

Certus Multifunction



Safety modules



Description

Certus offers a range of safety modules, compliant with international standards, designed to provide the most comprehensive protection for equipment and personnel. They enable safety functions accepting different types of input. This means cost saving and fewer product codes.

Applications

This safety module is able to monitor multiple safety functions of industrial machinery, protecting operators from dangerous moving parts of the machine.

The CERTUS module provides a safety-related interruption of a safety circuit.

The safety modules, compliant with the requirements of safety standards, can be used in applications with: E-stop, E-gate, limit switch, non-contact switch, safety light curtains (ESPE Type 4, Type2), safety light beam (single beam), safety mat.

Main functions

- 4 OSSD safety outputs. Certus provides up to 4 Output Signal Switching Devices. The correct opening and closing of the safety function OSSDs is tested automatically.
- Selectable delay time. Can be easily set-up through the hex-switch, selected from a choice of 15 pre-set configurations, from 0 to 30 sec. The main model CM22D0A can include 2 delayed digital outputs.
- Manual or automatic start selectable.

Benefits

- **Flexible solution.** Certus modules can be connected with different types of input: E-stop, E-gate, limit switch, non-contact switch, safety light curtains (ESPE Type 4, Type2), safety light beam (single beam), safety mat.
- **Cost saving.** Same module, different applications. Safety solutions for basic machines, equipment and production lines.
- **3 different devices.** The main model CM22D0A includes 2 instantaneous digital outputs and 2 delayed digital outputs (both OSSDs). The delay can be easily selected via a hex-switch on the front panel.
- **Compact dimensions.** 1 DIN, smaller than a standard safety housing! W x H x D: 18 x 90 x 63 mm.
- **Standards compliance.** Cat. 4 PL e in accordance with ISO 13849-1, SIL 3 in accordance with IEC 61508, SILcl 3 in accordance with IEC 62061.
- **Approval** by TÜV.

CM22D0A



Safety Module with configurable outputs using hex-switch



Description

This module provides a safety-related interruption of a safety circuit. It is used in applications with: E-stop, E-gate, limit switch, non contact switch, safety light curtains (ESPE Type 4, Type 2), safety light beam (single beam), safety mat.

The Certus CM22D0A safety module, compliant with international standards, is designed to provide the most comprehensive protection for equipment and personnel. It enables safety functions, accepting different types of input. This means cost saving and fewer product codes.

This safety module is able to monitor multiple safety functions of industrial machinery, protecting operators from dangerous moving parts of the machine.

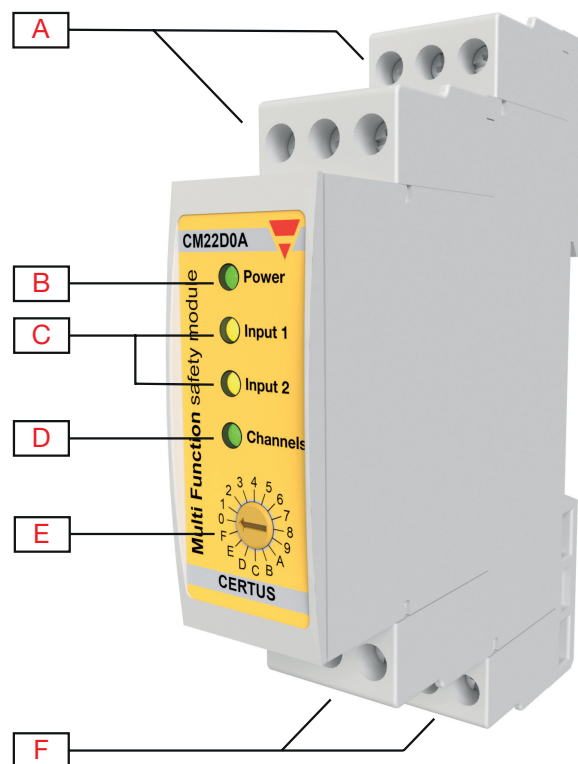
Main features

- **Flexible Solution.** Certus modules can be connected with different types of input: E-Stop, E-gate, limit Switch, non contact switch, safety light curtains (ESPE Type 4, Type2), safety light beam (single beam), safety mat.
- **Cost saving.** Same module different applications. Safety solutions for basic machines, equipment and production lines.
- **Selectable delay time.**
- **Compact dimensions.** 1 DIN, smaller than a standard safety housing! W x H x D: 18 x 90 x 63 mm.
- **Standards compliance.** Cat. 4, PL e in accordance with ISO 13849-1, SIL 3 in accordance with IEC 61508 and SILcl 3 in accordance with IEC 62061.
- **Status indicator.** 4 LEDs on the front panel indicate the status and any errors during operation.
- **Approval by TÜV.**

Main functions

- **4 OSSD safety outputs.** Certus CM22D0A provides up to 4 Output Signal Switching Devices. The correct opening and closing of the safety function OSSDs is tested automatically.
- **Configurable Outputs.** Configurable pre-set delayed safety outputs, set via the hex-switch.
- **Manual or automatic start selectable.**

Structure



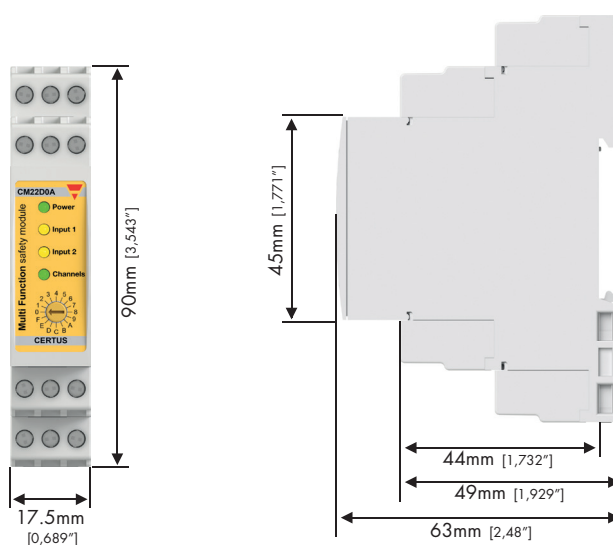
Element	Component	Function
A	Terminals	Power supply, start and activation element
B	LED	Power indicator
C	LED	Input status
D	LED	Channel status
E	Hex-Switch	Changing output configuration
F	Terminals	OSSD outputs



Features

General

Material	Noryl, self-extinguishing: UL 94 V-0
Weight	65 g
Assembly	DIN rail mounting (According to EN 50022)



Power Supply

Power supply	19.2 - 28.8 VDC
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The external power supply fulfills the voltage supply requirements of EN 61496-1.

Inputs

Number of channels	2
Trigger inputs	S12 and S22
Input voltage (according to EN61131)	24VDC (>12V = HIGH) 24VDC (<2V = LOW)
Input current	>6mA, typically 8mA
Operating mode	Manual or automatic
Number of connectable light curtains ESPE	2*
Number of testable single beam ESPEs	4
Safety mats resistive rating	<200 Ω

* Depends on the delay of one light curtain (type 2). The maximum response time of the test trigger must not exceed 10ms.

▶ Outputs

Number of outputs	4
Number of safety outputs	4
Instantaneous safety outputs	2
Delayed safety outputs	2
NC auxiliary output	0
Type	Semiconductor
Output voltage	24VDC
Max current.	≤ 400 mA (UL: 350mA)
Max. voltage drop	≤ 2V
Response time	20 ms

▶ Safety parameters

ISO 13849-1 Cat.	Cat. 4
ISO 13849-1 Performance Level	PL e
IEC 61508 Safety Integrity Level	SIL 3
IEC 62061 Safety Integrity Level	SILcl 3
MTTFd	2403 a
PFHd	1,89 E-09
DCavg	99%

▶ Compatibility and conformity

Approvals	  
	EC type examined by TÜV

▶ Environmental

Protection grade	IP 5X
Operating temperature	0 ÷ 55°C

 Hex-switch

Hex-position	Configuration	Delay [s]
0	3 NO + 1 NC	0
1	4 NO	0
2	2 NO direct + 2 NO delayed	0,1
3	2 NO direct + 2 NO delayed	0,5
4	2 NO direct + 2 NO delayed	1
5	2 NO direct + 2 NO delayed	1,5
6	2 NO direct + 2 NO delayed	2
7	2 NO direct + 2 NO delayed	3
8	2 NO direct + 2 NO delayed	4
9	2 NO direct + 2 NO delayed	5
A	2 NO direct + 2 NO delayed	10
B	2 NO direct + 2 NO delayed	15
C	2 NO direct + 2 NO delayed	20
D	2 NO direct + 2 NO delayed	25
E	2 NO direct + 2 NO delayed	30
F	PROGRAMMING	-

Information:

- The Hex-switch must only be rotated clockwise.
- Any counter clockwise movement leads to the module switching to safe condition.
- Factory setting "0" (3NO + 1NC).
- While power is OFF you can rotate in either direction with no adverse effect.
- Full rotations can also be made several times if you have not immediately arrived at the correct position.

References

▶ Order code



CM22D0A

▶ CARLO GAVAZZI compatible components

Component name/code	Where to find it
Electromagnetic safety interlock with separated actuator	https://www.gavazziautomation.com/images/PIM/DATASHEET/ENG/ESI_DS.pdf

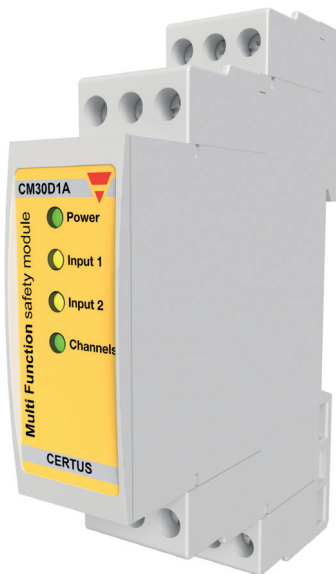
▶ Further reading

Information	Where to find it
Instruction manual	https://www.gavazziautomation.com/images/PIM/MANUALS/ENG/CM_IM.pdf
Software SISTEMA	http://www.dguv.de/webcode/e34183

CM40D0A, CM30D1A



Safety modules



Description

These modules are the easiest and cheapest solution for safety related components.

They include up to 4 OSSD outputs with no settable delays.

These modules provide safety-related interruption of a safety circuit. They are used in applications with: E-stop, E-gate, limit switch, non contact switch, safety light curtains (ESPE Type 4, Type 2), safety light beam (single beam), safety mat.

Compliant with international standards, they are designed to provide the most comprehensive protection for equipment and personnel. They enable safety functions, accepting different types of input. This means cost saving and fewer product codes.

These modules are able to monitor multiple safety functions of industrial machinery, protecting operators from dangerous moving parts of the machine.

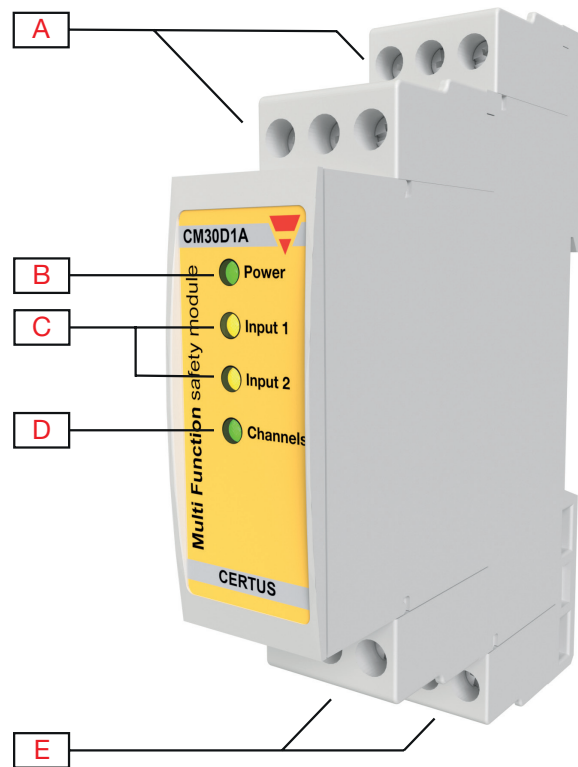
Main features

- **Flexible Solution.** Certus modules can be connected with different types of input: E-Stop, E-gate, limit Switch, non contact switch, safety light curtains (ESPE Type 4, Type2), safety light beam (single beam), safety mat.
- **Cost saving.** 2 modules, different applications. Safety solutions for basic machines, equipment and production lines.
- **Compact dimensions.** 1 DIN, smaller than a standard safety housing! W x H x D: 18 x 90 x 63 mm.
- **Status indicator.** 4 LEDs on the front panel indicate the status and any errors during operation.
- **Standards compliance.** Cat. 4 PL e in accordance with ISO 13849-1, SIL 3 in accordance with IEC 61508, SILcl 3 in accordance with IEC 62061.
- **Approval** by TÜV.

Main functions

- **Up to 4 OSSD safety outputs.** The correct opening and closing of the safety function OSSD is tested automatically.
- **Certus CM40D0A** has 4 Output Signal Switching Devices, not delayed.
- **Certus CM30D1A** has 3 Output Signal Switching Devices, not delayed.
- **1 auxiliary output.** The CM30D1A includes 1 auxiliary output.
- **Manual or automatic start selectable.**
- **Redundant circuit.**

Structure

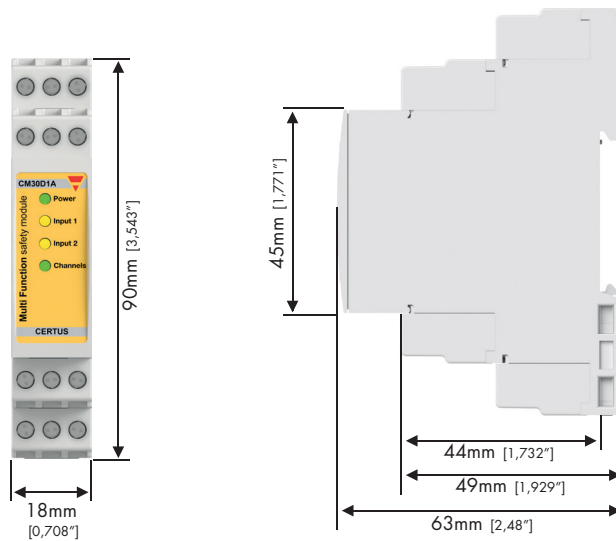


Element	Component	Function
A	Terminals	Power supply, start and activation element
B	LEDs	Power indicator
C	LEDs	Input status
D	LEDs	Channel status
E	Terminals	OSSD outputs

Features

General

Material	Noryl, self-extinguishing: UL 94 V-0
Weight	65 g
Assembly	DIN rail mounting (According to EN 50022)



Power Supply

Power supply	19.2 - 28.8 VDC
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Inputs

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Number of testable single beam ESPEs	4
Safety mats resistive rating	<200 Ω

* Depends on the delay of one light curtain (type 2). The maximum response time of the test trigger must not exceed 10ms.



Outputs

	CM40D0A	CM30D1A
Number of outputs	4	4
Number of safety outputs	4	3
Instantaneous safety outputs	4	3
Delayed safety outputs	0	0
NC auxiliary output	0	1
Type	Semiconductor	Semiconductor
Output voltage	24VDC	24VDC
Max current.	≤ 400 mA (UL: 350mA)	≤ 400 mA (UL: 350mA)
Max. voltage drop	≤ 2V	≤ 2V
Response time	20 ms	20 ms

Safety parameters

ISO 13849-1 Cat.	Cat. 4
ISO 13849-1 Performance Level	PL e
IEC 61508 Safety Integrity Level	SIL 3
IEC 62061 Safety Integrity Level	SILcl 3
MTTFd	2403 a
PFHd	1,89 E-09
DCavg	99%

Compatibility and conformity

Approvals	  
	EC type examined by TÜV

Environmental

Protection grade	IP 5X
Operating temperature	0 ÷ 55°C

Connection Diagrams

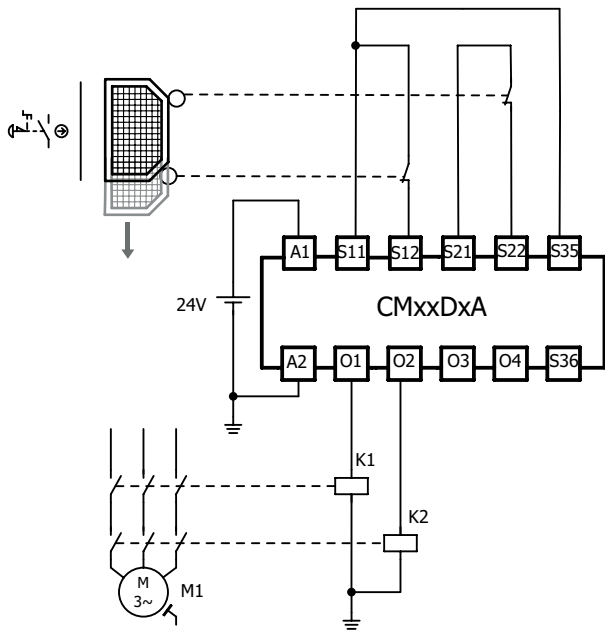


Fig. 1 E-Gate 4 wires, 2 channels with automatic start

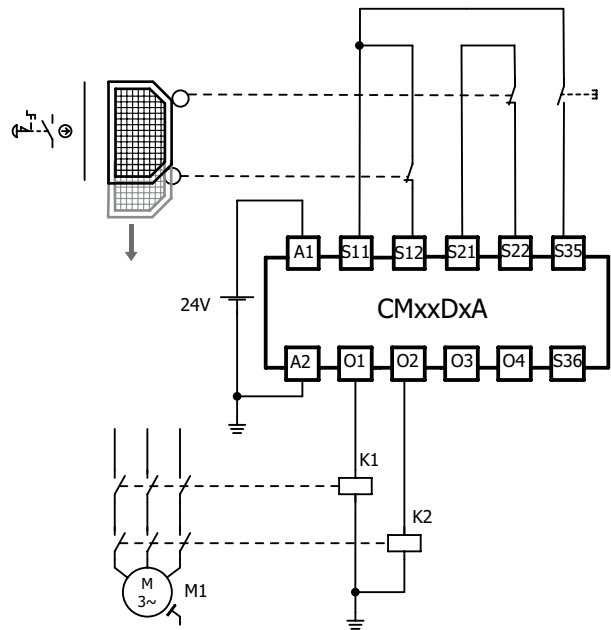


Fig. 2 E-Gate 4 wires, 2 channels with automatic start (start button not monitored)

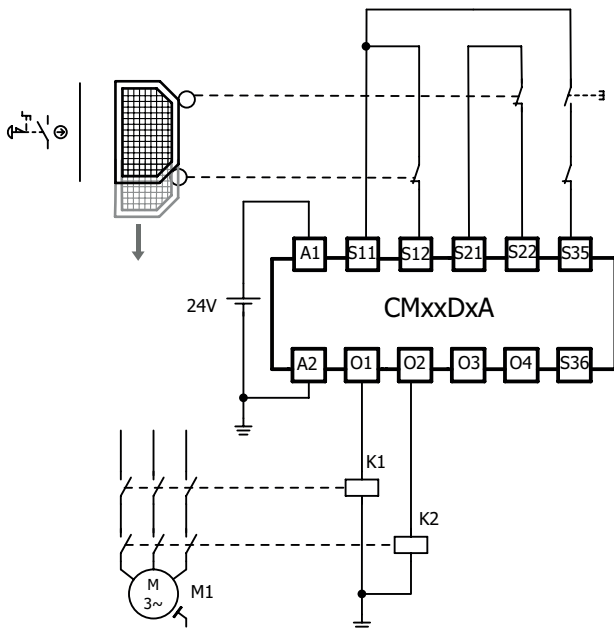


Fig. 3 E-Gate 4 wires, 2 channels with automatic start (external contactor monitored)

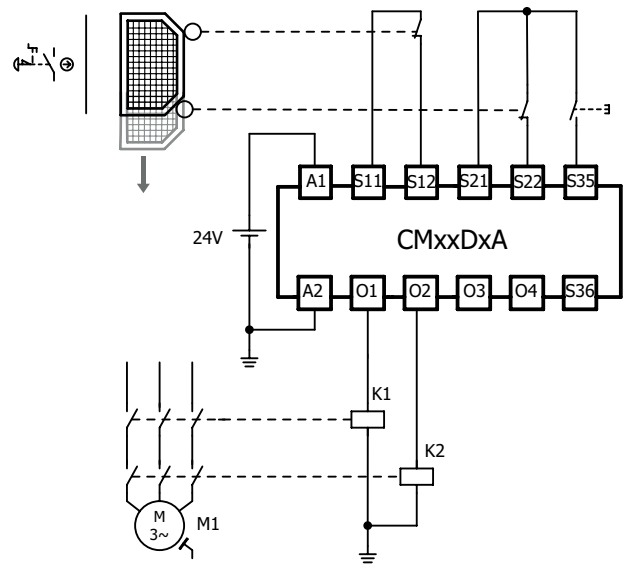


Fig. 4 E-Stop / E-Gate 4 wires, 2 channels with manual start (start button monitored)

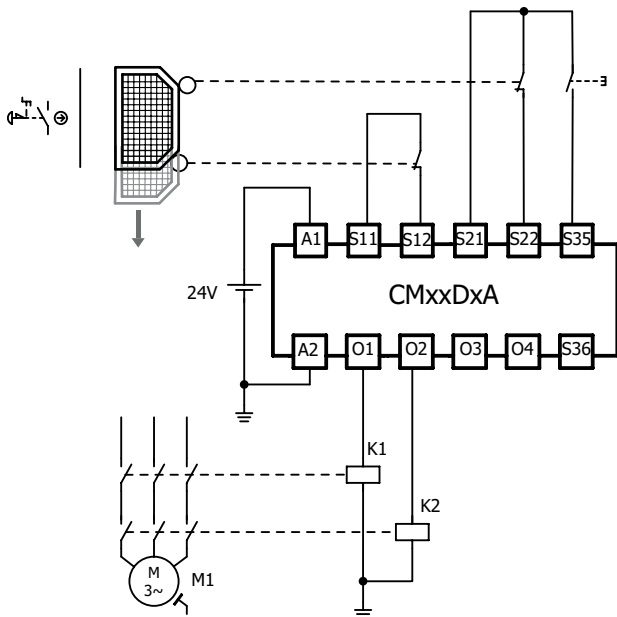


Fig. 5 E-Stop / E-Gate 3 wires, 2 channels with manual start (start button monitored)

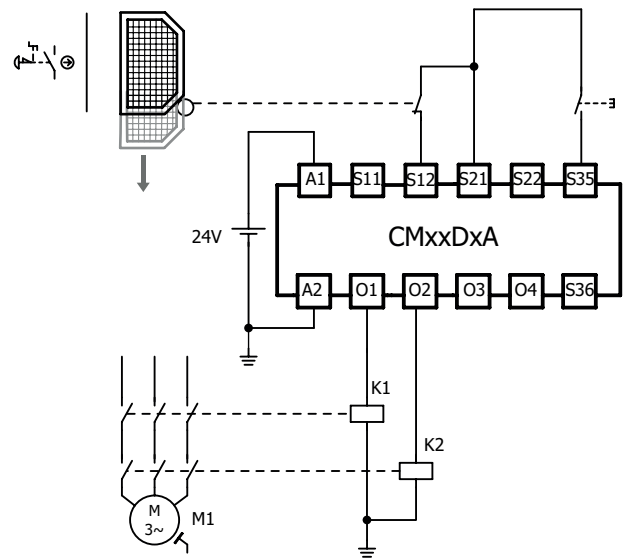


Fig. 6 E-Stop / E-Gate 2 wires, 1 channel with manual start (start button monitored)

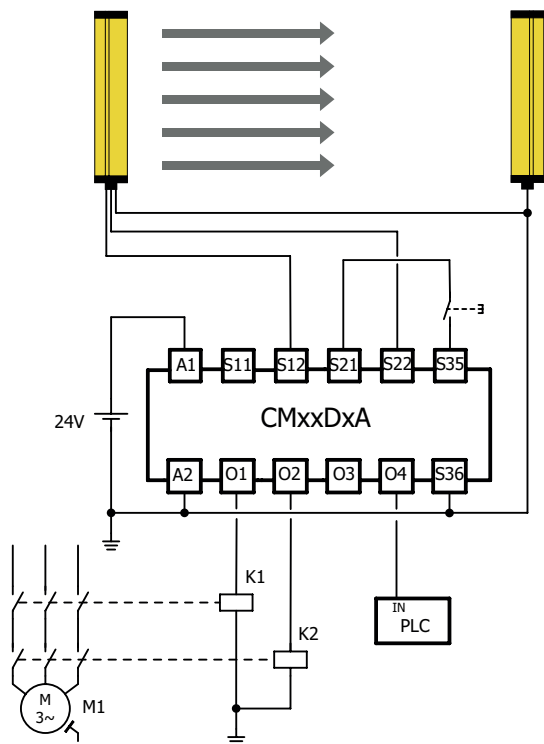


Fig. 7 ESPE devices type 4 / type 2, 2 channels NO, with manual start (start button monitored)

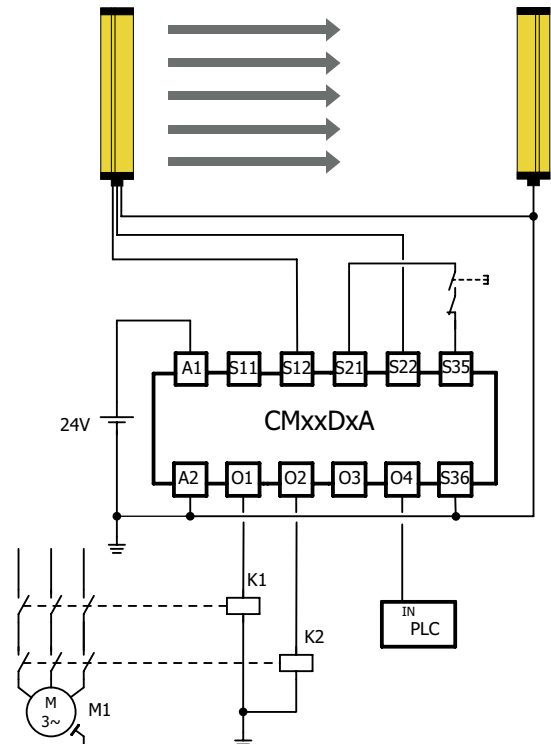


Fig. 8 ESPE devices type 4 / type 2, 2 channels NO, with manual start and feedback from external contactor

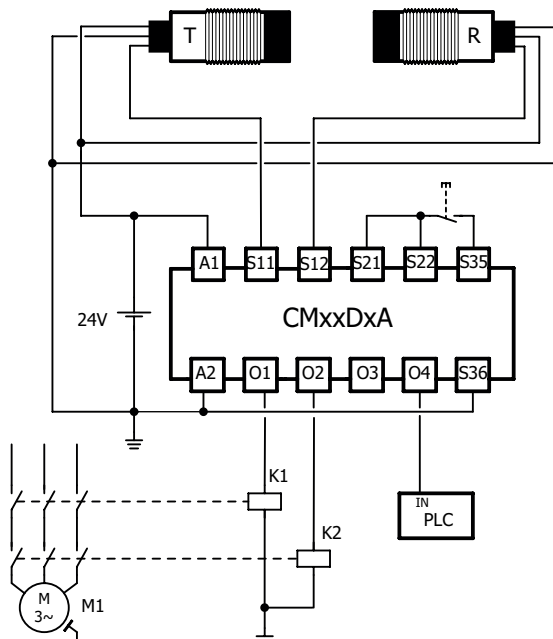


Fig. 9 Testable ESPE devices type 2, 1 channel NO, 2 wires, with manual start

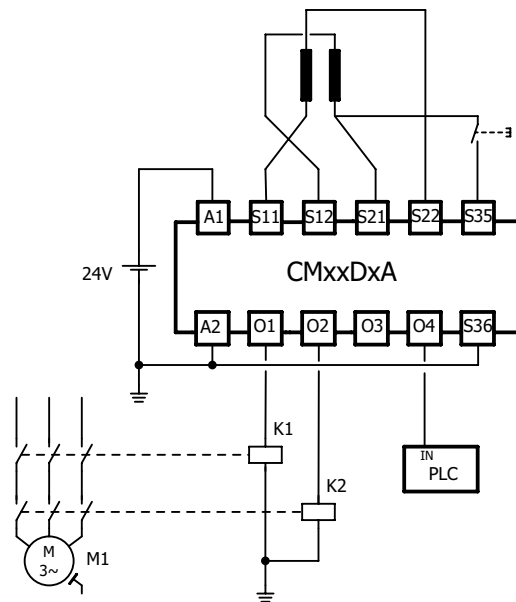


Fig. 10 Safety mat, 4 wires



References

▶ Order code

 **CM40D0A**

 **CM30D1A**

▶ Further reading

Information	Where to find it
Instruction manual	https://www.gavazziautomation.com/images/PIM/MANUALS/ENG/CM_IM.pdf
Software SISTEMA	http://www.dguv.de/webcode/e34183



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