CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

Industrial Automation

Solutions for
Food and Beverage

**Coffee
and vending machines**

**Heating and
cooking equipment**

**Ice makers
and cooling systems**

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: Sense, Switch, Control and Fieldbus.

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 material handling equipment, door and entrance control systems, lifts and escalators, as well as heating, ventilation and airconditioning devices.

DESIGNED TO MEET MARKET REQUIREMENTS

With over 40 years of expertise in manufacturing components for food and beverage equipment, Carlo Gavazzi can provide a wide range of advanced and reliable products for commercial heating and cooking equipment, ice making technology and cleaning processes.

Carlo Gavazzi is a market leader in solid state relay technology, offering innovative solutions in very compact dimensions for the control of heater loads. The range of products includes solid state relays for PCB mounting, chassis mounting as well as solutions ready for use with a built-in heatsink.

The number of switching cycles in food and beverage equipment is quite substantial and a reliable switching solution that guarantees a long, maintenance free lifetime can be provided only with solid state switching.

Carlo Gavazzi sensors are widely used to detect door closure or to check water level in coffee machines.

Food and beverage processes demand equipment capable of working in harsh environments and conditions.
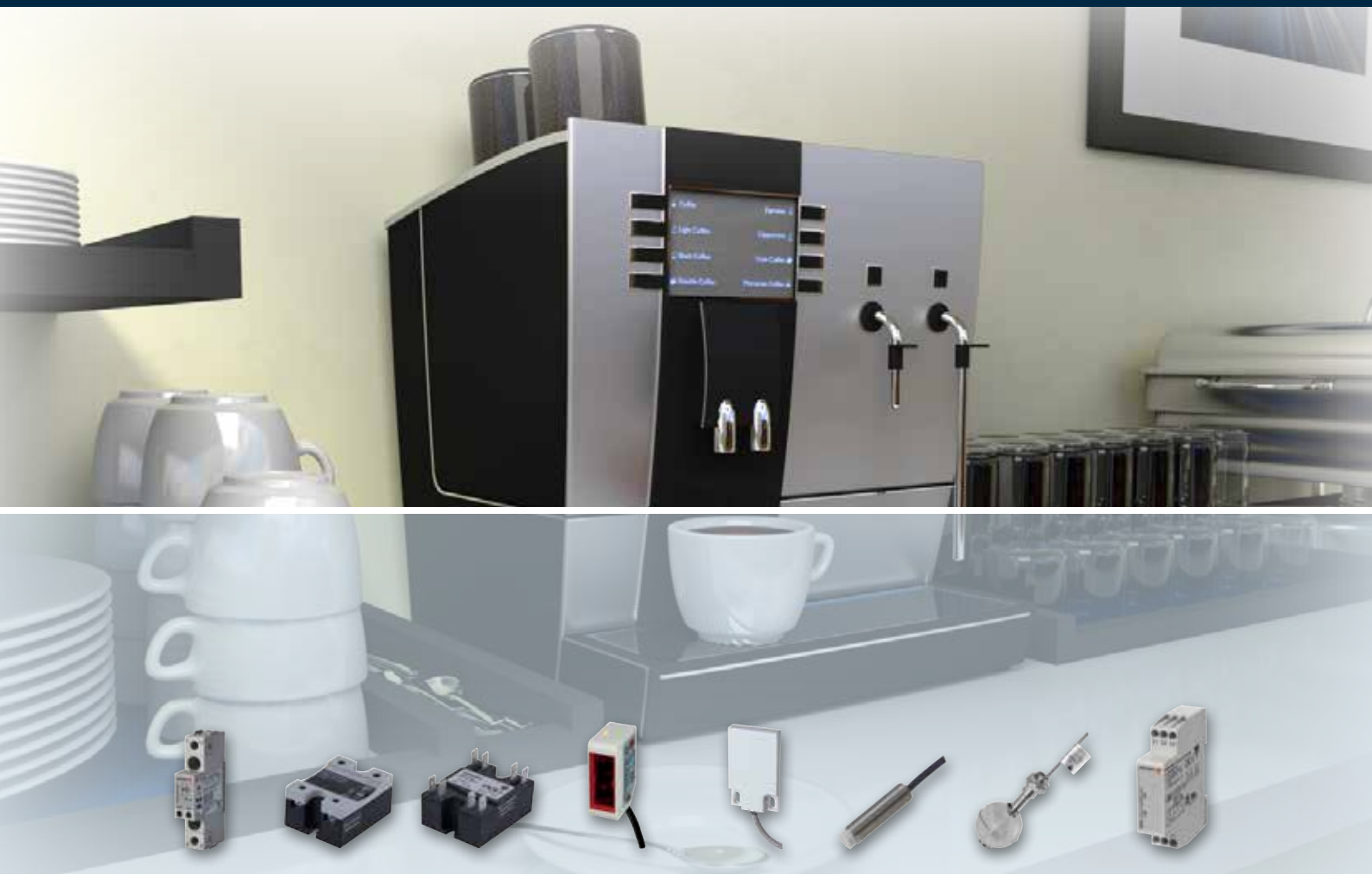
The Carlo Gavazzi range of sensors includes the new photoelectric type (Ecolab and IP69K approved) capable of withstanding high pressure and steam cleaning.

Monitoring relays, timers, switching power supplies and energy meters complete the range of Carlo Gavazzi products to ensure safe operation and monitoring of equipment, while increasing longevity.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Illustrations are for example only.

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Coffee and vending machines

Solid state relays	Solid state relays	Solid state relays	Photoelectric sensors	Capacitive sensors	Inductive proximity sensors	Magnetic level sensors	Monitoring relays
RGS	RM	RA2A	PD30 PA18 PH18	CD50CNF CA18CLF	IA08	ILM ILSP	DPA51 DPB51 DIB71 DWA01

Coffee machines, for both domestic and commercial use, must be reliably monitored in order to avoid any damage to the electromechanical elements such as the pump or the electric resistance. Carlo Gavazzi products provide efficient control and ensure the reliability of equipment.

Level sensors are the best solution to check the water level. The sensor may be installed directly in the bottom of the tank.
Usually, plastic propylene sensors (ILSP, ILM series) are used for this purpose. A second solution consists of a float in the tank controlled through magnetic sensors.

Furthermore, switching of heaters and motors can be performed through solid state relays (RG series, RM series and RA2A series). They can operate in a relative non-condensing humidity of 95%. There are no contacts and no arcing involved as in the case of mechanical contactors.
In the vending market, quality of dispensed drinks (hot and cold), reliability, easy cleaning and maintenance are the keys for success.
In coffee machines, the PD30 sensors with background suppression detect the cups to prevent the coffee from spillage, while CD50 sensors detect the levels of coffee beans.

Heating and cooking equipment

Solid state relays	Solid state contactors	Hybrid relays	Proportional controllers	Safety magnetic sensors	Switching power supplies	Energy meters
RAM RM	RGC1A RGC2A RGC3A	RMD3H	RGC3P RGC2P	SMS CLS	SPD24 SPPC 150 SPPC 150 F	EM23 DIN

Manufacturers of cooking equipment such as ovens, griddles, steamers and toasters need to ensure food quality and safety, improving production processes and ensuring long operating lifetime.

Global legislation enforces restrictions and bans on the use of mercury. Carlo Gavazzi solid state relays and contactors are RoHS compliant and are mercury free. They can operate in humid conditions without being affected by vapours that may be present in surrounding environmental conditions.

The RG and RM series are solid state solutions which integrate protection against uncontrolled transients and over voltages to guarantee reliable operation. The compact dimensions of the RG series offer the possibility of panel space optimisation.

Carlo Gavazzi can also provide hybrid relays with the RMD series. The hybrid solution combines the advantages of solid state relays and electromechanical relays.

The mercury free solution of the RMD3H series and the capability of switching 20 cycles per minute, make this product particularly suited forww the food and beverage industry as a replacement for mercury displacement relays.

The RGCxP series enables analog inputs to be connected directly to the relay when it is necessary to control the output power in proportion to the level of control input.

Machinery protection from voltage surges, overcurrent or phase loss is ensured by Carlo Gavazzi compact monitoring relays, thus prolonging their lifetime.

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Ice makers and cooling systems

Photoelectric sensors	Inductive proximity sensors	Timers	Capacitive sensors	Soft starters	Energy meters
PA18 PH18	IA08	HAA08 HAA14 FMB01	CD50CNF	RSBS	EM10 DIN EM23 DIN

Thanks to the progress in energy efficiency, reduced size and low refrigerant charge there are many applications of ice making technology, with millions of ice makers around the world. You can find ice makers in hotels, bars and restaurants as well as in hospitals, laboratories, supermarket and in the food industry.

The wide range of inductive, capacitive, photoelectric and ultrasonic sensors by Carlo Gavazzi includes some types suitable to be installed. An inductive sensor - specifically designed for this application - detects low speed of the gear motor, sending a signal to the PC board which stops the ice machine operation.

Carlo Gavazzi photoelectric sensors can be used for ice level control. The sensor will signal the P.C. board to stop the machine when a beam of light sent by the optical device is sheltered by ice. The ice machine will stop making ice before the bin or dispenser is full.

Capacitive sensors also enable accurate control of water levels sending a water fill signal to the controller.

Cleaning processes

CARLO GAVAZZI

Photoelectric
sensors

PA18

Photoelectric
sensors

PH18

ECOLAB

In Food and Beverage applications, systems and components have to withstand harsh cleaning conditions.

In the food industry it is necessary to clean the conveyor with water jets, as well as alkaline foam cleaning, chlorine containing foam and acidic foam disinfectant.

The new series of photoelectric sensors - PA18 series - can resist 80°C water at 80 – 100 bar, also cleaning agents and disinfectants, complying with the requirements set out by ECOLAB, IP67, IP69K.

These new devices are distinguished by their reliability under the harshest cleaning conditions.

Offered in a compact M18 threaded ABS housing, this new sensor series provides a space saving solution, available in both axial (straight) and radial (90° right angled) versions. Thanks to the built-in microprocessor, the new M18 powerful photoelectric sensors guarantee advanced filtering and detection, ensuring secure and flexible customized solutions.

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Food and Beverage

Our product range

1-phase solid state relays	1-phase solid state relays	1-phase solid state switches	3-phase solid state contactors

RM1A / RAM1A

- Dimensions: 58.2 x 44.8 x 28.8 mm, panel mount
- Rated operational voltage: up to 660 VAC
- Rated current: 25 AAC, 50 AAC, 75 AAC, 100 AAC, 125 AAC
- Control input: 4-32 VDC, 20-280 VAC
- Approvals/Marks: CE - cURus - CSA - VDE (RAM)

MAIN FEATURES
- Zero cross or Random switching
- Suited for resistive, inductive or capacitive loads
- Integrated output overvoltage protection (RM1)

RA2A / RA2A..C

- Dimensions: 57.8 x 44.5 x 31.7 mm, panel mount
- Rated operational voltage: up to 660 VAC
- Rated current per pole: up to 40 AAC
- Control input: 4-32 VDC
- Approvals/Marks: CE - cURus - CSA

MAIN FEATURES
- 2 separately controlled relays in a compact platform
- Zero cross switching
- LED per pole for control status indication

RGS1A / RGC1A

- Product width: 17.5 mm up to 70 mm, DIN or panel mount
- Ratings: up to 660 VAC, 90 AAC, 18,000 A²s
- Integrated output overvoltage protection
- Control input: 4-32 VDC, 20-275 VAC (24-190 VDC)
- Approvals/Marks: CE - cULus (RGC) - cURus (RGS) - CSA (RGS) - VDE - GL (RGC up to 30 AAC)

MAIN FEATURES
- Integrated heatsink (RGC1A), without heatsink (RGS1A)
- 100 kA short circuit current rating
- Optional integarted overtemperature protection (RGC1)

RGC3A / RGC2A

- Product width up to 70 mm, DIN rail mount
- Ratings: up to 660 VAC, 75 AAC (RGC2A), 65 AAC (RGC3A)
- Motor ratings up to 11 kW @ 400 VAC, 25 HP @ 600 VAC
- Control input: 5-32 VDC, 20-275 VAC (24-190 VDC)
- Approvals/Marks: CE - cULus

MAIN FEATURES
- 3-phase; 2-pole or 3-pole switching
- Optional monitoring for load and SSR malfunction
- 100 kA short circuit current rating

3-phase hybrid relays	3-phase proportional controllers	Multifunction meters	Energy meters

RMD3H

- Dimensions: 90 x 140.7 x 50.6 mm, panel mount
- Switching with arc free operation
- Rated current @ 60 °C: 30 AAC, 40 AAC
- Operating life: 1 million cycles
- Rated voltage: 240 VAC, 277 VAC / 480 VAC + Neutral

MAIN FEATURES
- Hybrid relay: SSR + EMR combination
- Mercury free, RoHS compliant
- Integrated overvoltage protection

RGC3P / RGC2P

- Product width up to 70 mm, DIN rail mount
- Rated operational voltage: 180 - 660 VAC
- Rated current: up to 75 AAC (RGC2P), 65 AAC (RGC3P) @ 40 °C
- Control input: 0-20 mA, 4-20 mA, 12-20 mA, 0-10 V, 0-5 V, 1-5 V, external potentiometer
- Approvals/Marks: CE - cULus

MAIN FEATURES
- Integrated output overvoltage protection
- Phase angle, Distributed full cycle or Soft start as switching modes
- Integrated monitoring for SSR and load circuit malfunction

WM14 / WM12

- Dimensions: 6 DIN rail module or 96 x 96 mm panel mounting housings
- 3-phase multifunction indicator (WM12) or analyser (WM14)
- Accuracy 0.5 % (voltage, current)
- Front protection degree IP65, NEMA4X, NEMA12

MAIN FEATURES
- Available models from a simple indicator up to an advanced analyser
- Allows the serial re-trasmission of the main parameters to a PLC for full control of the system
- Suitable for DIN-rail or panel mounting

EM10 DIN / EM23 DIN

- Single phase (EM10 DIN) and 3-phase (EM23 DIN) energy meters with direct connection
- Current input: up to 32 A (EM10 DIN) and up to 65 A (EM23 DIN) 1 DIN (EM10 DIN) and 4 DIN (EM23 DIN) module dimension
- Class 1 kWh acc. To EN62053-1
- Pulse open collector output

MAIN FEATURES
- Direct measurement in a very compact housing to save space
- Suitable for measuring generated energy MID compliant "annex MI-003" (Measuring Instruments Directive)

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Our product range

Photoelectric sensors	Photoelectric sensors	Photoelectric sensors	Capacitive sensors

PD30

- World standard housing style 10x30x20 mm
- Power supply: 10 to 30 VDC
- NPN or PNP transistor output
- Connection cable or built in M8 connector
- Approvals/Marks: CE - UL 508

MAIN FEATURES
- Distance and output setting by means of teach-button
- Long detecting distances
- Protection: reverse polarity, short circuit and transients

PA18

- Standard M18 cylindrical housing
- Power supply: 10 to 30 VDC
- Separate models available for NPN or PNP outputs
- Range: 1 m (Axial), 0.8 m (Radial)
- Sensitivity adjustment by potentiometer
- Approvals/Marks: CE - cULus

MAIN FEATURES
- ECOLAB approved/CE-marking /cULus approved according to UL508
- Diagnostic LED indication (Green and Yellow LED)
- Short-circuit, reverse polarity and overload protection

PH18

- Square sensor with M18 front
- Power supply: 10 to 30 VDC¨
- Separate models available for NPN or PNP outputs
- Sensing types: Diffuse reflective, BGS, Pol. Retro-reflective, Through beam
- Sensitivity adjusted by potentiometer
- Approvals/Marks: CE - cULus

MAIN FEATURES
- ECOLAB approved/CE-marking/ cULus approved according to UL508
- Diagnostic LED indication (Green and yellow LED)
- Short circuit, reverse polarity and overload protected

CA18CLF

- Sensing distance: 0.5 - 12 mm (M18)
- Automatic detection of NPN or PNP load
- Selectable "make or break" switching by means of Teach function
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES
- Teach-in of sensing distance via push-button or COM-input
- Humidity compensation
- Protection: short-circuit, transients and reverse polarity

Capacitive sensors	Inductive proximity sensors	Level magnetic sensors	Safety magnetic sensors

CD50CNF

- Dimensions 50x30x7 mm
- Supply 10-30 VDC or 5 VDC
- 3-wire DC sensors with open collector NPN or PNP transistor output
- Approvals/Marks: CE

MAIN FEATURES
- Basic capacitive water level sensor
- Detection of excess water in the tank
- Mounting by screws or glued on the outside of any non-metallic tank

IA08

- Stainless steel housing M8
- Sensing distance: 1.5 mm or 2.5 mm
- Power supply: 10 to 30 VDC
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES
- Miniature inductive proximity switches with reduced body length
- LED-indication for output ON
- Protection: Short-circuit

ILSP/ILM

- Cylindrical, float diameter 17,5 to 53 mm
- Reversible output function by float overturning
- High temperature versions available
- Degree of protection: IP67 minimum

MAIN FEATURES
- Cylindrical non-toxic polypropylene or stainless steel housing
- Vertical or horizontal mounting
- NO, NC or change-over output function

CLS / SMS

- Rectangular housing
- Output function: NO+NC
- Housing material: Plastic - Stainless steel (CLSA2M)
- Approvals/Marks: CE - cULus

MAIN FEATURES
- Multiple flux coding
- 1 NC auxiliary output (SMS03NC only)
- Operating temperature -25° to +70°C

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Food and Beverage

Our product range

| Monitoring relays | Monitoring relays | Monitoring relays | Monitoring relays |

DPA51

- Dimensions: 81 x 17,5 x 67,2 mm DINrail housing
- Phase sequence and loss relay
- 3 phase AC (own power supply); regenerated voltage
- Power supply from 208 to 480 VAC
- Approvals/Marks: UL, CSA and CCC approved

MAIN FEATURES
- Protection from reverse running and phase loss
- 17.5 mm width: the smallest in the market
- Plug and play: no settings needed

DPB51

- Dimensions: 81 x 17,5 x 67,2 mm DINrail housing
- TRMS 3-phase over/under voltage, phase sequence and loss relay
- 3 phase AC (own power supply)
- Power supply from 208 to 480 VAC
- Approvals/Marks: UL and CSA approved

MAIN FEATURES
- Detects the phase-phase or phase neutral voltage
- 17.5 mm width: the smallest in the market
- Independent voltage setpoints and built-in delays

DIB71

- Dimensions: 81 x 35,5 x 67,2 mm DINrail housing
- Over or under current monitoring relay 1-phase AC/DC TRMS
- Power supply from 24 to 2380 VAC (± 15%)
- Approvals/Marks: UL, CSA and CE approved

MAIN FEATURES
- Solution to simply monitor oveload LED indication for relay, alarm and power supply ON
- 35.5 mm wide housing suitable both for both back and front panel mounting

DWA01

- Dimensions: 83 x 22,5 x 99,5 mm DINrail housing
- Cos Φ monitoring relays
- 3 phase AC (own power supply)
- Power supply from 208 to 240 VAC or from 380 to 480 VAC
- Approvals/Marks: UL and CSA approved

MAIN FEATURES
- Detects any potentially dangerous change of the cos phì
- Direct current connection or by CT
- Easy setup

| Soft starters | Timers | Switching power supplies | Switching power supplies |

RSBS / RSBS HP

- Current limit starting
- Advanced diagnostic functions
- Internally bypassed
- Up to 12 starts per hour
- Approvals/Marks: cULus listed, EN60335-2-40 approval

MAIN FEATURES
- Plug&Play: no external settings needed
- Space saving IP20 design
- Integrated starting capacitor
- Optimised algorithm for high pressure starts (RSBS HP)

HAA08 / 14 / FMB01

- 48 x 48 mm housing for 11 pin socket or panel mounting (FMB01)
- 21.5 x 28 mm housing for 8 pin or 14 pin blade socket (HAA)
- Multifunction timer
- DPDT output (4PDT, HAA14 only)
- Universal power supply
- Approvals/Marks: cUR and CSA approved

MAIN FEATURES
- Front knob adjustable time setting
- Selectable time ranges from 0.1 s to 100 h (0.05 s to 300 h, FMB01 only)
- Delay on operate/release, ON/OFF first symmetrical recycle, single/double interval on trigger open/close

SPD24

- DIN-rail housing
- Short circuit and overload protection
- 1 Phase AC
- Rated input voltage: 90-265 VAC or 90-375 VDC universal supply voltage
- Approvals/Marks: cUL listed and TUV/CE approved

MAIN FEATURES
- High efficiency
- LED indicator for DC power on
- Parallel versions available

SPPC 150 / SPPC 150 F

- AC input selectable by switch / Input voltage range: 88 VAC~132 VAC / 176 VAC~264 VAC (SPPC150 type)
- Universal input voltage range: 85 VAC ~264 VAC / 120 VDC~370 VDC (SPPC150F type)
- 105°C long life electrolytic capacitors

MAIN FEATURES
- High efficiency and compact size
- DC output: 5, 12, 15, 24 and 48 V
- Built-in active PFC (Power Factor Correction) function: PF >0.98 @115 VAC and PF > 0.95@ 230 VAC (SPPC150F type)

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CARLO GAVAZZI

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
Fax: +32 2 257 41 25
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
Petaksentie 2-4, FI-00661 Helsinki
Tel: +358 9 756 2000
Fax: +358 9 756 20010
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-20020 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 Porsgrunn
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 94 480 10 61
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.
Calle La Montaña no. 28, Fracc. Los Pastores
Naucalpan de Juárez, EDOMEX CP 53340
Tel & Fax: +52.55.5373.7042
mexicosales@carlogavazzi.com

BRAZIL - Carlo Gavazzi Automação Ltda.
Av. Brig. Luís Antônio, 3067
Jd. Paulista São Paulo
CEP 01401-000
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 UE Print Media Hub
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 3 12/F Crown Industrial Bldg.,
106 How Ming St., Kwun Tong,
Kowloon, Hong Kong
Tel: +852 23041228
Fax: +852 23443689

OUR COMPETENCE CENTRES AND PRODUCTION SITES

DENMARK - Carlo Gavazzi Industri A/S
Hadsten

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

MALTA - Carlo Gavazzi Ltd
Zejtun

ITALY - Carlo Gavazzi Controls SpA
Belluno

LITHUANIA - Uab Carlo Gavazzi Industri Kaunas
Kaunas

HEADQUARTERS

Carlo Gavazzi Automation SpA
Via Milano, 13 - I-20020
Lainate (MI) - **ITALY**
Tel: +39 02 931 761
info@gavazziautomation.com

CARLO GAVAZZI
Automation Components

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www.gavazziautomation.com

CARLO GAVAZZI