

## Building Automation

Solutions for  
**Lifts and Escalators**

# Lifts & Escalators

## Solutions for



**Electric Lifts**

**Hydraulic Lifts**

**Home Lifts**

**Escalators**

### ABOUT CARLO GAVAZZI

Carlo Gavazzi Automation is a multinational electronics group active in the design, manufacture and marketing of electronic equipment targeted at the global markets of industrial and building automation.

Our history is full of firsts and our products are installed in a huge number of applications all over the world. With more than 80 years of successful operation, our experience is unparalleled.

We have our headquarters in Europe and numerous offices around the world.

Our R&D competence centres and production sites are located in Denmark, Italy, Lithuania, Malta and the People's Republic of China.

We operate worldwide through 22 of our own sales companies and also selected representatives in more than 65 countries, from the United States in the West to the Pacific Rim in the East.

Our core competence in automation spans four product lines: Sensors, Switches, Controls and Fieldbuses.

Our wide array of products includes sensors, monitoring relays, timers, energy management system, solid state relays, safety devices and fieldbus systems.

We focus our expertise on offering state-of-the-art product solutions in selected market segments.

Our customers include original equipment manufacturers of packaging machines, plastic-injection moulding machines, food and beverage production machines, conveying and materials handling equipment, door and entrance control systems, lifts and escalators, as well as heating, ventilation and airconditioning devices.





## DESIGNED TO MEET MARKET REQUIREMENTS

Carlo Gavazzi, thanks to its 30 years of expertise in providing components for Lift and Escalator equipment, is able to offer innovative and reliable solutions to maximize comfort and reduce operational costs.

The Lifts and Escalators market includes three main areas: new equipment, modernization and maintenance.

Market trends show that Asia will be a key source of demand for elevators in the coming years, thanks to the very active construction market and the trend to concentrate people in high-rise buildings, while in Europe and North America, sales of maintenance and upgrading services are expected

to grow at higher rates than new equipment sales, supported by safety requirements and the aging of current installations.

Lift door closing is now safer thanks to the Carlo Gavazzi BFL series of light curtains. By detecting people-movement in the entrance area, the BFL ensures effective protection for people and objects during lift access.

With an increased number of beams and a higher degree of protection, this is the ideal solution also for customers having special space requirements.

Designed according to the EN81-70 (Safety Rules for the Construction and Installation of Lifts), the installation of the BFL series in new and existing plants fulfils the European Safety Standards.

Fast and cost-effective installation, diagnostic LEDs, reliability and high immunity to light, even if reflected from shiny objects, mean less downtime for elevator door operations.

Carlo Gavazzi magnetic proximity switches are used in the Lifts and Escalators market for many applications, such as cabin levelling, speed monitoring and cabin presence detection. Accuracy and speed, combined with availability of various output functions, ensure the best signal for economical high speed elevator control.

Our range also includes several accessories to provide customers with powerful and user-friendly solutions.

# Lifts & Escalators

## Electric Lifts



**Magnetic sensors**

**SPB2  
FMP**

**Photoelectric sensors**

**PD70  
PE12  
PA18**

**Light curtains for lifts**

**BFL**

**Monitoring relays**

**DPA51  
DPA53  
DTA01**

**Energy meters**

**EM23  
EM210**

**Power supplies**

**SPD**

**Photoelectric sensor**

**PF74**

Lifts of this type make any number of trips per day, from a few to hundreds. So their components have to guarantee maximum reliability, accuracy and robustness. Carlo Gavazzi offers a wide range of components to make sure these requirements are met: from the top-selling SPB2 and FMP series of magnetic switches



to detect the presence of the cabin at various depths in the shaft, to the DPA51, designed to detect phase sequence or failure in the system. The cabin door can be equipped with the PE12 or PD70 photo sensors or, when full door coverage is required, with the BFL light curtain, available in two versions with up to 194 beams. Other user-friendly solutions, such as NC/NO programmable output and automatic blanking, make installation easy and extend the service life of the lift. In high speed lifts, floor detection is carried out with the PF74 photoswitch and bands to trip the sensor when at the floors. High commutation speed allows the detection of all floors even when the cabin is at the maximum speed. The

sensor can also be fitted into limited space, with easy installation and setting. The PS limit switch series ensures reliable detection of the cabin position. The range of panel products also includes the DPA53 to detect very low power supply voltage to avoid the cabin stopping in mid-shaft, the 24VDC switching power supplies (used increasingly in electrical panels), the DTA01/DTA02 PTC relays to detect overheating in the lift engine, the FSA hour meter to correlate preventive maintenance with usage of the lift, and our well-known DAA51 and DMB51 timers and RMI relays. A special role is reserved for energy meters, used increasingly to ensure the lift complies with LEED requirements or other energy-saving policies and legislation.





#### Safety modules

**NA12DLIFT**

#### Timers

**DAA51  
DMB51**

#### Soft starters

**RSGD  
RSDR**

#### Industrial relays

**RMI**

#### Power transducer

**CPT**

Our EM210 and EM23 energy meters or CPT transducer (when no visualization is required) are excellent cost-effective solutions when panel space is limited. Finally, the RAD01 and RAD02 microwave radars keep the lift door open while there are people outside (e.g. in hospitals).

#### Goods lifts

Built to withstand the rigours of harsh working environments, goods lifts are particularly suitable for industrial and commercial use. They are ideal for locations requiring efficient transfer of goods from one floor to another, such as shopping malls, department stores, hotels and leisure establishments. Construction characteristics may differ

from those of a standard lift, such as the absence of a segregated shaft or cabin doors. For this reason, Carlo Gavazzi recommends the use of special components in addition to the features available on standard electrical or hydraulic lifts.

The BFL light curtain can be used to monitor the platform edges (when there are no cabin walls) or to monitor the space below the cabin (to keep the space clear and avoid the risk of injury). In these cases, the availability of two different versions of the light curtain ensures the best solution where there are space constraints, while the customised length option makes the installer's job easier and more effective.

For hydraulic goods lifts, the NA12DLIFT is an even more important component than for ordinary lifts, to correct sudden shifts of position caused by platform loading and unloading. And for large oil pump motors, our RSGD and RSDR soft-starters help reduce the starting current and reduce mechanical stress on all components.



# Lifts & Escalators

## Hydraulic Lifts



### Magnetic sensors

**FMP  
SPB2**

### Photoelectric sensors

**PE12  
PD70  
PA18**

### Light curtains for lifts

**BFL**

### Safety modules

**NA12DLIFT**

### Monitoring relays

**DTA01**

### Soft starters

**RSDR  
RSGD**

A hydraulic elevator system lifts a car using a hydraulic ram, a fluid-driven piston mounted inside the cylinder.

With hydraulic lifts it is particularly important to safely regulate cabin/floor levelling. If the cabin is not at the same level as the floor, when the door opens, this could be dangerous for passengers. In order to avoid any kind of accident, Carlo Gavazzi's solution is to control cabin levelling by means of a safety contact, according to the norms included in the Lifts and Machinery Directives.

Our solution consists of two monostable magnetic switches mounted on the

cabin and connected to a safety module, allowing the safety control system to effectively operate the level adjustment.

Two additional mono-stable magnetic switches send an indication of the correct levelling to the control system.

The NA12DLIFT module is also approved by TUV for compliance with the annex A3 ( EN 81-1:1998 A3:2009 Chapter 9.11.7 and EN 81-2:1998 A3:2009 Chapter 9.13.7) to allow conformity of the lift to the norm with the configuration used for re-levelling and the control panel functions.





# Home Lifts



Magnetic sensors	Photoelectric sensors	Light curtains for lifts	Radar sensors	Safety modules	Timers	Soft starters	Industrial relays
SPB2 FMP	PE12	BFL	RAD01 RAD02	NLG13 NA12DLIFT	DMB51 DAA51	RSGD	RMI

This special kind of lift usually has no cabin door; therefore the user is exposed to the risk of damage by accidentally banging against the wall. Until recently, the start button had to be held pressed for the whole duration of the run; the advantage was that the user could not move while the lift was running, avoiding any risk.

The "universal automatic operation" allows the button to be pressed only once and then released, just like a standard lift. Since the user is now free to move, more protection must be added at every entrance to the cabin. This is achieved by the use of safety sensors and a safety module. Two pairs of BFL Light curtains are

mounted on the cabin entrance. The safety module receives the signal from the BFLs if any beam is interrupted and makes the lift stop in the case of a dangerous situation. The platform can move again only when any obstacle between the barriers is removed and the module receives a new start command.

Carlo Gavazzi offers a kit - including 2 pairs of light curtains and the safety module - certified according to the norm EN81-41, for redundant protection. This kit has been designed to prevent any access of the user in dangerous areas during the operation of the lift and it is the ideal solution for elevator platforms without doors.



# Lifts & Escalators

## Escalators



### Photoelectric sensors

**PA18  
PE12**

### Inductive sensors

**ICB Series**

### Radar sensors

**RAD01  
RAD02**

### Monitoring relays

**DPA51  
DPA53  
DTA01**

### Timers

**DAA51  
DMB51**

### Energy meters

**EM210**

### Soft starters

**RSDR**

Carlo Gavazzi considers all indoor and outdoor application needs when designing and manufacturing products for the escalator market.

Its range includes inductive proximity sensors to ascertain the speed, position and direction of the escalator, as well as photoelectric sensors to detect the

presence of commuters using the escalator and switch from standby mode to operational mode (dual-speed mode).

For single ECO-speed escalators, Carlo Gavazzi also offers a wide selection of soft starters to handle capacities up to 1050 kW.

In line with global attention to energy conservation issues, energy meters are also available to monitor energy efficiency.

Monitoring relays provide additional control features to indicate possible malfunctions in the escalator control and power system such as over/under voltage/current, phase loss, abnormal phase sequence and motor overheating.



For escalator control panels, the Carlo Gavazzi offer includes industrial mechanical relays; timers/counters; safety modules and many other devices.



## Our Expertise in Energy Efficiency



**Energy  
meters**

**EM24**

**Energy  
meters**

**EM21 72R  
EM21 72V**

**Energy  
meters**

**EM210**

When considering the energy profile of a building, lifts are an important power issue (power consumption is high) and often also an energy efficiency issue (as lifts are frequently in use). This makes energy management a prerequisite for lifts. Here are a couple of examples:

### **EM24 and EM210 : for regenerative lifts**

Electric lifts with regenerative variable speed drives use electrical energy when ascending full or descending empty (in such a case the counterweight is lifted). At the same time, when they go up empty or they descend full, the motor acts as a brake and the mechanical energy is transformed into electrical energy and

then delivered back to the network.

The BMS (Building Management System) needs to know the energy consumption of the elevator, how it impacts on the total consumption of the building and how much energy is returned to the network (very important, as this goes into the "green" part of the energy equation of the building).

The EM24 measures energy in both directions, it is easy to install and directly measures up to 65A, covering most applications.

The EM210 measures both imported and exported energies for CT measuring applications.

Furthermore, the Modbus RTU connection allows data transmission to the BMS.

### **EM2172R/V: better efficiency**

When proposing the replacement of a lift (or, sometimes, only the electrical parts) it is important to have convincing arguments. One of these can be by connecting EM2172R/V to the old system.

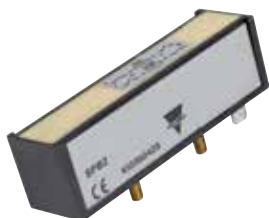
The EM2172R/V (designed for easy installation in a refitting) measures the total energy consumption of the elevator, making it easy to calculate the energy saving that a new lift could achieve.

The EM21, in the retrofit variants, includes split-core transformers, so that the installation to perform the monitoring test is faster and easier.

# Lifts & Escalators

## Our product range

### Magnetic sensors



#### SPB2

- Dimensions: 85 x 24 x 25.5 mm
- Housing material: plastic with two metal shielded sides
- Operating distance: 5 - 30 mm
- Output function: bistable
- Degree of protection: IP65 (SPB2) - IP67 (SPB22MT)

#### MAIN FEATURES

- Easy and fast mounting
- Cable or faston connector output
- Reduced magnetic interference when mounted side by side with other sensors

### Cylindrical magnetic sensors



#### FMP

- Housing material: plastic with M12 diameter
- Operating distance: 7 - 26 mm
- Output functions: NO, NC, bistable or CO
- Front side switching
- Degree of protection: IP67

#### MAIN FEATURES

- Different housing colours based on the output function
- Threaded body and two plastic nuts included for easy mounting
- Supports and brackets for simple sensor positioning (on request)

### Inductive proximity sensors



#### ICB Series

- M12 Nickel-brass housing in short or long barrel lengths
- Standard and double distance sensing ranges
- Output functions: NO or NC, NPN or PNP
- Two meter oil resistant PVC cable or M12 plug version
- Protection: reverse polarity, short circuit, transients

#### MAIN FEATURES

- High precision and programmable outputs thanks to the microprocessor technology
- Eco-friendly potting material made from recycled corn by-product and resistance to vibration and impacts

### Photoelectric sensors



#### PE12

- Dimensions: Ø12 x 29 mm Click-in
- Through-beam sensors, 15 m sensing distance
- Cable or pig-tail versions
- Power supply 10 to 30 VDC
- CE and cULus

#### MAIN FEATURES

- Detects interruptions of the light beam
- Fast mounting, ESPE2 viewing angle
- Plug and play: no settings needed

### Photoelectric sensors



#### PD70

- Dimensions: 11.6 x 11.6 x 70 mm
- Through-beam sensors, 12 m sensing distance
- Cable or M8 plug versions
- Power supply 10 to 30 VDC
- CE and cULus

#### MAIN FEATURES

- Detects interruptions of the light beam
- Slim housing, ESPE2 viewing angle
- Plug and play: no settings needed

### Photoelectric sensors



#### PA18

- Dimensions: M18 x 39 mm
- Diffuse reflective sensors, 1 m detecting distance
- Cable or M12 plug versions
- Power supply 10 to 30 VDC
- CE and cULus

#### MAIN FEATURES

- Sensors used to directly detect human presence
- Fast mounting, smooth finish
- Sensitivity adjustment



## Our product range

### Fork sensor for lifts



#### PF74

- Dimensions: 74 x 60 x 15 mm Fork opening 30 mm
- Photoelectric Fork Sensor
- Power supply 24 VDC ( $\pm 20\%$ )
- Push-Pull Transistor output, 100 mA
- CE and CCC approved

#### MAIN FEATURES

- Detection of the elevator chair
- Fast detection: 1000 Imp per sec.
- High detection gain to detect through i.e. smoke.

### Light curtains for lifts



#### BFL1x4E20/BFL1x4S200

- Side and Edge versions
- Timeout and blanking function
- Configurable output
- Extended power supply range
- UL, CSA approved

#### MAIN FEATURES

- 1 item with 6 configurable outputs
- Voltage free output: no need for external boxes
- Plastic housing for a galvanic insulation

### Radar sensors



#### RAD01 / RAD02

- Dimensions: 118 x 80 x 53 mm
- K-Band radar sensor,
- Up to 4 m mounting height
- Power supply 12 to 24 VAC/DC
- CE, cURus and FCC

#### MAIN FEATURES

- RAD01 Bi-directional detection
- RAD02 Uni-directional detection
- RAD02 Lateral traffic suppression
- IR-Remote control functionality

### Safety modules



#### NA12LIFT

- Lift cabin levelling module
- Input from magnetic sensors
- Feedback circuit for external contactor monitoring
- 24 V AC/DC power supply voltage
- 2 safety relay outputs

#### MAIN FEATURES

- Certified according to the Lift Directive
- Only 22 mm wide
- Plug and play : no settings needed

### Safety modules



#### NLG13

- Safety module for light curtains in home lift
- Performance level "e" (cat.4)
- PNP inputs
- 24 V DC power supply voltage
- 3 safety relay outputs

#### MAIN FEATURES

- Certified according to the Machine Directive
- Only 22 mm wide
- BFL + NLG certified

### Monitoring relays



#### DPA51

- Dimensions 81 x 17.5 x 67.2 mm DIN-rail housing
- Phase sequence and loss relay
- 3 phase AC (own power supply); regenerated voltage
- Power supply 208 to 480 VAC ( $\pm 15\%$ )
- UL, CSA and CCC approved

#### MAIN FEATURES

- Motor protection from reverse running and phase loss
- 17.5 mm width: the smallest on the market
- Plug and play: no settings needed

# Lifts & Escalators

## Our product range

### Monitoring relays



#### DPA53

- Dimensions: 81 x 17.5 x 67.2 mm DIN-rail housing
- Phase sequence, loss and undervoltage relay
- 3 phase AC (own power supply)
- Power supply from 208 to 480 VAC (2 models)
- UL, CSA and CCC approved

#### MAIN FEATURES

- Motor protection from reverse running and wrong phase voltage
- 17.5 mm width: the smallest on the market
- Plug and play: only undervoltage threshold to be set

### Monitoring relays



#### DTA / PPA 01/02

- Dimensions: 22.5 mm Euronorm for DIN-rail or 36 mm plug-in version
- Motor temperature relay
- Measuring ranges: PTC according to EN 44081
- Power supply: 24 to 48 VAC/DC, 110, 230 VAC
- UL, CSA approved

#### MAIN FEATURES

- Protection from high temperatures of the coils of a motor with built-in PTCs.
- Alarm resettable by external contactor or reset button
- Test button allowing the simulation of the fault condition

### Timers



#### DAA51 / DMB51

- Dimensions: 81 x 17.5 x 67.2 mm DIN-rail housing
- Delay on operating function (DAA), multifunction (DMB)
- Combined AC and DC power supply
- Repeatability: < 0.2%
- UL, CSA, RINA approved

#### MAIN FEATURES

- Delay on operate/release; interval (manual/automatic start);
- Double interval; symmetrical recycler (ON or OFF first)
- Timing range from 0.1 s to 100 h

### Industrial relays



#### RMI...

- 2 or 4 poles
- Max load: 12A / 250 VAC
- DC coils: 6 - 110 VDC
- AC coils: 6 - 230 VAC
- Degree of protection IP40

#### MAIN FEATURES

- High switching power
- Long life (minimum 100.000 electrical ops.)
- Standard with LED, Push with arm and Flag

### Dupline® master modules



#### G349600..700

- Dimensions: 77 x 72 x 70 mm DIN-rail housing
- Generates Dupline® carrier signal
- RS485/RS232 interface for Lift Controller
- Power supply from 20 to 30 VDC
- Synchronizes 24 VDC power supply with Dupline®

#### MAIN FEATURES

- Generates 3-wire system with power and communication
- Plug&Play versions available for specific PLC brands
- Possibility to multidrop up to 16 units as modbus slaves

### Dupline® master modules



#### G219600..700

- Dimensions: 86 x 54 mm Open PCB
- Generates Dupline® carrier signal
- RS485 interface for Lift Controller
- Power supply 20 to 30 VDC
- Synchronizes 24 VDC power supply with Dupline®

#### MAIN FEATURES

- Generates 3-wire system with power and communication
- Plug&Play versions available for specific PLC brands
- Possibility to multidrop up to 16 units as modbus slaves



# Our product range

## Dupline® I/O modules



### G2140442.1700

- Dimensions: 54 x 40 mm Open PCB
- 2 contact inputs
- 2 PNP transistor outputs
- Powered by Dupline® 3-wire bus
- LED indications for supply and carrier

#### MAIN FEATURES

- Used as interface for buttons and lamps at landing stations
- Input pulse prolongation to catch short button activations
- Simplifies the wiring to the Lift Controller

## Dupline® I/O modules



### G214055.0700

- Dimensions: 74 x 59 mm Open PCB
- 4 contact inputs
- 4 PNP transistor outputs
- Powered by Dupline® 3-wire bus
- LED indications for supply and carrier

#### MAIN FEATURES

- Used as interface for buttons and lamps in the car
- Input pulse prolongation to catch short button activations
- Simplifies the wiring to the Lift Controller

## Dupline® output modules



### G213055.1700

- Dimensions: 74 x 59 mm Open PCB
- 8 PNP or NPN transistor outputs
- Powered by Dupline® 3-wire bus
- LED indications for supply and carrier
- Operating temperature -20°C to 50°C

#### MAIN FEATURES

- Used as interface for floor indicators
- The same 8 Dupline addresses can be used for all floor indicators
- Simplifies the wiring to the Lift Controller

## Dupline® input modules



### G2120550.700

- Dimensions: 74 x 59 mm Open PCB
- 8 contact or voltage inputs
- Powered by Dupline® 3-wire bus
- LED indications for supply and carrier
- Operating temperature -20°C to 50°C

#### MAIN FEATURES

- Used as general purpose inputs
- Input pulse prolongation to catch short button activations
- Simplifies the wiring to the Lift Controller

## Energy meters



### EM23

- 3-phase energy meters with direct connection
- Direct connection up to 65 A
- Dimensions 4-DIN rail module housings
- Class 1 (kWh) acc. to EN62053-1
- Pulse open collector output

#### MAIN FEATURES

- Direct measurement in a very compact housing to save space
- Allows local energy allocation for cost allocation purposes
- On request, MID annex D certification available

## Energy meters



### EM24

- 3-phase energy meter with direct connection
- Direct connection up to 65 A
- Dimensions 4-DIN rail module housings
- Class 1 (kWh) acc. to EN62053-1
- Optional serial port, digital input and outputs

#### MAIN FEATURES

- Direct measurement in a very compact housing to save space
- Allows integration of energy management in the Dupline® fieldbus system
- On request, MID annex D certification available
- Dupline® port for energy and inst. variable retransmission (optional)

# Lifts & Escalators

## Our product range

### Energy meters



#### EM2172R / EM2172V

- 3-phase energy meters with CT connection
- Solid or split-core current sensors
- Dimensions 4-DIN rail module or 72x72 mm housing
- Class 1 (kWh) acc. to EN62053-1 (72V)
- Class 2 (kWh) accuracy (72R + current sensors)
- Pulse open collector or serial RS485 output

#### MAIN FEATURES

- Very compact and space saving meter
- Miniature split-core current sensors included (72 R)
- Suitable for any standard 0.333V current sensor or for CTV series (72 V)

### Energy meters



#### EM210

- 3-phase energy meters with CT connection
- Solid or split-core 5A CT
- Dimensions 4-DIN rail module or 72 x 72 housing
- Class 1 (kWh) acc. to EN62053-1
- Pulse open collector or serial RS485 output

#### MAIN FEATURES

- Very compact and space saving meter
- Can be installed both on DIN-rail or on the panel
- On request, MID annex D certification available

### Power transducer



#### CPT

- Dimensions: 83.5 x 45 x 98.5 mm DIN-rail housing
- Accuracy 0.5 % (voltage, current)
- Measurement by CT and VT
- Front protection degree IP20
- Analogue, digital, pulse or serial outputs available

#### MAIN FEATURES

- Very compact power transducer
- Provides electrical variables set to a PLC to manage compressors and other loads
- Suitable for on-board panel installation

### Switching power supplies



#### SPD

- DIN-rail housing
- Short circuit protection
- 1-phase, Bi-phase and 3-phase AC
- Up to 960 watt output
- Rated input voltage: 115/230 VAC selectable 100/240 VAC
- UL, cUL listed and TÜV/CE approved

#### MAIN FEATURES

- Overload protection
- Parallel versions available
- High efficiency

### 3-phase general purpose soft starters



#### RSGD

- Motor rating: up to 22 kW in 45 mm
- Ramp up time: 1 - 20 sec
- Internally bypassed
- Multi-voltage operation: RSGD40: 220 - 400 VAC RSGD60: 220 - 600 VAC
- Wide control voltage range : Option E: 110 - 400 VAC Option F: 24 VAC/DC

#### MAIN FEATURES

- Easy to use and setup
- Current balancing algorithm
- Auxiliary relays for top of ramp and alarms

### 3-phase 280kW soft starters



#### RSDR

- Motor Rating: Up to 280 kW @400 V
- Ramp up time: 0.5 - 30 sec
- Internally bypassed
- 6-wire connection capability
- UL approved

#### MAIN FEATURES

- Multi-voltage operation: 230 - 460 VAC, 50/60 Hz
- Auxiliary relays for top of ramp and alarms

### Limit switches



#### PS

- Material: plastic, metal
- Horizontal / vertical control available
- Minimum actuation force / torque
- Approvals: CE, UL, CSA

#### MAIN FEATURES

- Mechanical life > 15,000,000 cycles
- Precise operating point

### Counters



#### FSA01 / FSA02

- 24 x 48 mm housing
- Counting up to 100,000 hours
- Battery lifetime 8 years
- NPN/PNP or AC/DC inputs
- Reset button with locking function

#### MAIN FEATURES

- Preventive maintenance ensured
- Can be connected straight to the pump for time counting
- Front IP65 protection for all environments



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## 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** - Uab Carlo Gavazzi Industri Kaunas  
Kaunas

**CHINA** - Carlo Gavazzi Automation  
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