CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

Product Overview

CARLO GAVAZZI
Automation Components

Sense

Switch

Control

Fieldbus

EcoEnergy equipment

Carlo Gavazzi is a multinational electronics group active in the design, manufacture and marketing of electronic and electrical components targeted for the global markets of industrial automation, building automation and energy.

Founded over 80 years ago, our experience and knowledge are unparalleled. Our core competence in automation spans across five product ranges: Sense, Switch, Control, Fieldbus and EcoEnergy Equipment.

Our wide array of products includes solid state relays, sensors, monitoring relays, energy metering and management products, contactors, motor controllers, fieldbus systems and a growing range of renewable energy products and solutions.

We have our headquarters in Europe and numerous offices spanning the globe. Our R&D competence centers and manufacturing facilities are located in Denmark, Italy, Lithuania, Malta and China. With 21 wholly-owned sales companies and exclusive distributors in 70 other countries, from the Pacific Rim in the East to North America in the West, you are assured that product support, service and inventory are only a phone call or email away.

Carlo Gavazzi products have earned the independent approval of the relevant bodies which govern our own industry and the many industries we serve. They are developed and manufactured in full compliance with the most important international standard regulations.

Carlo Gavazzi manufacturing facilities operate with the requirements of ISO14001:2004 Environmental Management System standard. Focus is on the reduction of environmental damage arising from our production processes in particular air pollution, chemical waste and rejects.

Inductive Proximity Sensors

Carlo Gavazzi offers a comprehensive range of inductive sensors, primarily used to detect metal parts and objects.

These sensors are used extensively in packaging and plastics machinery, assembly lines and conveyor systems, and are available with a wide variety of styles and features, with digital (SCR, transistor) or analog outputs.

Carlo Gavazzi's inductive sensors with digital (SCR, transistor) or analog outputs are available in cylindrical housings (from 5 to 30mm) with standard and extended sensing ranges. They are also offered in flat-pack, fork-shaped and micro/limit switch housings.

The eco-friendly ICB Series from Carlo Gavazzi marks a turning point in the inductive proximity sensors market. The innovative air core printed coil is made of a new recycled and recyclable material that assures higher performance, while fully respecting our environment.

For more detailed information, visit: www.Gavazzi*Online*.com/Inductive

M5 & Ø 6.5	M8 & M12	M18 & M30	Metal Face	High Temperature
IA	**EI, IA, ICB**	**EI, IA, ICB**	**IA..F**	**IA**

Miniature inductive proximity sensors. Configurations include NPN or PNP, with choice of NO or NC output. M5 threaded or 6.5mm smooth stainless steel housing. Flush or non-flush mounting. Connection choice of 2m cable or M8 plug.

Inductive proximity sensors in M8 or M12 nickel-plated brass, stainless steel or plastic housings. Standard and extended sensing ranges. NAMUR, 2 wire AC 2 wire DC and 3 wire DC options. For flush or non-flush mounting. Connection choices include 2m cable or M12 plug.

Inductive proximity sensors in M18 or M30 stainless steel, nickel plated brass or plastic housings. Standard and extended sensing ranges. NAMUR 2 wire AC, 2 wire DC, 3 wire DC and analog output options. For flush or non-flush mounting. Connection choices include 2m cable or M12 plug.

Metal face inductive proximity sensors in stainless steel housings (M8, M12, M18 and M30 types). NPN or PNP, NO or NC output. Available with 2m cable and M8 or M12 plug. These sensors stand up to abrasion and impact caused by flying metal chips, and misaligned or vibrating targets.

M5, M8, M12, M18, M30 proximity sensors. For temperatures up to 248°F (120°C). Output options include NAMUR and 3 wire DC. For flush or non-flush mounting in metal. Connection choices include 2m cable or M12 plug.

Fork Shape	Flat Pack	Micro LS	Rotatable Head	Loop Detector
DU	**EI55**	**IG12**	**IC40**	**LDP**

Fork-shaped inductive proximity sensor. Slot sizes 3.5, 5, 6 or 10mm. Available in NPN or NAMUR.

Inductive DC proximity sensor. Sensing distances of 10mm (flush) and 15mm (non-flush). NPN or PNP with NO & NC output. Connection with 2m cable or M12 plug.

Flush mountable inductive proximity sensor in micro switch aluminum housing with 2m cable. This type of sensor can replace mechanical limit switches.

Inductive proximity sensor in standard limit switch style, rugged polyester housing. Sensing face adjustable in up to 5 positions. NPN, PNP and 2 wire AC/DC options for maximum efficiency.

Loop detectors for detection of vehicles. Designed for parking, drive-through and access control applications for controlling doors, gates, barriers or fences. Single or dual loop versions with relay output. Supply voltage options include 24 VAC/DC, 115 VAC and 230 VAC.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit Gavazzi*Online*.com for more details.

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Capacitive Proximity Sensors

Carlo Gavazzi's patented Tripleshield™ capacitive sensors have become the standard all other capacitive proximity sensors are measured against. They will detect most materials, whether they are conductive or nonconductive.

Tripleshield™ protection means the highest levels of electrical protection against electrostatic discharge, noise from inverters, mobile phones, wire conducted noise and surge and noise from contactors.

All Tripleshield™ sensors are tested to withstand electrostatic discharges up to 40 KV, line transients up to 4 KV, and airborne noise (ie mobile phones or two way radios) up to 15 V/m. They are ideal for level detection in plastics and agricultural applications.

The flat pack versions are quite popular in whirlpools and pellet stoves.

For more detailed information, visit: www.GavazziOnline.com/Capacitive

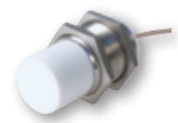| M18 **CA18**	Chemical Resistant **CA18**	M30 **CA30, EC30**	ATEX Zone 22 **Ø 18**	High Temperature **ECH**
Capacitive proximity sensors with Tripleshield™ technology. AC versions with sensing ranges of 3-8mm (flush) or 3-12mm (non-flush), NO or NC output. DC versions with sensing ranges of 3-8mm (flush) or 3-12mm (non-flush), NPN or PNP with NO and NC output. DC versions with Teach-in have sensing distance of 0.5-12mm (flush or non-flush). Connection via 2m cable or M12 plug.	Capacitive proximity sensors with Tripleshield™ technology. Adjustable sensing distance of 3-8mm (flush) or 3-12mm (non-flush). Black M18 polypropylene, PVC or Teflon housing with 2m cable. Ideal for use in level applications in chemical, semiconductor and food & beverage industries.	Capacitive proximity sensors with Tripleshield™ technology. AC and AC/DC versions with sensing ranges of 2-16mm (flush) or 4-25mm (non flush), NO & NC output. DC versions with sensing ranges of 2-16mm (flush) or 4-25mm (non-flush), NPN or PNP with NO and NC output. DC versions with Teach-in have sensing ranges of 1-30 mm (flush or non-flush). Connection via 2m cable or M12 plug.	ATEX-approved Capacitive DC-proximity sensors with Tripleshield™ protection. Sensing range 3-12mm non-flush mounted. NPN or PNP, NO or NC output. 2m cable or M12 connector. Ideal for detecting grain or solids in tanks, silos or containers.	Capacitive proximity sensors for extreme temperature applications. Operating temperature range of -321° to +356°F. (-196° to 180°C) Sensing range is 4-15mm (non-flush). NPN or PNP with NO & NC output. Ideal for drying hoppers/blenders in the plastics industry.

| Ø 32 **VC, VR**	ATEX Zone 20 **Ø 32**	Flat Pack **EC55, VC55**	Flat Pack **CD46**	Flat Pack **CD50**
Capacitive level sensor for solid, fluid or granulated substances, in thermoplastic polyester for mounting in PG 36 screw gland. Adjustable sensing distance (4-12mm) and with or without built-in time delay (ON or OFF delay).	ATEX-approved Capacitive AC or DC proximity sensors (Tripleshield™). Sensing distances are 3-12mm (Ø18) and 2-20mm (Ø30), non-flush mounted. NO or NC with ON or OFF delay output (AC models), NPN or PNP with NO or NC output (DC models). Ideal for detecting grain or solids in tanks, silos or containers.	Capacitive DC-proximity sensors. EC55 features Tripleshield™ technology. Sensing distance 4-25mm flush or non-flush. NPN or PNP, NO or NC output. 2m cable or M12 connector. VC55 is a basic sensor with sensing distance of 2-10mm. Choice of NPN or PNP, NO or NC output, with 2m cable. Ideal for level and plastic machinery applications.	Capacitive DC-proximity sensors with Tripleshield™ technology. Teachable switch point 1-10mm, flush or non-flush. NPN or PNP, NO or NC output. A perfect solution for pellet stove applications or any other level sensing application where this sensor can be strapped around a plastic pipe, tube or feeding chamber.	Capacitive level detector. 3-wire DC sensor with open collector NPN or PNP transistor output. Fixed sensing distance and detection through a non-metallic wall of up to 25mm thickness. Ideal for level detection in whirlpools and tubs.

Magnetic Sensors

Carlo Gavazzi offers a comprehensive range of magnetic sensors for use in proximity sensing applications.

A wide variety of styles are available, including rectangular, cylindrical and slotted. In addition, special coded magnets and sensors are available for use in safety applications.

Magnetic sensors are frequently used in elevators and lifts, gate control, level detection, and access control.

In elevator (lift) installations, normally open sensors are used for re-alignment of the lift car with the floor, and the bistable version is used to recognize the top and the bottom floors. Carlo Gavazzi's color coded magnetic sensors help installers to manage sensors, reducing the possibility of mistakes and time loss.
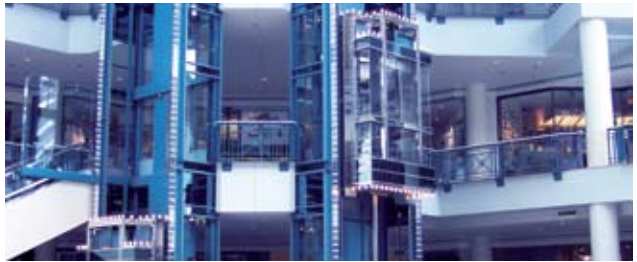
For more detailed information, visit: www.GavazziOnline.com/Magnetic

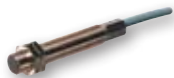| Ø 6 FMMP	M8 FMM	M10 FMA, FSA	M12 FMC, FMP, FS	Ø 13.5 FS
Miniature cylindrical magnetic sensor. Plastic housing material and 8mm or more operating distance. With NO output function. Twin lead cable output connection.	M8 cylindrical proximity magnetic sensors in stainless steel housing. PVC cable with NO, and change over output function. Operating distance up to 27mm.	M10 cylindrical proximity magnetic sensors in nickel plated brass housing. PVC cable with NO, and NC output function. Operating distance up to 23mm.	Cylindrical M12 magnetic sensors, color-coded plastic housing. Multiple output options: normally open, normally closed, change over, bistable. IP67 protection degree. Ideal for elevator applications.	Cylindrical proximity magnetic sensor in Ø 13.5 plastic housing. PVC cable with NO, NC, and change over output function. Operating distance up to 12mm.

M16 FSB, FSM	Flat type MC, MM, MS	Rectangular SP	Float Level ILM/S, FSH/V	Safety Switches SMS
M16 cylindrical proximity magnetic sensors in brass housing. PVC or silicon cable. Change over output function. Operating distance up to 8mm depending on the magnet. High temperature sensor.	Standard proximity magnetic sensor series in plastic rectangular housing. Different dimensions are available, also miniature sensors. The sensor switching is side type with different operating distances.	Rectangular plastic proximity magnetic sensor. Different dimensions are available, also miniature sensors. The sensor switching is side type with different operating distances. Cable or faston connection.	Float level switches utilize a magnet embedded in moving float to open or close the switch. Options include both vertical and horizontal mounted switches, in multiple sizes, and choice of stainless steel or plastic housing materials.	Safety magnetic sensors for monitoring the position of guard doors and gates. Utilizes a coded magnet to prevent false or malicious activation. Available in rectangular or cylindrical housings to fit nearly any machine.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit GavazziOnline.com for more details.

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Photoelectric Sensors

Carlo Gavazzi offers a large range of photoelectric sensors which are used extensively in packaging machinery, automatic door systems, material handling and many other industrial applications. Our sensors are available in diffuse reflective, background suppression, retro-reflective, polarized and through beam detection principles, as well as clear object detection and color recognition.

Carlo Gavazzi also offer a range of fiber-optic sensors for applications where a conventional sensor cannot be used (i.e. because of space limitations, high temperatures, atmospheric restrictions, etc.).

For more detailed information, visit: www.GavazziOnline.com/Photoelectric

M18 **PA18/E.18**	Versatile **PH18**	Miniature **PD30**	Laser Sensor **LD32**	Compact **PC50**

M18 family of cost-effective general purpose AC or DC sensors in plastic or nickel plated brass housings. Most sensing principles are available with a maximum distance up to 20 m. Cable or M12 connector versions. Available with ECOLAB and IP69K rating.

Small sensor in versatile housing allows side mount with screws, or front mount with 18mm threaded barrel. Available in diffuse, retro reflective and through beam sensing functions

Compact size of full range sensors in a reinforced plastic housing. An ideal solution when high accuracy detection, as well as small size is required. Teach-In function for detection, as well as sensitivity and NO, NC selection. NPN or PNP output and cable or M8 connector.

Compact housing for mounting in space-restricted areas. Visible laser beam with choice of through beam, diffuse, or background suppression versions. Ideal for detecting small objects, such as electronic components.

Compact size of full range AC/DC or DC-sensors in a reinforced plastic housing. Diffuse reflective, retro reflective and through beam. The long sensing range and sensitivity adjustment make for a very flexible sensor.

Rectangular **E.55**	Sensor for Amplifier **MOF**	Amplifier for Sensor **S142**	Multi Channel Amplifier **S1430**	Remote Amplifier **MPF**

Compact rectangular housing for mounting in confined areas. Diffuse version in 200mm or 600mm options, and through beam version with 5m range. 10-30 VDC with choice of cable or M12 plug connection.

Powerful robust through-beam sensors for use with the S14X amplifier for optimized space / performance ratios. Sensing distances up to 50m and three different detection angles. Ideal for harsh environments containing water, dust etc.

Microprocessor controlled amplifier for one set of photoelectric sensors, type MOF. Automatic or manual emitter power regulation. Self-diagnostic functions. Alignment help via LED or alternation of alarm output. Level indication for dirt accumulation.

Remote amplifier for up to 3 sets of MOF sensors. Separate output for each channel, with individual sensitivity adjustment. Includes diagnostic functions for easy setup and troubleshooting.

Remote amplified system consists of sensors in 3 different housing choices and a separate amplifier in choice of 1, 2 or 3 channels. Meets all global door standards. Has test input and relay output.

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Photoelectric Sensors (continued)

Carlo Gavazzi photoelectric sensors are suited for many diverse industries, and customized for many as well. We have the largest selection of UL 325 approved sensors for the automatic door and gate industry. For applications that feature harsh environments, such as car washes or wood processing, we have several very powerful remote-amplified sensors that can sense in extremely wet, foggy or dusty areas.

Innovation and quality are the fundamentals of our market approach. The PD112 sensor is provided with a specific detection mode for industrial applications – such as pallet wrapping, large conveyors, and the wood industry – as well as being designed for automatic door applications.

Doors and Gates **PD98**	Battery Powered **PD180**	Slimline **PD70**	Rectangular **PM**	Through Beam **PE12, PB10, PB18**
Through beam AC/DC sensors in a durable polycarbonate housing. Designed for the domestic and industrial door markets. The sensing functions can be verified through a sensor mute input. High neighbor immunity.	Through beam AC/DC sensors in polycarbonate housing, designed for the door and automatic gate markets. Sensing functions can be verified through a sensor mute input. Lens adjustment 200 degrees horizontal and ±30 degrees vertical.	Specially designed for doors and entrance control. Slim housing design. Emitter with test input for evaluation of the sensor function. Available in 10-30VDC version. Sensing range up to 12m. Modulated, infrared light. Perfect complement for RAD radar sensors.	Full size range of AC/DC or DC-sensors in a reinforced plastic housing. Diffuse reflective, retro reflective, polarized retro reflective and through beam. Mute input to verify sensing function. Ideal for industrial and door applications.	Through beam DC-sensors specially designed for door and entrance control with sensing distance up to 15 m. The sensing functions can be validated through a sensor mute input. NPN or PNP, NO or NC outputs.

Background Suppression **PD112**	Fork Sensor **PF80**	Fiber Optic **PD60CNX/V**	Clear Object **PD60CNG**	Contrast Sensing **PD60CNK**
Long range 2.5m background suppression DC sensor in a durable plastic housing. Outstanding black object detection of 1.8m. Based on triangulation detection principle - detect any object, while ignoring background disturbances from steady or moving objects.	Rectangular sensor with 3mm slot width. Ideal for detecting label marks. With universal output (NPN, PNP, NO, NC).	Teachable or manually adjustable amplifiers for fiber optic sensors, feature ON/OFF timer, bar graph display, and keyboard lockout. With a complete range of plastic and glass fiber optic cables/lenses.	Retro reflective sensor for detecting clear objects, such as glass, plastic film, or bottles. 10-30 VDC supply with NPN and PNP output. Easy setup via teach-in mode. Also available in the miniature PD30 housing shown on the adjacent page.	Fiber optic amplifier with specialized sensing unit for detecting changes in contrast in reflected light. Ideal for high speed printing and packaging applications, with 20 kHz switching frequency.

Conductive and Optical Level Sensors

The Carlo Gavazzi range of conductive level sensors is well suited for most level control applications. Typical applications are level control and liquid detection in the agricultural, chemical, food and beverage, water distribution and treatment industries.

Conductive sensors have been developed with special attention to solutions that meet all the typical demands of the panel designer: usability, flexibility, affordability and size, minimizing space requirements and allowing for installation in small enclosures.

Optical level sensors are the optimal solution for the detection of liquids in food and beverage and chemical industries.

For more detailed information, visit: www.GavazziOnline.com/Level

Probe **VN/VT**	Probe **VP**	Modular Probe **CLH**	Hanging Probe **VH1**	Hanging Probe **A94**
Conductive level sensing probes for liquid level detection. From one to four insulated or non-insulated electrodes. Cable or screw terminal connections. Detection functions determined by the amplifier used.	Level sensor for measuring the level of conductive liquids, i.e. max./min. control of charging or discharging. The function is determined by the amplifier relay used. one to four electrodes. Insulated or non-insulated electrodes. Cable or screw connection.	Conductive level sensing probes for liquid level detection. From one to five replaceable insulated or non-insulated electrodes. Screw terminal connections. Detection functions determined by the amplifier used.	Conductive level sensing probes for liquid level detection. Hanging probe for single point level detection. Neoprene cable connections. Detection functions determined by the amplifier used.	Conductive level sensing probes for liquid level detection. Hanging probe for single level point detection in swimming pools. Neoprene cable connections. Detection functions determined by the amplifier used.

Controller **CLD1DIN**	Controller **CLD**	Controller **CLP**	Optical - Plastic **VP**	Optical - Metal **VPA**
Microprocessor based single point level controller for liquids with a wide sensitivity range from 5KΩ to 150KΩ. 17.5mm wide housing mounts easily on DIN rail. For filling or emptying applications. Low-voltage AC electrodes. LED indication.	Microprocessor based level control relay for conductive liquids which can control two levels of filling or emptying. Adjustment sensitivity from 250Ω to 500KΩ. Easy installation by snapping onto DIN rail. Rated operational voltage: 24 VAC/DC, 115 VAC or 230 VAC. For two to four level points.	Microprocessor based level control relay for conductive liquids which can control two levels of filling or emptying. Adjustment sensitivity from 250Ω to 500KΩ. Easy installation into an 11 pin circular socket. Rated operational voltage: 24 VAC/DC, 115 VAC or 230 VAC. For two to four level points.	Optical level sensors with built-in amplifier and modulated or unmodulated, infrared light. Polysulphone housing resistant to most acids and bases or polyamide 12 housing resistant to various solvents. ATEX version available.	High end optical level sensors with modulated infrared light with built-in amplifier. Stainless steel or nickel-plated brass housings, with glass or polysulphone tip resistant to most acids and bases.

Ultrasonic, Motion and Presence *Sensors*

Carlo Gavazzi's ultrasonic sensors are designed for both distance measurement and object detection in tough environments. Different output types are available for presence and absence detection. They are ideally suited to detecting transparent objects.

Radar sensors are typically used for the free opening of all types of automatic doors (sliding, swinging, folding, revolving, high-speed doors, overhead doors, etc.).

To ensure perfect control of sliding doors, Carlo Gavazzi has developed the "Guardian", one of the most advanced overhead motion and presence detector(s) to watch over entrance and exit areas, thus safeguarding people.

Our new wireless safety edge system is ideal for monitoring large industrial doors.

For more detailed information, visit: www.Gavazzi*Online*.com/Ultrasonic

For more detailed information, visit: www.Gavazzi*Online*.com/Motion

M12 **UA12**	M18 **UA18**	M30 **UA30**	Square **UC80**

A self-contained multi-function diffuse ultrasonic sensor in stainless steel housing. Sensing distance 25 to 200mm. One PNP or NPN switching output and setup of NO or NC via a remote teach function.

Multi-function ultrasonic sensor in thermoplastic housing. Teachable sensing range up to 2m. NPN, PNP, NO, NC or analog output. Setup of "Normal Switching", "Window" or "Adjustable Hysteresis" function.

Multi-function ultrasonic sensor in thermoplastic housing with a teachable sensing range up to 3.5m. NPN, PNP, NO, NC or analog output. Setup of "Normal Switching", "Window" or "Adjustable Hysteresis" function.

Multi-function ultrasonic sensor in thermoplastic housing with a teachable sensing range up to 6m. NPN, PNP, NO, NC or analog output. Setup of "Normal Switching", "Window" or "Adjustable Hysteresis" function.

Radar **RAD**	Industrial Radar **IRS**	Accessories **RAD RC, IRS RC**	Motion & Presence **Guardian**	Wireless Safety **WSM**

Bidirectional and Uni-bidirectional K-Band radar sensor compatible with all swinging and sliding automatic doors. 3-D adjustable position of the sensor. Multiple filters allow complete customization for any installation. IR remote controller can be added for easy adjustment.

Long range motion radar sensor. Unidirectional. Mounting height from 2 to 7m. Vehicle and person detection. In field adjustment of the area detection with remote control. Sealed against dust and humidity

Infared remote controller for easy adjustment of standard range radar sensors and long range motion sensors. Allows for programming of all functions after sensor is installed.

Overhead sensor for sliding doors. Motion and presence detector in one. Equipped with digital video camera technology. Easy and quick to set up. Easily adjustable large motion zone. Advanced self control system. Bi- and Uni-directional

Wireless safety system for use with safety edges on industrial doors eliminates cables between the controller and the door. Main unit can control up to eight safety edges. Opening heights of up to 20m can be monitored. Works with photoelectric sensors, safety edge devices, and door-in-door sensors.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit Gavazzi*Online*.com for more details.

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Light Curtains

Carlo Gavazzi's wide range of light curtains includes models for lifts and elevators and models for industrial doors. Many models feature dynamic blanking, to detect the presence of obstacles along the entire door-opening height, thus preventing accidents.

Carlo Gavazzi's safety light curtains are widely adopted for safeguarding presses, punching machines, benders and cutters, automatic packaging machines or assembling lines and palletizers.

Flexibility, ease of installation and use and minimum impact on machine productivity make this choice much more effective than mobile material protection.

For more detailed information, visit: www.GavazziOnline.com/LightCurtains

Elevator/Lifts **BFL**	Homelift **BFL + NLG**	Accessories **BFLDIN BFLBOX**	Industrial Doors **BFDE/S**
Light curtains for lift door control. Increased number of beams for a higher degree of protection. Provided with integrated controller and insulated housing. Two models (edge/side sensing). Diagnostic LEDs, automatic signal level adjustment.	Two pairs of BFL light curtains and the NLG safety module certified together. The kit prevents any entry of the user in dangerous areas during the operation of the lift. BFL light curtains are to be mounted on the cabin entrance with RX1 and TX2 on one side, and TX1 plus RX2 on the other side.	BFLDIN and BFLBOX are power supply units with an SPST output relay and a built-in buzzer. BFLDIN features a Mini DIN-rail housing. BFLBOX includes the BFLDIN unit, within an enclosure that ensures an IP55 degree of environmental protection.	Safety light curtains for rollup doors, safely detects objects, even while door is opening or closing. Choice of side sensing or edge sensing profile. Integrated controller, insulated housing and high number of beams. Protected height up to 2.5m and long operating distance of 12m. Not available for sale in the United States.

Type 2 **SB2**	Type 2 and 4 **SB2, SB4**	Type 4 **SB4ED, SB4B**	Type 4 **SB4M/N**	Type 4 **SB4T/L/S**
Type 2 safety light curtains with a very compact design. Operating distance both for hand – 30mm resolution – and body – 90mm resolution – control protection. Response time range results to be amongst the lowest in the market – up to 21ms for hand and till 17ms for body.	Type 2 and 4 safety light curtains for body protection with different standard heights, 2-3-4 beams and operating distance reaching 25m or 50m. The manual or automatic Restart, as well as the Muting and partial Muting functions can be configured according to the specific needs.	Solutions suitable for finger with 14mm resolution and up to 6m operating distance and for hand control protection with 30mm and distances up to 15m or 19m. Each model has one or more advanced functions: External Device Monitoring and Fixed/Floating Blanking (only on SB4B series).	Two different solutions: 14mm resolution and up to 6m operating distance for finger and 30mm and up to 30m for hand control protection. Each model has one or more advanced functions: External Device Monitoring, Blanking and Cascade (master/slave).	Suitable for all applications that require the Muting function, thanks to the use of pre-assembled, pre-cabled and pre-aligned Muting sensors. Integrated bidirectional or unidirectional muting sensors or external ones for linear versions. Operating distance of 3m or 25m.

Environmental and Wind *Sensors*

Environmental sensors are designed for the measurement of different parameters in order to improve indoor air quality.

CGES environmental sensors monitor CO2, relative humidity, air temperature and air velocity. Typical applications are for offices, hotels, food storage rooms and museums.

Correctly installed CO2 sensors can help maximize indoor air quality and comfort. This approach, equally applicable to retrofit or to new constructions, can save energy while ensuring that the ASHRAE standard 62 ventilation rates are maintained.

Carlo Gavazzi wind vanes and anemometers are used for measuring relative wind speed and direction, and are ideal solutions for wind turbines and large doors.

For more detailed information, visit: www.Gavazzi*Online*.com/Environmental

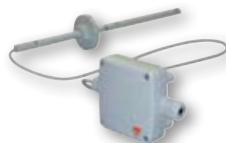| RH & Temperature **CGESHTD**	RH & Temperature **CGESHTW**	Air Velocity **CGESAIRVEL**	CO2 **CGESCO2W**	CO2 **CGESCO2D**
These transmitters are the ideal solution for accurate measurement of relative humidity and temperature in HVAC applications. They are available for duct mounting, with current or voltage output signals.	Wall mounted units for indoor HVAC applications such as in residential and office buildings. The standard humidity output of the transmitter is 4-20mA or 0-10 V. Temperature output signal can be active or passive.	The air velocity transmitter is ideal for accurate ventilation control applications. It operates on an innovative hot film anemometer principle. It is available with current or voltage output.	These wall-mounted transmitters combine CO2, relative humidity (RH) and temperature (T) measurement in one modern and user-friendly housing. This sensor provides analog outputs (in V or mA) or switching.	The CO2 sensing element uses NDIR (non-dispersive infrared technology). Measuring ranges of 0-2000 and 0-5000 ppm correspond to an analog output of 0-10 V or 4-20mA.

Anemometer **DWS-V**	Wind Vane **DWS-D**	Anemometer Amplifier **1056G**
Cup anemometer with opto-electronic detection for measuring air speed. Built-in heater and dust sealing. Inputs and outputs protected against reverse polarity and transients.	Relative wind vane for measurement of the relative wind direction. Optoelectronic detection. Built-in heater and dust sealing. Inputs and outputs protected against reverse polarity and transients.	Special 1056G is part of a wind security system for cranes. 48, 115, 230, 400VAC supply voltages. Intermittent warning level at wind speed between 31-43 mph (50-70 km/h). Alarm level at wind speed above 43 mph (70 km/h). 12 VDC output for anemometer autotest on startup. Two different siren modes.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit Gavazzi*Online*.com for more details.

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Solid State Relays

Carlo Gavazzi is the preeminent innovator in the design and manufacture of solid state relays. They feature direct copper bonding technology for increased life and reliability. No other manufacturer in the industry offers as wide an offering of the various 'switching types' or the vast product breadth.

On this page you can see our printed circuit board mount SSRs and our full range of single and three phase chassis mount type relays, which typically get mounted to an electrical enclosure's back panel, or to one of the dozens of various heat sinks Carlo Gavazzi offers.

As you can see on the adjacent page, we also offer a complete range of SSRs which have an integrated heat sink. This makes these relays 'ready-to-use' right out of the box, which makes them extremely user friendly. There's no need to calculate heat sink sizes, apply heat sink compound or mount the two components together. Also offered are hybrid relays.

For more detailed information, visit: www.Gavazzi*Online*.com/SSRs

PCB Mounting RP1A/D	Zero Switching RS1A	Zero/Instant-on Switching RM1A/RM1B	2-Pole Zero Switching RA2A	System Monitoring RA...S

SSRs for socket or printed circuit board mounting. For AC types (max. 480VAC), up to 5.5AAC, or 10AAC (with version with integrated heat sink). For DC types either 1 or 8ADC types at up to 350 or 60VDC respectfully. The RMP1P is an optional DIN rail mounted socket.

Chassis mount, zero switching solid state relay features an alternistor output, which is a cost-effective solution. The SSR also has a status LED and IP20 touch-safe cover. For resistive loads up to 40AAC, at voltages up to 530VAC.

The chassis mount, 1-phase relay is the most widely used industrial SSR due to its multiple application possibilities. They can be used for resistive, inductive and capacitive loads. RM1A zero switching type and RM1B instant on type are available in 25, 50, 75 and 100AAC outputs, for up 660VAC.

2-pole SSR minimizes the space requirements without compromising performance. Two SSRs are built into a single 'hockey puck' SSR. Relay is rated for two 40AAC outputs, up to 660VAC. 0.25" fast-on terminals are utilized on output terminals for quick wiring. Choice of fast-on or pinheader for input voltage.

The system monitoring relay not only switches loads up to 110AAC at up to 530VAC, it also monitors and alarms the user if anything is wrong with the line voltage, load current, current through the SSR or if there's anything wrong with the input status vs. the output status.

Peak Switching RM1C	DC Switching RD	Analog Switching RM1E	3-Phase Zero Switching RZ3A	Heat Sinks RHS

The peak switching solid state relay was designed for heavy inductive loads of up to 30AAC. The relay switches on the load at zero current, which happens to be at peak voltage for large inductive loads such as transformers. Four inductive output ratings of 10, 20, 25 and 30AAC at up to 660VAC.

The DC SSRs are used in fast switching applications of small DC loads with high input/output isolation of more than 4,000 VAC. The DC output switches ON and OFF in accordance with the applied DC control voltage. Outputs of either 5ADC at up to 60VDC or 1ADC at up to 350VDC.

The analog switching relay works in accordance with phase angle control principle, where the switching point in the sine wave depends upon a proportional input which can be 4-20mA or 0-10VDC. Four output ratings of 25, 50, 75 and 100AAC at up to 660VAC

This heat sink mountable 3-phase zero switching SSR is designed to switch resistive and inductive loads up to 75 and 20AAC respectively, at up to 660VAC. Built-in varistors provide transient protection for heavy industrial applications. Optional over-temperature protection is also offered.

Heat sinks are a necessary accessory for any chassis mount solid state relay where more than 5 amps are being switched. Approximately a half dozen heat sinks and heat sinks with optional cooling fans are available for mounting one, two or three solid state relays.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit Gavazzi*Online*.com for more details.

Solid State Relays/Contactors and Hybrid Relays

Most zero switching solid state relays are used to switch resistive loads, to control heating elements in plastics, packaging, food processing, coffee making and solder reflow machinery. They are also used extensively as a solid state means to control lighting loads.

Carlo Gavazzi's RGC Series with instant-on switching, features a high I²t and SCCR rating, thus making them the ideal device to use as a solid state contactor. The terminals also include built-in MOV and snubber protection. These are ideal for switching pump and motor loads.

The RG Series also allows the user to select the position of the control and load (I/O) terminals. The terminals can be side by side, and wired like a contactor, or the control terminals can be on the top, with the load wires on the bottom, thus allowing the user to keep all their low voltage wiring in the top wire tray, and their power wiring in the bottom wire tray.

As you can see from this and the adjacent page, Carlo Gavazzi is truly one of the most innovative solid state relay manufacturers and this is why we are amongst the market leaders worldwide.

Zero/Instant-on Switching **RGS**	DC Switching **RGC1D, RGS1D**	Zero/Instant-on Switching **RGC**	Zero/Instant-on Switching **RGC**	Zero/Instant-on Switching **RGC**
New generation of slim panel mountable solid state relays with a width of 17.5mm. Nominal current rating include 25, 50, 75 and 90AAC with proper heat sink. Solid state relay and contactor terminal layouts are available.	Both RGC1D and RGS1D feature only 17.5 mm width. RGC1D with integrated heat sink, has a rating of 15ADC at 40°C surrounding, while RGS1D is a panel-mount SSR and is provided with 15ADC and 25ADC rating. This premium line of solid state relays offer full amperage ratings up to 1,000VDC. up to 1,000VDC.	Mini size RGC solid state relays and contactors with integrated heat sink present a unique opportunity to maximize efficiency in panel space. Up to 20AAC/3Hp in 17.5mm width and up to 30AAC/5Hp in 22.5mm width. Up to 1,800 A²s I²t and 1,200Vp blocking voltage. Nominal rating at 40°C. IP20 and MOV protection standard.	Midi size RGC model with integrated heat sink features 35.5mm wide construction. Electrical ratings of 40AAC at 40°C and voltage up to 600VAC. High I²t rating of 6,600 A²s is available as a special RGH version. Both contactor (E) and SSR (U) terminal layouts are available.	Power line of the RGC with maximum output rating of 90AAC/15Hp at 40°C. 60AAC/10Hp version uses natural air convection cooling, while the 90AAC/15Hp version uses a built-in fan to achieve its high rating. MOV protection is standard. 100kArms SCCR UL508 rating.

2 & 3 Phase Zero Switching **RJ2, RJ3**	Integrated Fusing **RGC1F**	System Monitoring **RGS1S, RGC1S**	Proportional Output **RJ1P**	1, 2, & 3 Pole Hybrid **RMD**
These two and three pole products are a solid state solution to contactors, especially where frequent switching is required. Maximum rating of 32AAC at 25°C. MOV and snubber protection are standard. Internal over temperature switch is standard on 32AAC version, optional on smaller sizes.	This SSR combines three functions in one: switching, circuit protection by means of integrated semiconductor fuse and optionally, system monitoring. Front panel can be opened for easy access to the fuse. Fuse holder accepts fuses from most manufacturers. Alarms are indicated by a red LED on the front and auxiliary alarm output. Current rating up to 40AAC.	This slim RG design is capable of detecting various failure modes occurring in the load as well as the SSR itself. Detectable failures include: full or partial load failures, open or short SSR circuit, and SSR over temp-erature. Product is available in versions without heat sink (RGS1S) or with heat sink (RGC1S). Available current range is up to 85AAC at 40°C.	Analog switching SSR with integrated heat sink is a single phase device that provides proportional output control. This microprocessor controlled device offers the flexibility of five switching modes in one flexible package: phase angle, distributed and 1, 3 and 10 second bursts. Max. current range is 50AAC, controlled by 4-20mA or 0-10VDC.	This relay combines the benefits of solid state technology and electromechanical relays to provide a hybrid solution. Solid state components switch the load on, while the electromechanical components take over shortly thereafter. This minimizes contact arcing, therefore extending the life of the electromechanical relays. Up to 40AAC output at 480VAC (with neutral).

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Contactors, Overloads and Manual Motor Starters

CARLO GAVAZZI is proud to present our expanded range of contactors and overloads, as well as our comprehensive offering of manual motor starters.

The product offering starts with mini-contactors in a compact 12 amp frame size (7.5Hp), followed by midi-contactors in up to 100 amp frame sizes (75Hp), and topped off with the power-contactors which offer up to 800 amp frame sizes (600Hp). All of the midi-contactors, 9-100AAC (5-75Hp), also have CSA elevator ratings.

To complement the contactors, thermal overloads are offered for each frame size, available in several setting ranges. Additionally, the manual motor starters are available in 32, 63 and 100 amp frame sizes.

Electronic overloads, enclosed manual motor starters and other contactor accessories are also available.

For more detailed information, visit: www.GavazziOnline.com/Contactors

Mini Contactors **CGM**	IEC Midi Contactors **CC**	IEC Power Contactors **CC**	Mini Overloads **CGT-12M**	IEC Overloads **GT**

Electromechanical 3-phase switching. AC3 480VAC rating 6, 9 and 12AAC. cUL ratings up to 7.5Hp. One auxiliary contact. Full arrangement of AC and DC coils and accessories. Connection choices of screw, cage clamp, fast-on and pin terminals.

Rugged 3 or 4-pole contactors with AC3 480VAC ratings of 9-100AAC, cUL ratings of 5-75Hp. Full range of AC or DC coils. Screw and lug terminals. One or two sets of auxiliary contacts. Accessories include overloads, reversing kits, extra auxiliary contacts and surge suppression units.

Rugged 3 or 4-pole contactors with AC3 480VAC rating from 130–800AAC. cUL ratings of 75-600Hp. Two sets of auxiliary contacts are standard. Popular upgrades include extra auxiliary contacts, overloads and reversing interlocks. Full arrangement of AC, DC or AC/DC coils.

Bi-metallic overloads fit all sizes of mini contactors and protect motors from overloading and phase loss. One frame size and thirteen overload ranges protect motors with nominal rating ranging from 0.1-13AAC.

Rugged bi-metallic GT overloads attach directly to all sizes of CC contactors and protect motors from overloading and phase loss. Seven frame sizes protect motors ranging from 0.1-800AAC. Direct and separate mounting models are available.

Electronic Overloads **CGE**	Manual Motor Starters **GMS**	Definite Purpose Contactors **CGDP**	Accessories for Contactors & Manual Motor Starters	Bus Bar Accessories

Electronic overloads use solid state technology to detect overload and phase loss, as well as phase reversal and unbalance. Wide overload range and user selectable trip class. Three frame sizes, protecting motors from 0.3-85AAC. Direct, separate and through-hole mounting styles.

Manual motor starters combine functionality of bi-metallic overloads with magnetic short circuit protection. Available in three frame sizes with full load ratings up to 100AAC and short circuit protection up to 100kA. Adapters are available for direct connection to CC contactor sizes from 9 through 100AAC.

This cost-effective line of contactors comes in single, single+shunt, two and three pole normally open contact arrangements. AC3 amperage rating ranges 20-40AAC. Screw terminals (also featuring fast-ons) are standard, while box lugs are available as an option. All CGDP contactors require minimum order quantities.

AX, GFX, GSA and GUA side and top mount (NO and/or NC) auxiliary contacts for contactors and manual motor starters. GUS coil surge absorbing units with varistors and snubbers for contactors. GEH rotary handles with lockout to control GMS manual motor starters through the front of an enclosure.
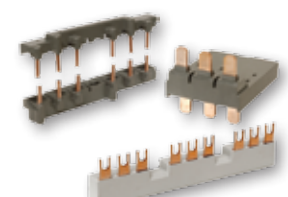
MS busbars simplify wiring by allowing the customer to easily connect up to five GMS manual motor starters to a common supply. GDA bridges directly connect the contactors to manual motor starters to form a monolithic motor starter. GUW wiring links simplify making reversing starters.

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Switch

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit GavazziOnline.com for more details.

Soft Starters

Carlo Gavazzi offers a range of motor controllers for soft starting/stopping, dynamic braking and reversing of three phase squirrel cage motors.

Applications include conveyor systems, pumps, compressors, industrial dryers, automatic doors, palletizers and fans. Our soft starters are available with a characteristic ramp suited to starting both compressors and pumps and it includes a 'Kick-Start' feature to start loads with a higher break-away torque.

Automatic features in the RSQK and RSXK soft starters continually adjust settings in the soft starter to optimize the operation. Its advanced software configures the relevant settings to ensure the optimal starting profile for the application. The soft starter is then ready to use with no further adjustment required, saving valuable time and money in commissioning and maintenance.

For more detailed information, visit: www.GavazziOnline.com/SoftStarters

1-Phase RSBS	3-Phase RSBT	2 & 3-Phase RSBT, RSBD	3-Phase RSHR	3-Phase Compact RSHL

Compact single phase compressor soft starter is available in both enclosed and open-board solutions. Internal starting capacitor option. Compressor: single phase up to 5 Hp.

The RSBT is a 3-phase controlled soft starter for 3-phase compressor applications up to 7.5 Hp. The RSBT's slim and sleek design fits perfectly in any application.

Soft starter with 2- or 3-phase control and integrated bypass relays for starting scroll compressors up to 75 Hp. Patented auto- adaptive algorithm for optimum inrush current reduction. Phase sequence, under voltage, over temperature, over current and locked rotor protection are standard.

Soft starting and stopping of 3-phase motors. Rotary knob setting of ramp. 2-phase or 3-phase controlled with internal bypass contactors. Motor rating: three phase up to 50 Hp.

Compact 3-phase soft starter for soft starting/stopping of 3-phase squirrel cage induction motors. Preset profile selectable via rotary switch. Motor rating: three phase up to 15 Hp. Integrated overload protection, phase sequence and phase loss protection.

Soft Starters RSDR	Soft Starters RSXK, RSQK	Solid State Contactors REC2B, REC2R	Modular Soft Starters RSC..HD/AA	Reversing Relays RR2A

3-phase soft starter for induction motor application up to 400 Hp. Ideal solution for replacement of star/delta starters. RSDR with their ramp-up time/ramp down time and flexible capabilities ensure that applications such as water pumps, compressors and high inertia loads are soft started and stopped efficiently.

3-phase controlled soft starters for induction motors. Automatic energy optimizing feature, keypad with LCD display for continuous display of parameters, modbus & remote keypad operation for multiple soft starter control. Motors, resistive (heaters) control and inductive (transformers) loads (RSQK series only). Up to 900AAC (670Hp).

Electronic contactor (REC2B, REC3B) and reversing contactor (REC2R) for 2 or 3-phase switching of motors up to 5.5 Hp. Product is intended to replace traditional electromechanical contactors and reversing contactors.

RSC-HD0M60 is a manually adjusted control module for full wave soft starting/ stopping of induction motors. RSC-AAM60 is a 4-20mA control module which serves as motor soft starter or as power controller for resistive loads. RSO output module is rated up to 600VAC, and up to 110AAC, with the proper heat sink.

Solid state reversing relay for 3-phase induction motors. LED indication for "forward" and "reverse" mode indication. Motor rating: three phase up to 7.5 Hp.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit GavazziOnline.com for more details.

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Variable Frequency Drives

The Carlo Gavazzi Variflex[2] variable frequency drives are suitable for the majority of motor control applications.

In particular, ease of setting makes Variflex[2] variable frequency drives versatile for a long list of conveyor applications (locations, transportation of bottles in bottling plants, letter or package sorting in postal services, cement powder conveyors in construction); HVAC (single and multi, fan heat ventilation, air conditioning, greenhouses, compressor/freezing); packaging development of turnkey automation packaging and molding machinery systems.

All Variflex[2] variable speed drives are approved according to the relevant North American and European safety standards.

For more detailed information, visit: www.Gavazzi*Online*.com/Drives

110V 1-Phase **RVDF**	110V 1-Phase **RVEF**	230V 1-Phase **RVDF**	230V 1-Phase **RVEF**	230V 1-Phase **RVCF**
AC variable frequency drive for use with AC induction motors. V/F mode, high starting torque, variable torque application. DIN rail or panel mounting. Nominal motor power: 0.25, 0.50 and 1Hp.	AC variable frequency drive for use with AC induction motors. SLS and V/F control, DIN rail or panel mounting. Nominal motor power: 0.25, 0.50 and 1Hp.	AC variable frequency drive for use with AC induction motors. V/F control, high starting torque, variable torque application. DIN rail or panel mounting. Nominal motor power: 0.25, 0.50, 1, 2 and 3Hp.	AC variable frequency drive. SLS and V/F control, DIN rail or panel mounting. Nominal motor power: 0.25, 0.50, 1, 2 and 3Hp.	AC variable frequency drive. SLS, V/F and V/T control. DIN rail or panel mounting. Nominal motor power: 0.5, 1, 2 and 3Hp.

230V 3-Phase **RVEF**	230V 3-Phase **RVCF**	480V 3-Phase **RVDF**	480V 3-Phase **RVEF**	480V 3-Phase **RVCF**
AC variable speed drive. SLS and V/F control, DIN rail or panel mounting. Nominal motor power: 0.25, 0.50, 1, 2 and 3Hp.	AC variable speed drive. SLS, V/F and V/T control. Nominal motor power:0.5, 1, 2, 3, 5, 7.5, 10, 15, 20, 25, 30 and 40Hp.	AC variable speed drive. For use with AC induction motors. V/F mode, high starting torque, variable torque application. DIN rail or panel mounting. Nominal motor power: 1.0, 2.0 and 3Hp.	AC variable speed drive. For use with AC induction motors. SLS and V/F control, DIN rail or panel mounting. Nominal motor power: 1.0, 2.0 and 3Hp.	AC variable speed drive. SLS, V/F and V/T control. Nominal motor power: 1, 2, 3, 5, 7.5, 10, 15, 15, 20, 25, 30, 40, 50, 60 and 75Hp.

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Switch

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Industrial Relays and Sockets

Carlo Gavazzi offers a comprehensive range of electromechanical relays for industrial automation.

They are available for plug-in, surface and PCB mounting. Many of our relays come standard with a push-to-test button as well as an orange flag or LED indicator

Carlo Gavazzi relays are frequently used in control panels, in HVAC control systems, pump and compressor control, as well as electronic consumer products. These are typically used to switch loads such as heaters, lights and motors.

Additionally, Carlo Gavazzi offers a complete range of relay sockets, for back panel or DIN rail mounting.

For more detailed information, visit: www.GavazziOnline.com/Relays

Industrial **RCP 8/11**	Midi Industrial **RMI 2-10/4-5**	Midi Industrial **RPY 1/2/3/4**	Power 1 & 2 Pole **CF & CS**	Power 1 & 2 Pole **NA, NF, NP**
2 and 3 pole relays for a wide range of industrial applications. Available in 8 or 11 pin versions. Up to 10AAC output contacts.	High switching power (2 or 4 pole, up to 10AAC) in a very compact relay size. Monostable and high inrush monostable versions. PCB, solder and plug-in terminals.	Available in 1, 2, 3 and 4 pole changeover contact configurations for up to 10AAC (2, 3 and 4 pole) or 16AAC loads (1 pole). High switching power and high reliability for a wide range of industrial applications.	Relay with high power, in a sealed design for vending machines and compressor loads. Switching capacity 30AAC. Reinforced insulation 4 kV / 8 mm (0.31"). Meets class F construction.	Relay with high power, in a sealed design, for vending machines, copiers and control equipment. Power and compressor loads. Heavy load up to 7500 VA.

Sockets **ZPD**	Sockets **ZMI**	Sockets **ZPY**
Sockets for RCP relays, rated voltage / rated current 10 A at 400 VAC. Terminal type: screw cage	Sockets for RMI relays, rated voltage / rated current 10 A x 2 or 5A x 4 at 300 VAC. Terminal type: screw cage	Sockets for RPY relays, rated voltage / rated current 10 A at 300 VAC. Terminal type: screw cage

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Limit Switches

Carlo Gavazzi offers a complete range of limit and safety switches, providing machine manufacturers and panel builders with unparalleled solutions, allowing machinery to operate correctly, thus minimizing process stops and personnel risk. Limit and safety switches, classified by application, allow an easier selection of the right switch.

There are over 8,000 different types for industrial automation as well as for elevator and door applications, facilitating reliable and safe operation of machinery for personnel.

For more detailed information, visit: www.Gavazzi*Online*.com/LimitSwitches

Limit Switches **PS21L**	Limit Switches **PS31L**	Limit Switches **PS42L**	Limit Switches **PS43L**	Pre-Wired Switches **PS21M**
Miniature standard housing, with one cable/conduit entry. 25 different actuator options. 6 different contact block choices. Available in metal or plastic housing. Robust switch in compact package.	Full-size, standard housing, with one cable/conduit entry. 20 different actuator options. 10 different contact block choices. Available in metal or plastic housing. Robust switch in traditional package.	Compact standard housing, with two cable/conduit entries. 18 different actuator options. 6 different contact block choices. Available in metal or plastic housing. Robust switch in compact package.	Large standard housing, with three cable/conduit entries. 20 different actuator options. 10 different contact block choices. Available in metal housing. Robust switch in large package.	Miniature limit switch with 20mm mounting hole spacing. Pre-wired with 1m (3.3 ft.) of cable. 15 different actuator options. 2 different contact block choices. Available in metal or plastic housing. Fully potted with IP67 rating.

Pre-Wired Switches **PS31M**	Safety Switches **Manual Reset**	Safety Switches **Cable Pull**	Safety Switches **Door Interlock**	Safety Switches **Hinge Switch**
Miniature limit switch with 25mm mounting hole spacing. Pre-wired with 1m (3.3 ft.) of cable. 15 different actuator options. 2 different contact block choices. Available in metal or plastic housing. Fully potted with IP67 rating.	Safety switch which becomes disabled when tripped, requiring manual reset. Typically used for detecting over-travel conditions. 2 different housing size options. 5 different actuator options. Available in metal or plastic housings.	Emergency stop switch, ideal for providing worker access over long areas (such as conveyors). Available with or without manual reset button. 4 different housing size options fit most preventative guard doors.	Safety switch used to monitor guard doors, and restrict machine operation when safety doors are not properly closed. 4 different housing size options. Choice of 7 different keys, to fit most guard doors.	Safety switch used to monitor swinging guard doors and restrict machine operation when safety doors are not properly closed. Switch mounts on top of machine, and pin is inserted into the door hinge or lever, typically secured to top of door. 2 different housing size options.

Push Buttons and Pilot Lights

Industrial manufacturing equipment command devices are of great importance in human-machine interfacing, which is precisely why Carlo Gavazzi offers a complete range of push buttons and pilot lights.

These products are designed to provide users with the flexibility to meet the requirements of a broad range of applications.

Economical in size and flexible in function, they can be mounted in switch boards, control panels, operator's consoles, on conveyors and in elevators/lifts.

Pushbuttons, selector switches, mushroom head type, key switch and pilot lights are available in six different colors and multiple contact configurations.

For more detailed information, visit: www.GavazziOnline.com/PushButtons

Push Buttons **PB**	Emergency Stop **PB**	Selector Switches **PB**	I/O Push Buttons **PB**	Push Button Boxes **PBBOX / EMPB**
Pushbutton switches to open or close electric contacts. They are mostly used to start/ stop electric circuits or devices like lamps, motors, etc. Choice of 6 colors, illuminated or non-illuminated. Flush and extended options. Maintained or spring-return operation. 22mm hole size. 40 & 60mm mushroom head, push-pull options.	RED emergency STOP pushbutton switches. Twist-to-release function. 40mm and 60mm button size options. 22mm hole size.	Selector switches are mechanical switches that can be turned right, center or left to open or to close the electric contacts. Short and long handle options. 6 different color choices, including illuminated options. 22mm hole size. Keyed selector switches are also available for higher security applications.	I/O push button switches are mostly used to start/stop electric circuits/devices like lamps, motors, etc. Illuminated or non-illuminated, in 22mm hole size.	Plastic boxes for push button and pilot lights. PBBOX series is available in choice of yellow or grey cover, and 1 - 5 holes. Emergency stop stations (EMPB series) are provided with E-stop button, contact block, and placard.

High/Concentric Lens **PL**	Low/Teeth Lens **PL**	Flash Light **PL**	Two Color **PL**	Buzzer/Flashing **PL**
Pilot lights are panel mounted (22mm hole) lamp assemblies consisting of the indicator housing, an internal high brightness pure color LED, terminals, and a lens. Choice of 5 colors (red, white, blue, yellow, green) in high profile lens or lens with concentric circles. Available in 8 different voltage ranges, from 6V to 380V. Compact versions available for shallow panels.	Pilot lights are panel mounted (22mm hole) lamp assemblies consisting of the indicator housing, an internal high brightness pure color LED, terminals, and a lens. Choice of 5 colors (red, white, blue, yellow, green) in a low profile lens or lens with aesthetically stylish notched out teeth. Compact versions available for shallow panels.	Flashing pilot lights are panel mounted (22mm hole) lamp assemblies consisting of the indicator housing, an internal high brightness pure color LED, terminals, and a lens. Choice of 5 colors (red, white, blue, yellow, green). Available in 8 different voltage ranges, from 6V to 380V.	Two-color pilot light (red and green) are panel mounted lamp assemblies consisting of the indicator housing, two-color internal high brightness pure color LED, terminals and a lens. Available in 8 different voltage ranges, from 6V to 380V. Conserve panel space and minimize cutouts with this dual-function indicator.	Buzzers (black) or flashing buzzers (red) are panel mounted device assemblies consisting of the housing, an internal lamp or buzzer, terminals and a cover. For 22mm panel holes. Available in 8 different voltage ranges, from 6V to 380V.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit GavazziOnline.com for more details.

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Monitoring Relays

Carlo Gavazzi monitoring relays are used in a wide range of applications to protect one of the most critical elements in manufacturing and process control: the motor. Whether your target concern be compressors, pumps, HVAC systems or conveyors, the Carlo Gavazzi monitoring relay offers a long lasting, and reliable, solution to protect your investment and minimize costly downtime. Our family of monitoring relays will detect overloads, phase sequence and phase loss, regenerated voltage, phase asymmetry, tolerance and power factor. We capture anomalies before they become serious problems.

Additionally, our monitoring relays are the solid choice to detect broken heater elements and are well suited for monitoring of lighting systems within an automated building system.

For more detailed information, visit: www.GavazziOnline.com/MonitoringRelays

Current Relays **DIA, DIB**	Current Relays **DIC**	Voltage Relays **DUA, DUB**	Voltage Relays **DUC**	3-Phase Relays **DPA, DPB**

DIA AC/DC over current monitoring relay and DIB TRMS AC/DC over or under current monitoring relay. Direct input measurement or for use with a current transformer. 11-pin PIA/PIB plug-in types are also available.

TRMS AC/DC over+under, over+over or under+under current and voltage monitoring relays. DIC01 can also perform +/- DC measurement. 11-pin PIC plug-in types are also available.

DUA AC/DC over voltage monitoring relay and DUB TRMS AC/DC over or under voltage monitoring relay. 11-pin PUA/PUB plug-in types are also available.

Over+under, over+over or under +under voltage monitoring relays. 11-pin PUC plug-in types are also available.

DPA phase loss and sequence relay and DPB over+under voltage, as well as phase sequence and loss monitoring relay. 11-pin PPA/PPB plug-in types are also available.

3-Phase Relays **DPC**	Frequency Relays **DFB**	Frequency Relays **DFC**	Power and Cosφ **DWA**	Power and Cosφ **DWB**

TRMS over+under, phase sequence and phase loss, two relay alarm outputs plus phase asymmetry and tolerance monitoring relay. 11-pin PPC plug-in types are also available.

Over+under frequency monitoring of its own power supply. 11-pin PFB plug-in types are also available.

Over+under frequency monitoring relay with individual outputs.

Over or under Cosφ monitoring relay for balanced 3-phase system. 11-pin PWA plug-in types are also available.

TRMS AC active power and power factor monitoring relay for 3-phase balanced systems. 11-pin PWB plug-in types are also available.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit GavazziOnline.com for more details.

Monitoring Relays (continued)

Carlo Gavazzi monitoring relays are available, with the same functions, in up to three different housings: the standard DIN-rail mount types, perfect for industrial panels, the plug-in housing to allow fast and safe replacement (without moving cables), and the Mini-D housings for space-saving compact DIN-rail mounting.

When considering lifts/elevators, escalators and cranes, the direction of the motion must be 100% correct. Phase sequence relays are a fast, reliable and easy-to-maintain solution. In overload conditions, the motor temperature can damage and eventually burn up the motor. The DPA51 provides detection of the voltage regenerated by the motor during phase loss. This means that the motor won't overheat, burn or cause danger.

Interface Protection **DPC02**	Temperature Relays **DTA**	Alternating Relays **DLA**	Surge Arresters **DSF**	Current + CT **DIA 53**

1-phase and 3-phase monitoring relays for maximum and minimum voltage and frequency, phase sequence and phase loss. It also checks that the frequency and voltage are within the limits required by the utility company.

Thermistor relay used to monitor the temperature of the coils of a motor with built-in PTCs. 11-pin PTA plug-in types are also available.

This relay will automatically alternate two or three pumps in a multiple pump system.

Protect the investment in solar PV installations from transient over-voltage, indirect atmospheric discharge and switching with this Type 2, Class C, surge protection device. The DSF is for DC systems and is UL1449 3rd Edition approved. No backup fusing is required below 200,000 volts.

This series of AC current monitoring relays is self-powered, compact and features a built-in current transformer that measures from 2-100AAC. Output is a normally open NPN-PNP open collector. Through-hole size is 12mm.

Current + CT **DIB 100A**	Current Tranducers **E83, A82**	Current Transformers **CTD**	Current Transformers **CTD-S, SCT**	Current Sensors **ROG400**

TRMS AC over or under current monitoring relay with a built-in current transformer that measures from 2A to 100A AC. Through-hole size of 12mm.

Compact AC current metering transducer with 7 selectable primary ranges up to 50AAC and a 22.5mm through hole. Also offered in a cabled version, type A82 in a 25, 50, 100, 250 and 500AAC primary range with a 0-20mA, 4-20mA or 0-10VDC output and 27mm through hole.

Cable/Bus-bar type current transformer with DIN-rail/bus-bar and panel mounting facility. Solid-core current transformer with bus-bar mounting facility. Split-core current transformer with bus-bar mounting facility.

Split-core current transformer with bus-bar mounting facility. Rated primary currents from 100-2,000AAC. SCT split core current transformers can be used for currents from 500-6,000AAC.

Split core AC TRMS current sensor to measure a current from 20-400AAC with signal output from 4-20mA DC proportional to the primary current being measured. Power supply from 10-30VDC.

Switching Power Supplies

Carlo Gavazzi power supplies are designed for virtually any application where DC power is required. Our SPD industrial power supplies are DIN-rail mounted and available in single, bi-phase and three-phase versions. Most models are approved for Class I, Division II installations. The majority of models under 100 watts are rated UL 1310 Class 2, a panel-builder preferred specification.

Optional redundancy modules are available when DC voltage must be maintained (in the event the primary power supply loses output power). Our SPM low profile series has a fixed 2.2" (81mm) installed depth making it perfect for shallow panels and commercial installations.

The SPP enclosed power supplies are extremely compact, chassis-mounted and ideally suited for vending machines, commercial food ovens and warming equipment.

All Carlo Gavazzi power supplies have a three year warranty.

For more detailed information, visit: www.GavazziOnline.com/PowerSupplies

1-Phase **SPD**	Bi-Phase **SPD**	1 Phase Peak Load **SPD**	3-Phase **SPD**	Low Profile **SPM**
Adjustable output power supplies feature a universal input voltage, noise filter and short circuit protection. Output power: 5, 10, 18, 30, 60, 90, 100, 120, 240 or 480 watts. Output voltages of 5, 12, 15, 24 or 48 VDC. Most approved for Class I, Division 2 installations.	No need for a control voltage transformer due to this model's high-voltage, bi-phase input of 380-575 VAC. This power supply provides 100 watts of power at 24 VDC. Approved for Class I, Division 2 installations.	Adjustable output power with 10A (24VDC) and 16A (12VDC) versions. Each has universal AC input and 150% peak load capability with active power factor correction, power ready output, parallel function and high efficiency up to 93%.	This 3-phase series is available with output power levels of 120, 240, 480 or 960 watts, without voltages of 12, 24 or 48 VDC. Connection via bi-phase input power is possible with an output de-rating of 75%. Approved for Class I, Division 2 installations.	These power supplies feature a low profile depth of 2.2" (81mm). Output power levels consist of 7.5, 10, 15, 25, 30, 35, 54, 60, 72, 91 and 100 watts in voltages of 5, 12, 15 and 24 VDC. Most models are UL1310 Class 2 compliant.

Redundancy **SPD, SPM**	Enclosed Chassis **SPP 20**	Enclosed Chassis **SPP 35, 60**	Battery Charger **SPMBC5**
The redundancy modules permits the connection of two identical 24 VDC power supplies where one serves as the backup for the other should one fail. The SPD version handles 20A total current and the SPM version handles 10A total current.	This 20 watt unit features universal input voltages, high efficiency, very low stand-by power consumption and a high MTBF. Output voltages are 5, 12, 15 or 24 VDC. The housing is plastic and surface mounted.	The 35 and 60 watt types feature universal input voltages, high efficiency, very low stand-by power consumption and a high MTBF. Output voltages are 5, 12, 15 or 24 VDC. The extremely compact housing is metal and may be mounted in vertical or horizontal orientation.	The switch-mode SPMBC5 is designed specifically to charge lead-acid batteries. Its output voltage is stabilized at a preset value, whether charging or not. This contributes to the optimization of performance and duration of the battery. Available in four models: 30 watt and 60 watt with 12 or 24VDC outputs.

Timers and Counters

Carlo Gavazzi offers a comprehensive range of timers that can be mounted within the enclosure or through the front panel. Available in several different housing styles, each has either a SPDT, DPDT or 4PDT relay output and features one or more common timing functions: On Delay, Off Delay, True Delay on Release, One Shot, Zero Speed, Start-Delta and Recycler. Most feature multi-voltage supply and timing ranges from 0.1 second through 100 hours. This wide range of functionality means Carlo Gavazzi has a solution for most of your timing applications.

Our range of electronic and electromechanical counters includes hour meters, pulse counters, tach and frequency, preset counters, position indicators and multifunction, fully programmable digital devices with single or two-line displays.

For more detailed information, visit: www.Gavazzi*Online*.com/Timers

Delay on Operate **DAA, DBA, DBB**	Recycler **DCB**	Star Delta **DAC**	Multifunction **DMB, DMC**	Mini-E **EAS, EBS, ECS**

Our multi-voltage delay on operate (DAA), delay on release (DBA) and true delay on release (DBB) series are available with up to seven time ranges and a SPDT or DPDT relay output. Each features simple setup and clearly marked front knobs. 11-pin plug-in versions are also offered PAA/PBA/PBB

A variety of processes require an event to take place for a certain time and then wait for another delay. This recycler series offers full flexibility for both ON and OFF time from 0.1 second to 100 hours. Also available in 11-pin plug-in version, PCB

Star-delta is a proven solution to avoid undesired inrush current while starting a motor, as well as the subsequent voltage drop. This compact series is also available in an 11-pin plug-in version, PAC.

Universally powered, each series features seven timing functions in a compact housing. The DMB series has a SPDT relay and the DMC offers a choice of SPDT or two SPDT relays, one of which can be configured as instantaneous. 11-pin plug-in versions are offered as PMB01 and PMC01

Single-function and compact, these low cost timers feature two wire connections and a solid-state SCR output. Dedicated timing functions are on-delay (EAS), interval (EBS) and recycler (ECS). Available with screw or fastons terminals.

Multifunction **FAA, FMB, FMC**	Multifunction **HAA**	Digital Counters **FKA, FSA, DMF**	Mechanical Counters **EMCT**	Hour Meters **FSA, E1HM4**

This series offers the panel builder the choice of a front panel installation or 8-pin (FAA08) or 11-pin (FAA01) socket/DIN-rail installation inside the enclosure. Easy adjustment and clear LED indication offer simplicity of operation for one of four timing functions using the FAA or the seven functions of the FMB.

This popular miniature housing provides multifunction and multi-voltage supply with just two models, a DPDT (HAA08) and 4PDT (HAA14). Each features delay on operate, symmetrical recycler "ON" first, symmetrical recycler "OFF' first and Interval timing functions.

Key products offered include the 8-digit, single channel up/down pulse counter (FKA). The multifunction products include the 1/16 DIN DMF61/62 series with 2-line LCD, single or dual presets, AC or DC supply and a 60KHz high speed counter input. Also available are 1/32 DIN multifunction counters

Panel mounted with magnified numbers and AC/DC input(s). Low power consumption, long life and without reset. EMCT46 has 6 figures and EMCT47 has 7 figure display. IP65 and IP66, respectively.

Electronic series FSA01 and FSA02 feature 8-digit LCD in a 24x48 DIN housing. AC and DC input models, front key lock, 0.1s synchronization and an 8-year lithium battery. Mechanical hour meter families E1HM4 (1/32 DIN) and E2HM4 (1/16 DIN) have 7 or 8 magnified figures and AC or DC supply

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit Gavazzi*Online*.com for more details.

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Energy Management

Carlo Gavazzi supplies energy management meters and systems that provide information so that operators can identify consumption trends and take corrective actions. Analyzing the power profile, operators can aggregate loads and negotiate favorable terms with the utility company. Real time power consumption monitoring allows overloads to be anticipated. In commercial buildings and production facilities, cost allocation and load control are becoming more and more important because of the need to save money or issue the energy bill when needed. In airports and infrastructures it is of fundamental importance to have a powerful control of the mains, since medium voltage systems and very high currents are involved.

For more information, visit: www.GavazziOnline.com/EnergyManagement

Energy Meter/Analyzers	Energy Meters	Energy Meters	Multifunction Meters	Multifunction Meters
EM10/EM11	**EM21**	**EM24**	**WM12/14 DIN**	**WM12/14 96**

1-phase energy meter (EM10) and energy analyzer (EM11) for DIN-rail mounting. Direct measurement up to 32 A and self-power supply. LCD display with readout of 6-DGT.

3-phase energy meter with removable front LCD display. Can be use as panel meter or DIN rail meter/transducer. Can be front panel or DIN-rail mounted. Pulse output or RS-485 communication is available.

DIN-rail mounted energy analyzer (EM24). With 8-DGT LCD display. EM24 is available with either direct measurment up to 65A or by means of CTs.

3-phase multifunction meter (WM12) and power analyzer (WM14), with built in programming keypad. DIN rail mounting. Red LED display. RS485 port on request. Suitable to measure the main electrical variables.

3-phase multifunction meter (WM12) and power analyzer (WM14), with built in programming keypad. Panel mounting. Red LED display. RS485 port on request. Suitable to measure the main electrical variables.

Energy Analyzers	Power Analyzers	Power Analyzers	Power Analyzers
EM26	**WM5**	**WM30**	**WM40**

3-phase energy analyzer with harmonic analysis capability, panel mounting, dual colour back-lighted 8-DGT LCD display. Digital inputs/outputs and RS485 port.

3-phase power quality analyzers for panel mounting with harmonic analysis capability. Display unit and some plug-in modules such as: power supply, measurement/ digital inputs, digital/analog outputs and serial port (Modbus, Ethernet). Measurement Canada approved.

3-phase smart power analyzer with built-in application configuration system and LCD data display. Plug and play modules. Ten digits total energy counting. Communication protocol: Modbus-RTU, iFIX Scada compatibility. Modbus TCP/IP ethernet port and BACnet-IP over ethernet port (on request). Go Solar California eligible.

3-phase smart power analyzer with built-in application con-figuration system and LCD data display. Data logging and event stamping. Optical front communication port (ANSI type 2). Communication protocol: Modbus-RTU, iFIX Scada compatibility. Modbus TCP/IP ethernet port and BACnet-IP over ethernet port (on request). Go Solar California eligible.

Energy Management (continued)

Power quality and accurate measurements are becoming more and more important in a number of applications (hospitals, heavy and big industries, etc.). Utilities need an instrument with a high accuracy to monitor the distribution system or the generation plants. Carlo Gavazzi offers a broad range of power transducers that give early warning of power quality problems.

Carlo Gavazzi's energy management program also includes software products for monitoring a network of meters and transducers. Also offered are a wide range of current transformers, that can be connected with all the existing wire terminals and installed either on DIN-rail, around bus-bars or directly onto back panels.

Power Transducers **CPT**	Power Transducers **PQT H**	Serial Converter **SIU PC3**	Serial Converter **SIU TCP2**
3-phase compact power transducer for the measurement of the main electrical variables also on board machines. Housing for DIN-rail mounting, with up to 3 analog outputs, RS485 communication port alarm outputs or "Dupline" bus.	3-phase utility grade power quality transducer. Particularly recommended for the measurement of the main electrical variables. Housing for DIN rail mounting. RS485/RS232 communication ports, Ethernet port, pulse and alarm outputs are available on request.	Serial communication line adapter for laptop computers and PCs not equipped with a serial port. The SIU-PC3 converts from USB to RS485, compatible with new and legacy serial devices, and can be used with any Carlo Gavazzi power analyzers, energy meters or digital panel meters.	Compact ethernet to RS232/485 Modbus Gateway. Easy-to-use configuration software suite. Wall and DIN-rail mounting. High speed serial communication up to 230.4Kbps. Power supply: 9 to 30 VDC, AD5V1A: AC/DC power supply adapter is available upon request

Web Access Unit **VMUC**	GSM Communication Unit **VMUW**	Software **PowerSoft**	Current Transformers **CTD**	Current Transformers **CTD-S, SCT**
This product is designed to complement most Carlo Gavazzi energy metering products. It collects relevant electrical data and makes it available to users via an internal web server or via an external web portal by means of web-service based communication. External connection types include Ethernet, cellular (with VMUW) or USB.	This product is a quad band GSM modem specifically designed to provide a wireless means of connecting through the VMUC to Eos Array, AC energy meters and inverters, where wired internet is not available. SIM card and data plan with wireless provider are required.	Suitable for Windows 7, WIN98, 98SE and XP, specifically developed to interface the Carlo Gavazzi products by means of the Modbus protocol. It allows efficient management of an electrical distribution system. Management of up to 800 power analysers and energy meters. Data acquisition by means of COM ports and/or Ethernet.	Cable/Bus-bar type current transformer with DIN-rail/bus-bar and panel mounting facility. Solid-core current transformer with bus-bar mounting facility. Split-core current transformer with bus-bar mounting facility.	Split-core current transformer with bus-bar mounting facility. Rated primary currents from 100-2,000AAC. SCT split core current transformers can be used for currents from 500-6,000AAC.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit GavazziOnline.com for more details.

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Digital Panel Meters and PID Controllers

Carlo Gavazzi offers a comprehensive range of digital panel meters which measure current, voltage, frequency, temperature, resistance and rate.

The UDM modular family provides unique flexibility and advanced solutions using 3.5, 4.0 and 6.0 digit display configurations. These products are used in multiple markets such as agriculture, chemical, pharmaceutical, food & beverage, material handling, packaging & wrapping, petrochemical, plastic & rubber, pulp & paper, water and wood. The UDM front housing is rated IP67, NEMA12 and NEMA4X.

Additonally, Carlo Gavazzi features a comprehensive line of PID controllers for use in temperature control in plastics, packaging machinery, food processing, semiconductor manufacturing, and for scientific and medical instrumentation equipment. The PID controller front housing is rated IP67, NEMA12 and NEMA4X.

For more detailed information, visit: www.GavazziOnline.com/PanelMeters

Volt/Amp Indicators **DI3-72**	Volt/Amp Indicators **LDM30**	Volt/Amp Controllers **LDM35/LDM40**	Modular Controllers **UDM35**	Modular Controllers **UDM40**
72x72mm 1-phase AC/DC voltmeter and ammeter with 3-digit red LED display for panel mounting.	1/8 DIN 1-phase AC voltmeter and ammeter with 3-digit red LED display for panel mounting.	1/8 DIN LDM35 features 3.5 digit display and LDM40 features 4-digit display. Both are panel mounted AC/DC multi-signal controllers with up to two alarm set points.	1/8 DIN 3.5 digit 1-phase TRMS AC/DC and pulse multi-signal panel meter with plug-in modules for power supply, measuring inputs, serial communications, digital and analog outputs.	1/8 DIN 4-digit 1-phase TRMS AC/DC and pulse multi-signal panel meter with plug-in modules for power supply, measuring inputs, serial communications, digital and analog outputs. The multi-color display can be programmed to display up to three different colors.

Modular Controllers **UDM60**	Signal Conditioners **USC**	PID Controllers **T2032**	PID Controllers **T2016**
1/8 DIN dual 6-digit displays with dual analog indicators. Accepts up to two AC or up to two DC pulse inputs up to 50KHz and calculates speed, rate and maintains ratio between two inputs.	DIN-rail mount microprocessor-based signal conditioner for current, voltage, temperature, resistance, rate, frequency, speed and period measurements. Plug-in modules provide ease of installation.	1/32 DIN single line display PID controller. AC or DC powered, universal inputs, pulsed DC, relay output(s), as well as serial communications.	1/16 DIN two-line display PID controller. AC or DC powered, heat-cool operation and universal inputs. T2016P versions permit multiple ramp/ soak modes.

Safety Modules

Carlo Gavazzi safety modules offer an internationally approved interface between the operation of the machine and the safety switches installed within, or in proximity to, the machine.

Each safety module is specially designed for a purpose. Whether the application be an emergency stop, a removable guard or gate, the two-hand control at a punch or forming press, a safety light curtain or the floor leveling function found in an elevator, we have a safety module solution for you.

For more detailed information, visit: www.GavazziOnline.com/SafetyModules

Emergency Stop **NES**	Safety Gates **NSO**	Safety Gates **NSC**	Two-Hand Control **ND12D**

Safety Category 4 emergency stop modules up to performance level "e" for category "0" E-stops NES02 has 2 NO safety outputs, NES13 has 3 NO safety outputs plus 1 NC auxiliary. Auto/manual or monitored manual reset versions.

Safety Category 4 safety gate and safety magnetic sensor modules up to performance level "e". NSC02 has 2 NO safety outputs, NSC13 has 3 NO safety outputs plus 1 NC auxiliary with auto/manual or monitored manual reset versions.

Safety Category 4 safety gate and safety magnetic sensor modules up to performance level "e". NSC02 has 2 NO safety outputs, NSC13 has 3 NO safety outputs plus 1 NC auxiliary with auto/manual or monitored manual reset versions.

Safety Category 4 two-hand safety module up to performance level "e" meets the requirements of two-hand controls up to Cat. IIIC according to EN574.

Light Curtain **NLG**	Lift Leveling **NA12DLIFT**	Standstill Monitor **MF1C**	Expansion Module **NE14D**

Features ESPE with static PNP or relay outputs permitting performance level "e". NLG02 has 2 NO safety outputs, NLG13 has 3 NO safety outputs plus 1 NC auxiliary with auto/manual or monitored manual reset versions. Safety category 4.

Designed to be used in lifts/elevators for floor leveling of the cab according to the requirements for the safety circuits of EN81-1 and EN81-2 European Standards and to the 95/16/EC Lift Directive. 2 NO safety outputs with auto/manual reset. Safety category 4.

Safety category 3 module to monitor the rotation speed of mechanical parts and conforms to EN954-1, EN60904-1, EN292-1/2 and EN418.

Used to increase the number of contacts available that can reach performance level "e". 4 NO instantaneous relay outputs plus 1 NC auxiliary for feedback. Safety category 4.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit GavazziOnline.com for more details.

Control 27

General Purpose Dupline® and DuplineSafe

Dupline® is a versatile bus for industrial, commercial and building automation, currently with more than 120,000 installations worldwide. It is used for transferring discrete and analog signals over distances up to 6.2 miles/10Km. The Dupline® range consists of general purpose fieldbus I/O modules and various types of connectivity gateways for PCs, PLCs, etc. The strength of the Dupline® system lies in a unique set of features allowing flexible and cost-effective solutions for a wide range of applications: factory process monitoring, railway systems and water distribution.

DuplineSafe offers a flexible and easy-to-wire solution complying with EN954-1 Cat 4 and at the same time, the the fast and precise diagnostic features reduce production stops in large machines and plants. It represents the ideal solution for long conveyor runs, where the immediate indication and diagnosis of causes for production stops enables significant downtime reduction.

For more detailed information, visit: www.GavazziOnline.com/Dupline

Digital I/O	Analog I/O	Sensors	Gateways	Data Logging and Control

Numerous digital input modules accepting contact and voltage signals, and receiver modules with relay, NPN and PNP outputs. Available in DIN-rail housings and compact, bus-powered housing for decentralized installations.

Input and output modules for 0-20mA, 4-20mA and 0-10VDC signals.

Various digital and analog bus-powered sensors are available for decentralized installation that include PIR, magnet, inductive, smoke and water detection, temperature humidity, lux and wind speed.

Fieldbus gateways are typically used for interfacing the Dupline bus to PLCs and PCs. Versions available for Profibus-DP, Modbus-RTU, Modbus TCP and DeviceNet.

Programmable component for web-based data logging and control functions. Can be used for energy recording combined with energy saving control functions.

Display Modules	Network Components	DuplineSafe Input Transmitter	DuplineSafe Safety Receiver	DuplineSafe Gateway

The GTD50 is a 20 character x 2 line programmable display for status and alarm-monitoring and may be used with Dupline® and DuplineSafe.

The Dupline® repeater functions to regenerate the Dupline® carrier signal in order to extend the bus up to another 6.2miles/10Km. This category includes optical repeaters for sending the signals over fiber optic transmission cables.

Completely bus-powered safety input has a voltage-free input and uses two Dupline® channels for redundancy. Available in plug-in or pigtailed versions.

Monitors up to 63 DuplineSafe inputs and is approved per IEC61508-SIL3

Passive gateway with safety mapping is DIN-rail mounted and reads and controls up to 128 inputs and outputs through Profibus-DP.

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Automation Components

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Dupline® Parking Guidance System, Irrigation & Elevator

The parking guidance system is a complete solution for guiding drivers directly to available parking bays. Displays with direction arrows and numbers indicate the direction and number of parking spaces available in that zone. An ultrasonic sensor in each parking bay detects and immediately indicates the occupancy status of each parking space using bright green, red or blue LED lights.

Our Dupline® elevator control modules feature a 3-wire bus to handle all signal and DC power making it cost effective for connecting corridor call buttons and in-cab illuminated floor selector buttons without any hard-wired connections.

In agriculture the Dupline® irrigation bus reduces installation costs and increases flexibility of irrigation design, especially where valves are distributed over a large area.

For more detailed information, visit: www.GavazziOnline.com/Parking

Parking Sensors	Parking Monitors	Parking Displays	Parking Test Unit	Parking Software

Ultrasonic sensors used for the detection of cars in the Parking Guidance System feature high reliability and built-in LED illumination of both available or occupied spaces (green/red) or available and occupied handicapped spaces (blue/red).

These modules provide the intelligence for monitoring a specific area of a parking garage. These monitors can be linked together in an upper level network to exchange information and provide real-time data to signage and/or PCs.

The signage provides the "guidance" in our parking guidance systems using LED directional arrows in combination with a count of available spaces in the direction of the arrow

The hand-held configuration unit quickly connects to, and programs the sensors and monitors. It features an LCD display and 12-key tactile keyboard, powered by a standard 9VDC battery
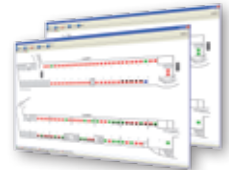
The Parking Guidance Software is an application that provides information from the installed parking system. The server is installed on a Windows-PC and manages the traffic data between the parking garage and the logged data.

Elevator I/O Modules	Elevator Interface Modules	Irrigation Valve Modules	Irrigation Control Modules	Accessories

Cost-effective I/O modules are open PCBs. Designed for use with call buttons and illuminated indicators and can fit directly behind pushbutton panels.

These master modules are open PCBs for interfacing with PLCs and other elevator controllers, and include dedicated versions for popular PLC brands.

Special I/O modules, including one for direct burial at the valve location, for the control and monitoring of irrigation systems over distances up to 3.1 miles/5km. Power for switching the bi-stable valves comes directly from the Dupline bus.

Two DIN-rail mounted modules serve to control the irrigation system and to generate 28V for the Hi-Line signal which is used to supply and control up to 64 valve I/O modules

Include hand-held programming devices for assigning addresses to I/O modules and sensors, and test units for monitoring and control of Dupline channels.

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Visit GavazziOnline.com for more details.

Fieldbus 29

Solar Energy Products

Carlo Gavazzi's expertise is focused on developing and offering a package of products and devices for the renewable energy market, and as you can see below, we offer quite an extensive range of innovative solutions for the photovoltaic (PV) industry.

Apart from the PV modules, Carlo Gavazzi can provide most components for a PV plant installation, ideally designed to monitor and control the efficiency of PV plants.

The product range includes PV inverters, string monitoring controllers, surge arresters and energy meters (see page 24).

The wide range of PV inverters provide the optimum features and benefits required in light industrial, commercial, residential and PV park installations.

For more detailed information, visit: www.Gavazzi*Online*.com/SolarEnergy

PV Control Solution **Eos Array**	PV Control Solution **Eos Array Lite**	Web Access Unit **VMUC**	GSM Communication Unit **VMUW**	PV Control Solution **Eos Box**

Modular local control for PV plants. String level current, voltage measurement, power, energy and efficiency calculations. I/O and environmental measurement modules are available. Direct DC measurement up to 30A/1000VDC. Integrated fuse holder in 15Amp model.

Simplified and cost effective measurement/control system. According to the plant size and the application needs – from small (25kWp) to medium size solar PV applications. Direct DC measurements up to 30A/1000V. Integrated fuse holder in 15Amp model.

Designed to complement the Eos Array, the VMUC collects relevant electrical and environmental data, and makes the data available to users via an internal web server or via an external web portal by means of web-service based communication. External connection types include Ethernet, cellular (with VMUW) or USB.

This product is a quad band GSM modem specifically designed to provide a wireless means of connecting through the VMUC to Eos Array, AC energy meters and inverters, where wired internet is not available. SIM card and data plan with wireless provider are required.

Eos-Box is a fanless embedded PC with Web-server capability suitable for gathering photovoltaic plant information from Eos Array, inverters, energy meters and interface protection. Data available via internet wherever you are.

PV Inverters **ISGA122, 132**	PV Inverters **ISGA 142, 153**	Surge Arresters **DSF**	Environmental Sensors **CELLSOL200**	Environmental Sensors **TEMPSOL, IKE2000K**

Single phase, grid tied PV inverter for up to 2 or 3kW systems. Transformerless and fanless design. Low 120VDC MPPT input. NEMA3R outdoor rated housing. Informative mimic panel display with free graphical user interface software. RS232, RS485, Ethernet, USB or relay communications.

All of the same features as the ISGA 122/132 series inverters, but with higher output ratings of up to 4 or 5kW. These higher rated series also allow up to two MPP trackers, making it suitable for East-West installations. All ISGA inverters also offer efficiency ratings up to 96.4%, and up to a 10 year warranty.

Protect the investment in solar PV installations from transient over-voltage, indirect atmospheric discharge and switching with our new Type 2, Class C, surge protection device. The DSF is for DC systems and is UL1449 3rd Edition approved. No backup fusing is required below 200,000 volts.

Silicon irradiation sensors to be used in all monitored PV plants in order to determine precisely the amount of energy the sun delivers per square meter at any time. CELLSOL200 is a mono-crystalline silicon cell that provides an output voltage, which is proportional to the sun's irradiation.

Measurement of temperatures on flat surfaces, such as the surface of PV modules. TEMPSOL has a special self adhesive material on one side, which is also a good thermal conductor. Easy installation and temperature reading reliability. IKE200K for open air temperature measurements.

EcoEnergy
equipment

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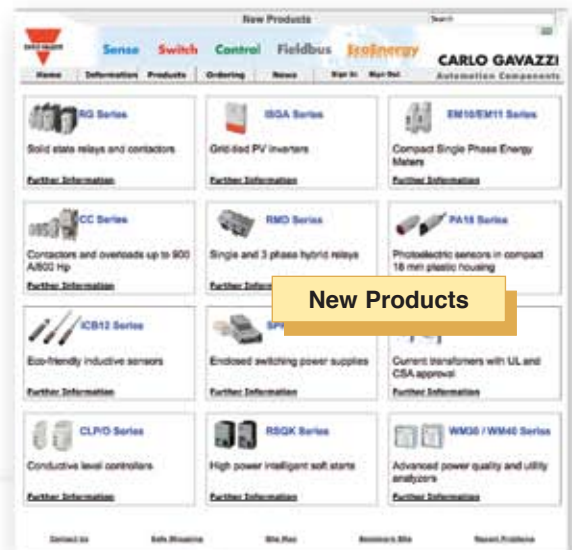
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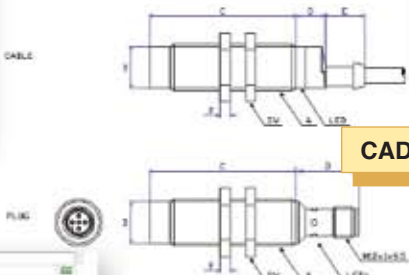
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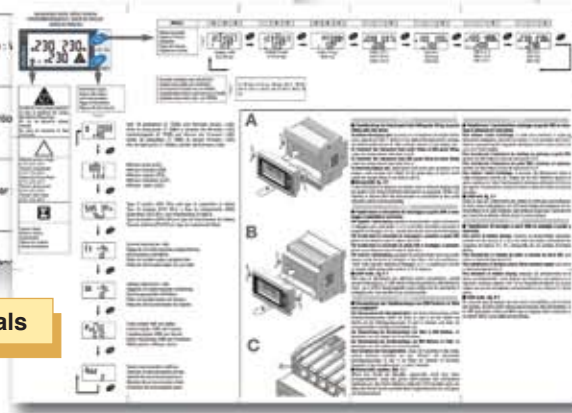
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Ultrasonic Sensors
Wind Sensors
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Motion/Presence Vision Sensors
Conductive Level Sensors
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Switch
Solid State Relays
Contactors and Overloads
Manual Motor Starters/Protectors
Soft Starters
Variable Frequency Drives
Hybrid Relays
Electromechanical Relays
Limit Switches
Push Buttons and Pilot Lights

Control
Energy Management
Switching Power Supplies
Timers and Counters
Monitoring Controls
Current Transformers/Shunts
Digital Panel Meters
PID Controllers
Surge Arresters
Safety Control Modules

Fieldbus
Dupline® Field and Installation Bus
Building Automation Systems
Parking Guidance Systems
Elevator Systems
DuplineSafe Mining Systems
Irrigation Systems

EcoEnergy equipment
Solar Monitoring and Control
Grid-Tied PV Inverters
PV Surge Arresters

A Global Force in Automation and Energy Solutions

CARLO GAVAZZI has a multitude of sales offices spanning North America *(not to mention our hundreds of distributors)*. Therefore, we can be viewed as *"your local automation resource"* - assisting you every step of the way in finding the proper solution for your various application requirements. Naturally, our job is greatly simplified as we have such a vast range of solutions to offer you via our comprehensive *product package*.

Our worldwide sales offices make us an ideal business partner, *especially for manufacturers of exported machinery*, as our products are available locally and they are RoHS and CE marked.

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