

# 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, lift levelling.

### 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.
- 2 auxiliary outputs. All the modules provide at least 1 auxiliary output. 2 auxiliary outputs for CL20D2A.
- Manual or automatic start selectable.

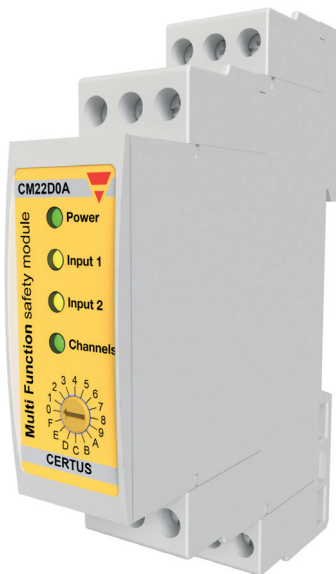
### Benefits

- **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, lift levelling.
- **Cost saving.** Same module, different applications. Safety solutions for basic machines, equipment and production lines.
- **4 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 62061, SILcl 3 in accordance with IEC 61508.
- **Lift Directive Compliance.** Compliant with standards EN81-20 EN81-50 for CL20D2A model only
- **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.

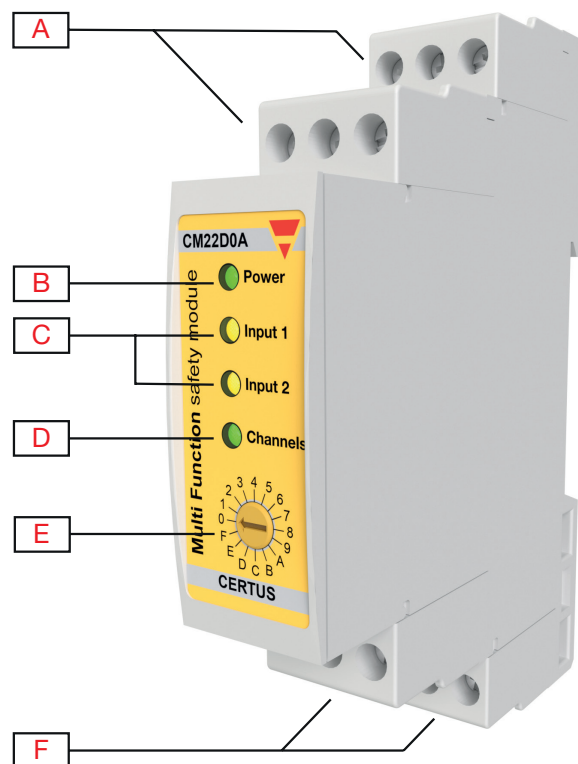
### Main features

- **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 62061 and SILcl 3 in accordance with IEC 61508.
- **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

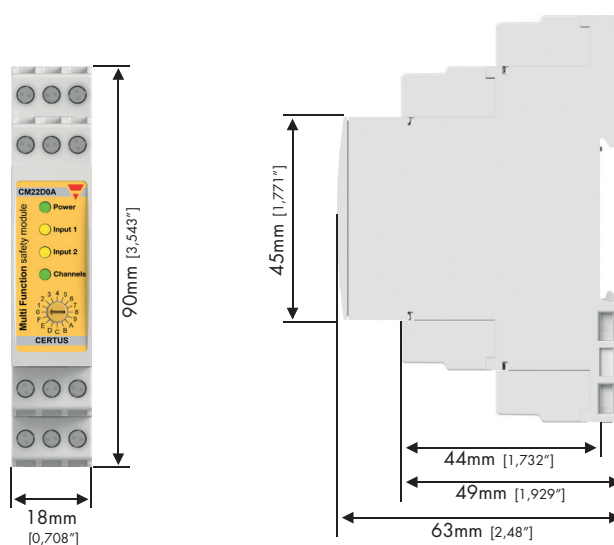


Element	Component	Function
A	Terminals	Power supply, start and activation element
B	LED	Power indicator
C	LED	Input status
D	LED	Channel status
E	Hex-Switch	Changing output configuration
F	Terminals	OSSD outputs

## Features

### General

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



### Power Supply

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

### Inputs

<b>Number of channels</b>	2
<b>Trigger inputs</b>	S12 and S22
<b>Input voltage (according to EN61131)</b>	24VDC (>12V = HIGH) 24VDC (<2V = LOW)
<b>Input current</b>	>6mA, typically 8mA
<b>Operating mode</b>	Manual or automatic
<b>Number of connectable light curtains ESPE</b>	2*
<b>Number of testable single beam ESPEs</b>	4
<b>Safety mats resistive rating</b>	<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
NO 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	SILcl 3
IEC 62061 Safety Integrity Level	SIL 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	QR
Electromagnetic safety interlock with separated actuator	<a href="http://www.productselection.net/MANUALS/UK/ESI_IM.pdf">http://www.productselection.net/MANUALS/UK/ESI_IM.pdf</a>	

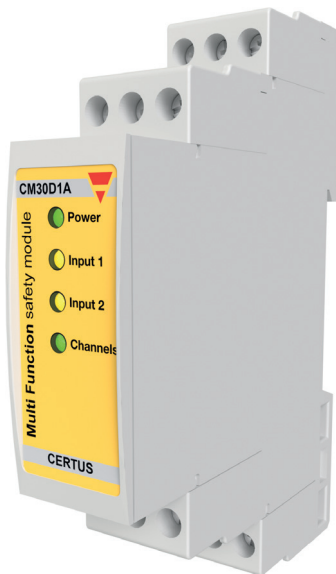
### Further reading

Information	Where to find it	QR
Instruction manual	<a href="http://www.productselection.net/MANUALS/UK/CM_IM.pdf">http://www.productselection.net/MANUALS/UK/CM_IM.pdf</a>	
SISTEMA Libraries	<a href="http://www.gavazzi-automation.com/nsc/HQ/EN/safety_modules">http://www.gavazzi-automation.com/nsc/HQ/EN/safety_modules</a>	

# 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

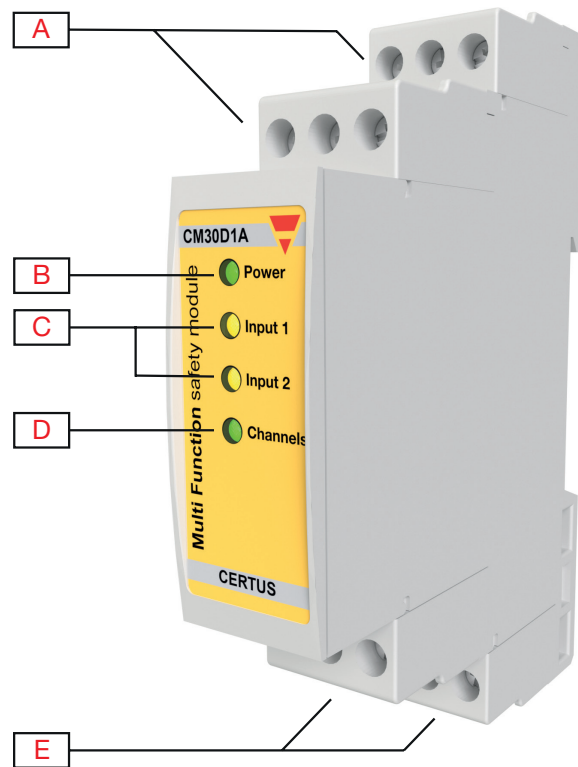
- **Flexible Solution.** Certus modules can be connected with different types of input: E-Stop, E-gate, limit Switch, non contact switch, safety light curtains (ESPE Type 4, Type2), safety light beam (single beam), safety mat.
- **Cost saving.** 2 modules, different applications. Safety solutions for 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 62061, SILcl 3 in accordance with IEC 61508.
- **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

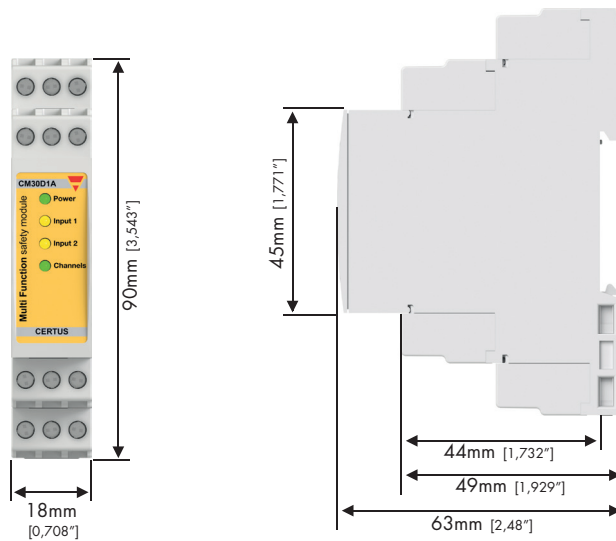


Element	Component	Function
A	Terminals	Power supply, start and activation element
B	LEDs	Power indicator
C	LEDs	Input status
D	LEDs	Channel status
E	Terminals	OSSD outputs

# Features

## General

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



## Power Supply

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

## Inputs

<b>Number of channels</b>	2
<b>Trigger inputs</b>	S12 and S22
<b>Input voltage (according to EN61131)</b>	24VDC (>12V = HIGH) 24VDC (<2V = LOW)
<b>Input current</b>	>6mA, typically 8mA
<b>Operating mode</b>	Manual or automatic
<b>Number of connectable light curtains ESPE</b>	2*
<b>Number of testable single beam ESPEs</b>	4
<b>Safety mats resistive rating</b>	<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
NO auxiliary output	0	0
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	SILcl 3
IEC 62061 Safety Integrity Level	SIL 3
MTTFd	2403 a
PFHd	1,89 E-09
DCavg	99%

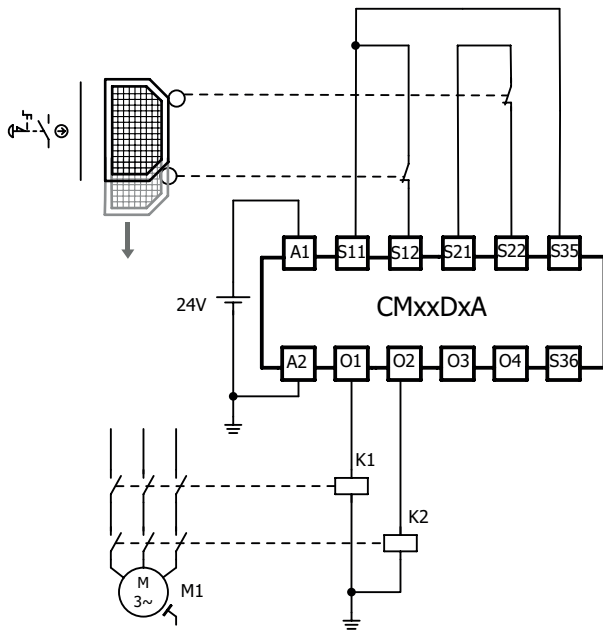
**▶ Compatibility and conformity**

Approvals	
	EC type examined by TÜV

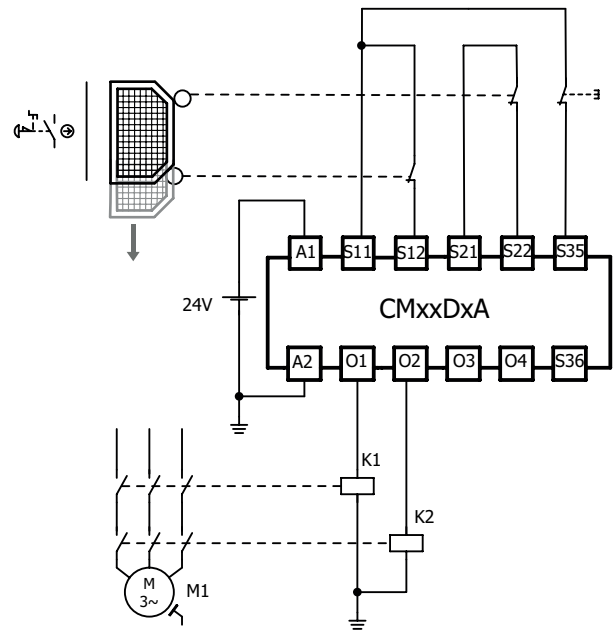
**▶ Environmental**

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

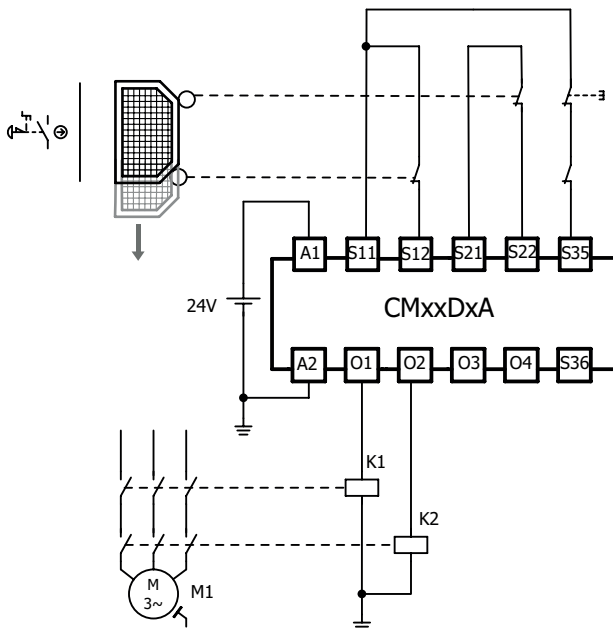
# Connection Diagrams



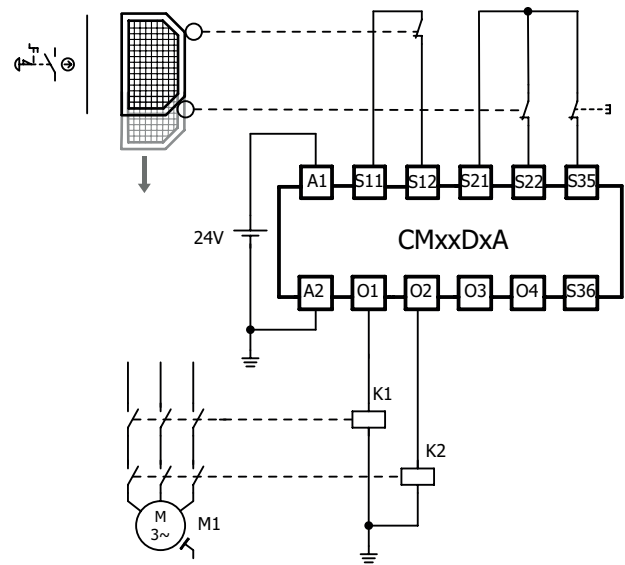
**Fig. 1** E-Gate 4 wires, 2 channels with automatic start



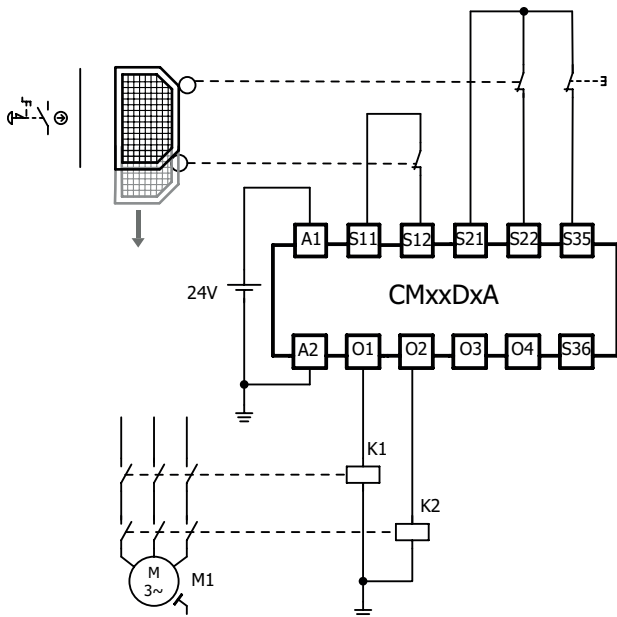
**Fig. 2** E-Gate 4 wires, 2 channels with automatic start (start button not monitored)



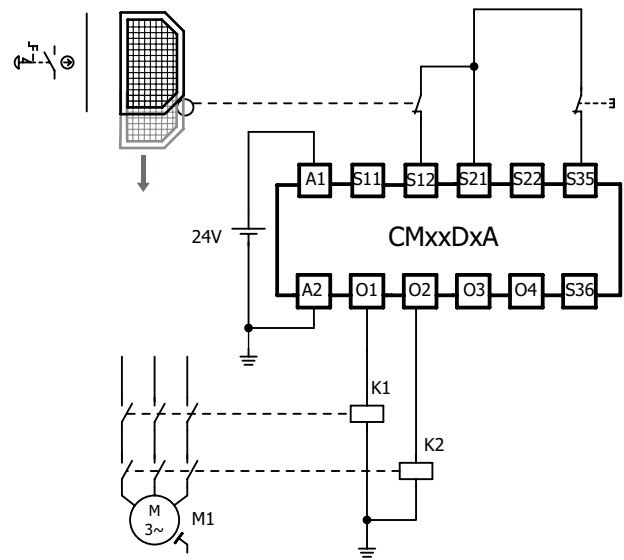
**Fig. 3** E-Gate 4 wires, 2 channels with automatic start (external contactor monitored)



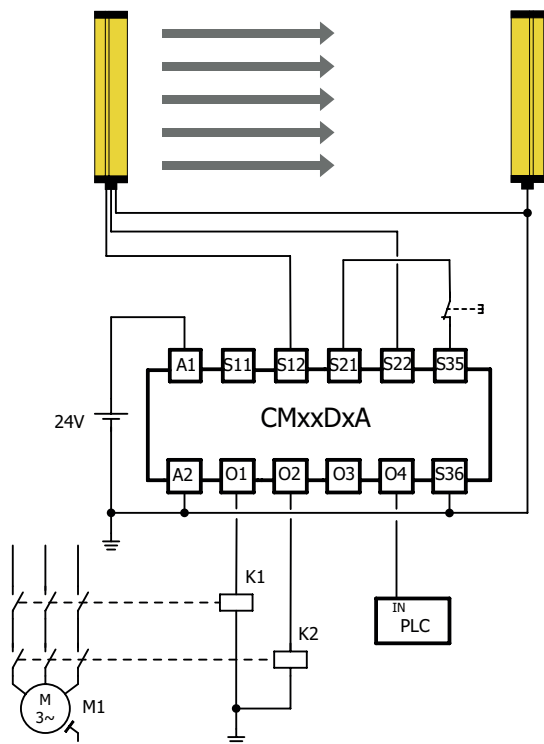
**Fig. 4** E-Stop / E-Gate 4 wires, 2 channels with manual start (start button monitored)



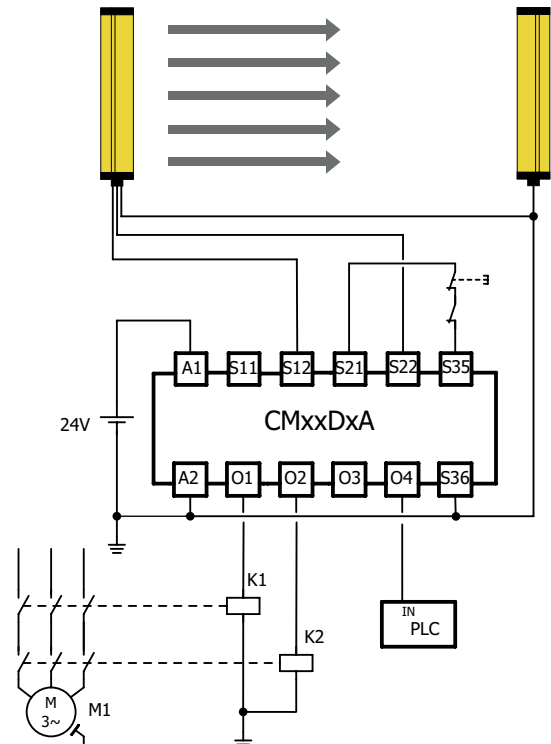
**Fig. 5** E-Stop / E-Gate 3 wires, 2 channels with manual start (start button monitored)



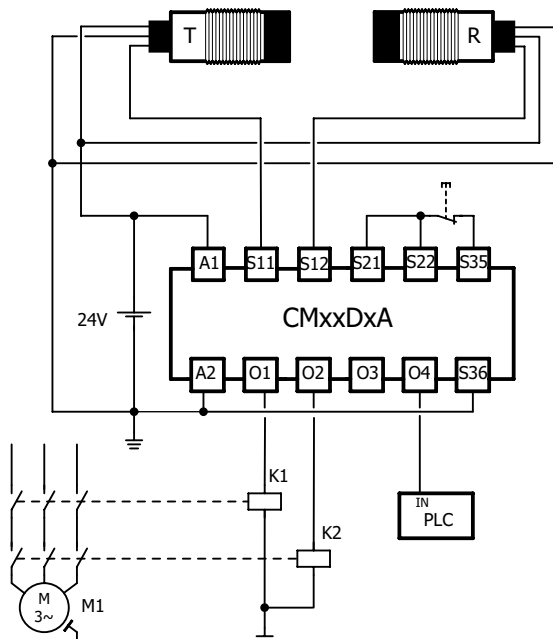
**Fig. 6** E-Stop / E-Gate 2 wires, 1 channel with manual start (start button monitored)



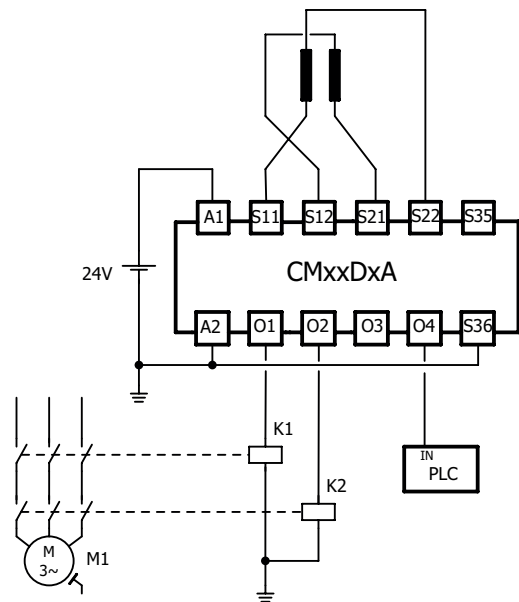
**Fig. 7** ESPE devices type 4 / type 2, 2 channels NO, with manual start (start button monitored)



**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	QR
Instruction manual	<a href="http://www.productselection.net/MANUALS/UK/CM_IM.pdf">http://www.productselection.net/MANUALS/UK/CM_IM.pdf</a>	
SISTEMA Libraries	<a href="http://www.gavazzi-automation.com/nsc/HQ/EN/safety_modules">http://www.gavazzi-automation.com/nsc/HQ/EN/safety_modules</a>	

# CL20D2A



## Lift levelling safety module



### Description

The CL20D2A is for lift applications. There are 2 semiconductor safety outputs (OSSDs) and 2 auxiliary outputs (1 NC and 1 NO). These outputs are not delayed.

In 2014 the European Committee for Standardization released two safety standards for the construction of lifts and for the testing of lift components.

These standards apply to both passenger and goods lifts.

EN 81-20 specifies the technical requirements for the construction of lifts.

EN 81-50 specifies design rules, calculations and the testing of lift components.

The Certus CL20D2A module is compliant with these Standards.

### Main features

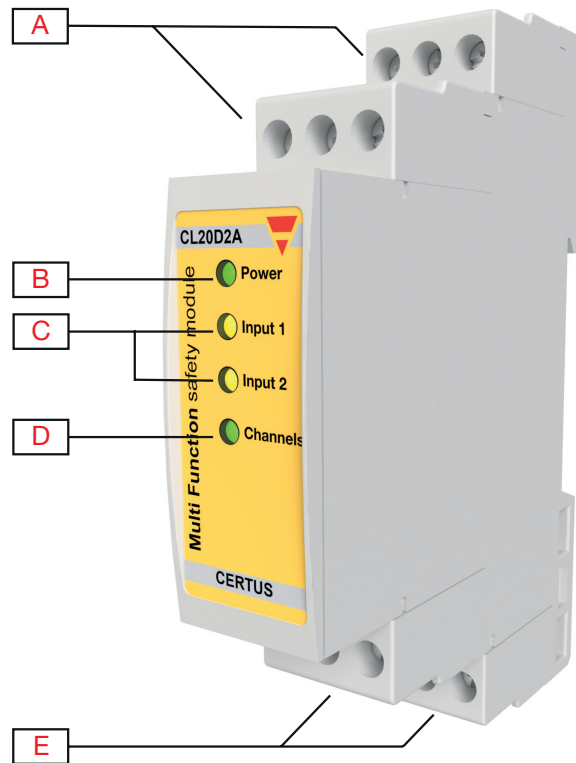
- **Cost saving.** Lift application solutions for escalators, public or private lifts.
- **Status indicator.** 4 LEDs on the front panel indicate the status and any errors during operation.
- **Compact dimensions.** 1 DIN, smaller than a standard safety housing! W x H x D: 18 x 90 x 63 mm.
- **Lift Directive Compliance.** Compliant with standards EN81-20 EN81-50.
- **Standards compliance.** Cat. 4 PL e in accordance with ISO 13849-1, SIL 3 in accordance with IEC 62061, SILcl 3 in accordance with IEC 61508.
- **Approval** by TÜV.

### Main functions

- The CL20D2A safety module is designed to be used in lift installations for floor levelling and re-levelling of the cabin. It is connected to the lift plant and to the lift controller board.
- When the cabin arrives at the floor level, the landing circuit slows it down while the cabin doors circuit allows the cabin to be re-levelled to the floor, also the detection of any faults.



## Structure

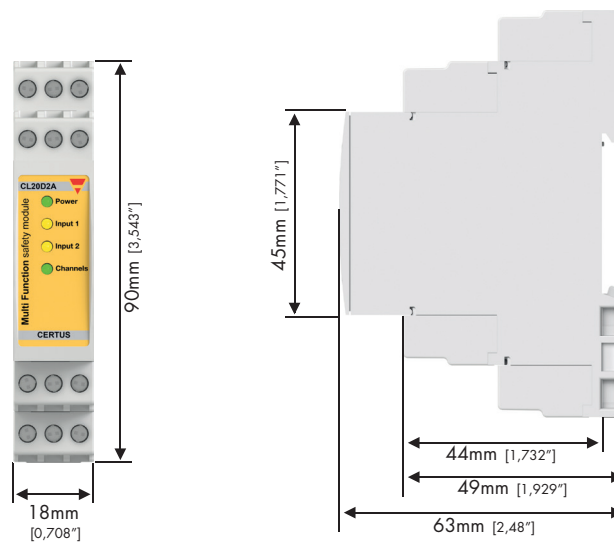


Element	Component	Function
A	Terminals	Power supply, start and activation element
B	LEDs	Power indicator
C	LEDs	Input status
D	LEDs	Channel status
E	Terminals	OSSD outputs

## Features

### General

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



### Power Supply

<b>Power supply</b>	19.2 - 28.8 VDC
---------------------	-----------------

The external power supply fulfills the voltage supply requirements of the EN 61496-1.

### Inputs

<b>Number of channels</b>	2
<b>Trigger inputs</b>	S12 and S22
<b>Input voltage (according to EN61131)</b>	24VDC (>12V = HIGH) 24VDC (<2V = LOW)
<b>Input current</b>	>6mA, typically 8mA
<b>Operating mode</b>	Manual or automatic

## ▶ Outputs

Number of outputs	4
Number of safety outputs	2
Instantaneous safety outputs	2
Delayed safety outputs	0
NC auxiliary output	1
NO auxiliary output	1
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	SILcl 3
IEC 62061 Safety Integrity Level	SIL 3
MTTFd	1268 a
PFHd	3,58 E-09
DCavg	99%

## ▶ Lift directive compliance

Lift standard	EN81-20
	EN81-50

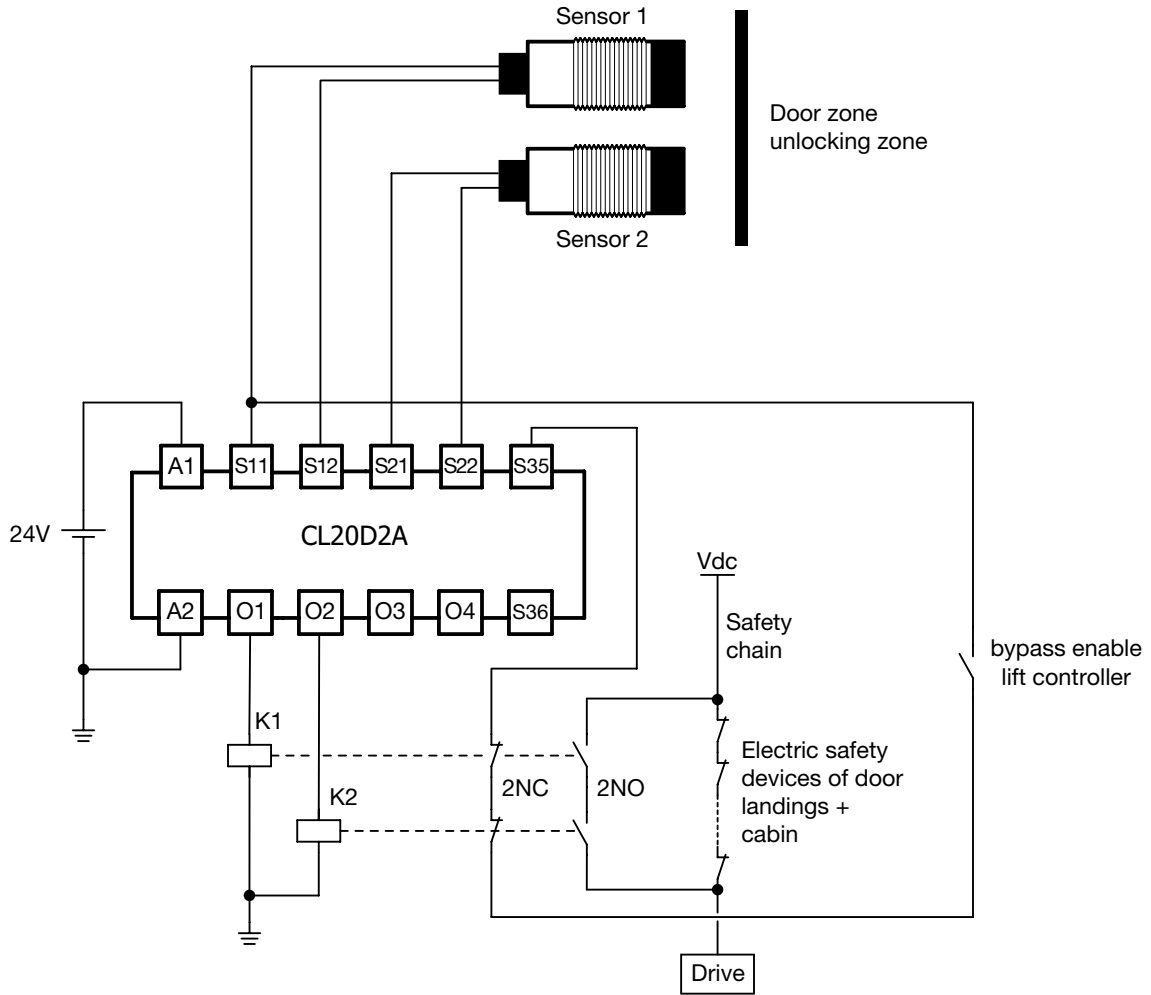
## ▶ Compatibility and conformity

Approvals	  
	EC type examined by TÜV

## ▶ Environmental

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

# Connection Diagrams





## References

### ▶ Order code

### ▶ CL20D2A

### ▶ Further reading

Information	Where to find it	QR
Instruction manual	<a href="http://www.productselection.net/MANUALS/UK/CM_IM.pdf">http://www.productselection.net/MANUALS/UK/CM_IM.pdf</a>	
SISTEMA Libraries	<a href="http://www.gavazzi-automation.com/nsc/HQ/EN/safety_modules">http://www.gavazzi-automation.com/nsc/HQ/EN/safety_modules</a>	



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