel and Ex)

### 3 Installation

Installation and commissioning of SiCOMS® is conducted or supervised by personnel from motcom GmbH or its authorized representatives.



A training for the on-site operation personnel and/or the commissioning data on a CD are available on request.

The wiring diagram and schematic given here are guidelines only. The actual wiring will be adapted to the existing alarm and monitoring system on-site.

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.



## Important for users of Gas Engines



The SiCOMS®Ex has to be installed to the engine wall in the manner specified, that the appropriate component (electronic system) sits in the non explosive engine room outside the crank case and the intrinsically safe component (sensor) sits inside the crank case with its Ex-category 2G requirements.

For non intrinsically safe electric circuits (current supply and RS 485 interface)  $U_m$  of DC 30V is compulsory.

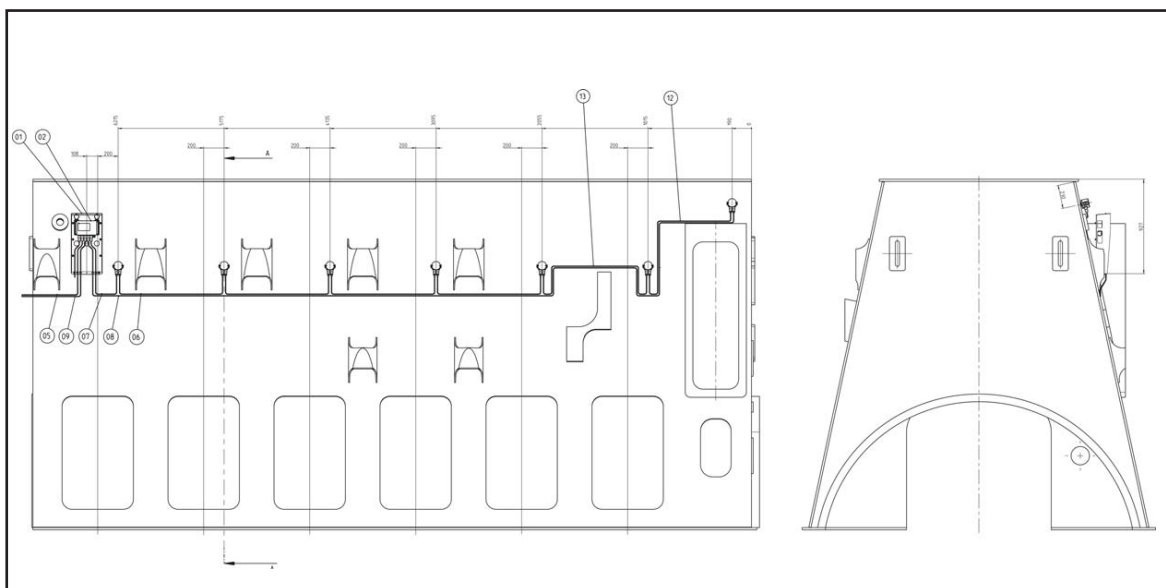
Power supply unit used for connecting the SiCOMS® system to 230V line voltage including devices communicating through RS485 interface must meet the following requirements:

- it must have safe galvanic isolation
- the current circuits of the power supply and of the RS485 interfaces have to be carried by an engineered safety barrier. Special instructions/requirements constituted in the certificates of these engineered safety barriers have to be necessarily carried out.

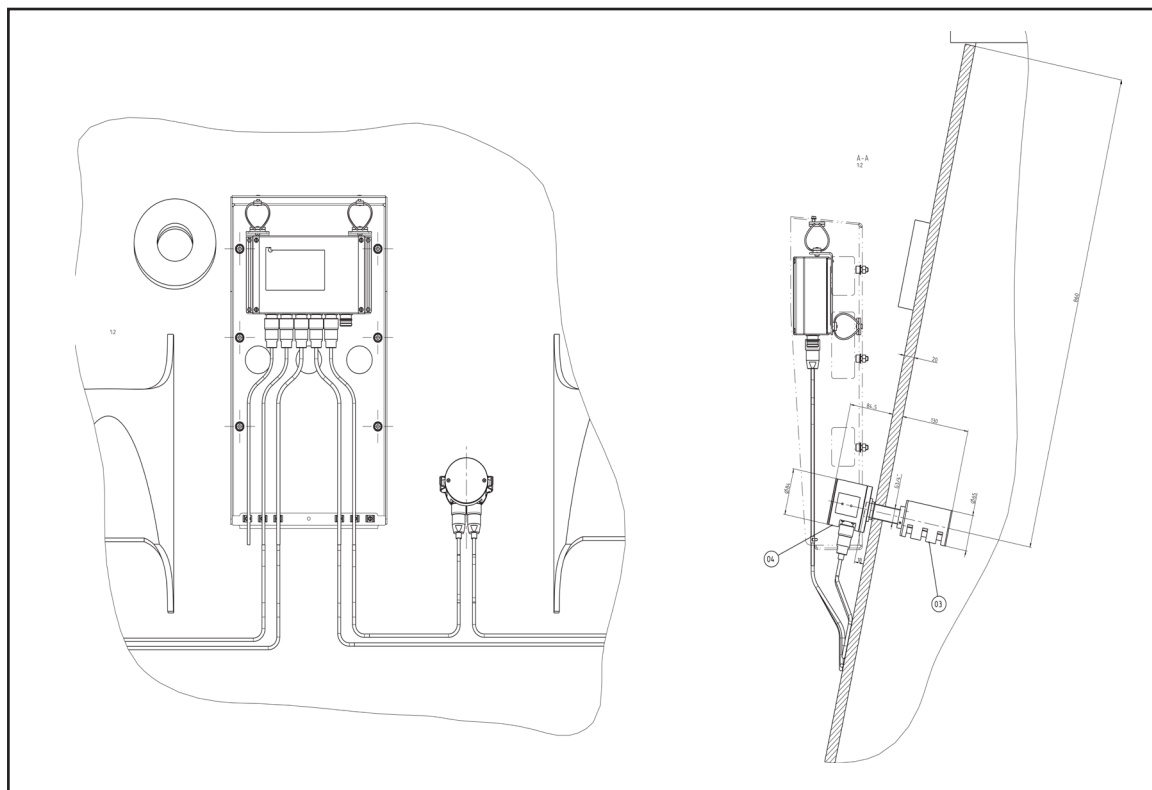


A mounting diagram, which will be developed by motcom GmbH and the engine manufacturer, is needed prior the installation to determine the best installation position of the SiCOMS® sensors.

### 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: SiCOMS® User Manual, chapter 5.2 Installation Position

### 3.1 Installation of the mechanical components

Follow the steps below

- 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. 3.1)



**Fig. 3.1 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. 2.2)



- Use the counter support (hook wrench or adjustment tool) on the inside and the V-wrench on the outside to tighten the installation (Fig. 3.2, 3.3, 3.4)

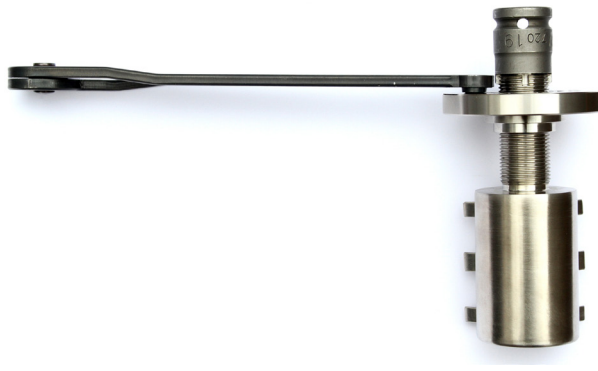


**Fig. 3.2** Installation kit, Part No. 2 600 20 40000 (for SOG 65 delivered up to May 2018)



**Fig. 3.3** Installation kit, Part No. 2 600 20 40010 (for all SOG 53 and for SOG 65 delivered from May 2018)

### Correct use of the installation kit



**Fig. 3.4 Use of the installation kit**

- Insert the SiCOMS® sensor by using the O-ring 36x2mm into the SOG and lock it with the retaining clips refer to Example 2 and also refer to SiCOMS® User Manual, chapter 5.3, Fig. 5.7 and 5.8
- Mount the SiCOMS® 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 SiCOMS® 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 (12x AWG 20 C UL, black), please also refer to the User Manual, chapter 2, page 2.1 
- 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! 

### 3.2 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 SiCOMS® 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 SiCOMS® User Manual, chapter 11.2, Fig. 11.10.

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

Basic principle of connections SiCOMS® 7 Appendix, Fig. 7.1

- 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 SiCOMS® 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!**

## 4 Commissioning

Follow the next steps:

- 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 SiCOMS® User Manual chapter 4.7.4,
- Navigate to the “PIN for Setup” display by using the UP and DOWN buttons, also see SiCOMS® User Manual Table 4
- 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 required alarm level (1-10), see SiCOMS® User Manual, Table 1

**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 required Prealarm-Level in % of the “OMC Alarm-Level” (Range 40-100%), Table 1
- 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 SiCOMS® Evaluator

## 5 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 SiCOMS® 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 SiCOMS® User Manual, chapter 4.5.1)
- 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 for sensor, 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 





## 6 Troubleshooting

Occurring failures will be automatically detected by the Evaluator and shown, refer to SiCOMS® User Manual chapter 8 “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.



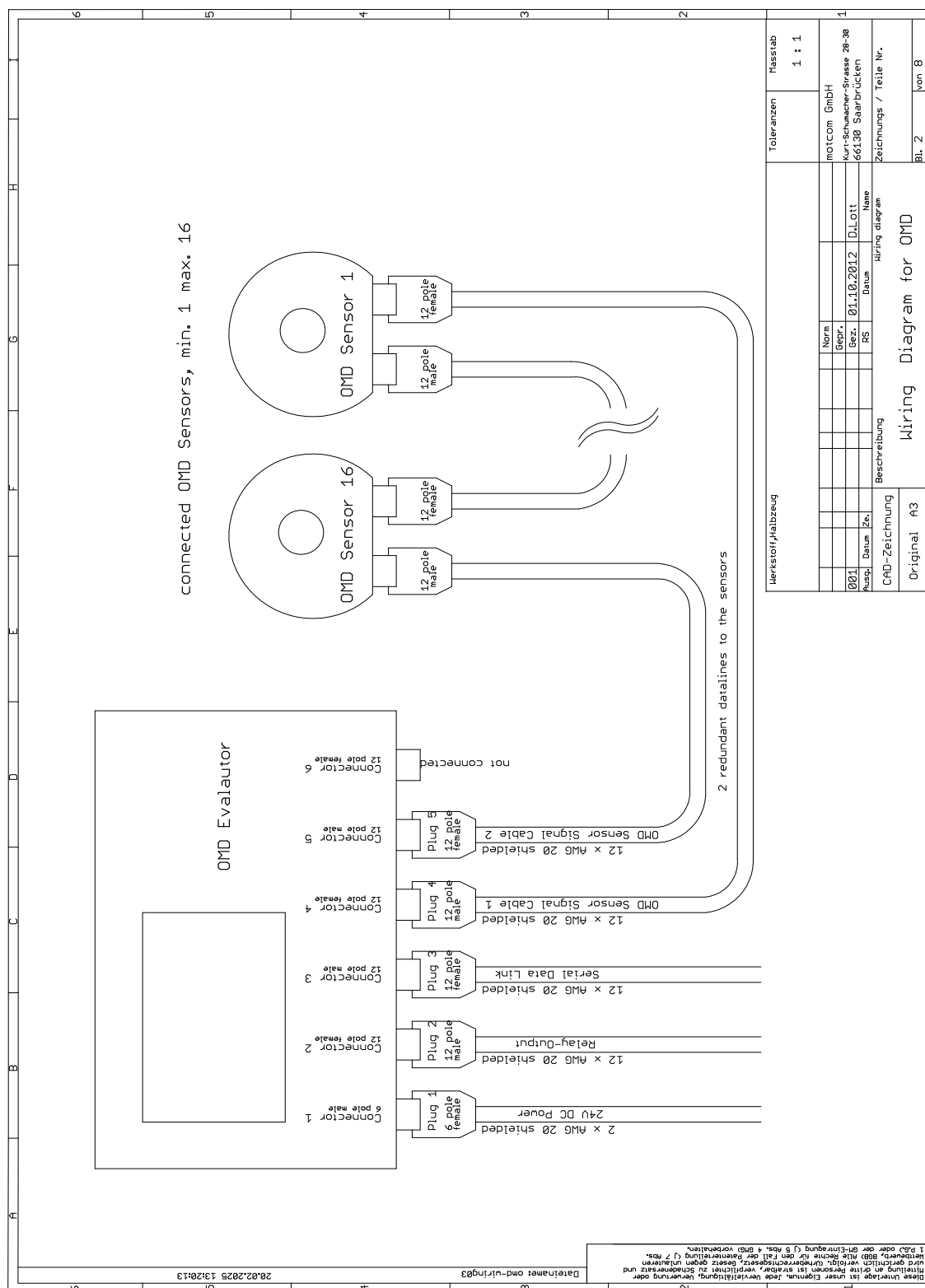
Usage of cables or connectors which do not apply to the given specifications may cause malfunctions of the system and thus is prohibited.

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 SiCOMS® User Manual, chapter. 9 “Repair”.

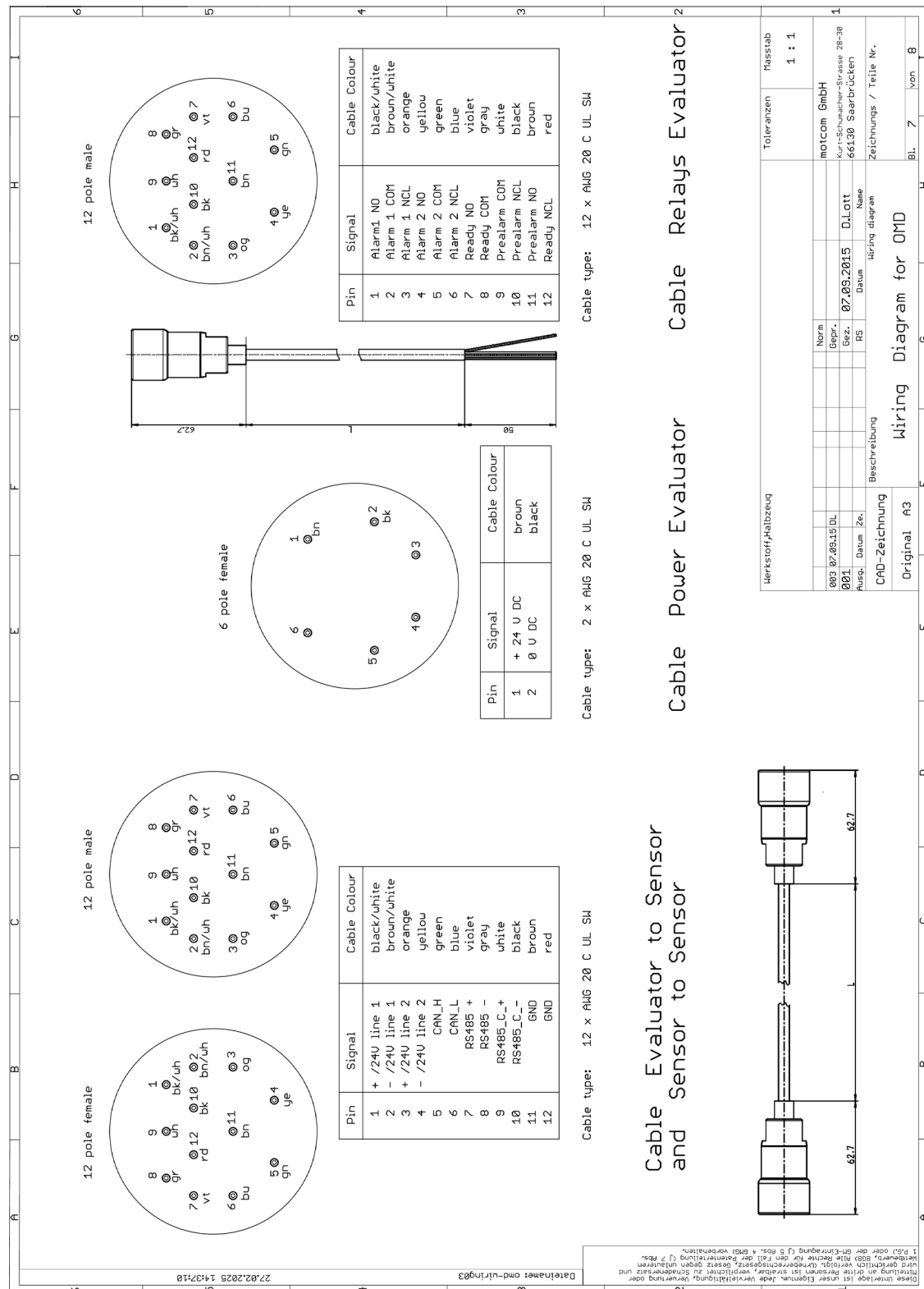




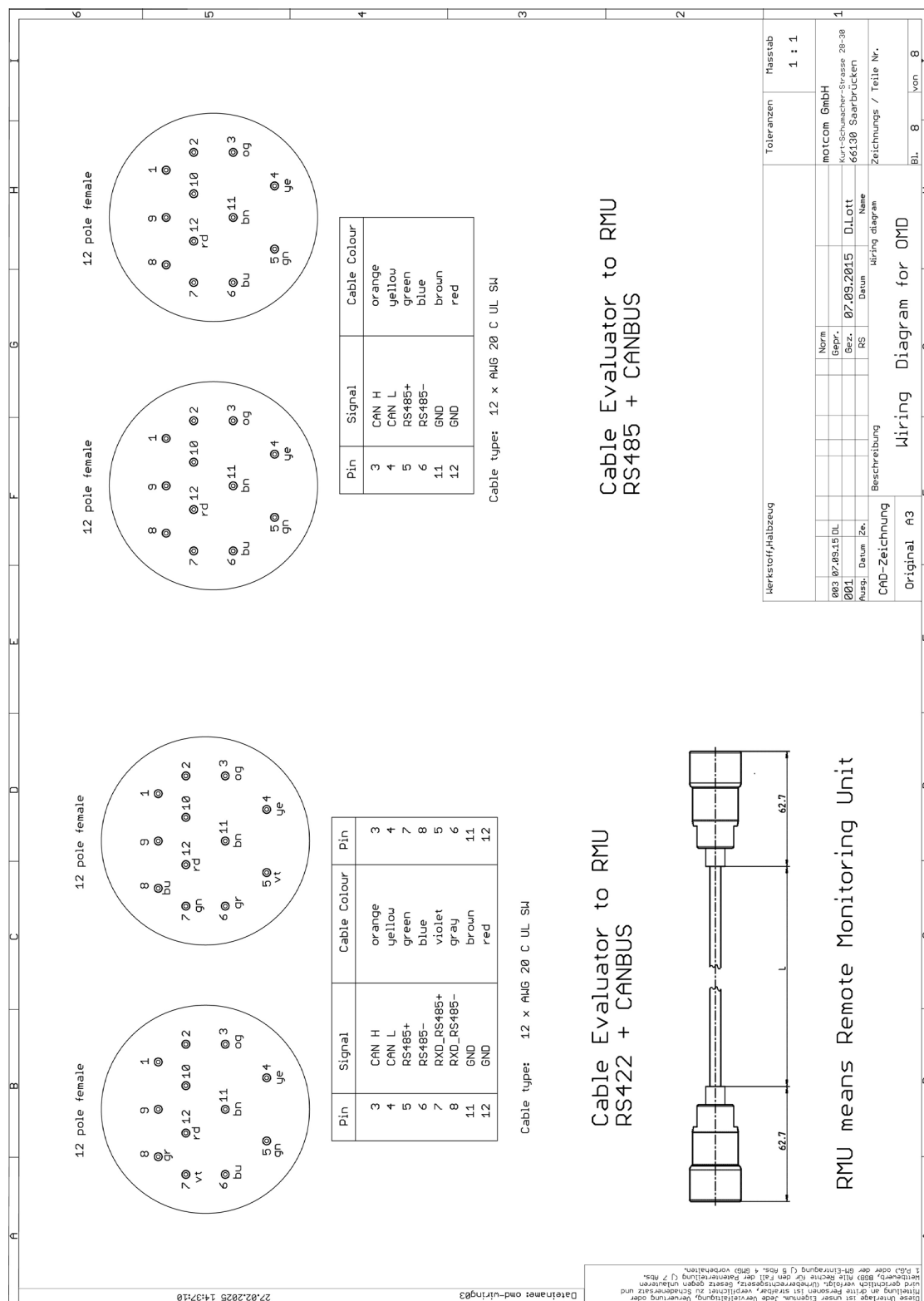
## 7 Appendix



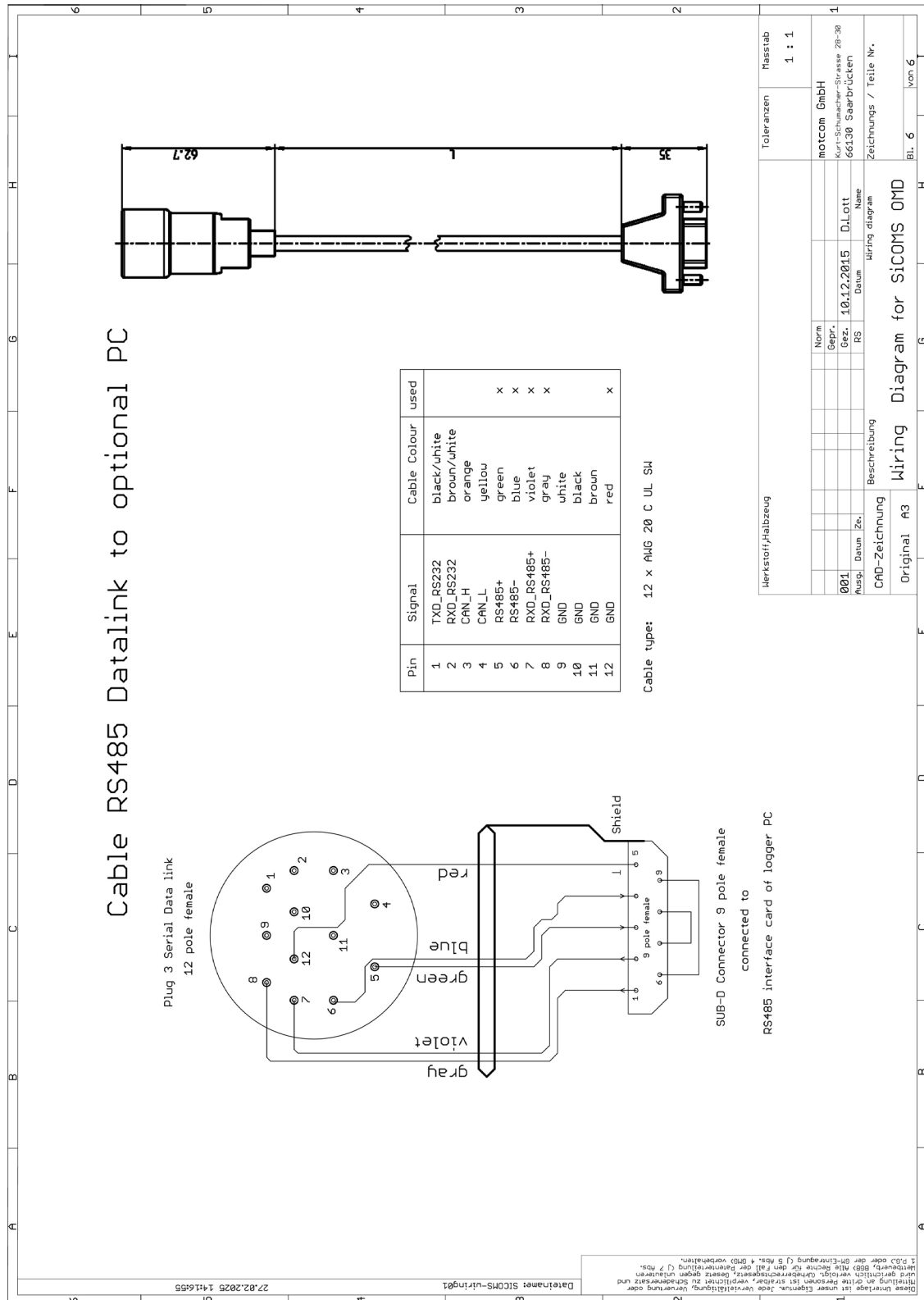
**Fig. 7.1 Basic principle of connections SiCOMS®**



**Fig. 7.2 Evaluator cable connections**



**Fig. 7.3 Evaluator connection to RMU**



**Fig. 7.4 RS485 Datalink to optional PC**



**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](mailto:info@motcomgmbh.com)

**Internet** [www.motcomgmbh.com](http://www.motcomgmbh.com)

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