





Solutions

Lifts and Escalators

Lifts & Escalators



Electric Lifts Hydraulic Lifts Escalators

ABOUT CARLO GAVAZZI

Carlo Gavazzi Automation is a multinational electronics group active in designing, manufacturing 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 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 highrise buildings, while in Europe and North America, sales of maintenance

and upgrading systems are expected to grow at higher rates than new equipment sales, as a result of safety requirements and the aging of current installations.

Carlo Gavazzi's magnetic proximity sensors are used in the Lifts and Escalators market for many applications, such as cabin levelling, speed monitoring and cabin presence detection.

The accuracy and speed of these sensors, combined with the availability of various output functions, ensure the best signals for economical high speed elevator control.

Not only is safety important in lift

systems, but also continuity of operation in case of energy loss. Our range of DIN rail mounting DC UPS modules provides different solutions with integrated or external power supply, load and charging current up to 30A.

Furthermore, the energy efficiency of lift and escalator systems can be constantly monitored by our wide range of energy meters.

Our range also includes several accessories to enhance our powerful and user-friendly solutions.

Electric Lifts

& Escalators



Magnetic sensors	Photoelectric sensors	Radar sensors	Photoelectric sensors	Energy analysers	Safety modules
SPB2	PD70	RAD02	PF74	EM210	NA12DLIFT
FMP	PE12 PA18	RAD01		EM340	

Electric lifts 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 sensors to detect the presence of the cabin at various depths in the shaft, to the DPA51 monitoring relay, designed to detect phase sequence or failure in the system.

The cabin door can be equipped with the PE12 or PD70 photoelectric sensors. 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 monitoring relay to detect very low power supply voltage to avoid the cabin stopping in midshaft, the 24VDC switching power supplies (used increasingly in electrical panels), the DTA01/DTA02 PTC relays to detect overheating in the lift engine,







Monitoring relays	Timers	Power supplies	Power transducers	Industrial relays
DPA51	HAA08 / HAA14	SPD	СРТ	RMI
DPA53	DAA51 / DMB51			
DTA01				

the FSA hour meter to correlate preventive maintenance with usage of the lift, and our well-known DAA51, DMB51 and HAA 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.

Our EM210 and EM340 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.



Hydraulic Lifts

Escalators



Magnetic sensors	Photoelectric sensors	Radar sensors	Safety modules	Monitoring relays
FMP	PE12	RAD01	NA12DLIFT	DTA01
SPB2	PD70	RAD02		
	PA18			

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 safety module NA12DLIFT is also approved by TÜV 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.









Soft	Smart	Limit	Industrial
starters	UPS	switches	relays
RSBD RSBT	SPUBC	PS	RMI

The PS limit switch series also ensures reliable detection of the cabin position.

The SPUBC, our latest development for DC energy continuity, is not just a simple battery charger, it is a totally new DC UPS concept. It is a power supply providing 5A nominally, but capable of supplying 10A continuous service, boosting up to 15A for 4 seconds in case of need.

The condition of the battery is continuously monitored by the diagnostic cycle and this can predict or provide remote information about any possible failure.

The SPUBC does not allow complete battery discharge but, if connected to a totally flat battery, it can restore the operation by means of a specific charging cycle.

Goods lifts

For hydraulic goods lifts, the NA12DLIFT is an even more important component than for ordinary lifts, as it corrects sudden shifts of position caused by platform loading and unloading.

RSBT/D soft starters help to reduce the starting current of the hydraulic pump.



Lifts & Escalators



Photoelectric sensors	Inductive sensors	Radar sensors	Monitoring relays	Timers	Energy analysers
PA18	ICB12	RAD01	DPA51	DAA51	EM210
PE12	ICB18	RAD02	DPA53	DMB51	
	ICB30		DTA01		

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).

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

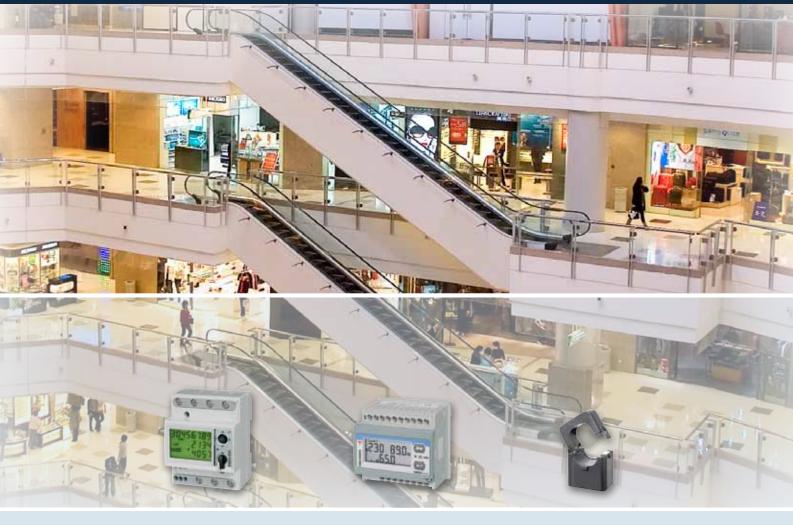
Monitoring relays provide additional control features to indicate possible malfunctions in the escalator control and power system such as over/under voltage/current, phase loss, abnormal phase sequence and motor overheating.

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	
analysers	5

Energy analysers

Current transformers

EM24

EM210 EM210 MV CTV

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, consume electrical energy when ascending full or descending empty. 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 energy for CT measuring applications. Furthermore, the Modbus RTU connection allows data transmission to the BMS.

EM210 MV: 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 produced by connecting the EM210 MV to the old system.

The EM210 MV (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 EM210, in its retrofit variant, can manage both split-core transformers and Rogowski coils, so that its installation in order to perform the monitoring test is faster and easier.



Escalators

Magnetic sensors

Cylindrical magnetic sensors

Inductive proximity sensors

Photoelectric sensors



SPB2

- Dimensions: 85 x 24x 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)



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



ICB12 / ICB18 / ICB30

- M12, M18 and M30 Nickel-brass housing in short or long barrel lenghts
- Standard, double and triple 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



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 approved

MAIN FEATURES

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

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)

MAIN FEATURES

- High precision and reliability thanks to the microprocessor technology
- Short-circuit and overload LED indication
- Laser engraved information on the front cap, permanently legible

MAIN FEATURES

- Detects interruptions of the light beam
- Fast mounting
- ESPE2, performance level: C (EN13849-1)
- Plug and play: no settings needed

Photoelectric sensors

Photoelectric sensors

Photoelectric fork sensor for lifts

Motion radar sensors



District Control

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 approved

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 approved



PF74

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



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 approved

MAIN FEATURES

- Detects interruptions of the light beam
- Slim housing, ESPE2 viewing angle
 Plug and play: no settings needed
- MAIN FEATURES
- Sensors used to directly detect human presence
- Fast mounting, smooth finish
- Sensitivity adjustment

MAIN FEATURES

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

- RADO1 Bi-directional detection
- RAD02 Uni-directional detection
- RADO2 Lateral traffic suppression
- IR-Remote control functionality



Safety modules	3-phase monitoring relays	3-phase monitoring relays	Temperature relays
NA12DLIFT	DPA51	DPA53	DTA / PPA 01/02
Lift cabin levelling module Input from magnetic sensors Feedback circuit for external contactor monitoring Dual channel input 2 NO safety outputs	 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 (± 15%) CE, UL, CSA and CCC approved 	 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) CE, UL, CSA and CCC approved 	 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 CE, UL, CSA approved

MAIN FEATURES

- Certified according to Lift Directive EN 81-1/-2, EN12015, EN12016
- Possibility to connect mechanical or magnetic switches for lift cabin position monitoring
- TÜV 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

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

- N
- 0,

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

Dupline® master Dupline® master **Dupline® I/O** Dupline® I/O modules modules modules 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



G219600..700

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



G21404421700

- 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



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

- 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

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

- 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



Escalators

Dupline® output modules

Dupline® input modules

Timers

Timers



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



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



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



HAA08 / HAA14

- 21.5 x 28 mm housing for 8 pin or 14 pin blade socket
- Multifunction timer
- DPDT or 4PDT output
- Universal power supply
- cUR and CSA approved

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

MAIN FEATURES

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

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

MAIN FEATURES

- Front knob adjustable time setting
- Selectable time ranges from 0.1 s to 100 h
- Delay on operate/release, ON/OFF first symmetrical recycle, single/double interval on trigger open/close

3-phase energy analyser

3-phase energy analysers for 5A or 0.333mV CTs

3-phase energy analysers for direct current up to 65A

3-phase power transducer



EM24

- 3-phase energy meter with direct connection
- Direct connection up to 65 A

MAIN FEATURES

housing to save space

available

- Dimensions 4-DIN rail module housings
- Class 1 (kWh) acc. to EN62053-1
- Optional serial port, digital input and outputs

• Direct measurement in a very compact

· Allows integration of energy management

• On request, MID annex D certification

• Dupline® port for energy and inst. variable

in the Dupline® fieldbus system

retransmission (optional)

150 890. D

EM210 / EM210 MV

- 4 DIN modules or 72 x 72 mm
- LCD with two installation options
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering, 3 x 3-digit or 8-digit readout, cl. B (EN50470)
- Voltage inputs: 3x230(400) VAC; Current inputs: 5 A CT (AV version) or 0.333mV from CTV-xX sensors (MV version)

MAIN FEATURES

- Self-power supply (230-400V aux power supply in MID version)
- Pulse output and optionally: RS485 Modbus RTU, high speed (up to 115 kbps)
- Sealable terminal covers
- CE, cULus, MID (only 5A, aux power supply version)



EM340

- 3 DIN modules
- Backlit touch LCD
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering, 3x 8-digit, cl. B (EN50470)
- Measuring inputs: 230 to 400 VLL AC, 65A

MAIN FEATURES

- Self-powered
- Dual tariff management
- Pulse output or RS485 Modbus or M-Bus port
- Sealable terminal covers
- CE, MID (PFA and PFB)



CPT DIN

- 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



Our product range

3-phase general 3-phase general purpose soft starters purpose soft starters

1-phase DIN-rail power supplies

Switch mode power supplies



RSBD

- Self-learning algorithm for current reduction and current balancing
- Operational current: 12 A up to 95 A
- Operational voltage: 220 600VAC, 50/60Hz
- Alarm and top of ramp relay outputs
- cULus and CCC approved

MAIN FEATURES

- Compact dimensions: 45A in 45mm and 95A in 75mm wide housing
- Plug and play: no user settings required
- Internally bypassed



RSBT

- Self-learning algorithm for current reduction
- Operational current: 16 A up to 95 A
- 3-phase controlled and internally bypassed
- Operational voltage: 220 480VAC, 50/60Hz
- cULus, CCC and VDE approved

MAIN FEATURES

- Plug and play: no user settings required
- Compact dimensions: 32A in 45mm and 95 A in 120mm wide housing
- Serial communication: Modbus 2-wire (RS485)



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



SPDM Plastic

- Output from 24W to 72W
- Low consumption
- Compact dimension
- Universal input voltage AC and DC
- CE, TÜV, UL and UL1310 Class 2 approved

MAIN FEATURES

- Overload protection
- Parallel versions available
- High efficiency

MAIN FEATURES

- Screw or spring loaded terminals
- DC OK LED indication

UPS	Smart	Monitoring	Limit
controller	UPS	relays	switches



SPUC

- Up to 30 A UPS controller
- 12 V and 24 V versions
- Outputs for: Device OK, Battery OK and Battery Low.
- DIN rail battery accessory available up to 7.2 A/h
- CE and UL approved

MAIN FEATURES

- To be used in addition to 12 or 24 V power supply
- Front 30 A replaceable fuse
- Plug and play: no settings needed



SPUBC

- Power supply, UPS and battery charger "All in one
- 24 VDC 5 A output
- Power boost up to 2 times rated output, permanent.

· Power supply independent of charger

Remote indication for battery operation

• "Start from battery" and "Empty battery

- Built in battery diagnosis
- CE and UL approved

MAIN FEATURES

and battery low

charging" features

- - Star and Delta power supply from 208
 - CE, UL and CCC approved



DPB51CM44B006

- Dimensions 81x17,5x67,2mm DIN-rail housing
- TRMS 3-phase sequence
- Phase and Neutral loss relay
- to 480 VAC (+/- 15%)



PS

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

MAIN FEATURES

- Motors and users protection from reverse
- Detects all phase presence and also Neutral loss (Ln-N)
- 17.5 mm width: the smallest in the market
- No settings nor adjustments: plug & play

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



Industrial relays

Counters



RMI...

- 2 or 4 poles
- Max load: 5 A (4 poles) 10 A (2 poles) / 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



FSA01 / FSA02

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

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



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Carlo Gavazzi Controls SpA Carlo Gavazzi Ltd Belluno

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