

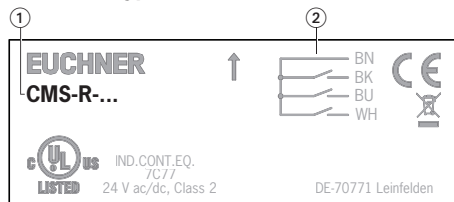
Scope

These operating instructions are valid for all read heads/actuators for evaluation units CMS. These operating instructions, the operating instructions for evaluation unit CMS-E-..., the document *Safety information* and any available data sheet form the complete user information for your device.

Important!

Make sure to use the operating instructions valid for your product version. The version numbers can be found on the type label of your product. Please contact the EUCHNER service team if you have any questions.

Read head type label



- ① Item designation
- ② Circuit diagram

Supplementary documents

The overall documentation for this device consists of the following documents:

| Document title (document number) | Contents | |
|---|--|--|
| Safety information (2525460) | Basic safety information | |
| Operating instructions (2102384) | (this document) | |
| Operating instructions (2099179) | Evaluation unit CMS-E-AR | |
| Operating instructions (2099180) | Evaluation unit CMS-E-BR | |
| Operating instructions (2102344) | Evaluation unit CMS-E-ER | |
| Operating instructions (2102345) | Evaluation unit CMS-E-FR | |
| Declaration of conformity | Declaration of conformity | |
| Any additions to the operating instructions | Take any associated additions to the operating instructions or data sheets into account. | |

Important!

Always read all documents to gain a complete overview of safe installation, setup and use of the device. The documents can be downloaded from www.euchner.com. For this purpose, enter the doc. no. or the order number for the device in the search box.

Correct use

The **C**oded **M**agnetic **S**afety switches series **CMS** are safety devices for monitoring movable guards.

The system consists of evaluation unit, read head and actuator. It forms a non-contact, magnetically coded interlocking device with low coding level (type 4).

In combination with a guard, this system prevents dangerous machine functions from being performed for as long as the guard is opened. A stop command is triggered if the guard is opened during the dangerous machine function.

Before safety components are used, a risk assessment must be performed on the machine, e.g. in accordance with:

- EN ISO 13849-1
- EN ISO 12100
- EN IEC 62061

Correct use includes observing the relevant requirements for installation and operation, e.g.:

- EN ISO 14119
- EN IEC 60204-1

Important!

- The read heads and actuators must be used only with the designated evaluation units from EUCHNER. On the use of different evaluation units, EUCHNER provides no warranty for safe function.
- The user is responsible for safe integration of the device into a safe overall system. For this purpose, the overall system must be validated, e.g. in accordance with EN ISO 13849-1.
- Correct use requires observing the permissible operating parameters (see technical data).
- If a data sheet is included with the product, the information on the data sheet applies in case of discrepancies with the operating instructions.
- Only components that are permissible in accordance with the following *combination options* table may be used. Refer to the operating instructions of the corresponding component for further information.

Exclusion of liability and warranty

In case of failure to comply with the conditions for correct use stated above, or if the safety regulations are not followed, or if any servicing is not performed as required, liability will be excluded and the warranty void.

General safety precautions

Safety components fulfill personnel protection functions. Incorrect installation or tampering can lead to severe injuries to personnel.

Check the safe function of the guard particularly

- after any setup work
- each time after replacement of a CMS component
- after an extended period without use
- after every fault

Independent of these checks, the safe function of the safeguard should be checked at suitable intervals as part of the maintenance schedule.

Warning! Danger of fatal injury in the event of incorrect connection or incorrect use.

Safety components must not be bypassed (bridging of contacts), turned away, removed or otherwise rendered ineffective. Pay particular attention to EN ISO 14119: 2025, section 8, regarding the possibilities for bypassing an interlocking device.

The device may be installed and put into operation only by authorized personnel

- who are familiar with the correct handling of safety components
- who are familiar with the applicable EMC regulations
- who are familiar with the applicable regulations on operational safety and accident prevention
- who have read and understood the operating instructions.

Function

The safety system CMS consists of evaluation unit, read head and actuator and is functional only in particular combinations (see combination options).

The read head connected to the evaluation unit contains reed contacts that are activated by the coded magnetic actuator. The evaluation unit converts this information and transfers the guard state to the control system via a safety contact.

Mounting

Caution! Risk of damage to equipment as a result of incorrect installation.

Read heads or actuators must not be used as a mechanical end stop. Fit an additional end stop for the movable part of the guard.

Caution! Read heads or actuators must not be used in an environment with strong magnetic fields.

Important! Read heads and actuators must be positively mounted to the guard, e.g. by using the safety screws supplied. Tighten the screws with a torque of max. 0.5 Nm.

Important! The M8 plug connector must be tightened with a suitable tool.

The read head and actuator may be installed in any position. The alignment of the read head and the actuator must be kept in mind (see Fig. 1).

Install read head and actuator so that:

- they are accessible for inspection work and the installation of spare parts
- when the guard is closed, the active read head and actuator faces are exactly aligned (see Fig. 1)
- the actuator is located in the read head's actuating range when the guard is closed.
- A guide and an additional end stop must be fitted for the movable part of the guard.
- A latching mechanism in the closed position must be provided for the safety door.
- If the read head and actuator are installed flush, the operating distances are reduced in line with the installation depth and the guard material.
- If the read head and actuator are mounted on ferromagnetic material, the read distance is reduced.
- If the approach speed between the read head and the actuator is low and the evaluation unit CMS-E-BR is used, the approach direction **Z** (see Fig. 1) should be avoided.
- Round actuators have protection against twisting. In order to ensure that the actuator cannot be rotated when secured to the safety door, a \varnothing 2 mm hole must be drilled for the safety lug during mounting.

Electrical connection

Warning! In the event of a fault, loss of the safety function due to incorrect connection.

Both switching contacts on the read head must be evaluated separately.

The evaluation unit must perform the short circuit monitoring on the read head connected.

Lay the connecting cables with protection to prevent the risk of short circuits.

Caution! Risk of damage to equipment or malfunctions as a result of incorrect connection.

On read heads with LEDs the current on the contact status indication is not allowed to be greater than 20 mA.

The read heads must be connected to the evaluation units in accordance with the wiring diagram (see operating instructions for evaluation units).

Service and inspection

Remove iron swarf from the read head and actuator **at regular intervals**.

Use only solvent-free cleaning agents for cleaning the actuators and read heads.

Regular inspection of the following is necessary to ensure trouble-free long-term operation:

- Correct switching function
- Secure mounting of components
- Loose connections

In the event of damage or wear, the damaged system component must be replaced.

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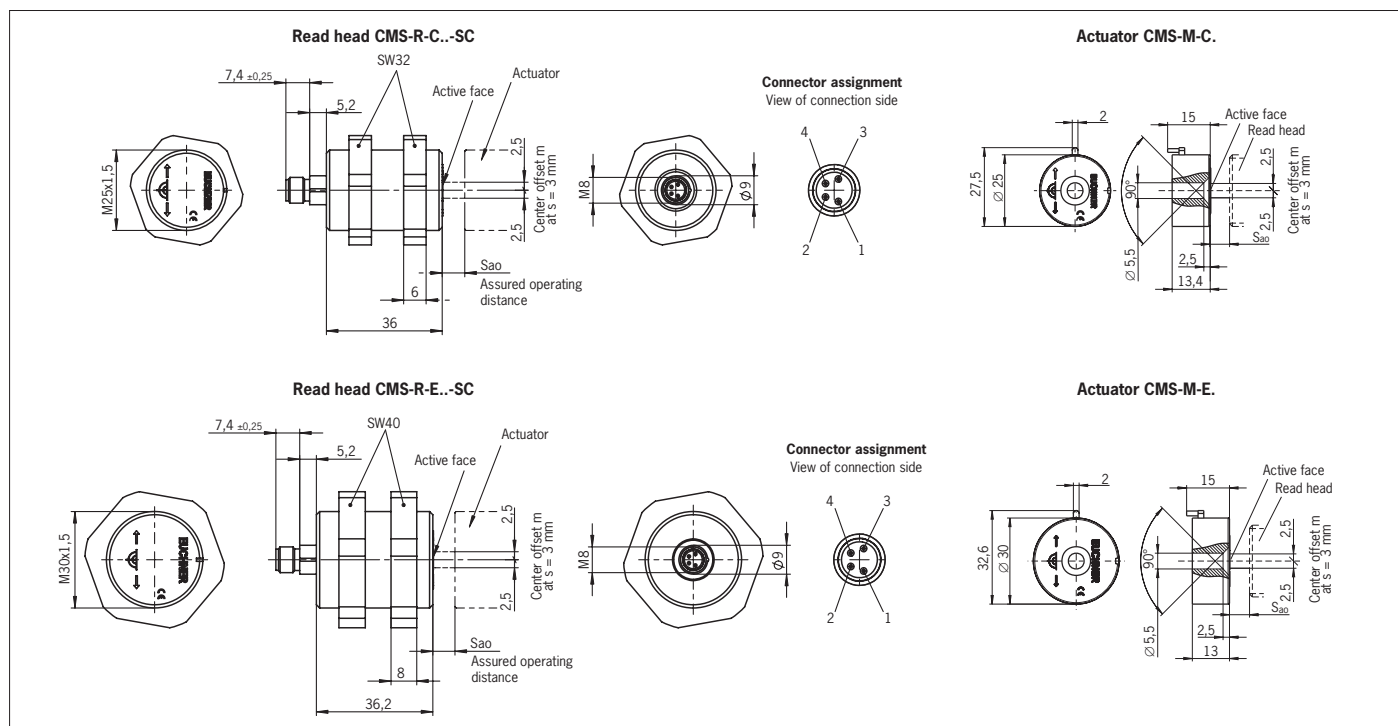


Fig. 3: Dimension drawings for read heads CMS-R-C...-SC / CMS-R-E...-SC
Dimension drawings for actuators CMS-M-C. / CMS-M-E.

Combination options for evaluation units CMS-E-AR, CMS-E-BR, CMS-E-ER, CMS-E-FR

| | Design | Read head | Circuit diagram not actuated | Actuator | Assured operating distance s_{so} [mm] ¹⁾ | Assured release distance s_{ar} [mm] |
|--|--------|----------------------------|------------------------------|----------|---|---|
| Evaluation units CMS-E-AR | | CMS-R-AXD-SC | | CMS-M-AB | 6 | 18 |
| | | CMS-R-AXE-SC | | CMS-M-AG | 18 | 34 |
| | | CMS-R-AXF-SC | | CMS-M-AB | 6 | 18 |
| | | CMS-R-AXG-SC | | CMS-M-AG | 18 | 34 |
| | | CMS-R-BXO-SC | | CMS-M-BH | 6 | 17 |
| | | CMS-R-BXP-SC | | | | |
| | | CMS-R-CXA-SC | | CMS-M-CA | 7 | 16 |
| | | CMS-R-CXB-SC | | | | |
| | | CMS-R-EXL-SC | | CMS-M-EF | 7 | 16 |
| | | CMS-R-EXN-SC | | | | |
| Evaluation units CMS-E-BR, CMS-E-ER and CMS-E-FR | | CMS-R-AXH-SC ²⁾ | | CMS-M-AC | 6 | 31 |
| | | CMS-R-BXI-SC | | CMS-M-BD | 3 | 12 |
| | | CMS-R-CXC-SC | | CMS-M-CA | 6 | 14 |
| | | CMS-R-EXM-SC | | CMS-M-EF | 6 | 17 |

1) There must be no ferromagnetic material in the vicinity of the read head or the actuator. All data refer to the frontal approach direction and a center offset of $m = 0$.
2) The minimum operating distances s_{min} between read head and actuator are 1 mm. If the distances are less than this, the evaluation unit can change to the fault state.