

# EUCHNER

## Operating Instructions

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## 1. About this document

### 1.1. Scope

This document is valid for all submodules MSM-1-R-A-....

These operating instructions, the document *Safety information*, the operating instructions for the modules connected and any associated data sheets form the complete user information for your system.

Series	Module connection type	Product versions
MSM-1-R-A-...	...MLF...	From V1.1

#### 1.1.1. Notes on older product versions

Products with lower product versions or without a version number are not described by these operating instructions. Please contact our support team in this case.

### 1.2. Target group

Design engineers and installation planners for safety systems on machines, as well as setup and servicing staff possessing special expertise in handling safety components as well as expertise in the installation, setup, programming and diagnostics of programmable logic controllers (PLCs) and bus systems.

### 1.3. Key to symbols

Symbol/depiction	Meaning
	Printed document
	The document is available for download at <a href="http://www.EUCHNER.com">www.EUCHNER.com</a>
 <b>DANGER</b> <b>WARNING</b> <b>CAUTION</b>	Safety precautions <b>Danger</b> of death or severe injuries <b>Warning</b> about possible injuries <b>Caution</b> Slight injuries possible
 <b>NOTICE</b> <b>Important!</b>	<b>Notice</b> about possible device damage <b>Important</b> information
<b>Tip</b>	Tip/useful information

### 1.4. 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 (2539735)	(this document)	
Operating instructions for the connected modules and their submodules	Device-specific information for the related module and the submodules installed	
Any associated data sheets	Item-specific information about deviations or additions	



#### 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](http://www.euchner.com). For this purpose enter the doc. no. or the order number for the device in the search box.

## 2. Correct use

The submodule MSM-1-R-A-... is installed in suitable MGB2 Modular system components and used for connecting external enabling devices or safety switches without guard locking.

Before the device is used in combination with a safety function, a risk assessment must be performed on the machine, e.g. in accordance with the following standards:

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

Correct use includes observing the relevant requirements for installation and operation, particularly based on the following standards:

- EN 60204-1
- Possibly others (depending on the connected switches)

The submodule MSM-1-R-A-... may be combined only with suitable MLI modules (see *Table 1: Combination options for modules with MLI technology*).

On the unauthorized modification of system components, EUCHNER provides no warranty for function.

The customer is responsible for the safe overall function, especially for the safe integration into an overall system.



### Important!

- The user is responsible for the proper 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 13849-2.
- Correct use requires observing the permissible operating parameters (see chapter 15. *Technical data on page 9*).
- If a data sheet is included with the product, the information on the data sheet applies.
- Observe the information about connecting the external enabling devices or safety switches (see chapter 11. *Connecting external switches on page 8*)

Table 1: Combination options for modules with MLI technology

Submodules	Bus module MBM-...-MLI from V1.00.0	
	Interlocking/locking module MGB2-I...-MLI / MGB2-L...-MLI from V1.4.0	Base units Expansion module MCM-...-MLI from V1.2.0
MSM-1-R-DA-M00-A6-137596	●	●
MSM-1-R-DA-00N-A7-137597	●	●
MSM-1-R-CA-BPM-D2-160626	●	●
MSM-1-R-DA-SQSQSQ-F3-164058	●	●
MSM-1-R-DA-SISISI-H1-165628	●	●
<b>Key to symbols</b>	●	Combination possible

### 3. Description of the safety function

When combined with the base unit, the submodule MSM-1-R-A-... has the safety functions *detecting and monitoring connected switches* and *forwarding the data to the bus module MBM*. Observe the description of the safety functions in the operating instructions for your bus module MBM and in any data sheet for your submodule MSM.

### 4. 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.

### 5. General safety precautions

Additionally observe the safety precautions in the operating instructions for your bus module MBM and your external switch.

	<p><b>WARNING</b></p> <p>Danger to life if the wrong switch is selected.</p> <ul style="list-style-type: none"> <li>› Combination with unsuitable switches can result in the loss of the safety function. Connect only permissible external switches (see chapter 11. <i>Connecting external switches on page 8</i>).</li> </ul>
	<p><b>WARNING</b></p> <p>Danger to life due to improper installation or due to bypassing (tampering). Any contained safety components fulfill a personnel protection function.</p> <ul style="list-style-type: none"> <li>› Contained safety components must not be bypassed, turned away, removed or otherwise rendered ineffective. On this topic pay attention in particular to the measures for reducing the possibility of bypassing according to EN ISO 14119:2013, section 7.</li> <li>› Mounting, electrical connection and setup only by authorized personnel possessing the following knowledge: <ul style="list-style-type: none"> <li>- specialist knowledge in handling safety components</li> <li>- knowledge about the applicable EMC regulations</li> <li>- knowledge about the applicable regulations on operational safety and accident prevention</li> </ul> </li> </ul>
	<p><b>Important!</b></p> <p>Prior to use, read the operating instructions and keep these in a safe place. Ensure the operating instructions are always available during mounting, setup and servicing. For this reason you should archive a printed copy of the operating instructions. You can download the operating instructions from <a href="http://www.euchner.com">www.euchner.com</a>.</p>

## 6. Function

The submodules MSM-1-R-DA-M00-A6-137596, MSM-1-R-DA-00N-A7-137597 and MSM-1-R-CA-BPM-D2-160626 have a connection for an external enabling switch.

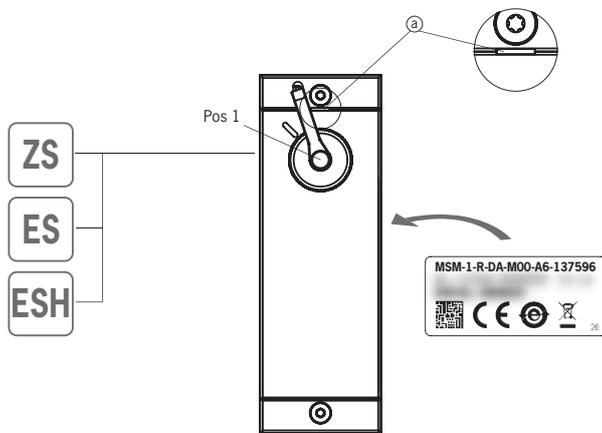


Fig. 1: Submodule MSM-1-R-DA-M00-A6-137596

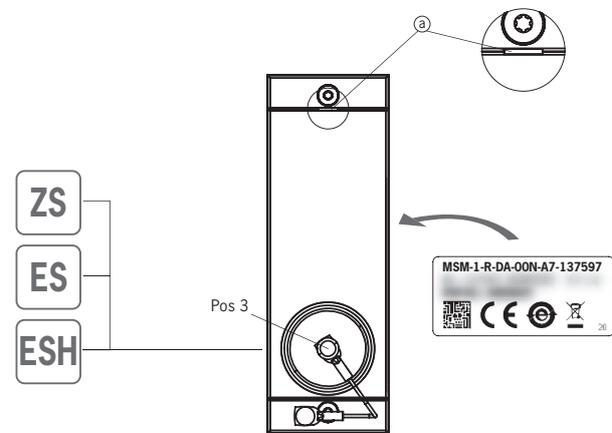


Fig. 2: Submodule MSM-1-R-DA-00N-A7-137597

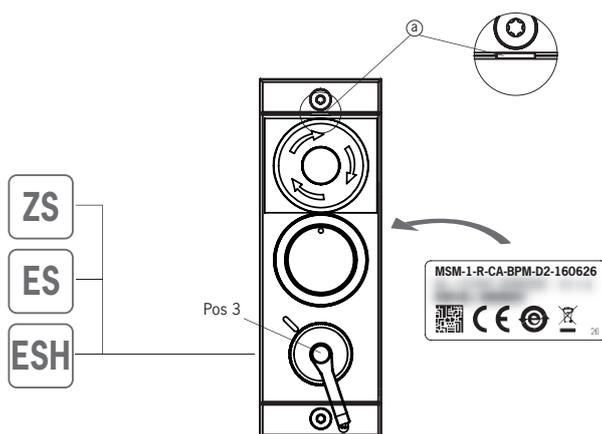


Fig. 3: Submodule MSM-1-R-CA-BPM-D2-160626

The submodules MSM-1-R-DA-S... have connections for up to three external electromechanical or transponder-coded safety switches without guard locking (see chapter 11. Connecting external switches on page 8).

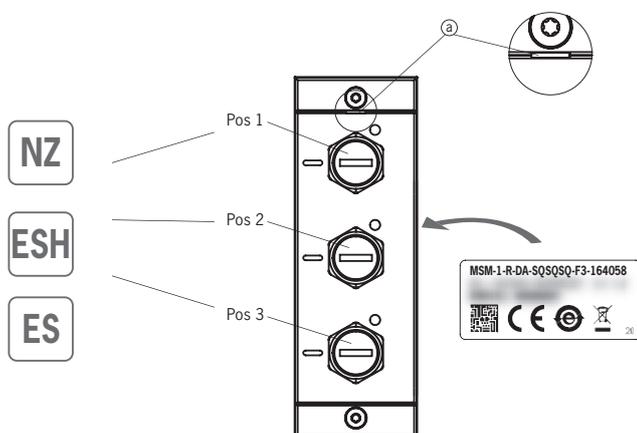


Fig. 4: Submodule MSM-1-R-DA-SQSQSQ-F3-164058

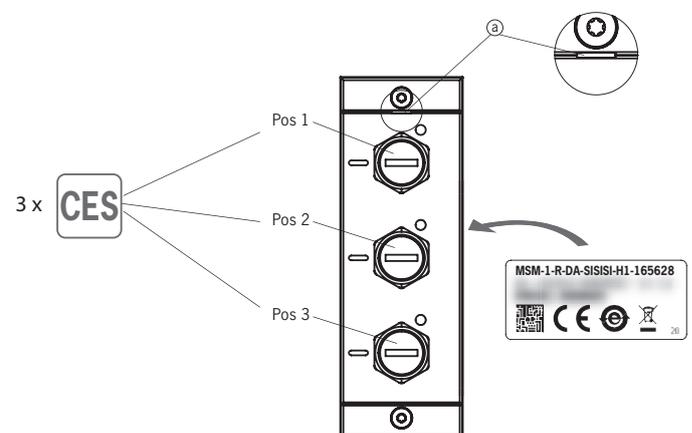


Fig. 5: Submodule MSM-1-R-DA-SISISI-H1-165628

## 7. Mounting



### Important!

- › Mounting must be performed only by authorized personnel.
- › The submodule MSM-1-R-A-... can be used only in base units with MLI technology (see *Table 1: Combination options for modules with MLI technology on page 4*).
- › Submodule mounting is described in the operating instructions for the respective base unit. Observe the relevant information.

## 8. Protection against environmental effects

A lasting and correct safety function requires that the system must be protected against foreign bodies such as swarf, sand, blasting shot, etc., which can become lodged in the housing.

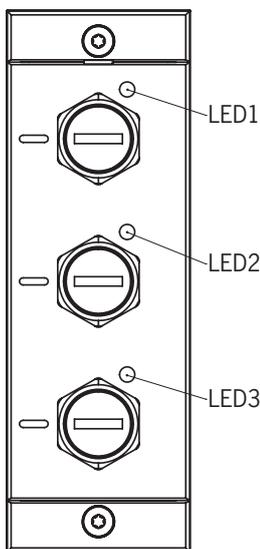
Pay attention to the following measures:

- › Seal unused connections using the covers provided.
- › Make sure the housing covers are correctly sealed and the cover screws are tightened to the necessary tightening torque.
- › Cover the device during painting work.

## 9. Controls and indicators

### 9.1. LED displays

The submodules MSM-1-R-DA-M00-A6-137596, MSM-1-R-DA-00N-A7-137597 and MSM-1-R-CA-BPM-D2-160626 do not have an LED indicator.



LED	Description
1 ... 3	Indicates that both safety outputs are switched. Color: green

Fig. 6: LED displays of the submodules MSM-1-R-DA-SQSQQ-F3-164058 and MSM-1-R-DA-SISIS-H1-165628

## 10. Electrical connection



### Important!

- › Pay attention to the instructions on electrical connection in the operating instructions for your bus module MBM.
- › Avoid touching the contacts on the underside of the submodule. Risk of ESD damage and contact problems due to soiling.

Refer to the associated data sheet for the exact connection options.

## 11. Connecting external switches



### WARNING

Danger to life if the wrong switch is selected.

- › Combination with unsuitable switches can result in the loss of the safety function. Connect only permissible external switches.



### Important!

- › Observe the information in the operating instructions for your enabling device or your safety switch.
- › The following applies to the submodules MSM-1-R-DA-M00-A6-137596, MSM-1-R-DA-00N-A7-137597, MSM-1-R-CA-BPM-D2-160626 and MSM-1-R-DA-SQSQSQ-F3-164058:  
Connect only safety switches with dual-channel, electrically isolated, equivalent switching contacts.
- › The following applies to the submodule MSM-1-R-DA-SISISI-H1-165628:  
Connect only Euchner safety switches from series CES-AP or -BP.  
External switches require separate currents, which must be taken into account in the chain (max. 100 mA per M12 plug connector).
- › In order to achieve the stated degree of protection, unused connections must be fitted with the covers provided.
- › The connecting cable must not be longer than 50 m.

## 12. Setup

For information on setup, refer to the operating instructions for your bus module MBM.

## 13. Data blocks



### Important!

- › Refer to the associated data sheet for information about the communication data and the data blocks of your submodule.
- › You will find more information about the communication data and the data blocks in the operating instructions for your bus module.

## 14. Diagnostics, troubleshooting and aids

For instructions on diagnostics and troubleshooting, refer to the operating instructions for your bus module MBM.

## 15. Technical data



### NOTICE

If a data sheet is included with the product, the information on the data sheet applies.

Parameter	Value date
Housing material	Fiber glass reinforced plastic, die-cast zinc, nickel plated
Dimensions	See dimension drawing
Weight	0.1 kg net
Ambient temperature	-25 ... +55 °C
Degree of protection	IP65 <sup>1)</sup> (IP20)
Installation orientation	Any
Connection of external switches	Push-pull (A-coded), 5-pin, or M12 (A-coded), 5-pin, for external switches; max. cable length 50 m
Internal current consumption, max.	
- For MSM-1-R-DA-M00-A6-137596	16 mA
- For MSM-1-R-DA-00NA7-137597	50 mA
- For MSM-1-R-CA-BPM-D2-160626	38 mA
- For MSM-1-R-DA-SQSQSQ-F3-164058	48 mA
- For MSM-1-R-DA-SISISH1-165628	50 mA + current consumption of OSSD switches (3 x 100 mA); total max. 350 mA
Resilience to vibration and shock	Acc. to EN 60947-5-3
EMC protection requirements	Acc. to EN 61000-4 and DIN EN 61326-3-1
Risk times, max. (turn-off times) <sup>2)</sup>	See information in the operating instructions for your bus module
<b>Reliability values acc. to EN ISO 13849-1:2015</b>	
Category	4
Performance Level	PL e
MTTF <sub>d</sub>	>2,500 years
Mission time	20 years
PFH <sub>d</sub> <sup>3)</sup>	9.06 x 10 <sup>-10</sup> (2,500 years MTTF <sub>d</sub> )

1) IP65 only in the screwed tight state with the specified base units.

2) The risk time is the maximum time between the change in the input status and the clearing of the corresponding bit in the bus protocol.

3) Applies only in combination with the base units MGB2.

## 16. Service

If servicing is required, please contact:

EUCHNER GmbH + Co. KG  
Kohlhammerstraße 16  
70771 Leinfelden-Echterdingen  
Germany

### Service telephone:

+49 711 7597-500

### E-mail:

support@euchner.de

### Internet:

www.euchner.com

## 17. Inspection and service



### **WARNING**

Loss of the safety function because of damage to the device.  
In case of damage, the affected module must be replaced completely. Only accessories or spare parts that can be ordered from EUCHNER may be replaced.

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

- › Check the secure mounting of the devices and the connections

Further inspection measures may be necessary for the modules connected and submodules installed. Refer to the related operating instructions.

No servicing is required. Repairs to the device are only allowed to be made by the manufacturer.



### **NOTICE**

The year of manufacture can be seen in the lower right corner of the type label.



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