



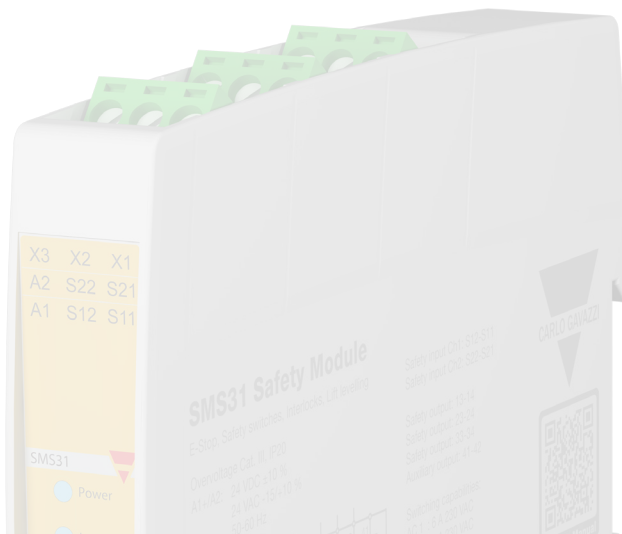
## Safety modules

## 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.

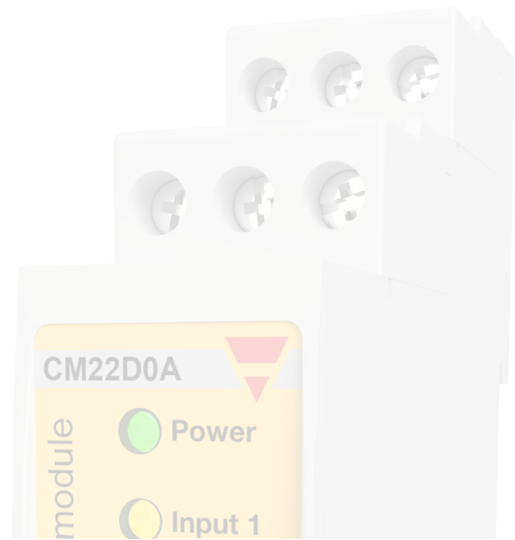
**SME41** is a safety expansion unit that operates as relay expansion unit controlled by a master safety module, so to extend the number of safety relay outputs. It can operate with master safety modules with safety relay or OSSD outputs.



# CM 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.



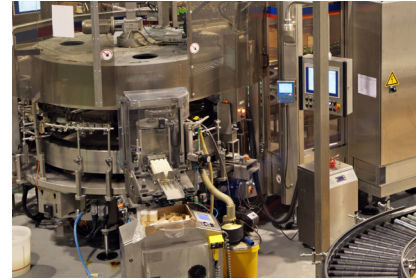
# SM - CM

## 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.



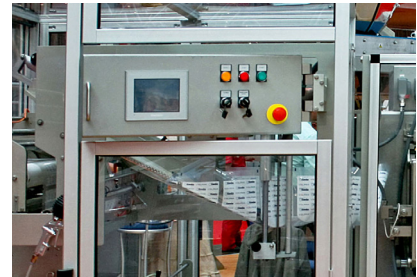
#### Two-hand control consoles

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.

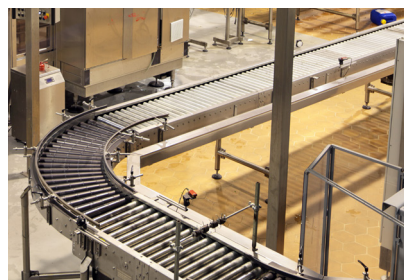


### Sensors

## 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

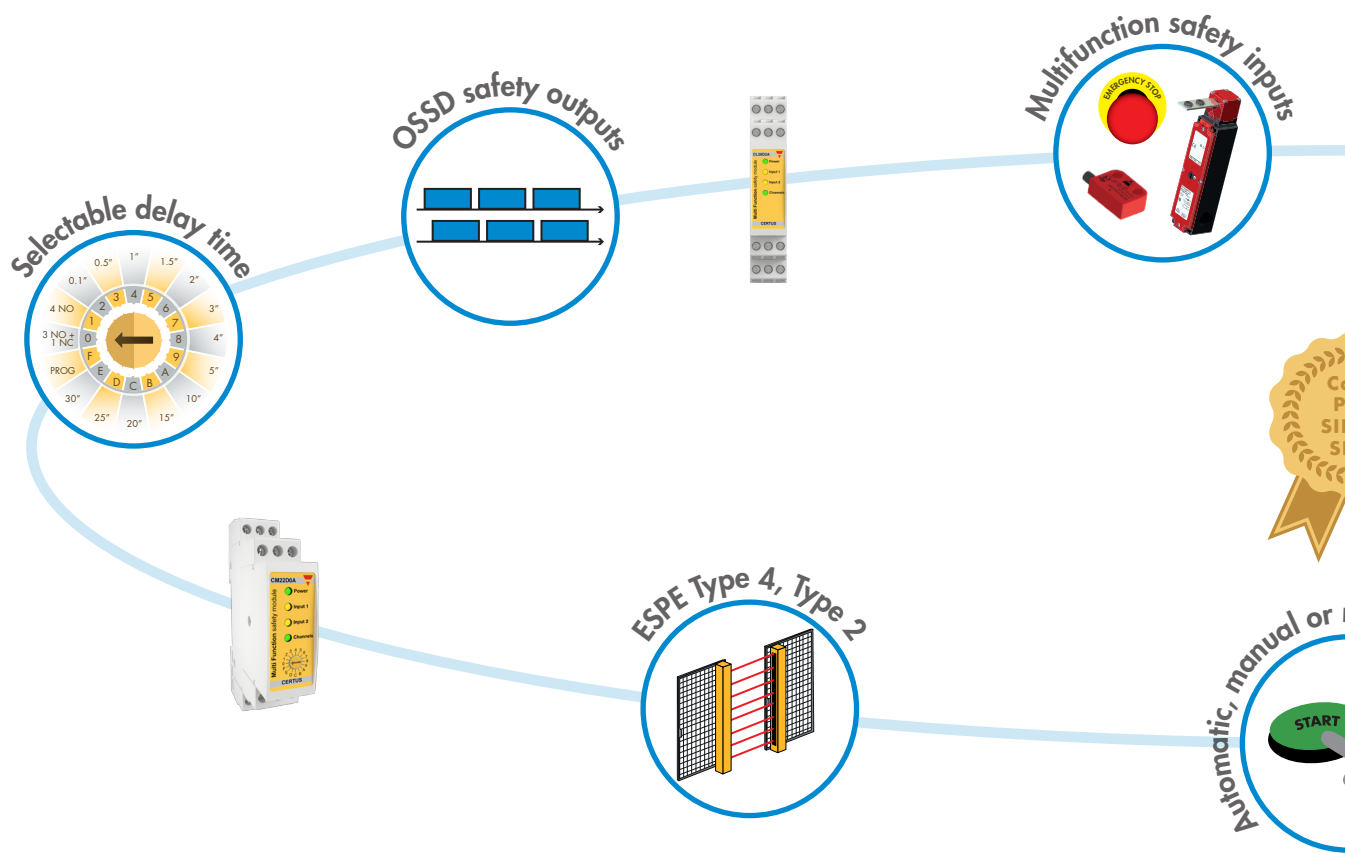
The SMS20 and SMS31 are designed to be employed in lift plants for floor levelling and releveling of the cabin, according to the requirements of EN 81-20 and EN 81-50 standards, and according to the 2014/33/EU Lift Directive. The modules monitor the two re-leveling sensors (magnetic or photosensors) 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**

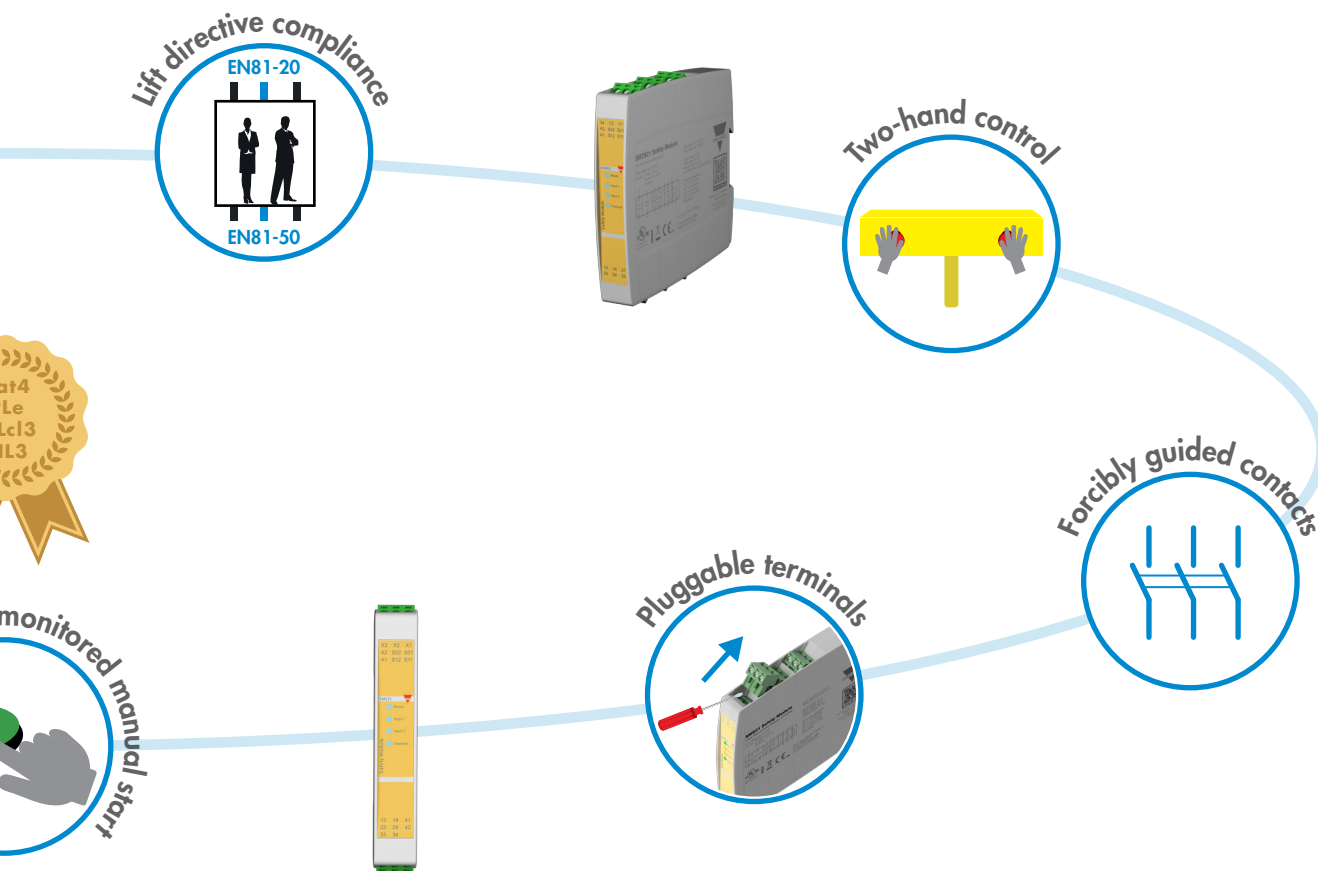


**CM30D1A**



**CM40D0A**

	CM22D0A	CM30D1A	CM40D0A
<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
<b>Safety outputs</b>		OSSD (Output Signal Switching Devices)	
<b>Type</b>			
<b>Number</b>	Selectable via hex-switch: 2 delayed + 2 instantaneous or 4 instantaneous or 3 instantaneous	3 instantaneous	4 instantaneous
<b>Auxiliary outputs</b>	1 instantaneous	1 instantaneous	-
<b>Start mode</b>	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
<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 + 1 PNP

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 ±10% or 24 Vac -15/+10%, 50÷60 Hz

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

## OUR SALES NETWORK IN EUROPE

### AUSTRIA

Carlo Gavazzi GmbH  
Ketzergasse 374,  
A-1230 Wien  
Tel: +43 1 888 4112  
Fax: +43 1 889 10 53  
office@carlogavazzi.at

### BELGIUM

Carlo Gavazzi NV/SA  
Mechelsesteenweg 311,  
B-1800 Vilvoorde  
Tel: +32 2 257 4120  
sales@carlogavazzi.be

### DENMARK

Carlo Gavazzi Handel A/S  
Over Hadstenvej 40,  
DK-8370 Hadsten  
Tel: +45 89 60 6100  
Fax: +45 86 98 15 30  
handel@gavazzi.dk

### FINLAND

Carlo Gavazzi OY AB  
Ahventie, 4 B  
FI-02170 Espoo  
Tel: +358 9 756 2000  
myynti@gavazzi.fi

### FRANCE

Carlo Gavazzi Sarl  
Zac de Paris Nord II, 69, rue de la Belle Etoile,  
F-95956 Roissy CDG Cedex  
Tel: +33 1 49 38 98 60  
Fax: +33 1 48 63 27 43  
french.team@carlogavazzi.fr

### GERMANY

Carlo Gavazzi GmbH  
Pfnorstr. 10-14  
D-64293 Darmstadt  
Tel: +49 6151 81000  
Fax: +49 6151 81 00 40  
info@gavazzi.de

### GREAT BRITAIN

Carlo Gavazzi UK Ltd  
4.4 Frimley Business Park,  
Frimley, Camberley, Surrey GU16 7SG  
Tel: +44 1 276 854 110  
Fax: +44 1 276 682 140  
sales@carlogavazzi.co.uk

### ITALY

Carlo Gavazzi SpA  
Via Milano 13,  
I-20045 Lainate  
Tel: +39 02 931 761  
Fax: +39 02 931 763 01  
info@gavazziacbu.it

### NETHERLANDS

Carlo Gavazzi BV  
Wijkermeerweg 23,  
NL-1948 NT Beverwijk  
Tel: +31 251 22 9345  
Fax: +31 251 22 60 55  
info@carlogavazzi.nl

### NORWAY

Carlo Gavazzi AS  
Melkeveien 13,  
N-3919 Parsgrunn  
Tel: +47 35 93 0800  
Fax: +47 35 93 08 01  
post@gavazzi.no

### PORTUGAL

Carlo Gavazzi Lda  
Rua dos Jerónimos 38-B,  
P-1400-212 Lisboa  
Tel: +351 21 361 7060  
Fax: +351 21 362 13 73  
carlogavazzi@carlogavazzi.pt

### SPAIN

Carlo Gavazzi SA  
Avda. Iparraguirre, 80-82,  
E-48940 Leioa (Bizkaia)  
Tel: +34 94 480 4037  
Fax: +34 94 431 6081  
gavazzi@gavazzi.es

### SWEDEN

Carlo Gavazzi AB  
V:a Kyrkogatan 1,  
S-652 24 Karlstad  
Tel: +46 54 85 1125  
Fax: +46 54 85 11 77  
info@carlogavazzi.se

### SWITZERLAND

Carlo Gavazzi AG  
Verkauf Schweiz/Vente Suisse  
Sumpfstrasse 3,  
CH-6312 Steinhausen  
Tel: +41 41 747 4535  
Fax: +41 41 740 45 40  
info@carlogavazzi.ch

## OUR SALES NETWORK IN THE AMERICAS

### USA

Carlo Gavazzi Inc.  
750 Hastings Lane,  
Buffalo Grove, IL 60089, USA  
Tel: +1 847 465 6100  
Fax: +1 847 465 7373  
sales@carlogavazzi.com

### CANADA

Carlo Gavazzi Inc.  
2660 Meadowvale Boulevard,  
Mississauga, ON L5N 6M6, Canada  
Tel: +1 905 542 0979  
Fax: +1 905 542 22 48  
gavazzi@carlogavazzi.com

### MEXICO

Carlo Gavazzi Mexico S.A. de C.V.  
Circuito Puericultores 22, Ciudad Satelite  
Naucalpan de Juarez, Edo Mex. CP 53100  
Mexico  
Tel: +52 55 5373 7042  
Fax: +52 55 5373 7042  
mexicosales@carlogavazzi.com

### BRAZIL

Carlo Gavazzi Automação Ltda.  
Av. Francisco Matarazzo, 1752  
Conj 2108 - Barra Funda - São Paulo/SP  
Tel: +55 11 3052 0832  
Fax: +55 11 3057 1753  
info@carlogavazzi.com.br

## OUR SALES NETWORK IN ASIA AND PACIFIC

### SINGAPORE

Carlo Gavazzi Automation Singapore Pte. Ltd.  
61 Tai Seng Avenue #05-06  
Print Media Hub @ Paya Lebar iPark  
Singapore 534167  
Tel: +65 67 466 990  
Fax: +65 67 461 980  
info@carlogavazzi.com.sg

### MALAYSIA

Carlo Gavazzi Automation (M) SDN. BHD.  
D12-06-G, Block D12,  
Pusat Perdagangan Dana 1,  
Jalan PJU 1A/46, 47301 Petaling Jaya,  
Selangor, Malaysia.  
Tel: +60 3 7842 7299  
Fax: +60 3 7842 7399  
sales@gavazzi-asia.com

### CHINA

Carlo Gavazzi Automation  
(China) Co. Ltd.  
Unit 2308, 23/F.,  
News Building, Block 1, 1002  
Middle Shennan Zhong Road,  
Shenzhen, China  
Tel: +86 755 83699500  
Fax: +86 755 83699300  
sales@carlogavazzi.cn

### HONG KONG

Carlo Gavazzi Automation  
Hong Kong Ltd.  
Unit No. 16 on 25<sup>th</sup> Floor, One Midtown,  
No. 11 Hoi Shing Road, Tsuen Wan,  
New Territories, Hong Kong  
Tel: +852 26261332 / 26261333  
Fax: +852 26261316

### TAIWAN

Branch of Carlo Gavazzi Automation  
Singapore Pte. Ltd.  
12F-3, No. 530 Yingcai Rd,  
West Dist, Taichung City 403518,  
Taiwan, China  
Tel: +886 4 2258 4001  
Fax: +886 4 2258 4002

## OUR COMPETENCE CENTRES AND PRODUCTION SITES

### DENMARK

Carlo Gavazzi Industri A/S  
Hadsten

### MALTA

Carlo Gavazzi Ltd  
Zejtun

### ITALY

Carlo Gavazzi Controls SpA  
Belluno

### LITHUANIA

Uob Carlo Gavazzi Industri Kaunas  
Kaunas

### CHINA

Carlo Gavazzi Automation (Kunshan) Co., Ltd.  
Kunshan

## HEADQUARTERS

Carlo Gavazzi Automation SpA  
Via Milano, 13  
I-20045 - Lainate (MI) - ITALY  
Tel: +39 02 931 761  
info@gavazziautomation.com

*Energy to Components!*

www.gavazziautomation.com