



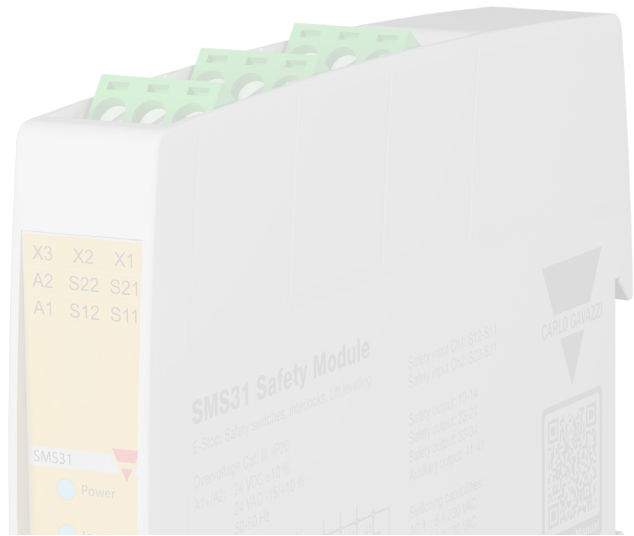
## Safety modules

## Sensors

# SM

## Multifunction safety modules

The SM range of multifunction safety modules, designed in Category 4, Performance Level “e” in accordance with the Machine Directive EN ISO 13849-1, provides for safety control outputs with electromechanical forcibly guided relays and can monitor a vast range of electromechanical safety devices.



**SMS20** and **SMS31** safety modules are designed to provide for a safe interruption of safety circuits in applications with emergency stops, safety gates, safety magnetic switches, safety limit switches and electromechanical interlocks. They are also used to control safely the safety circuits of the lift car levelling, detection of uncontrolled movements of the cabin and the lift pit inspection, in compliance with the Lifts Standards EN81-20 and EN81-50.

**SMSA31** safety module monitors and controls safely the safety circuits in safety gates, single or multiple accesses, with safety magnetic switches and safety limit switches switching the safety inputs in anti-valent mode (NO+NC signals).

**SM2H21** is the solution to monitor and control safely the operation of two-hand control consoles (Type III C according to EN 574-1).

The device enables the safety control outputs only if the two buttons of the console are activated by the operator simultaneously or with a max interval of 500 ms from each other.

**SME41** is a safety expansion unit that operates as relay expansion unit controlled by a master safety module, so to extend the number of safety relay outputs. It can operate with master safety modules with safety relay or OSSD outputs.

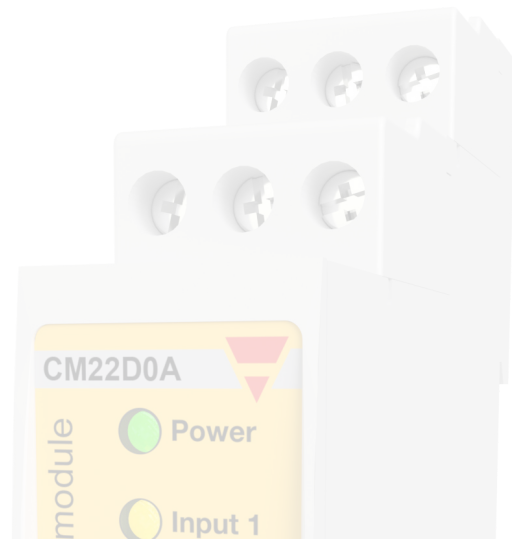


# CM - CL

## Multifunction safety modules



The CM series are multifunction safety modules with OSSD safety control outputs and can monitor safety circuits with electromechanical and electronic safety devices (ESPE type 2 and type 4); they are designed in Category 4, Performance Level "e" in accordance with the Machine Directive EN ISO 13489-1, as well as compliant to Functional Safety SIL 3, SIL cl3 as per EN 62061 Machine Safety.



**CM22D0A**, **CM40D0A** and **CM30D1A** provide for a safe interruption of safety circuits with safety light curtains (ESPE type 2 and type 4), safety light beams, emergency stops, electromechanical interlocks, safety gates, safety magnetic switches, safety mats. The devices monitor and test automatically the safe state of the safety devices and provide for interruption of the safety circuit through the OSSD safety outputs, which are constantly tested to prevent short circuits. In addition, **CM22D0A** has the flexibility of providing for time delayed OSSD safety outputs, by setting the hex-switch on the front; this function is particularly important in critical machinery applications with high inertia to protect the hazardous area from undesired accesses for a certain time after having stopped the machine operation.

The **CL20D2A** safety module is a device designed to monitor safely the floor levelling and releveling of the lift cabin in the safe zone, detection of uncontrolled movements of the cabin, in accordance with the requirements of the EN 81-20 and EN 81-50 Lifts standards.

CL20D2A can be connected to the safety magnetic or electromechanical switches of the safety circuit, to monitor the proper levelling and re-levelling of the lift cabin; it provides for 2 OSSD safety outputs to enable the lift controller to operate the cabin, as well as 2 OSSD auxiliary outputs (NO+NC).



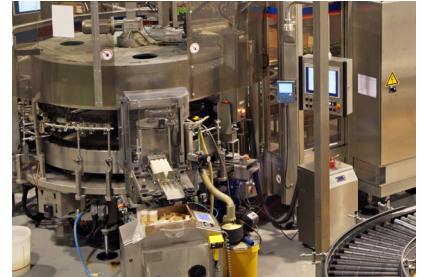
# SM - CM - CL

## Multifunction safety modules

### Applications

#### Industrial machinery

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 multifunction safety module is designed to provide the most comprehensive protection for equipment and personnel. It enables safety functions, accepting different types of input. This safety module is able to monitor multiple safety functions of industrial machinery, protecting operators from dangerous moving parts of the machine.



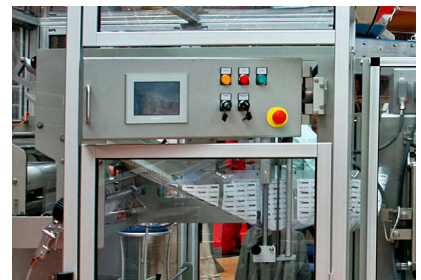
#### Two-hand control consoles

The SM2H21 safety module is designed in Category 4, Performance Level e in accordance with the Machine Directive EN ISO 13849-1 to monitor and control safely the operation of twohand control consoles (Type III C according to EN 574-1). The device enables the safety control outputs only if the two buttons of the console are activated by the operator simultaneously or with a max interval of 500 ms from each other. The release of at least one push button of the two-hands console forces immediately the safety outputs to the open state. A new operating cycle is possible only after releasing both push buttons and operating them again.



#### Emergency stops monitoring

Emergency stops are widely used on machinery to prevent accidents and stop machine operation in case of dangerous situations; the SM and CM series safety modules monitor the safe interruption of the E-stops with manual, automatic or monitored manual start.



#### Control of interlocks on safety gates

Hazardous areas have to be protected from accesses when the machine is in operation; the safety module monitors the emergency stop signals and controls the interlock (electrically interlocked) to lock and unlock the safety access. The interlock can be controlled with a delayed intervention, to allow for motors or machine with high inertia to stop prior to allow access in the dangerous area.



#### Dangerous moving parts of the machinery

To ensure safe protection on machinery with dangerous and high inertia moving parts, the CM22D0A safety module can be used to operate safely and with adjustable delayed intervention the safety gate, so to allow for the machine to stop before entering in the hazardous area.

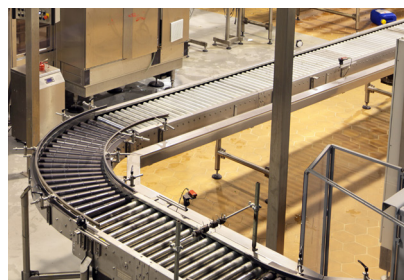


### Sensors

## Applications

### Conveyors

Increased automation in the logistic industry requires wide use of conveyors for safe and efficient material handling and transportation. To ensure a safe use and prevention of accidents, they are equipped with pull wire safety switches and emergency stops, that would safely stop the motors in case of a dangerous situation.



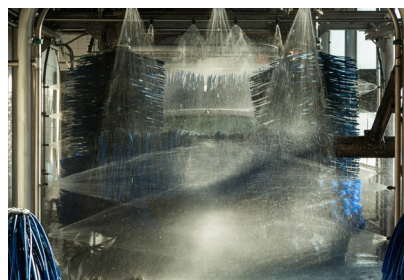
### Recycling machinery

Crushers for plastics and metal parts are widely used in the waste recycling industry, to crush all kinds of soft and hard parts, grinding the plastic blocks, strip shaped aluminum parts for an easier recycling of the materials. The operation of the cutting blades is controlled by motors drives and protected by emergency stop safety circuits, both with e-stop pushbuttons and pull-wire safety limit switches.



### Car wash equipment

Serious injuries can occur in car wash operations such as lacerations, amputations, strains, struck-by moving parts; conveyor and in-bay automatic car washes have higher accident exposures from equipment operations. Precautions are taken by installing emergency stop circuits with manual reset, to ensure the re-start of the equipment only after the emergency situation has been addressed and resolved.



### Lift levelling

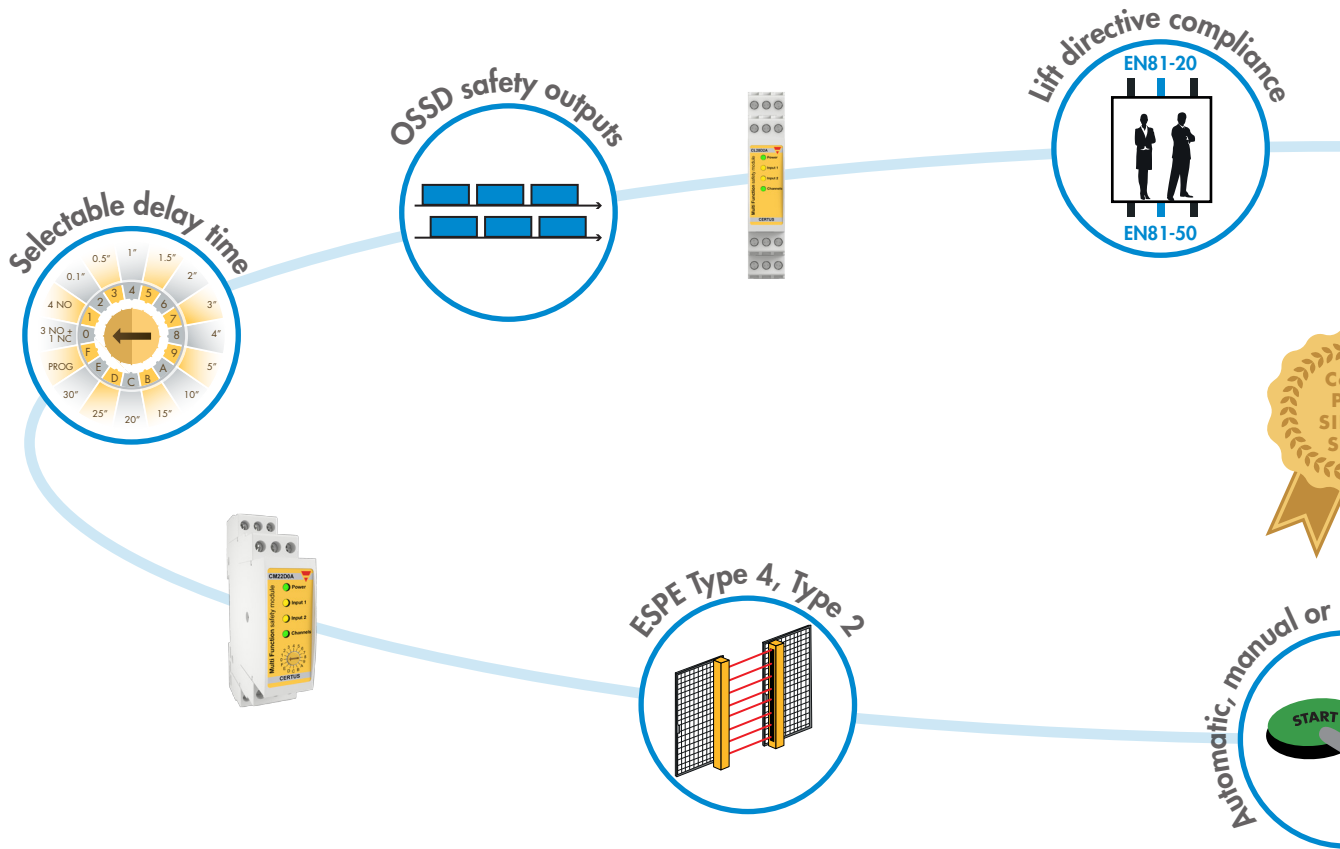
The SMS20, SMS31 and CL20D2A are designed to be employed in lift plants for floor levelling and releveling of the cabin, according to the requirements of EN 81-20 and EN 81-50 standards, and according to the 2014/33/EU Lift Directive. The modules monitor the two re-leveling sensors (magnetic or photosensors) and when the cabin is in the re-leveling zone, they enable the safety outputs. One safety output must be connected to bypass the circuit that monitors the cabin landing and cabin doors, when the lift cabin is inside the re-leveling zone; further to the landing and re-leveling of the cabin at the floor, the safety module detects eventual faults and the lift controller will stop the lift.



### Lift inspection and maintenance

Maintenance activities in the lifts pit or machine room are high risk activity, hence the maintenance area have to be protected from inadvertent operations or unauthorized personnel. A solution frequently used is the installation of safety circuits with emergency stops and electromechanical interlocks.





## Overview



**CM22D0A**



**CM30D1A**

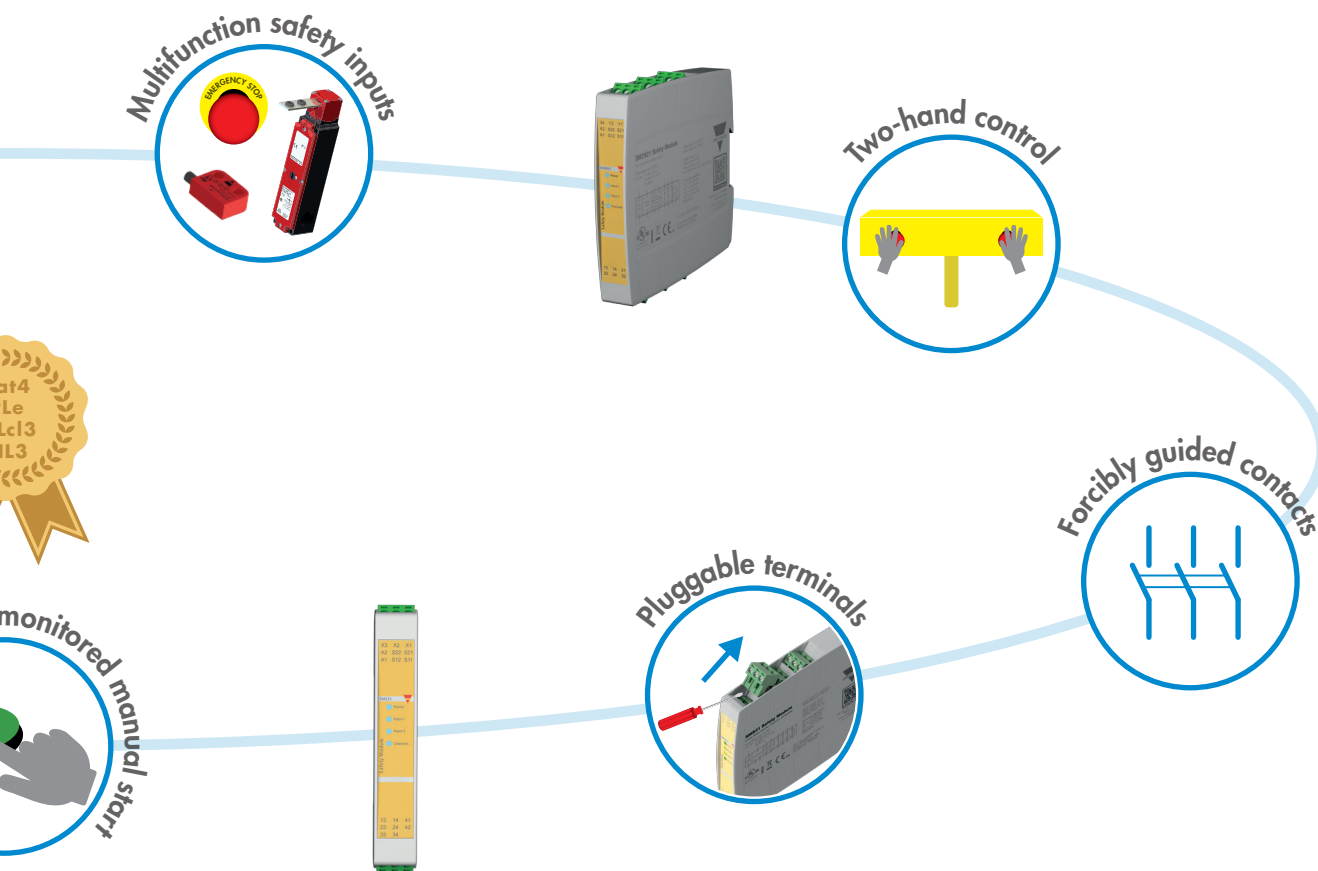


**CM40D0A**



**CL20D2A**

	<b>CM22D0A</b>	<b>CM30D1A</b>	<b>CM40D0A</b>	<b>CL20D2A</b>
<b>Safety functions</b>	E-stop, ESPE Type 4 and Type 2, E-gate, safety magnetic switches, interlocks, limit switches, safety mats	E-stop, ESPE Type 4 and Type 2, E-gate, safety magnetic switches, interlocks, limit switches, safety mats	E-stop, ESPE Type 4 and Type 2, E-gate, safety magnetic switches, interlocks, limit switches, safety mats	Lift levelling, safety magnetic switches, ESPE Type 4 and Type 2, safety mats
<b>Safety outputs</b>	OSSD (Output Signal Switching Devices)			
<b>Type</b>	OSSD (Output Signal Switching Devices)			
<b>Number</b>	Selectable via hex-switch: 2 delayed + 2 instantaneous or 4 instantaneous or 3 instantaneous	3 instantaneous	4 instantaneous	2 instantaneous
<b>Auxiliary outputs</b>	1 instantaneous	1 instantaneous	-	2 instantaneous
<b>Start mode</b>	Automatic, manual or monitored manual	Automatic, manual or monitored manual	Automatic, manual or monitored manual	Automatic, manual or monitored manual
<b>Connection type</b>	Screw terminals			
<b>Safety parameters</b>	Cat. 4, PL e, SIL 3, SILcl 3	Cat. 4, PL e, SIL 3, SILcl 3	Cat. 4, PL e, SIL 3, SILcl 3	Cat. 4, PL e, SIL 3, SILcl 3, EN81-20, EN81-50
<b>Approvals</b>	CE, cULus, EC type examined by TÜV			
<b>Power supply</b>	24 Vdc ±20%			
<b>Dimensions (H x W x D)</b>	90 x 17,5 x 63 mm			



**SMS20**

E-stop, E-gate, safety magnetic switches, interlocks, limit switches, lift levelling



**SMS31**

E-stop, E-gate, safety magnetic switches, interlocks, limit switches, lift levelling



**SMSA31**

E-gate, safety magnetic switches in antivalent mode



**SM2H21**

Two-hand control device



**SME41**

Relay expansion unit

Voltage free contact output, relays with forcibly guided contacts

2 NO

3 NO

3 NO

2 NO

4 NO

-

1 NC

1 NC

1 NC + 1PNP

1 NC

Automatic, manual or monitored manual

Automatic, manual or monitored manual

Automatic, manual or monitored manual

Two-hand control device

-

Pluggable screw terminals

Cat. 4, PL e, EN81-20, EN81-50

Cat. 4, PL e, EN81-20, EN81-50

Cat. 4, PL e

Cat. 4, PL e

Cat. 4, PL e

CE, cULus, EC type examined by TÜV

24 Vdc  $\pm 10\%$  or 24 Vac -15/+10%, 50 $\pm 60$  Hz

110,8 x 17,5 x 121,1 mm

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