

Easily programmable.

The small safe control system **MSC**

EUCHNER
More than safety.

The small safe control system **MSC**

The MSC is a universal, freely programmable, modular safety system for the safeguarding of machines and manufacturing equipment. It is suitable for almost all safety-related tasks and can monitor numerous safety-related devices. Programming is easily and conveniently on a PC using the software "EUCHNER Safety Designer". Even with only the base unit MSC-CB it is possible to realize a large number of safety applications with up to 8 inputs and 2 outputs, and that with a housing width of only 22.5 mm.

■ Can be expanded easily and specifically

Depending on the requirements, the MSC offers a broad range of expansion modules with which the base unit MSC-CB can be expanded almost without limit. The different input and output expansions can be connected to the base unit with the aid of an expansion connector. Various fieldbus modules can be integrated for straightforward connection to a machine control. The function of the fieldbus can be specifically defined in the programming. In this way the control system can be used in a read-only role, or to provide control. All common fieldbuses are available to suit the related control system.

■ Rapid and targeted diagnostics

The MSC offers a range of types of diagnostics. The LED indication on the front of all modules provides a straightforward, quick diagnostic feature. In addition it is possible to access directly the program in the base unit with the aid of the software EUCHNER Safety Designer so that the switching state of the inputs and outputs or the logic functions can be checked in detail. Initial setup is significantly simplified in this manner.

■ Equipped for an emergency

Each base unit has an internal memory in which the program and all related settings are saved. As an option it is also possible to use a separate memory module in the device. A copy of the actual program is automatically saved on this card. It is then possible to replace quickly a faulty device in an emergency, without a PC.

■ Protection in compliance with standards

The small safe control system MSC offers a high degree of safety. Category 4 and Performance Level e (PL e) in accordance with EN ISO 13849-1 are met by the base unit and all expansion modules.

■ Clear software

The easy to use and free of charge software "EUCHNER Safety Designer" provides an excellent overview of the logic functions programmed like e-stop, interlock, footswitch. A dedicated module is available for almost every safe device, in this way it is possible to differentiate between the emergency stop and an interlock at a glance.



The base unit **MSC-CB**

► **Freely programmable small safe control system**

Suitable as a standalone solution for many safety-related tasks and can be expanded almost without limit.

► **8 single-channel/4 dual-channel inputs**

For all common safety-related sensors like safety switches (interlocking and guard locking), light curtains, enabling switches, emergency stop etc.

► **2 control inputs**

For the connection of start buttons or contactor feedback monitoring.

► **2 safe outputs (PL e, category 4)**

According to the programming for safety-related shutdown of hazardous machine movements.

► **2 monitoring outputs**

Can be used as required for all tasks outside safety engineering.

► **PC connection for the software "EUCHNER Safety Designer"**

For programming and detailed diagnostics.

► **Optional memory module for configuration**

Redundant memory should replacement be necessary.

► **Compact housing with width of only 22.5 mm**

Saves valuable space in the control cabinet.

► **Straightforward diagnostics via LED displays**

For continuous monitoring of the input and output states.

► **Plug-in terminals**

For convenient wiring and for quick replacement.



The expansion modules for the **MSC**

▶ **MSC-CE-FI8-121291**

Input expansion with
8 safe inputs



▶ **MSC-CE-FI16-121292**

Input expansion with
16 safe inputs

▶ **MSC-CE-AC-FI8FO2-121290**

Input and output expansion with
8 safe inputs
2 safe semiconductor outputs
2 monitoring outputs



▶ **MSC-CE-FM4-121293**

Input expansion with
4 pressure sensitive mat inputs



▶ **MSC-CE-AC-FO2-121294**

Output expansion with
2 safe semiconductor outputs



▶ **MSC-CE-AC-FO4-121295**

Output expansion with
4 safe semiconductor outputs

▶ **MSC-CE-AZ-FO4-121298**

Output expansion with
4 safe relay outputs



▶ **MSC-CE-SPM0-121300**

2 Proximity switch



▶ **MSC-CE-AZ-FO408-121299**

Output expansion with
4 safe relay outputs
8 monitoring outputs

▶ **MSC-CE-SPM1H-121301**

2 Proximity switch
1 or 2 HTL encoder

▶ **MSC-CE-SPM2H-121304**

▶ **MSC-CE-SPM1TB-122721**

2 Proximity switch
1 or 2 TTL encoder

▶ **MSC-CE-SPM2TB-122722**

▶ **MSC-CE-SPM1S-121303**

2 Proximity switch
1 or 2 sin/cos encoder

▶ **MSC-CE-SPM2S-121306**

▶ **MSC-CE-PN-121315**

PROFINET fieldbus



▶ **MSC-CE-SPM1S-121303**

2 Proximity switch
1 or 2 sin/cos encoder

▶ **MSC-CE-SPM2S-121306**



▶ **MSC-CE-PR-121310**

PROFINET fieldbus

▶ **MSC-CE-CO-121312**

CANopen fieldbus

▶ **MSC-CE-US-121316**

USB connection

▶ **MSC-CE-EC-121313**

EtherCAT fieldbus

▶ **MSC-CE-EI-121314**

EtherNET /IP fieldbus

▶ **MSC-CE-DN-121311**

DeviceNet fieldbus

▶ **MSC-CE-MR-122716**

Modbus RTU fieldbus

▶ **MSC-CE-MT-122717**

Modbus TECP/IP fieldbus

▶ **MSC-CE-EI2-122718**

EtherNET /IP 2-PORT fieldbus

▶ **MSC-CE-CI1-121317**

Decentralized 1-channel
communication module

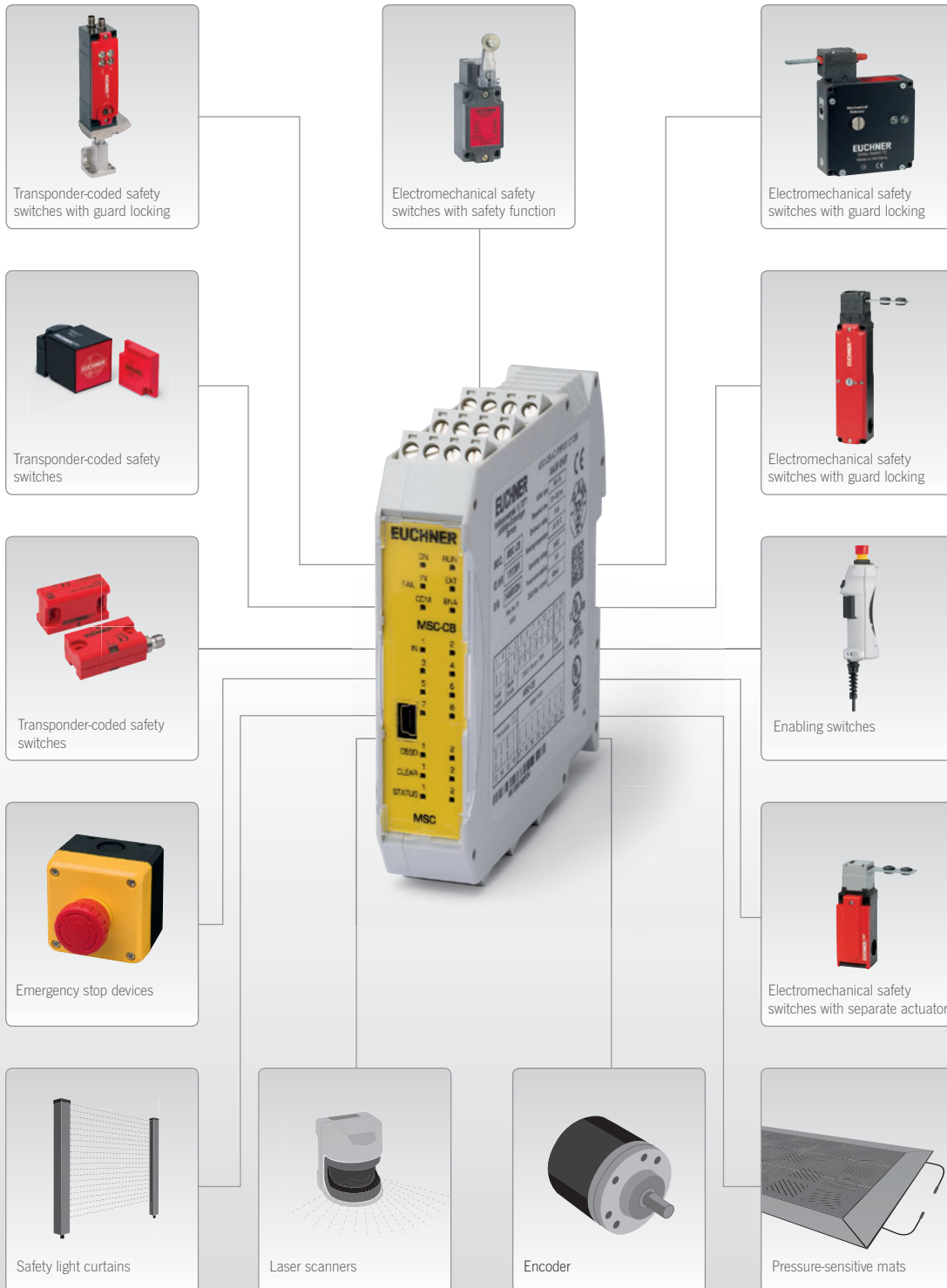
▶ **MSC-CE-CI2-121318**

Decentralized 2-channel
communication module



Versatile connection options

Almost every available safety device can be connected to the safe control system MSC. From conventional emergency stop devices, to safety switches with contacts or OSSD outputs, safety light curtains etc. the options are diverse. Both wear-free semiconductor outputs and relay outputs are available on the output side.



Technical data MSC-CB and expansion modules



Parameter	Value			Unit
	min.	typ.	max.	
Dimensions	114.5 x 108 x 22.5			mm
Degree of protection	IP20			
Mounting	Mounting rail 35 mm according to EN60715			
Connection (plug-in terminals)	0,5	–	2,5	mm ²
Ambient temperature	-10	–	55	°C
Operating voltage U_b (PELV) EN 60204-1	DC 24 ± 20 %			V
Power consumption	Max. 3			W
Digital inputs*				
	Up to 16; semiconductor inputs, p-switching according to EN61131-2			
Feedback loop inputs*				
	Up to 4; external device monitoring (EDM), automatic, manual operation			
Pulse outputs*				
	Up to 8			
- Test pulses	200			µs
Monitoring outputs*				
	Up to 8, semiconductor outputs, p-switching			
- Max. load	Max. 100			mA
Safety outputs*				
	Up to 4; semiconductor outputs, p-switching, short circuit-proof			
- Max. load	Max. 400			mA
- HIGH	$U_b - 0.75$	–	U_b	V
- LOW	0	–	2	V
- Test pulses	–	100	–	µs
Relay outputs*				
	Up to 4			
- Switching current	0.02	–	6	A
- Utilization Category to EN 60947-5-1	AC-15 240V 3A / DC 13 24V 1A			
Reliability values according to EN ISO 13849-1				
Category		4		
Performance Level		PL e		
Mission time		20		years
Speed monitoring modules				
Interface	TTL (SPMxTB), HTL (SPMxH), sin/cos (SPMxS)			
Connection	RJ45			
Rated insulated voltage	250			V
Rated impuls voltage	4			kV
Max. number	Up to 2			
Max. frequency	500 (HTL : 300)			kHz
Adjustable threshold range	1 Hz – 450 kHz			
Proximity switch				
Type	PNP/NPN - 3/4-wires			
Max. number	2			
Max. frequency	5			kHz
adjustable threshold range	1 Hz – 4 kHz			
Max. number of axes	2			
Stand-Still/overspeed frequency gap	>10			Hz

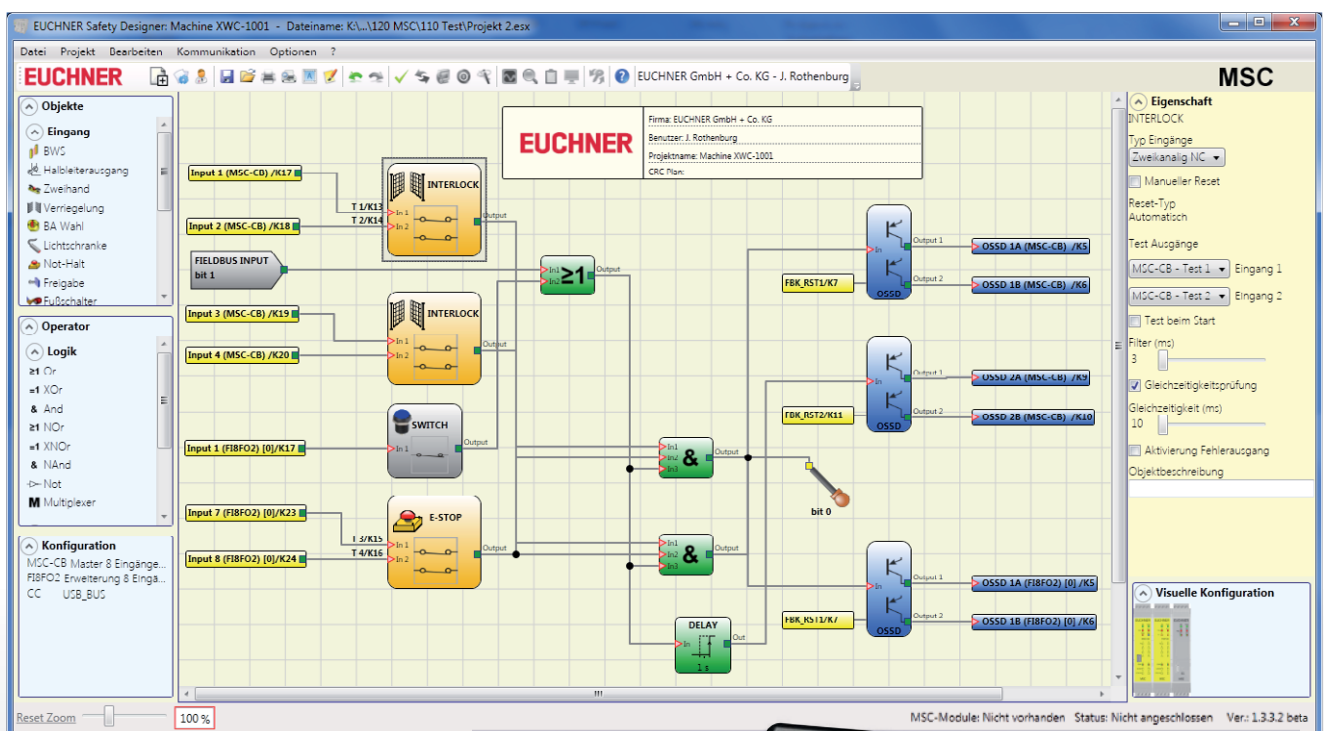
* per module

The programming interface "EUCHNER Safety Designer"

The software "EUCHNER Safety Designer" provides a graphic configuration interface for programming the small safe control system MSC. This software has a clear layout and is easy and intuitive to operate. A large number of different safety functions (e.g. e-stop, interlock, footswitch) as well as various logic operators (e.g. 1 out of N, AND, OR, INVERTER) are available for the configuration. With these features even complex applications can be generated easily. The parameter settings are immediately visible on clicking a module. It is not necessary to open any additional windows. This feature provides a quick overview and makes work easier.

To setup the system the programming software on a PC is connected directly to the base unit MSC-CB via a USB cable. This saves time during setup and makes troubleshooting easier.

The programs prepared are protected by different access levels. In this way inadvertent changes, incorrect operation or changes to the system configuration are effectively prevented. It is of course possible to change the language.



The advantages of MSC at a glance

- Easy to program and multifunctional in use
- Compact housing for all modules saves space in the control cabinet
- Various diagnostics features – can be read easily on the front, in detail in the software
- Maximum safety (PL e, category 4)
- Connection of a large number of safety-related devices
- Low wiring effort
- Clear programming interface
- Can be expanded easily and quickly

Ordering table

Item	Description	Terminal set*	Order no.
MSC-CB-AC-FI8FO2-121289	Base unit, 8 safe inputs, 2 safe outputs	Six contacts	121289
MSC-CE-AC-FI8FO2-121290	Expansion unit, 8 safe inputs, 2 safe outputs	Six contacts	121290
MSC-CE-FI8-121291	Expansion device, 8 safe inputs	Four contacts	121291
MSC-CE-FI16-121292	Expansion device, 16 safe inputs	Six contacts	121292
MSC-CE-FM4-121293	Expansion device, 4 pressure-sensitive mats	Six contacts	121293
MSC-CE-AC-FO2-121294	Expansion device, 2 safe outputs	Four contacts	121294
MSC-CE-AC-FO4-121295	Expansion device, 4 safe outputs	Six contacts	121295
MSC-CE-AZ-FO4-121298	Expansion device, 4 safe relay outputs	Four contacts	121298
MSC-CE-AZ-FO408-121299	Expansion device, 4 safe relay outputs	Six contacts	121299
MSC-CE-PR-121310	Expansion device, PROFIBUS fieldbus	Two contacts	121310
MSC-CE-DN-121311	Expansion device, DeviceNET fieldbus	Two contacts	121311
MSC-CE-CO-121312	Expansion device, CANopen fieldbus	Two contacts	121312
MSC-CE-EC-121313	Expansion device, EtherCAT fieldbus	Two contacts	121313
MSC-CE-EI-121314	Expansion device, EtherNET/IP fieldbus	Two contacts	121314
MSC-CE-PN-121315	Expansion device, PROFINET fieldbus	Two contacts	121315
MSC-CE-US-121316	Expansion device, USB connection	Two contacts	121316
MSC-CE-SPM0-121300	Expansion device, 2 Proximity switch	Four contacts	121300
MSC-CE-SPM1H-121301	Expansion device, 2 Proximity switch, 1 HTL encoder	Four contacts	121301
MSC-CE-SPM1TB-122721	Expansion device, 2 Proximity switch, 1 TTL encoder	Four contacts	122721
MSC-CE-SPM1S-121303	Expansion device, 2 Proximity switch, 1 sin/cos encoder	Four contacts	121303
MSC-CE-SPM2H-121304	Expansion device, 2 Proximity switch, 2 HTL encoder	Four contacts	121304
MSC-CE-SPM2TB-122722	Expansion device, 2 Proximity switch, 2 TTL encoder	Four contacts	122722
MSC-CE-SPM2S-121306	Expansion device, 2 Proximity switch, 2 sin/cos encoder	Four contacts	121306
MSC-CE-CI1-121317	Decentralized 1-channel communication module	Four contacts	121317
MSC-CE-CI2-121318	Decentralized 2-channel communication module	Four contacts	121318
MSC-CE-MR-122716	Expansion device, Modbus RTU fieldbus	Two contacts	122716
MSC-CE-MT-122717	Expansion device, Modbus TECP/IP fieldbus	Two contacts	122717
MSC-CE-EI2-122718	Expansion device, EtherNET /IP 2-PORT fieldbus	Two contacts	122718
AC-PL-B-121308**	Expansion connector	-	121308
MSC-MA1-121309	Memory module card	-	121309
AC-SC-02-V04-121319	Terminal set 2 contacts screw terminals	-	121319
AC-SC-04-V04-121320	Terminal set 4 contacts screw terminals	-	121320
AC-SC-06-V04-121321	Terminal set 6 contacts screw terminals	-	121321
C-USB-2.0-A-01,8-MINB-121322	USB cable	-	121322

*) Please order separate! **) To expand the base unit MSC-CB an expansion connector must be ordered. One expansion connector is included with all expansion modules.

The software "EUCHNER Safety Designer" is included on CD with each base unit MSC-CB (121289).

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