



Solutions

Plastics Machinery

Plastics Machinery

Solutions for



Injection machines

Extrusion machines

Blow moulding machines

Blown film extrusion machines

Thermoforming machines

Plastic dryers & Dosing systems

ABOUT CARLO GAVAZZI

Carlo Gavazzi Automation is a multinational electronics group active in designing, manufacturing and marketing 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 three product lines: Sensors, Switches and Controls.

Our wide array of products includes sensors, monitoring relays, timers, energy management systems, 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 air-conditioning devices.



DESIGNED TO MEET MARKET REQUIREMENTS

The rising demand for processed food and beverages, followed by increasing requirements for packaging, is driving overall growth in plastics machinery applications.

Accuracy, reliability and energy efficiency are becoming more and more important.

Extrusion equipment has seen an interesting growth, with an increase in the demand for extruded goods. Injection moulding machines are used in a wide range of applications, ranging from automotive components to consumer goods.

The production efficiency of machines for plastics has continuously increased

over the last few decades. Appropriate temperature control is essential to ensure good quality of the final outcome.

The thermal stability necessary in such machinery can only be achieved through the use of solid state relays (SSRs) which are capable of meeting the demands of fast heater switching.

Carlo Gavazzi offers a comprehensive range of SSRs which feature back to back thyristors in combination with direct copper bonding technology for increased lifetime and reliable operation of the SSR.

Carlo Gavazzi's patented Tripleshield™ capacitive sensors have become the standard all other manufacturers are measured against. Capacitive sensors

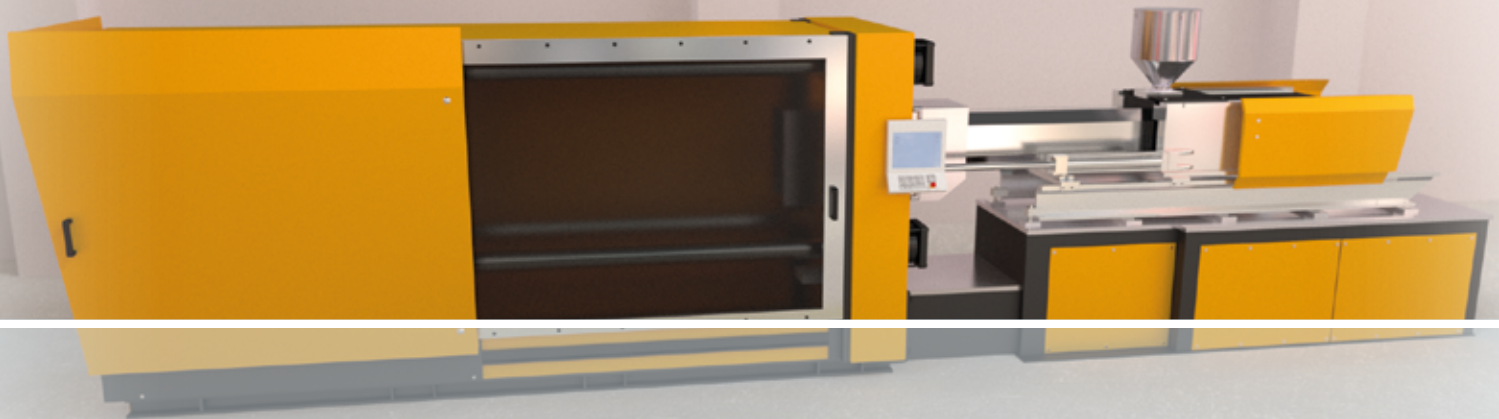
will detect most materials, conductive and non conductive. This makes them ideal for level detection in raw plastic delivery systems.

Carlo Gavazzi's ultrasonic, photoelectric and inductive sensors are also used extensively in plastics machinery.

In order to protect the working area, ensuring the safety of operators and the safe operation of the machines, Carlo Gavazzi provides a range of safety modules to monitor the safe operation of the safety control circuits, light curtains, emergency stops and safety gates; included in product offering, we also provide for safety magnetic sensors.

Plastics Machinery

Injection machines



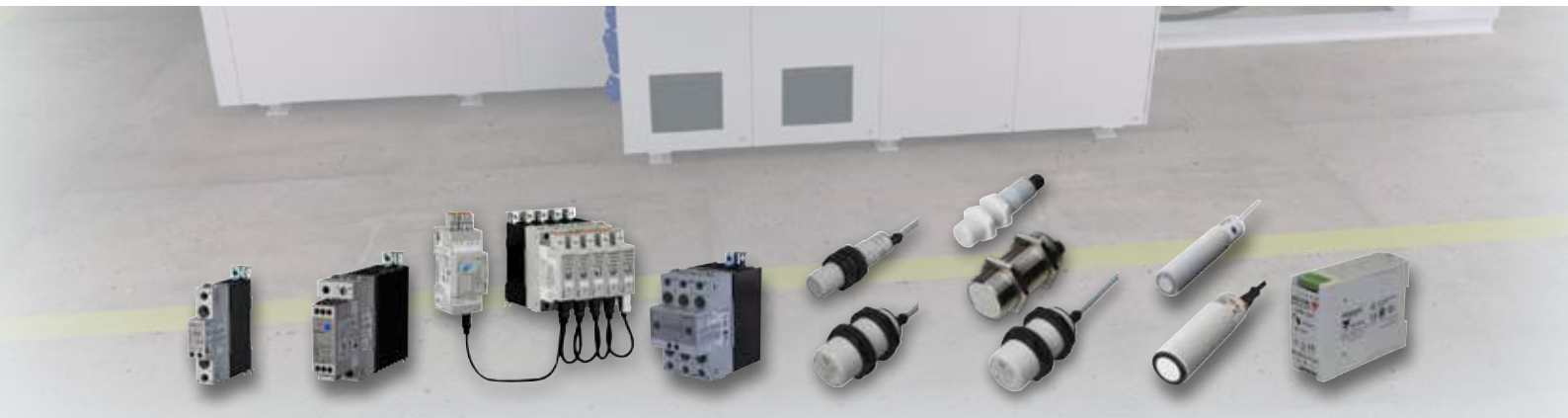
Solid state switches	Digital solid state switches	Capacitive sensors PBT, PTFE or AISI316L with IO-Link	Safety magnetic sensors	Multifunction safety modules	Configurable safety modules	Electromagnetic safety interlocks
RGS1A RGC1A RM1A	NRG	CA18..IO CA30..IO	MC36.. SMS.. CLS..	SM.. CM..	CMM	ESI

Process stability is critical to ensure high product quality so stable temperatures are achieved by frequent switching. Carlo Gavazzi solid state switches provide extremely reliable solutions that permit the fast switching needed in these processes. The RGS1 series and RM1 series are 1-phase solid state solutions which can be mounted on a chassis or an external heatsink, whilst the RGC1 series is provided with an integrated heatsink, hence ready for use. The integrated over voltage protection and high surge current capability of Carlo Gavazzi SSRs ensure trouble free operation, preventing unnecessary machine stoppages which result in frequent scrap material and high downtime costs.

Real-time data from each solid state relay is accessible with the NRG series. This allows machine builders to make informed decisions, solve urgent problems at short notice and develop machines that are more autonomous. The capacitive sensors with IO-Link can be used in hoppers, dryers and dosers to detect the dielectric constant of the plastics and when a wrong material is used, the sensors give an alarm. The filling mode can be performed, without involving a PLC, just connecting two IO-Link sensors together and setting the logic functions. Carlo Gavazzi's safety modules can be used with safety light curtains, safety photo sensors, emergency stop buttons

or safety magnetic switches. In plastics machines, the gates must often be opened under safety conditions: the SM or CM devices control the safe interruption of the safety circuit. For applications that require flexible safety logics or control of multiple safety circuits, we provide a modular and configurable safety control solution with the Certus series, that offers an intuitive configuration interface. Our range of safety modules are certified to the industry standards and rated: SIL+, SILCL 3, PL e and Cat.4; it offers intuitive and quick logical configuration software, easy to set-up tamper proof safety systems, and a reduction in components and wiring.

Extrusion machines



Solid state switches	Solid state switches	Digital solid state switches	Solid state contactors	Capacitive sensors	Capacitive sensors PBT, PTFE or AISI316L with IO-Link	Ultrasonic sensors	Switching power supplies
RGC1A RGS1A RM1A	RGC1S RGS1S	NRG	RGC3A RGC2A	CA18 CA30 EC30	CA18..IO CA30..IO	UA18 UA30	SPD SPPC SPDM

Consistency and repeatability of extruded parts can only be ensured if the temperature control process is stable with minimum deviations from set points. Deviations from temperature set points are limited by fast switching of heaters which can only be done through solid state relays. Carlo



Gavazzi offers a wide range of solid state solutions for temperature control of the barrel zones. The RGC1, RGS1 and RM1 series are 1-phase solutions, whilst the RGC3 series provides 3-phase switching solutions. Additionally, the RG series utilises wire bonding technology that reduces the thermal stress of the solid state switch, guaranteeing extended lifetime over other SSRs. The RGC1S and RGC3..M versions integrate detection of malfunction of the load or the SSR, where an alarm output is readily available for immediate intervention. With the NRG solution, SSRs can be controlled via a fieldbus, hence reducing costs and installation time.

Measurements and diagnostic data is available in real-time and can be used to predict failures before they occur. Capacitive, photoelectric and ultrasonic sensors are used to detect any interruption in the extruded pipe. They ensure prompt intervention in the case of interruption and round-the-clock monitoring of the extrusion process. In both injection machines and extrusion machines, Carlo Gavazzi's switches and sensors ensure smooth and efficient production processes. Capacitive sensors in particular are widely used in silos.

Plastics Machinery

Blow moulding machines



Solid state switches

RGC1S
RGC1A..M
RGC1A
NRG

Inductive sensors with IO-Link

ICB12...IO
ICB18...IO
ICB30...IO

Photoelectric sensors

PA18

Monitoring relays

DPA51
DPB52
DIA53

Gateway and controller

UWP 3.0

Multifunction safety modules

SM..
CM..

Electromagnetic safety interlocks

ESI

Reliable thermal process control is key in determining the quality of the final outcome in blow moulding. An accurate thermal process can only be guaranteed by continuous monitoring of the load and system parameters. The RGC1A..M solid state relay integrates monitoring to identify load failures in a timely manner in order to eliminate scrap. The RGC1S series is an up-scaled solution to the RGC1A..M since it integrates current monitoring for malfunction detection and so is able to additionally detect variations in load current versus a Teached set point. In both the RGC1A..M and RGC1S, the failure detection is reactive.

The NRG solution, consisting of solid state relays that integrate monitoring and a communication interface enable prediction of failures through real-time data accessibility. Photoelectric sensors and inductive sensors are installed along the machinery for part counting, detection and verification and for mould position detection. The UWP 3.0 is a comprehensive web-based monitoring solution to keep track of energy consumption in industrial facilities and to improve the energy efficiency of the installation.



Blown film extrusion machines



Solid state switches	Ultrasonic sensors	Capacitive sensors	Capacitive sensors PBT, PTFE or AISI316L with IO-Link	Safety magnetic sensors	Inductive sensors with IO-Link	Monitoring relays	Power transducers
RGC1A RGC1S RGS1S	UA18 UA30	CA18 CA30 EC30	CA18...IO CA30...IO	MC36.. SMS.. CLS..	ICB12...IO ICB18...IO ICB30...IO	DPA51 DPB52 DIA53	CPT

It is essential that plastics processing machines operate without breakdown. When the machine restarts after a breakdown, the material might have to be scrapped: this is typical of blown film extrusion. By using an ultrasonic sensor to check film loop tension, film breakage is prevented and interruptions in the production cycle are minimized. Three ultrasonic sensors are placed round the cylinder of blown plastic film, measuring the diameter of the cylinder, and are used for controlling the air pressure and maintaining a controlled diameter and thickness of the plastic film. The MC36C safety magnetic sensors are designed for an easy installation in

safety-related monitoring of swinging, sliding or removable safety guards, even when space is limited. They have a wide actuation range and compact dimensions and are available with integrated cable or M8-plug with a left or right exit connection and optionally LED indicator. If the distance of the bubble surface from the machinery is not controlled, dangerous contacts can occur. Several analogue ultrasonic sensors can be positioned to constantly check the size and the shape of the bubble. The IO-link ICB inductive sensors allow easy exchange of process data, remote configurations and events with simple and inexpensive 3-wire

cabling, without needing to change the existing architecture. The ICB series, available from M12 to M30, can be completely configured to enable new functionalities such as the divider and speed control functions. To monitor the ON/OFF switching of groups of the heating elements, DIA53 monitoring relay can be used. This does not need any auxiliary power supply. It is supplied by the measured current, with a built-in current transformer up to 100 A. Furthermore, a CPT power transducer checks the electrical parameters vital for the motor, as a motor running in overload condition can suffer irreparable damage.

Plastics Machinery

Thermoforming machines



Solid state switches

**RGC1F
RGC1A
RGC1P**

Solid state switches

NRG

Soft starters

**RSGD
RSWT**

Inductive sensors with IO-Link

**ICS05...IO
ICS08...IO**

Multifunction safety modules

**SM..
CM..**

Energy analyzers

**EM210
EM24 DIN**

In thermoforming processes, heating is a critical phase. The plastic sheet needs to be evenly heated at the right temperature before entering the forming phase; failure to control the heat evenly and precisely results in a poor quality product. Fast switching is necessary to maintain stable processes. This can only be done by solid state relays. A number of solid state relays are typically required to ensure even heating and panel space is often a challenge. The RGC1F, offers a compact solution which also integrates fuse protection. This solution is provided in the same footprint as a standard solid state relay, whilst freeing up space normally utilised for protection components. An integrated

solution provides savings on installation time and costs. Quality and scrap rates can be further improved through timely decisions based on real time data. This is possible with the NRG series that through its communication interface enables the read out of parameters. Inductive sensors placed in the mould, at the end of the pins, can detect whether the mould is properly sealed, enabling the system to start with a new injection process, thus preventing damage to the machinery, as well as improving safety conditions. The ICS series offer the ideal solution for industrial automation equipment in applications where space is limited. The extended sensing range together with the compact and robust stainless steel

housing makes this sensor extremely reliable. The ICS05 with its very high switching frequency up to 6 kHz can be used where fast detection is a must. The variants with on-board IO-Link communication allow advanced sensing performance such as rotational speed monitoring and RPM counter.



Plastic dryers & Dosing systems



Solid state switches	Solid state switches	Proportional controllers	Photoelectric sensors	Capacitive sensors PBT, PTFE or AISI316L with IO-Link	3-phase power analyzers	Touch screen/ Datalogger
RM1A RK	RGC1A RGC2A RGC3A	RGC1P RGC2P RGC3P	PD30ET	CA18..IO CA30..IO	WM20	BTM-T4-24 BTM-T7-24

Carlo Gavazzi components integrate into auxiliary equipment that is used in combination with plastics machinery, such as plastic dryers and dosing units, as well as stand-alone temperature control units for zone control. Wherever plastic granules are conveyed and processed, capacitive sensors monitor the levels in



pipes and in silos or through a viewing window in loaders of injection machines, extruders and blow moulding machinery. Thanks to Tripleshield™ technology, Carlo Gavazzi capacitive sensors are protected against disturbance caused by high ESD of up to 40 kV. Featuring EMC and ESD immunity, Carlo Gavazzi sensors – EC and CA series - detect the level of plastic pellets in the hopper whilst withstanding environmental interference. The sensing face (flush mounted) withstands temperatures up to 120°C. The new PD30ET photoelectric sensors are ideal for industrial environments and work perfectly even in the harshest conditions. The high-quality stainless steel housing guarantees maximum mechanical

resistance. Retroreflective and polarized retroreflective versions are used to check the level of plastic granules in loaders. Additionally, heaters for the drying of the plastic granules can be switched with the RM1A or RGC1A for 1-phase heaters or the RGC2A, RGC3A for 3-phase heaters. The RGC1P, RGC2P and RGC3P series offer the possibility of controlling the switching of the heater with an analog input (0-10 V or 4-20 mA) which can be fed directly to the SSR. The touch screen BTM series reads the electrical measurement from Carlo Gavazzi energy meters or any other energy meter. It shows the data as instantaneous values and/or depicts it in diagrams.

Plastics Machinery

Our product range

1-phase solid state relays



RAM1A / RM1A

- Dimensions 58.2x44.8x28.8 mm, panel mount
- Rated operational voltage: up to 660 VAC
- Rated current: 25 AAC, 50 AAC, 75 AAC, 100 AAC, 125 AAC
- Control input ranges: 4-32 VDC, 20-280 VAC
- Approvals/Marks: CE - cURus - CSA - CCC - EAC - VDE [RAM]

MAIN FEATURES

- Zero cross or Random switching
- Suitable for resistive, inductive or capacitive loads
- Integrated output overvoltage protection [RM]

1-phase solid state switches



RGS1A / RGC1A

- Product width: 17.5 mm up to 70 mm, DIN-rail or panel mount
- Ratings: up to 660 VAC, 90 AAC, 18000 A²s
- Integrated output overvoltage protection
- Control input ranges: 4-32 VDC, 20-275 VAC (24-190 VDC)
- Approvals/Marks: CE - cULus [RGC] - cURus [RGS] - CSA [RGS] - VDE - EAC - GL [RGC up to 30 AAC]

MAIN FEATURES

- Integrated heatsink [RGC1A], without heatsink [RGS1A]
- 100 kA short circuit current rating
- Optional overtemperature protection

1-phase solid state switches with current monitoring



RGS1S / RGC1S

- Product width: 17.5 mm up to 70 mm, DIN-rail or panel mount
- Ratings: up to 660 VAC, 85 AAC, 18000 A²s
- Integrated output overvoltage protection
- Control input range: 4-32 VDC
- Approvals/Marks: CE - cURus [RGS1S] - CSA [RGS1S] - cULus [RGC1S] - EAC

MAIN FEATURES

- Partial load failure detection (1/6)
- Monitoring for SSR and load circuit malfunction
- TEACH by local push button or remote signal

1-phase solid state contactors



RGC1F

- Dimensions: 106x35.6x165 mm, DIN-rail mount
- Rated operational voltage: up to 660 VAC
- Rated operational current: up to 40 AAC @ 40°C
- Control input range: 4.5-32 VDC
- Approvals/Marks: CE - cULus [up to 30 AAC]

MAIN FEATURES

- Integrated protection by semiconductor fuse
- Monitoring for SSR and load circuit malfunction [RGC1FS]
- 100 kA short circuit current rating

2-pole solid state relays



RK

- Dimensions 45x58x33 (44) mm, panel mount
- Independent control [RKD2..] or common control [RK2..]
- Ratings: up to 660 VAC, 50 AAC/pole, 75 AAC/pole
- Control input: 4-32 VDC
- Approvals/Marks: CE - cURus - CSA - VDE

MAIN FEATURES

- Integrated output overvoltage protection
- Pre-attached thermal pad
- Conformant to EN 60335-1

3-phase solid state contactors



RGC2A / RGC3A

- Product width: 54 mm up to 70 mm, DIN-rail mount
- Ratings: up to 660 VAC, 75 AAC/pole [RGC2A], 65 AAC/pole [RGC3A] @ 40°C
- Motor ratings: up to 11 kW @ 400 VAC, 25 HP @ 600 VAC
- Control input ranges: 5-32 VDC, 20-275 VAC (24-190 VDC)
- Approvals/Marks: CE - cULus - EAC - CCC

MAIN FEATURES

- 3-phase; 2-pole [RGC2A] or 3-pole switching [RGC3A]
- Monitoring for SSR and load circuit malfunction [RGC..M]
- 100 kA short circuit current rating

Our product range

1 and 3-phase proportional controllers



RGC1P / RGC2P / RGC3P

- Product width: 35 mm up to 70 mm, DIN-rail or panel mount
- 1-ph with heatsink [RGC1P] or for panel mount [RGS1P], 3-phase with heatsink [RGC2P, RGC3P]
- Ratings: up to 660 VAC, 90 A (1-phase), 75 A/pole (2-phase), 65 A/pole (3-phase)
- Control input: 0-20 mA, 4-20 mA, 12-20 mA, 0-10 VDC, 0-5 VDC, 1-5 VDC
- Approvals/Marks: CE - cULus - cURus [RGS1P] - CSA [RGS1P] - EAC - CCC [RGC2P, RGC3P]

MAIN FEATURES

- Selectable switching modes
- Integrated overvoltage protection
- Monitoring for SSR and load circuit malfunctions [RGC2P, RGC3P]

Digital solid state switches



NRG

- Modbus RTU or PROFINET for NRG controller
- Up to 32 solid state switches with 1 NRG controller
- Switching through communication interface
- Ratings: 1-phase, max. 660 VAC, up to 90 A
- Approvals/Marks: CE - cULus - UR - cUR - EAC

MAIN FEATURES

- ON/OFF, Distributed Full Cycle, Advanced Full Cycle or Burst switching mode
- Real-time measurement: current (A), voltage (V), power (W or VA), energy consumption (kWh), running hours
- Predictivity of load failures by detection of load resistance changes
- Immediate failure detection of load loss, SSR damage or operation out of set ranges

3-phase pumps and ventilators soft starters



RSWT

- Motor rating: Up to 45 kW (90 A)
- 3-phase controlled & internally bypassed
- Operational voltage: RSWT40: 220-400 VAC, RSWT60: 220-600 VAC
- PTC input, Alarm - Top of ramp - Run relay indication
- Approvals/Marks: cULus - CCC - EAC

MAIN FEATURES

- Easy to use and set up
- Self-learning algorithm to improve pump starts/stops
- Integrated overload protection (Class 10)

3-phase general purpose soft starters



RSGD

- Operational voltage range: 187-440 VAC, 187-660 VAC
- Operational current range: 12 AAC up to 100 AAC
- Control voltage: 24 VAC/DC, 110-400 VAC
- Auxiliary relays for top of ramp and alarms
- Approvals/Marks: cULus - CCC - EAC

MAIN FEATURES

- Serial communication (Modbus 2-wire) [RSGD 75mm models]
- Easy to use and set-up
- Self-learning algorithm to adapt to different loads

Capacitive sensors



EC30

- Tripleshield™ sensor protection
- Dimensions: M30 mm
- Plastic or metal housing, AC versions
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES

- High EMC immunity
- Protection: short circuit, transient and reverse polarity

Capacitive sensors



CA18 / CA30

- 4th generation Tripleshield™ technology
- Dimensions: M18 / M30
- Plastic housings DC versions
- Sensing distance up to 30 mm
- Approvals/Marks: CE - cULus

MAIN FEATURES

- Highest EMC immunity
- ESD ratings up to 40 kV
- Sensing face temperature up to 120°C
- Best immunity towards inverters

Plastics Machinery

Our product range

Capacitive sensors PBT, AISI316L or PTFE with IO-Link



CA18..IO / CA30..IO

- Sensing distance: 0.5 - 12 mm (M18), 2 - 30 mm (M30)
- Selectable: NPN, PNP, Push-Pull, External Input, N.O. and N.C. output
- IO-Link 1.1 with timer, diagnostics and logic functions
- Approvals/Marks: CE - cULus - ECOLAB

MAIN FEATURES

- 4th Generation TRIPLESIELD™ with superior EMC performance
- IP67, IP68 and IP69K
- Diagnostics tools: Quality of Run & Quality of Teach and Alarms
- Housing material: PBT, PTFE or Stainless Steel

Photoelectric sensors



PA18

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

MAIN FEATURES

- Sensors used to detect the finished plastic items
- Fast mounting, smooth finish
- Sensitivity adjustment

Photoelectric sensors



PD30ET

- World standard housing style 11x31.5x21 mm
- Supply voltage: DC 4-wire
- Sensing distance: < 15 m
- Output: NPN/PNP NO+NC
- Sensor types: D, B, R, P and T
- Connectivity: Cable or M8 connectors
- Approvals/Marks: CE - cULus - ECOLAB

MAIN FEATURES

- Stainless steel housing AISI 316L
- Resistant to high-pressure washdown, aggressive cleaning agents.
- IP67, IP68, IP69K, NEMA type 1, 2, 4, 4x, 5, 6, 6P
- Protection: reverse polarity, short circuit and transients

Inductive sensors with IO-Link



ICS05 / ICS08

- M5 and M8 stainless steel housings
- Sensing distance from 0.8 mm up to 4 mm
- flush or non-flush (ICS08 only) versions
- M8-plug or cable versions
- Advanced diagnostic functions with indication of shortcircuit and overload
- IO-Link communication V 1.1

MAIN FEATURES

- Configurable output: NO, NC, PNP, NPN, push-pull
- Adjustable switching distance
- Adjustable hysteresis: standard and extended
- Single point, two-point or window mode
- Timer functions: Turn On delay and Turn Off delay
- Temperature alarms

Inductive sensors with IO-Link



ICB12 / ICB18 / ICB30

- M12, M18 and M30 long or short barrel nickel-plated brass housings
- Sensing distance from 4 mm up to 22 mm
- Flush or non-flush
- M12-plug or 2 metre cable
- Dual LED user interface for advanced diagnostics
- IO-Link communication V 1.1

MAIN FEATURES

- Configurable output: NO, NC, PNP, NPN, push-pull
- Adjustable switching distance: 33%, 50%, 75% and 100% of the maximum Sn
- Adjustable hysteresis: standard and extended
- Single point, two-point or window mode
- Timer functions: Turn On delay and Turn Off delay
- Temperature alarms

Smart configurator for IO-Link sensors



SCTL55

- Handheld device for IO-Link sensors
- 5.5" HD touch screen display
- Automatic IODD file download via Wi-Fi
- High capacity rechargeable battery
- M8 3-wire, M8 4-wire and M12 connectors
- Approvals/Marks: CE, FCC
- IO-Link v1.1

MAIN FEATURES

- Intuitive GUI with dedicated App for a simplified user experience.
- Access to an advanced diagnostic with the possibility to verify operating hours, number of detections, operating cycles, alarms and quality of run of the sensor connected.
- Easy management of operating parameters such as switchpoint mode, logic and timing functions, sensing distance, output configuration (PNP/NPN/push-pull, NO/NC)

Our product range

Ultrasonic sensors



UA18 / UA30

- Dimensions: M18, M30
- Ultrasonic sensors with integrated amplifier providing a digital and/or analog output and integrated amplifier
- Housing material: plastic
- Approvals/Marks: CE - cULus - CSA

MAIN FEATURES

- Excellent EMC performance and precision
- Detects clear, transparent and shiny targets, solid objects, liquid or granules.
- Protection: short circuit, transient and reverse polarity

Safety magnetic sensors



MC36CH / MC36CM

- Rectangular plastic housing: 36 x 26 x 13 mm
- Assured switching distance (Sao) 5 mm
- Output functions: 2 NO or 1 NO + 1 NC
- 2 meter PVC cable or M8 plug version
- Approvals/Marks: CE - cULus

MAIN FEATURES

- Up to Cat. 4, PL e in accordance with EN ISO 13849-1, with suitable safety module
- Flexibility: left or right exit connection versions
- LED version available for all variants
- Suitable for applications where greater tolerances are required

Safety magnetic sensors and units



CLS / SMS

- Rectangular or cylindrical housing
- Connection: PVC cable or pigtail solution
- Housing material: plastic or stainless steel
- Approvals/Marks: CE - cULus

MAIN FEATURES

- Multiple flux coding
- Several combinations of safety and auxiliary outputs available
- Operating temperature -25° to +70°C
- Long operating distance up to 20 mm

3-phase monitoring relays



DPA51 / DPA52

- 81 x 17.5 x 67.2 mm; DIN-rail housing
- Phase sequence and phase loss, regenerated voltage detection
- 3 phase AC (own power supply)
- Power supply 208 - 480 VAC
- Approvals/Marks: CE - UL - CSA - CCC

MAIN FEATURES

- Motor protection against reverse running and phase loss
- 1 DIN module width. Suitable for NORM panels
- No setup needed (plug&play)

3-phase voltage relays



DPB51 / DPB52

- 81 x 17.5 x 67.2 mm; DIN-rail housing
- Phase sequence and loss; overvoltage and undervoltage detection + time delay
- 3 phase connection; 3 phase + neutral connection [DPB51]
- Power supply 208-480 VAC
- Approvals/Marks: CE - UL - CCC

MAIN FEATURES

- Complete mains monitoring in a space saving solution
- Neutral loss protection [DPB51]
- Small size for the control panel

AC current relays



DIA53

- 81 x 17.5 x 67.2 mm; DIN-rail housing with 12 mm hole for current measurement
- Current monitoring relay with built-in current transformer
- 20 A, 50 A or 100 AAC
- Self powered
- Approvals/Marks: CE - cULus - CSA

MAIN FEATURES

- Only 2 wires connection
- Adjustable current tripping setpoint
- Integrated solid state NPN PNP output

Plastics Machinery

Our product range

Energy analyzers



EM210

- 3-phase energy meters
- Solid or split-core 5 A CT, 333mV CT, Rogowski coils
- Dimensions: 4 DIN modules or 72x72 housing
- Class 1 (kWh) acc. with EN62053-1
- Class B (kWh) acc. with EN50470-3
- Pulse or serial RS485 output
- cULus approved

MAIN FEATURES

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

3-phase energy analyzers



EM24

- 3-phase energy analyser with direct connection
- Direct connection up to 65 A or by CT
- Dimensions: 4-DIN-rail module housings
- Class B (EN50470)
- Pulse open collector output
- Optional serial port (Modbus RS485 or TCP, M-bus wired or wireless and Dupline®), digital input and outputs

MAIN FEATURES

- Direct measurement in a very compact housing to save space
- Suitable for measuring generated and consumed energy
- On request, MID annex D certification available
- M-bus port integrated in the meter without external gateways

3-phase power analyzers



WM20

- 96x96 mm panel mounting housing
- Accuracy 0.2 % (voltage, current)
- Class 0.5S (kWh)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- cULus approved

MAIN FEATURES

- Provides installation data to a SCADA to manage the whole system
- Modular housing to build the instrument according to the real application needs
- Modbus, Ethernet, Profibus, BACnet (IP and MS/TP) communication ports

Monitoring gateway and controller



UWP 3.0

- Micro PC with embedded Web-Server
- Data and event logging from Modbus, Modbus/TCP and Dupline® devices
- Local gateway functions (to BACnet and Modbus/TCP)
- Remote gateway functions (FTP, SFTP, FTPS, Rest-API)
- Microsoft Azure Certified for IoT
- Huge ecosystem of compatible meters, sensors, actuators

MAIN FEATURES

- Flexible control functions
- Energy efficiency monitoring
- Building automation control
- Car parking guidance

Power transducers



CPT

- Dimensions: 83.5x45x98.5 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 size power transducer
- Provides electrical variables set to a PLC to manage compressors and other loads
- Suitable for on-board panel installation

Touch screen/ Datalogger



BTM-T4-24 / BTM-T7-24

- 4" / 7" colour display
- Easy setup of graphic pages and functions with the powerful Wizard software
- Activation of internet links through touch buttons
- Support viewing from IP cameras

MAIN FEATURES

- Ethernet connection
- Wide screen display, 64 K colours
- USB port, SD memory, Modbus RTU serial port

Our product range

True delay on release timers



DBB01 / PBB01

- 80 x 22.5 x 99.5 mm; DIN-rail housing [DBB01] or 80 x 36 x 94 mm; Plug-in housing [PBB01]
- 12-24 VDC and 24-240VAC power supply range true delay on release timer
- True delay on release timer using power supply disconnection to start timing
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES

- Time range 0.1 to 600s - capacitor powered
- Less cabling for quicker and simpler installation
- 8 A SPDT or 8 A DPDT relay

Asymmetrical recycler timers



DCB01 / PCB01

- 80 x 22.5 x 99.5 mm; DIN-rail housing [DCB01] or 80 x 36 x 94 mm; Plug-in housing [PCB01]
- Asymmetrical Recycler timer with 4 functions
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES

- Time range 0.1s to 100h
- Easy ON and OFF time settings via front dials
- 8 A SPDT or 8 A DPDT relay

Timers



DAA51 / DMB51

- 81 x 17,5 x 67,2 mm; DIN-rail housing
- Delay on operate function [DAA], multifunction [DMB]
- Combined AC and DC power supply
- Repeatability: < 0.2%
- Approvals/Marks: CE - UL - CSA - RINA [DMB51]

MAIN FEATURES

- Wide range of timing functions [DMB51]
- Timing range 0.1 s to 100 h
- 5 A SPDT relay

1-phase DIN-rail power supplies



SPD

- Output power from 5 W to 480 W
- Input 110/240 VAC 1-phase and DC
- Short circuit, overload and overvoltage protection
- PFC >100 W
- Approvals/Marks: CE - cULus - cURus - UL1310 Class 2 (up to 90W) - ISA 12.12.1 Class I Div2 - TÜV - CCC

MAIN FEATURES

- Power supply OK output
- Parallel connection feature
- Spring, screw terminals or detachable connectors

Metal enclosed power supplies



SPPC

- Output power from 15 W to 800 W
- Input 110/240 VAC 1-phase
- Short circuit, overload and overvoltage protection
- PFC function available >75 W
- Approvals/Marks: CE - cURus

MAIN FEATURES

- Adjustable output $\pm 10\%$
- Compact dimensions
- Wide operating temperature range up to 70°C

Low profile DIN-rail power supplies



SPMA

- Compact DIN-rail housing: 1/3/4 DIN wide
- Output power from 12 W to 100 W
- Output voltage: 5/12/15/24 VDC
- Universal input: 85-264 VAC (120 - 350 VDC)
- Insulation voltage: 4 kVAC
- Approvals/Marks: CE - cULus - UL1310 Class 2 (up to 91.92 W) - UL121201 Class I Div2 - UL62368

MAIN FEATURES

- Compact design for installation in tight panels
- Output voltage adjustment
- Wide operating temperature range up to 70°C

Plastics Machinery

Our product range

Compact DIN-rail power supplies



SPDM

- Output power from 30 W to 240 W
- Universal input range of 110-240 VAC or up to 370 VDC
- Short circuit, overload, overvoltage and over temperature protection
- Compact dimension
- Approvals/Marks: CE - cULus (all except 240 W) - cURus (all except 240 W) - UL1310 Class 2 (up to 72 W, for 72 W only for 24 VDC models)

MAIN FEATURES

- Save up to 20% panel space
- High efficiency and wide operating temperature
- Screw or spring terminal connectors

Compact DIN-rail power supplies



SPDC

- Output power: 120 W / 240W / 480 W
- Universal input 90 VAC~264 VAC / 127 VDC~370 VDC
- Output voltage 120 W - 12/24 VDC; 240 W - 24 VDC; 480 W - 24/48 VDC
- High efficiency >90%
- Approvals/Marks: CE - cULus - cURus

MAIN FEATURES

- Compact dimensions
- 150% power boost for up to 3 seconds
- In built active-PFC
- Parallel connection selection switch

Battery chargers & UPS



SPUC / SPUBC

- Power supply, UPS and battery charger "All-in-one" [SPUBC], UPS controller [SPUC]
- 12 or 24 VDC 5 A output (up to 30 A SPUC)
- Power boost up to 2 times rated output, permanent [SPUBC]
- Built in battery status, complete diagnosis [SPUBC]
- Approvals/Marks: CE - cURus - cULus [SPUBC] - TÜV [SPUBC]

MAIN FEATURES

- Power supply independent from charger [SPUBC], to be used in addition to 12 or 24 V power supply [SPUC]
- Remote indication for battery operation and battery low
- "Start from battery" and "Empty battery charging" features [SPUBC]

Multifunction safety modules



CM22D0A / CM40D0A / CM30D1A

- Compact dimension, 1 DIN, W x H x D: 18 x 90 x 63 mm.
- Safety solution for basic machines, equipment and production lines
- 4 LEDs on the front panel indicate the status and any errors during operation
- Up to 4 OSSD safety outputs
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

- Selectable delay time
- Can be used in applications with: e-stop, e-gate, limit switch, non contact switch, safety light curtains, safety light beam and safety mat
- Cat.4, PL e (ISO 13849-1), SIL 3 (IEC 62061), SILd 3 (IEC 61508)
- 2 OSSD auxiliary outputs
- Selectable manual or automatic start

Multifunction safety modules



SMS31

- Dimensions 110,8 x 17,5 x 121,1 mm DIN-rail housing
- Auto, manual or monitored manual start
- 3 NO safety relay outputs
- 1 NC auxiliary relay output
- Detachable screw terminals
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

- Dual channels simultaneity infinite
- Safe monitoring of emergency stops, interlocks, safety magnetic and limit switches
- Front LED's for safety channel diagnosis
- PL e as per ISO EN 13849-1

Expansion safety module



SME41

- Dimensions 110,8 x 17,5 x 121,1 mm DIN-rail housing
- Expansion relays module
- 4 NO safety relay outputs
- 1 NC auxiliary relay output
- Detachable screw terminals
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

- Extension of safety relay outputs
- Operates as expansion unit for master safety relays or OSSD signals
- Front LED's for safety channel diagnosis
- PL e as per ISO EN 13849-1 in combination with a master safety module

Our product range

Configurable safety module



CMM

- 4 non-safety test outputs for sensor monitoring
- 2 non-safety programmable digital signal outputs
- 2 non-safety inputs for Start / Restart interlock and EDM
- LOG file with 5 configuration modifications
- Connection with other exp. units via rear bus
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

- Also usable as a stand-alone device, able to control any other expansion unit
- 8 safety digital inputs
- 2 safety OSSD pairs (400 mA Output)
- Cat.4, PL e (ISO 13849-1), SIL 3 (IEC 62062), SILcl 3 (IEC 61508),

Configurable I/O expansion modules



C I/O

- Wide range of Input/Output, Input only or Output only (both OSSD and standard relay) expansion units to serve different application requirements
- Models offer a variety of non-safety Inputs/Outputs such as: inputs for Start/Restart interlock and EDM, test outputs
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

- The models offer eight combinations:
 - 8 Inputs 2 Outputs; 12 Inputs 8 test Outputs
 - 8 Inputs, 16 Inputs,
 - 2 OSSD, 4 OSSD
 - 2 relay Outputs, 4 relay Outputs

Data and diagnostic modules + bus transfer



DDC + CBT

- DDC: Expansion unit for Diagnostics and Data Comm.:
 - C PFBUS - Profibus DP, - C DNET - DeviceNET
 - C CAN - CANOpen, - C EIP - Ethernet IP
 - C ECAT - EtherCAT, - C PFNET - PROFINET
 - C OMMS - Universal Serial Bus
- Bus Transfer: interface module allowing the connection of remote expansions via bus
- DDC: allows communication with most common industrial fieldbus systems
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

- Bus transfer: up to 100 m for each connection. Maximum 5 CBT expansions. Ideal solution for the interconnection of the safety functions of several machines in a production line

Electromagnetic safety interlocks



ESI

- Enhancing safety. Ideal for applications that require access to remain closed and locked until potential hazards have stopped or come to a predetermined safe state.
- Protecting machines from production interruptions
- Standards compliance. SIL 3 (EN 62061), PL e in accordance with EN ISO 13849-1, interlock type 2 in accordance with EN ISO 14119.
- Approvals by IMQ - CE - cULus.

MAIN FEATURES

- Ensure protection in inertia's machineries
- Prevents entry into a dangerous area until the unlock signal
- With a manual unlock device for emergency
- Block controlled by solenoid

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
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 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 94 431 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
T +52 55 5373 7042
F +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
info@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 25th Floor, One Midtown,
No. 11 Hoi Shing Road, Tsuen Wan,
New Territories, Hong Kong
Tel: +852 26261332 / 26261333
Fax: +852 26261316

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 (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



CARLO GAVAZZI
Automation Components

Energy to Components!

www.gavazziautomation.com



BROCHURE PLASTICS MACHINERY ENG REV.08_09/20
Specifications are subject to change without notice. Illustrations are for example only.