

Product Overview



Sensors

Inductive Proximity Sensors	4
Capacitive Proximity Sensors	5
Photoelectric Sensors.....	6
Magnetic Sensors.....	8
Optical and Conductive Level Sensors	9
Ultrasonic, Motion and Presence Sensors.....	10
Environmental Sensors	11
Sensor Accessories	12

Switches

Solid State Relays.....	14
Solid State Relays/ Contactors	15
Contactors, Overloads and Manual Motor Starters.....	16
Circuit and Motor Protection	17
Solid State Motor Controllers and Drives	18
Industrial Relays and Sockets	19
Limit Switches.....	20
Push Buttons and Pilot Lights.....	21

Controls

Monitoring Relays.....	22
Power Supplies	24
Timers and Counters.....	25
Energy Management.....	26
Digital Panel Meters, HMI's and PID Controllers.....	28
Safety Modules and Light Curtains..	29

Fieldbuses

General Purpose Dupline® and DuplineSafe	30
Dupline® Parking Guidance System.....	31
Dupline® Building Automation.....	32

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 85 years ago, our experience and knowledge are unparalleled. Our core competence in automation spans across four product ranges: Sensors, Switches, Controls and Fieldbuses

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 22 wholly-owned sales companies and

exclusive distributors in 60 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.



Our Strategic Markets and Industries

Carlo Gavazzi products are the result of years of extensive research and development. Our Engineering, Marketing and Sales Departments assure you that all of our products are designed with key integrated features to meet or exceed the demanding application requirements and provide the necessary

benefits. Below are several of the markets and industries where Carlo Gavazzi has a presence worldwide. We are members of many of their trade organizations, and participate in their trade shows and write technical papers or white papers for their trade journals.



Food and Beverage



Plastics



Packaging



Agriculture



Material Handling



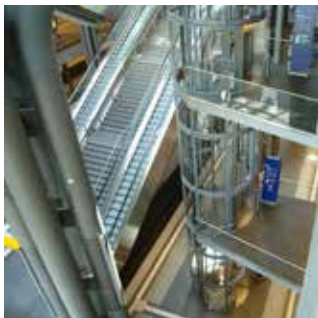
Doors and Access



Parking Guidance



HVAC



Elevators and Escalators



Smart Building



Conventional Energy



Renewable Energy



Mining



Water and Waste Water



Mobile Equipment



Distribution

Inductive Proximity Sensors

Carlo Gavazzi offers a comprehensive range of inductive sensors for detecting the presence of metal. These sensors are used extensively in packaging and plastics machinery, on assembly lines and conveyor systems, and are available with a wide variety of styles and features.

Carlo Gavazzi cylindrical inductive sensors are available in a wide variety of diameters and lengths, and configurations. Standard, extended and extra extended sensing ranges are available, providing up to 40mm sensing range. For particularly tough applications, Carlo Gavazzi offers IP69K-rated sensors for harsh wash-down applications, high temperature sensors, and full metal housed sensors. Flat-pack, fork-shaped and micro/limit switch housings are also available for specialty applications.

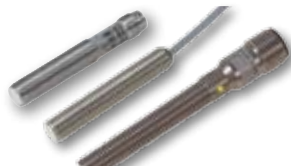


For more detailed information, visit: www.GavazziOnline.com/Inductive

M5 & Ø 6.5 IA	M8 EI & IA	M12 ICB, EI & IA	M18 ICB, EI & IA	M30 ICB, EI & IA
------------------	---------------	---------------------	---------------------	---------------------



Miniature inductive proximity sensors. Sensing ranges up to 1mm. NAMUR or 3 wire DC options. M5 threaded or 6.5mm smooth stainless steel IP67 housing. Flush or non-flush mounting. Connection choice of 2m cable or M8 plug.



Inductive proximity sensors in M8 stainless steel IP67 housings. Standard and extended sensing ranges up to 4mm. NAMUR, 2 wire DC and 3 wire DC options. Flush or non-flush mounting. Connection choice of 2m cable, M8 or M12 plug.



Inductive proximity sensors in M12 stainless steel, nickel plated brass or plastic IP67 housings. Standard and extended ranges up to 8mm. NAMUR, 2 wire AC, 2 wire DC and 3 wire DC options. Flush, quasi-flush or non-flush mounting. Connection choice of 2m cable or M12 plug.



Inductive proximity sensors in M18 stainless steel, nickel plated brass or plastic IP67 housings. Standard and extended ranges up to 14mm. NAMUR, 2 wire AC, 2 wire DC and 3 wire DC options. Flush, quasi-flush or non-flush mounting. Connection choice of 2m cable or M12 plug.



Inductive proximity sensors in M30 stainless steel or nickel plated brass IP67 housings. Standard and extended sensing ranges up to 22mm. NAMUR, 2 wire AC, 2 wire DC and 3 wire DC options. Flush, quasi-flush or non-flush mounting. Connection choice of 2m cable or M12 plug.

Extra Extended Sensing Distance	Harsh Environment ICS	High Temperature IA..HT-K	Full Metal Housed IA..F	Other Sensors and Amplifiers
------------------------------------	--------------------------	------------------------------	----------------------------	---------------------------------



ICB Series extra extended sensing distance in M12, M18 and M30 nickel plated brass IP67 housings. Extra extended range up to 10mm (M12), 20mm (M18) and 40mm (M30). 3 wire DC output. Quasi-flush or non-flush mounting. Connection choice of 2m cable or M12 plug.



ICS Series harsh environment sensors in M12, M18 and M30 stainless steel IP69K ECOLAB certified housings rated from -40 to 80°C (-40 to 176°F). Sensing range up to 22mm. 3 wire DC. Flush or non-flush mounting. Connection via M12 plug and **CONB Series** IP69K cord set.



IA..HT-K Series high temperature sensors in M5, M8, M12, M18 and M30 stainless steel or nickel plated brass IP67 housings. Rated from -40 to 120°C (-40 to 248°F). Sensing range up to 15mm. 3 wire DC. Flush or non-flush mounting. Connection choice of 2m cable or M12 plug.



IA..F Series metal faced inductive proximity sensors in M8, M12, M18 and M30 stainless steel IP67 housings. Standard ranges up to 15mm. 3 wire DC output. Flush or non-flush mounting. Connection choice of 2m cable or M12 plug. Sensors stand up well to abrasion and impact.



Carlo Gavazzi also offers non-cylindrical sensors and amplifier relays: **DU Series** fork shaped with various slot sizes; **IG12 Series** in micro-limit switch housing; **EI55 Series** flat pack; **IC40 Series** with rotatable head in general purpose limit switch housing; and **LDP Series** loop detectors amplifiers.

Capacitive Proximity Sensors

Carlo Gavazzi capacitive sensors will detect most materials, whether they are conductive or non-conductive. The patented and proven Tripleshield™ design has become the standard all other capacitive proximity sensors are measured against. Now in its fourth generation, Tripleshield™ provides outstanding electromagnetic immunity and protection against electrostatic discharge, surges and electrical noise from inverters, mobile phones, and contactors.

Carlo Gavazzi cylindrical capacitive sensors are available in a wide variety of physical sizes and configurations, providing up to 30mm sensing range. Various versions are available with dirt alarm or over-temperature alarm output, relay output, IP69K ECOLAB approvals, chemical resistant housings, ATEX-approvals for explosive environments, and high temperature applications.

Carlo Gavazzi also offers a full line of flat-pack style capacitive sensors, ideal for level sensing in pipes and tubes, plastic machinery, whirlpools, and pellet stove applications.



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

4th Gen. Tripleshield™ CA18/30..CA



Capacitive proximity sensors with improved 4th generation Tripleshield™ technology (enhanced EMI, dust and humidity compensation). IP69K ECOLAB approved housings with up to 120°C (248°F) on the sensing face. Sensing ranges up to 12mm (M18) & 30mm (M30). 4 wire DC, NPN or PNP with NO & NC output. With 2m cable or M12 plug. Optional dirt or over-temperature alarm output.

Tripleshield™ CA18/30 & EC30..T



Capacitive proximity sensors with Tripleshield™ technology. 20-250VAC & 20-250VAC/DC (M30 CA30..CLN..CP only) versions. IP67 PBT and stainless steel housings are offered. Sensing ranges of up to 15mm (M18) or 25mm (M30), NO & NC output. Connection via 2m cable or M12 plug. 4 wire DC versions are also available in stainless steel housings (EC30..N.ASL)

Teach-In Tripleshield™ CA12/18/30..BP



Capacitive proximity sensors with Tripleshield™ technology and Teach-in button setup. Sensing ranges up to 8mm (M12), 12mm (M18) and 30mm (M30). 4 wire DC, NPN or PNP with NO and NC output. Connection via 2m cable or M12 plug. Humidity compensation, NPN/PNP auto-detection, remote set-up, alarm output. Optional with dirt and moisture compensation.

Chemical Resistant CA..LF/LN



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.

ATEX Zone Ø18 & Ø32



ATEX-approved Capacitive AC or DC proximity sensors (Tripleshield™). Sensing distances up to 12mm (Ø18) and up to 20mm (Ø32), 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 in ATEX Zones 20 or 22.

High Temperature ECH



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.

Relay Output CA..12M & VC



Capacitive level sensor for solid, fluid or granulated substances, in M30 PBTP threaded housing or smooth Ø32 thermoplastic housing (for PG36 screw gland). 21-265VAC/DC supply and 2A SPDT output. Adjustable sensing distance up to 12mm. Optional adjustable (ON or OFF) time delay.

Flat Pack EC55 & VC55



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.

Flat Pack CD46



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.

Flat Pack CD50



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.

Photoelectric Sensors

Carlo Gavazzi offers a wide range of photoelectric sensors which are used extensively in packaging machinery, automatic door systems, material handling and many other industrial applications. Available in diffuse reflective (with or without background suppression), retro-reflective (polarized and non-polarized) and through beam styles. Carlo Gavazzi photoelectric sensors are available in many physical configurations to accommodate a vast array of mounting and sensing requirements. Versions with IP69K and ECOLAB approvals are also available for harsh environments.

Carlo Gavazzi also offers a variety of powerful photoelectric sensor amplifiers, ideal for extremely wet, foggy, or dusty environments, such as car washes and wood processing applications.



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

M18 PA18 & E.18



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.

Versatile PH18



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.

Miniature, Basic PD30



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. Top or back potentiometer adjustment. Diffuse, retro-reflective, through-beam types. Polarization, APS CMOS array background suppression, and transparent object detection versions available.

Miniature, Advanced PD30



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 ease of set-up. Diffuse, retro-reflective, through-beam types. Polarization, background suppression, transparent object detection, and dust alarm versions available.

Laser Sensor LD32



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 PC50



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.

Sensor for Amplifier MOF



Powerful robust through-beam sensors for use with the S142 and S1430 amplifiers for optimized space/performance ratios. Sensing distances up to 50m and three different detection angles. Ideal for harsh environments containing water, dust etc.

Amplifier for Sensor S142



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

Multi Channel Amplifier S1430



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 Sensor MPF



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.

Photoelectric Sensors (continued)

Carlo Gavazzi photoelectric sensors are ideally suited for many diverse industries and applications, including the largest selection of UL 325 approved sensors for the automatic door and gate industry.

Fork sensors are available in various slot widths.

Clear object detection and color recognition sensors and an extensive range of fiber-optic sensors are also available. The fiber-optic sensors are ideal for applications where a conventional sensor cannot be used due to space limitations, high temperature, or atmospheric restrictions.



Doors and Gates PD98	Battery Powered PD180	Door Sensors PD86	Slimline PD70	Rectangular PM
				
Through beam AC/DC sensors in a durable polycarbonate housing. Designed for the domestic and industrial door markets. The sensing function 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 function can be verified through a sensor mute input. Lens adjustment 200 degrees horizontal and ± 30 degrees vertical.	Stylish IP66 plastic or metal alloy housing and versatile polarized retro-reflective sensor, developed for automatic door systems. Detects in one of three directions by adjusting the sensing angle within the housing. Up to 12m range, with 24VAC/DC supply voltage and relay output.	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 PE12, PB10 & PB18	Background Suppression PD112	Fork Sensor PF74 & PF80	Fiber Optic FA1, FUR & FUT	Clear Object & Contrast PD60CNG/K
				
Through beam DC-sensors specially designed for door and entrance control with sensing distance up to 1.5 m. The sensing functions can be validated through a sensor mute input. NPN or PNP, NO or NC outputs.	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.	Fork sensors with various slot widths. Narrow 3mm slot width (PF80) is ideal for label detection, and wide 30mm slot width (PF74) is ideal for lift/elevator applications. 3 or 4 wire DC sensors in IP65 housings.	Compact FA1 fiber optic amplifier, with easy and flexible setup. Includes user-selectable sensitivity, response time, timer settings, and two 4-digit displays. A robust and complete range of fiber optic cables (FUR and FUT) supports a wide variety of applications.	PD60CNG retro reflective sensor for detecting clear objects such as glass, plastic film or bottles. PD60CNK fiber optic amplifier with specialized sensing unit for detecting changes in contrast in reflected light, which is ideal for the printing industry. Both types feature teach-in mode.

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



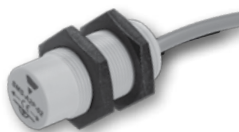
Miniature cylindrical magnetic sensor. Plastic housing material and 8mm or more operating distance. With NO output function. Twin lead cable output connection.

M8
FMM



M8 cylindrical proximity magnetic sensors in stainless steel housing. PVC cable with NO, and change over output function. Operating distance up to 27mm.

M10
FMA & FSA



M10 cylindrical proximity magnetic sensors in nickel plated brass housing. PVC cable with NO, and NC output function. Operating distance up to 23mm.

M12
FMC, FMP & FS



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.

Ø 13.5
FS



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



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.

Flat type
MC, MM & MS



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
SP



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
ILM/S & FSH/V



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 Switches
SMS



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.

Optical and Conductive Level Sensors

Carlo Gavazzi offers a variety of level sensing and control technologies and products to meet the needs of most level control applications.

Conductive level control uses the electrical conductivity of the liquid to detect and control the level of liquids, and is well suited for most level control applications. Conductive level control is found in diverse areas, including agricultural, chemical, food and beverage, water distribution and water treatment industries. Carlo Gavazzi conductive level control products include a variety of probes and controllers, for filling and emptying applications ranging from a simple single point to complex four-point control and cascading up to seven level controllers.

Optical level sensors are popular in food and beverage and chemical industries. They are also popular in applications where conductive level technology cannot be used, such as in acids, bases, solvents, or potentially explosive environments.



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

Optical - Plastic VP



Optical level sensors with built-in amplifier and modulated or unmodulated, infrared light. Polysulfone housing resistant to most acids and bases or polyamide 12 housing resistant to various solvents. ATEX version available.

Optical - Metal VPA



High end optical level sensors with modulated infrared light with built-in amplifier. Stainless steel or nickel-plated brass housings, with glass or polysulfone tip resistant to most acids and bases.

Conductive Probe VN/VT & VP



Level sensing probes to control filling and emptying of conductive liquids. Use with CLD Controllers. Includes up to four insulated or non-insulated electrodes 1 meter long, cut to length to suit the application. Housings available in nylon (VN), PVC (VPC), polypropylene (VPP), stainless steel (VS), and Teflon (VT).

Modular Probe CLH



Modular level sensing probes to control filling and emptying of conductive liquids. Use with CLD Controllers. Up to five insulated or non-insulated electrodes can be used, with virtually any length required by the user application. Kynar (PVDF) and polyolefine (IFR) electrode insulation available.

Hanging Probe A94 & VH



Conductive level sensing probes for liquid level detection. Hanging probe for single level point detection in i.e. swimming pools. Neoprene cable connections. The A94 has two probes in one part, separated by an insulating barrier constructed of the polyester housing material. Detection functions determined by the amplifier used.

1 Level Controller CLD1



Single point level controller (with adjustable ON or OFF time delay) for liquids with sensitivity range from 5KΩ to 150KΩ. 17.5mm wide housing mounts easily on DIN rail. For filling or emptying applications. Supply voltage of 24VAC/DC, with one 8A output and diagnostic LEDs.

2 Level Controller CLD2 & CLP2



Dual-point level controller for conductive liquids, which can control up to two levels of filling or emptying. Adjustment sensitivity from 250Ω to 500KΩ. DIN rail mount (CLD2) or 11-pin plug-in (CLP2). Supply voltage of 24VAC/DC, 115VAC or 230VAC. CLD2EBU is 240VAC/DC. Up to two 8A outputs and diagnostic LEDs.

4 Level Controller CLD4 & CLP4



Multi-point level controller for conductive liquids, which can control up to four levels of filling or emptying. Adjustment sensitivity from 250Ω to 500KΩ. DIN rail mount (CLD4) or 11-pin plug-in (CLP4). Supply voltage of 24VAC/DC, 115VAC or 230VAC. Two 8A outputs and diagnostic LEDs.

Cascading Controller CLP2



Cascade up to seven amplifiers for filling or emptying of up to two level points. Adjustment sensitivity from 250Ω to 500KΩ. Supply voltage of 24VAC/DC, 115VAC or 230VAC. 8A SPDT output and diagnostic LEDs. Easy installation into an 11 pin circular socket.

Ultrasonic, Motion and Presence Sensors

Carlo Gavazzi's ultrasonic sensors provide contactless distance measurement and object detection in tough applications. Because the technology is based on the reflection of sound, they are an ideal solution for detecting almost any type or color of material, even transparent objects. They provide superior performance, even where dust, steam, fumes and temperature variations are present. Both on/off switching and analog output versions are available for sensing distances up to 18 feet.

Carlo Gavazzi also carries a full line of motion and presence sensors, utilizing radar, digital video, and wireless technologies. These products are ideal for controlling all types of commercial and industrial automatic doors (e.g., sliding, swinging, folding, revolving, high-speed, overhead).



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



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

M12 UA12

Short-bodied M18 UA18

M18 UA18

M30 UA30

M30 Extended UA30



NEW



Multi-function M12 diffuse ultrasonic sensor in IP65 stainless steel housing. Sensing distance up to 200mm. One PNP or NPN switching output and setup of NO or NC via a remote teach function. M12 plug connection.

Short bodied multi-function M18 diffuse ultrasonic sensor in IP67 PBT plastic or stainless steel housing. Sensing distance up to 2.2m. Two transistor outputs, or one analog and transistor output. Standard switching, adjustable hysteresis or window modes via a simple pushbutton set-up. 2m cable or M12 plug connection.

Multi-function M18 diffuse ultrasonic sensor in IP67 PBT plastic or stainless steel housing. Sensing distance up to 2.2m. Two transistor outputs, or one analog and transistor output. Standard switching, adjustable hysteresis or window modes via a simple pushbutton set-up. 2m cable or M12 plug connection.

Multi-function M30 diffuse ultrasonic sensor in IP67 PBT plastic or stainless steel housing. Sensing distance up to 3.5m. Two transistor outputs, or one analog and transistor output. Standard switching, adjustable hysteresis or window modes via a simple pushbutton set-up. 2m cable or M12 plug connection.

Multi-function M30 diffuse ultrasonic sensor in IP67 PBT plastic housing, with a Ø40 head that protrudes 20mm. Sensing distance up to 6m. Two transistor outputs, or one analog and transistor output. Standard switching, adjustable hysteresis or window modes via a simple pushbutton set-up. 2m cable or M12 plug connection.

Radar RAD

Industrial Radar IRS

Accessories RAD RC & IRS RC

Motion & Presence Guardian

Wireless Safety WSM



Bidirectional and unidirectional 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.

Infrared 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.

Environmental Sensors

Carlo Gavazzi environmental sensors are used to detect and measure a variety of outdoor and indoor environmental parameters, including air speed, temperature, brightness, precipitation, solar irradiance, relative humidity, and carbon dioxide (CO₂).

Outdoor environmental sensors, including anemometers and wind vanes, are ideal solutions for use with wind turbines, cranes, large doors, weather stations and greenhouses.

Indoor environmental sensors are commonly used in systems that optimize air quality in offices, hotels, food storage rooms, museums and other indoor locations.



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

Anemometer **DWS-V**



Cup anemometer with optoelectronic detection for measuring air speed. Built-in heater and dust sealing. Inputs and outputs protected against reverse polarity and transients.

Wind Vane **DWS-D**



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.

Weather Station **SHOWEAGPS**



Weather station for measurement of temperature, wind speed, brightness and precipitation. Ranges of: -40° to 80°C (-40° to 176°F), 0 to 35 m/s (0 to 67 mph) and 0 to 100 kilo lux. Rain sensor also included. Integrated GPS receiver with Modbus RS485 protocol.

Solar Irradiance **PVS1**



Silicon irradiation sensors measure the energy of the sun per square meter, up to 1250W/m². It is based upon photovoltaic technology, constructed with a solid aluminum case and anti-UV encapsulating resin. It then provides a low level voltage or current output proportional to the sun's irradiation.

Pyranometer **PVS2**



Global solar irradiation sensor based on a thermopile transducer, which is compliant with WMO (World Meteorological Organization) standards for environmental monitoring. Worldwide calibration certified. Solar irradiance up to 2000W/m². It provides a 4-20mA output proportional to the sun's irradiation.

RH & Temperature **CGESHTD**



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.

RH & Temperature **CGESHTW**



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.

Air Velocity **CGESAIRVEL**



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.

CO₂ **CGESCO2W**



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.

CO₂ **CGESCO2D**



The CO₂ sensing element uses NDIR (non-dispersive infrared technology). Measuring ranges of 0-2,000 and 0-5,000 ppm correspond to an analog output of 0-10 V or 4-20mA.

Sensor Accessories

Carlo Gavazzi offers a variety of high quality accessories to support our wide range of sensors. PVC and PUR cordsets are available in various lengths and configurations, with IP67, IP69K, and ECOLAB ratings. Sensor testers provide a perfect installation and troubleshooting tool. A wide variety of reflectors for retro-reflective sensors, and mounting brackets of all shapes and sizes are available.



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

DC Cordsets, PVC **CONM1**



IP67 PVC cordsets, available with straight or right angle M12 connector. Available with 3, 4 or 5 pin/wire connection for DC sensors. Available in 2m, 5m or 10m cable lengths. Some types available with LEDs.

DC Cordsets, PUR/PVC **CONM1..P**



IP67 PUR/PVC cordsets are similar to the PVC cordsets, but provide better flexibility and resistance to abrasion, chemicals, oils and other lubricants. For connection of DC sensors. Available with straight or right angle M12 connector, 3 or 4 pin/wire, and 2m or 5m cable lengths.

DC Cordsets, IP69K **CONB1**



IP69K cordsets with ECOLAB and UL certification. Resistant to chemicals and cleaning agents, making them ideal for the food and beverage industry. For connection of DC sensors up to 90°C (194°F). Available with straight or right angle M12 connector, 4 pin/wire, and 2m or 5m cable lengths.

AC Cordsets **CONM6**



IP67 PVC cordsets, available with straight or right angle M12 connector. Available with 3 pin/wire connection for AC sensors. Available in 2m or 5m cable lengths.

M8 Cordsets **CONM5**



IP67 PVC cordsets, available with straight or right angle M8 connector. Available with 3 or 4 pin/wire connection for DC sensors. Available in 2m, 5m or 10m cable lengths. LED types offered for PNP sensors.

M12 IP67 Terminals **CONM14NFA-A/S**



IP67 terminal for hardwiring, available as a straight or right angle M12 connector. Available with 4 pin/terminal connections for DC sensors.

Sensor Tester **ST-03**



Compact sensor tester powered by two standard 9VDC batteries (included). For all 2, 3 or 4 wire DC sensors with NPN/PNP, NO/NC or NAMUR output. Diagnostic LED and buzzer.

Reflectors **ER**



A comprehensive range of reflectors and reflective tape for use with photoelectric sensors. Reflectors can be screw mounted or are provided with an adhesive backing. ER681 is a heated reflector, ideal for cold installations.

Mounting Brackets **AMB**



Galvanized or stainless steel mounting brackets for M8, M12, M18 or M30 sensors.

Universal Bracket **AMB4-30**



Universal mounting bracket for all cylindrical sensors with Ø4 to Ø30 mm. The mounting adaptor is supplied complete with 2 mounting heads (Ø18 and Ø30 mm) and 5 adaptor bushings (Ø4, Ø5, Ø8, Ø12 and Ø14 mm).

This image shows a full page of white paper with horizontal blue lines, resembling notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

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.GavazziOnline.com/SSRs

PCB Mounting **RP1A/D**



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 respectively. The RMP1P is an optional DIN rail mounted socket.

Zero/Instant-on Switching **RF1A & RF1B**



Compact chassis mount relay requires 30% of the space that a standard hockey puck relay needs. They feature fast-on tabs and a pre-attached thermal interface, which ensure quick installation. These SSRs are ideal for small resistive, inductive or capacitive loads, up to 25AAC, for up to 280VAC.

Zero/Instant-on Switching **RM1A & RM1B**



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 to 660VAC.

2-Pole Zero Switching **RA2A**



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.

System Monitoring **RA...S**



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**



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.

DC Switching **RD**



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.

Analog Switching **RM1E**



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.

3-Phase Zero Switching **RZ3A**



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 **RHS**



Heat sinks are a necessary accessory for any chassis mount relay where more than 5 amps are being switched. Available for DIN rail, panel and through-the-wall mounting of one to multiple SSRs, the product offering dissipates from 4.0 to 0.12°C/W. Optional cooling fans are also offered.

Solid State Relays/Contactors

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 **RGS1A & RGS**



Slim panel mountable solid state relays, only 17.5mm wide. Nominal current ratings include 25, 50, 75 and 90AAC with proper heat sink. SSR and contactor terminal layouts available. Narrow width and larger output terminals make it ideal compared to standard chassis mount (hockey puck) SSRs.

DC Switching **RGC1D & RGS1D**



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 ampere ratings up to 1,000VDC.

Zero/Instant-on Switching **RGC**



Mini size **RGC** solid state relays and contactors with integrated heat sink maximize 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.

Zero/Instant-on Switching **RGC**



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.

Zero/Instant-on Switching **RGC**



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 **RGC2A & RGC3A**



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.

Integrated Fusing **RGC1F**



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.

System Monitoring **RGS1S & RGC1S**



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 temperature. Product is available in versions without heat sink (**RGS1S**) or with heat sink (**RGC1S**). Available current range is up to 85AAC at 40°C.

1-Phase Proportional **RGC1P**



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: Maximum current range is 63AAC, controlled by 4-20mA, 0-5, 1-5 or 0-10VDC.

3-Phase Proportional **RGC2P & RGC3P**



SSRs, which provide proportional output control. This microprocessor controlled device offers six switching modes phase angle, distributed (1,4 or 16 cycle bursts) or soft start (followed by a 16 cycle burst). Max. current range is up to 75A (**RGC2P**) and 65A (**RGC3P**), controlled by one of several analog signals.

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 GDP	Enclosed Starters CGP	Accessories for Contactors & Manual Motor Starters
------------------------------------	-------------------------------------	---	---------------------------------	--



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.



Costeffective range of contactors offered in single, single-shunt and two pole normally open contact arrangements for 25-40AAC maximum AC3 ratings with screw load terminals standard and in three pole from 25-90AAC with lug load terminals standard. Multiple 0.25" fastons are also standard for control and load terminals.



Enclosed starters housed in NEMA 4 metallic enclosures. Available for both single and three phase motors up to 600V/600Hp and featuring a compact, space saving design. Available options include a broad range of control and pilot light layouts, integrated control transformer and both fused and non-fused disconnects.



Side and top mount auxiliary contacts for contactors and manual motor starters. Bridges connect the contactors to manual motor starters to form a monolithic motor starter. Rotary handles, plastic enclosures and busbars for manual motor starters. Coil surge absorbing units. Mechanical interlocks and wiring links simplify wiring of reversing starters.

Switches

Circuit and Motor Protection Devices

The circuit breaker plays an important role in providing short circuit, overload and disconnect protection in electrical systems. Carlo Gavazzi offers an extended range of UL489 miniature circuit breakers, UL 508 manual motor controllers and UL1077 supplementary protectors that are suitable for most over-current protection applications.

Our surge protection devices feature products for protection against any type of overvoltage: TOVs, switching over-voltages, direct and indirect lightning strikes. They are designed to protect high voltage DC lines, single or three phase AC lines, serial communication lines and devices, as well as the Carlo Gavazzi Dupline® devices.

The DMPU Series is an advanced motor protection and control unit suitable for AC induction motors. Due to its modular design, customers have much more flexibility to adapt the unit to their specific needs. This solution is especially effective for motors located in very sensitive positions and applications where any failure of the plant would be very costly, such as mining, water treatment, oil, gas and power stations.



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



UL 489 MCB GMB



NEW

UL 489 miniature circuit breakers provide reliable protection in wide range of applications including branch circuit protection of HVACR equipment, power supplies, motors, receptacles and other equipment. 1, 2 and 3 pole arrangements are available, ranging from 0.5A to 63A and has short circuit interrupt capacity of 10kA.

UL 1077 SP GSB



NEW

UL 1077 supplementary protectors offer overcurrent protection for specific applications where branch circuit protection is already provided by another device or is not required. Product is available in 1, 2, 3 and 4-pole variations, ranging from 1 to 63Amps and has a short circuit rating of 5kA.

UL 508 MMS GMS



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.

AC Surge Arrestors DSF A/P



Protect single and three-phase installations (<550VAC) from transient over-voltage, indirect atmospheric discharge and switching with this Type 2, Class C, surge protection device. The **DSF** is for AC systems and is UL1449 3rd Edition approved. No backup fusing is required below 200kArms.

DC Surge Arrestors DSF D



Protect the investment in solar PV installations (<1200VDC) from transient over-voltage, indirect atmospheric discharge and switching with this Type 2, Class C, surge protection device. The **DSF.D** is for DC systems and is UL1449 3rd Edition approved. No backup fusing is required below 200kArms.

Motor Protection Unit DMPUC PRB/MBT



Main DMPU unit provided with Modbus RTU and Profibus DPV1 (**DMPUC-PRB**) or Modbus RTU and Modbus TCP/IP (**DMPUC-MBT**) interfaces. Both types offer protection functions, data loggers and three digital inputs.

Measurement Unit DMPUC 05/65



5A or 65A unit to be connected to the **DMPUC-MBT** or **PRB** for voltage and current measurements, which features two relay outputs. **DMPUC05**: 3-phase split core current measurement for easy installation. **DMPUC65**: 12mm through holes for current measurement.

I/O Units DMPUC-R2



Adds two additional digital or temperature inputs and two relay outputs to the **DMPUC**, by plugging it into the **DMPUC-PRB** or **MBT**. The system can reach up to 23 inputs and 22 outputs.

Earth Leakage Units DMPUC-EL



Performs earth leakage current measurement using **CTG** core balance transformer (not shown). It plugs into the **DMPUC-MBT** or **PRB**, and provides three digital inputs.

Accessories



DMPUC-CC bus extension unit, **DMPUC-CPC** RS485 programming cable and **DMPUC-CPAN** RS485 cable for front panel connection. Also offered, but not shown are operator interfaces and touchscreen interfaces for use with the **DMPUC** Series.

Solid State Motor Controllers and Drives

Carlo Gavazzi offers a range of solid state motor controllers for starting and stopping of three phase general purpose squirrel cage motors and starters dedicated to control of single and three phase scroll compressors and three phase pumps.

Applications for general purpose soft starters include conveyor systems, industrial driers, automatic doors, palletizers and fans. Applications for compressor soft starters include heat pumps, chillers and roof tops units. Pump soft starters are designed to control centrifugal pumps.

General purpose soft starters come with standard ramp-up/down and kick start controls, while compressor soft starters do not require any user adjustments. Pump starters offer a mix of user adjustable dials and sophisticated self-learning algorithm that assure optimized pump start.

Variable Frequency Drives offer cost effective solution for motor applications where speed control is required. Drives can be controlled by discrete and analog inputs or communication options such as Modbus, Profibus, DeviceNet, TCP/IP or CANopen.



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



1-Phase Compressors **RSBS**



Compact single phase scroll compressor soft starter with integrated start capacitor. **RSBS** is available in standard 25A and High Pressure 32A sizes. High Pressure version provides a dynamic current limiting that ensures compressor starting even at higher starting pressures with maximum current limit of 80AAC.

3-Phase Compressors **RSBD & RSBT**



2 and 3 phase, easy to use soft starters for scroll compressors up to 45AAC (**RSBD**) and 32AAC (**RSBT**). Equipped with a patent pending auto-adaptive algorithm that automatically adapts itself to each specific compressor, assuring that an optimum inrush current reduction is achieved. Internally bypassed for optimized heat dissipation.

3-Phase Compressors **RSBT & RSBD**



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.

3-Phase General Purpose **RSGD**



3-phase soft starter for AC induction motors utilizing 2-pole switching with bypassing of semiconductors for reduced heat dissipation. Through its micro-controlled based algorithm, the **RSGD** achieves an exceptional inrush current reduction. Operational current ranges from 12 to 45AAC, all in a compact 45mm wide package.

3-Phase General Purpose **RSHR**



Compact digital AC semiconductor motor controller for 3-phase general purpose squirrel cage motors. Rated for motor up to 30Hp when wired inside delta or 20Hp when in wired in line. This device does not include internal bypass relays but provides a relay contact to help energize an external bypass contactor

3-Phase Pumps **RSWT**



3-phase controlled soft starter for centrifugal pumps. Three frame sizes are available with amperage rating ranging from 12 to 90AAC. The **RSWT** has a number of diagnostic functions including phase-sequence, over and under voltage and SCR short circuit. Built-in Class 10 overload is an option on all three frame sizes.

Solid State Contactors **REC2B & REC2R**



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.

Reversing Relays **RR2A**



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.

230V 1-Phase VFD **RVLf**



Simple and compact AC variable speed drive for use with 1-phase, 230VAC induction motors. Two frame sizes are available with motor rating ranging from 0.25 to 3Hp. RS485 Modbus communication is standard with options for Profibus, DeviceNet, EtherNet/IP and CANopen.

480V 3-Phase VFD **RVLf**



Simple and compact AC variable speed drive for use with 3-phase, 480VAC induction motors. One frame size is available with motor rating ranging from 1 to 3Hp. RS485 Modbus communication is standard with options for Profibus, DeviceNet, EtherNet/IP and CANopen.

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



2 and 3 pole relays for a wide range of industrial applications. Available in 8 or 11 pin versions. Up to 10AAC output contacts.

Midi Industrial RMI 2-10/4-5



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.

Midi Industrial RPY 1/2/3/4



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.

Power 1 & 2 Pole CF & CS



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.

Power 1 & 2 Pole NA, NF & NP



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 for **RCP** relays, rated voltage / rated current 10 A at 400 VAC. Terminal type: screw cage

Sockets ZMI



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

Sockets ZPY



Sockets for **RPY** relays, rated voltage / rated current 10 A at 300 VAC. Terminal type: screw cage

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 for 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.GavazziOnline.com/LimitSwitches

Limit Switches **PS21L**



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.

Limit Switches **PS31L**



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.

Limit Switches **PS42L**



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.

Limit Switches **PS43L**



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.

Pre-Wired Switches **PS21M**



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**



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 Switches Manual Reset



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.

Safety Switches Cable Pull



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 Switches Door Interlock



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 Switches Hinge Switch



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 to 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



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.

Emergency Stop PB



RED emergency STOP pushbutton switches. Twist-to-release function. 40mm and 60mm button size options. 22mm hole size.

Selector Switches PB



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 Buttons PB



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.

Push Button Boxes PBBOX & EMPB



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



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.

Low/Teeth Lens 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 a low profile lens or lens with aesthetically stylish notched out teeth. Compact versions available for shallow panels.

Flash Light PL



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 PL



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.

Buzzer/Flashing PL



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.

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 is 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



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. 5A maximum monitoring (higher with a CT).

Current Relays DIC



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. 10V maximum monitoring; up to 500AAC (1 or 3-phase) with an **MI** or **MP** CT.

Voltage Relays DUA & DUB



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. 500VAC/DC maximum monitoring.

Voltage Relays DUC



Over+under, over+over or under+under voltage monitoring relays. 11-pin **PUC** plug-in types are also available. 500VAC/DC maximum monitoring.

3-Phase Relays DPA & DPB



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. 690VAC maximum monitoring.

3-Phase Relays DPC



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. 690VAC maximum monitoring.

Frequency Relays DFB



Over+under 50/60Hz frequency monitoring of its own power supply. 11-pin **PFB** plug-in types are also available.

Frequency Relays DFC



Over+under 50/60Hz frequency monitoring relay with individual outputs.

Power and Cosφ DWA



Over or under Cosφ monitoring relay for balanced 3-phase system. 11-pin **PWA** plug-in types are also available. 480VAC maximum monitoring, maximum current is determined by the primary of the **MI**, **MP** or 5A secondary CT.

Power and Cosφ DWB



TRMS AC active power and power factor monitoring relay for 3-phase balanced systems. 11-pin **PWB** plug-in types are also available. 480VAC maximum monitoring, maximum current is determined by the primary of the **MI**, **MP** or 5A secondary CT.

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**



3-phase monitoring relay 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. 690VAC maximum monitoring.

Temperature Relays **DTA**



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.

Alternating Relays **DLA**



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

Surge Arresters **DSF A/P**



Protect single and three-phase installations (<550VAC) from transient over-voltage, indirect atmospheric discharge and switching with this Type 2, Class C, surge protection device. The **DSF** is for AC systems and is UL1449 3rd Edition approved. No backup fusing is required below 200kArms.

Current + CT **DIA 53**



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**



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.

Current Transducers **E83 & A82**



Compact AC current metering transducer with 7 selectable primary ranges up to 50AAC and a 12mm 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.

Current Transformers **CTD**



Cable/Bus-bar type current transformer with DIN-rail/bus-bar and panel mounting facility. Rated maximum primary currents from 50 to 2,000AAC.

Current Transformers **CTD-S & SCT**



Split-core current transformer with bus-bar mounting facility. Rated maximum primary currents from 100 to 2,000AAC.

Current Sensors **ROG400**



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.

Power Supplies

Carlo Gavazzi power supplies, from 5 watts to 960 watts, are found wherever DC power is required, with a variety of output voltages from 5VDC to 48VDC.

SPD industrial power supplies, with 1-phase, 2-phase, and 3-phase input, can be cascaded in parallel to further extend the range. Most models are approved for Class I, Division II hazardous locations. The majority of power supplies up to 100 watts are UL1310 Class 2 certified.

At merely 2.2" deep, the SPM low profile power supplies are perfect for shallow panels and commercial installations.

For critical applications, redundancy modules, a complete line of UPS controllers and battery chargers are available. Compact SPPC enclosed power supplies are ideal for vending machines, commercial food ovens and warming equipment.



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

1-Phase SPD



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.

Bi-Phase SPD



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.

1 Phase Peak Load SPD



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%.

3-Phase SPD



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.

Low Profile SPM



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



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.

Enclosed Mini SPPC



Compact 25, 35, 50 and 75 watt enclosed power supplies, which feature universal AC/DC input, high efficiency, very low standby power consumption, and high MTBF. Output voltages are 5, 12, 15, 24, and 48VDC.

Enclosed Power SPPC



Small but powerful 150, 200, 240, 320, 480, 600 and 800W enclosed power supplies, which feature built-in fans with speed control, as well as active PFC. They also feature universal AC/DC input, high efficiency, very low standby power consumption, and high MTBF. Output voltages are 5, 12, 15, 24, 36 and 48VDC.

UPS Controller SPUB



A fully independent DC UPS unit with a unique energy management concept. The power for the load is managed independently from charging the battery, with priority given to the load. Continuous output is 5A, with up to 10A possible by utilizing power from the battery. Racks for DIN-rail mounting of batteries are also available.

Power Supply & UPS SPUC



Controller converts an existing, standard power supply into a fully functional UPS. 12VDC or 24VDC versions available, 30A output maximum. DIN rail mounted. Racks for DIN-rail mounting of batteries are also available.

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.GavazziOnline.com/Timers

Delay on Operate DAA, DBA & DBB



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**.

Recycler DCB



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 DAC



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**.

Multifunction DMB & DMC



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**.

Mini-E EAS, EBS & ECS



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



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**.

Multifunction HAA



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.

Digital Counters FKA, FSA & DMF



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.

Mechanical Counters EMCT



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.

Hour Meters FSA & E1HM4



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.

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 **EM10 & EM11**



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.

Energy Meter **EM210**



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 high speed RS-485 communication is available.

Energy Meters **EM24**



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

Multifunction Meters **WM12/14 DIN**



3-phase multifunction meter (**WM12**) and power analyzer (**WM14**), with built in programming keypad. DIN rail mounting. Red LED display. RS-485 port on request. Suitable to measure the main electrical variables.

Multifunction Meters **WM12/14 96**



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 **EM26**



3-phase energy analyzer with harmonic analysis capability, panel mounting, dual color back-lighted 8-DGT LCD display. Digital inputs/outputs and RS-485 port.

Power Analyzers **WM5**



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.

Power Analyzers **WM30**



3-phase smart power analyzer with built-in application configuration system and LCD data display. Plug and play modules. Ten digits total energy counting. Optional communication: Modbus-RTU, Modbus TCP/IP, BACnet MS/TP, BACnet/IP, EtherNet/IP, relay and analog outputs. Go Solar California eligible.

Power Analyzers **WM40**



3-phase smart power analyzer with built-in application configuration system and LCD data display. Plug and play modules. Ten digits total energy counting. Optional communication: Modbus-RTU, Modbus TCP/IP, BACnet MS/TP, BACnet/IP, EtherNet/IP, relay and analog outputs. Go Solar California eligible.

PV Control Solution **Eos Array**



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.

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**



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.

Power Transducers **PQT H**



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.

Logger / Webserver **VMUC-EM**



Combination of modules which core function is to collect electrical measurements from up to 32 energy meters and other environmental variables, store them and make them available to end user either via web page, email, SMS or data push.

Data Aggregator **VMU-Y**



This double-DIN module is used in applications where customers need to deploy more than 32 energy meters. **VMU-Y** acts as a data aggregator that collects data from up to 10 **VMUC-EM** systems (up to 320 energy meters). **VMU-Y** offers web page, email and SMS user interface.

Software **EM²**



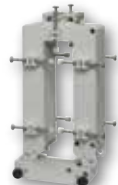
EM² Server software for managing large distributed energy meter installations. **EM²** pulls data from a local **VMUC** and energy meter installations, & stores it in a central database. Data can be accessed from the **EM² Server** via a web browser. Users can monitor and manage up to 100 **VMUC** installations (3,200 meters).

Current Transformers **CTD**



Cable/Bus-bar type current transformer with DIN-rail/bus-bar and panel mounting facility. Rated maximum primary currents from 50 to 4,000AAC.

Current Transformers **CTD-S, SCT**



Split-core current transformer with bus-bar mounting facility. Rated maximum primary currents from 100 to 3,200AAC.

Serial Converter **SIU PC3**



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.

Serial Converter **SIU TCP2**



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

Digital Panel Meters, HMIs 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 all types of process industries, as well as agriculture, plastics, food & beverage, packaging and other industries. The UDM front housing is rated IP67, NEMA12 and NEMA4X.

Carlo Gavazzi also offers a comprehensive range of HMI touch displays, available in plastic, aluminum and stainless steel for processing, food and beverage, pharmaceutical and other industries. Configuration software for CG Design Studio, OPC Server, Historical Viewer and Remote Viewer are free downloads.

Additionally, PID Controllers are offered for the plastics, packaging, processing and other industries.



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

Volt/Amp Indicators **DI3-72**



72x72mm 1-phase AC/DC voltmeter and ammeter with 3-digit red LED display for panel mounting.

Volt/Amp Indicators **LDM30**



1/8 DIN 1-phase AC volt-meter and ammeter with 3-digit red LED display for panel mounting.

Volt/Amp Controllers **LDM35 & LDM40**



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.

Modular Controllers **UDM35**



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.

Modular Controllers **UDM40**



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**



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.

Signal Conditioners **USC**



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.

Plastic HMIs **CGHMI 450/730**



Economical 4.3 and 7" IP65 plastic housings. 65,536 colors, 667 MHz processor, 128 MB ROM, 256 RAM, USB host, 2 serial ports, SD card slot and optional Ethernet port. **CGHMI450** (4.3"): 11-36VDC supply. **CGHMI730** (7"): 11-36VDC or 90-250VAC. WinCE 6.0 Core Platform.

Metal HMIs **CGHMI 750/1050/1550**



Durable 7, 10 and 15" IP65 aluminum housings, but optional in IP66K stainless steel. 65,536 colors, 1 GHz processor, 128 MB ROM, 256 RAM, USB host, 2 serial ports, SD card slot and up to two Ethernet ports. Optional sound and network cards. 11-36VDC supply, but optional 90-250VAC. WinCE 6.0 Core Platform.

PID Controllers **T2032 & T2016**



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 and Light Curtains

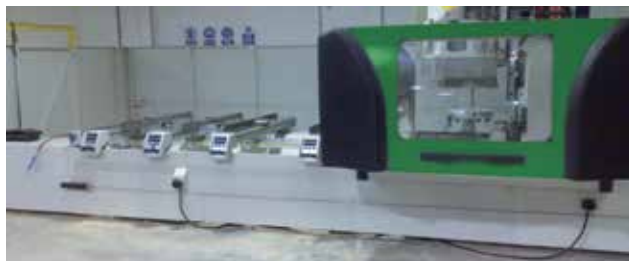
Carlo Gavazzi special purpose safety relay modules provide an internationally approved interface to specific safety related devices on a machine. Emergency Stop, Two-Hand Control, Safety Gate, Light Curtain, and Elevator Leveling modules are suitable for applications up to Safety Category 4.

For larger and more complex safety installations, Carlo Gavazzi's CERTUS safety system supports up to 128 inputs and 16 pairs of programmable solid state outputs in a compact modular system. CERTUS provides robust versatile safety logic, enabling more flexibility than standard safety relay modules. The optional CERTUS Bus Transfer module allows the CERTUS system to be interconnected with up to six different remote locations. The CERTUS Data and Diagnostic module supports communication of critical data on a variety of popular industrial communication networks.

The SC safety light curtains feature faster reaction times and very compact profiles. Available for Cat 2 and Cat 4 applications, Carlo Gavazzi SC light curtains are widely adopted for safeguarding presses, punching machines, benders and cutters, automatic packaging machines or assembling lines and palletizers.



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



Two-Hand Control **ND12D**



Special purpose safety relay module, designed for two-hand control in high risk applications, such as presses and punches. Provides up to Performance Level "e", and meets EN574 requirements up to Cat. IIIC.

Emergency Stop **NES**



Special purpose safety relay module, designed for Category 4 Emergency Stop applications. 2NO safety outputs (**NES02**), or 3NO safety + 1NC auxiliary (**NES13**). Automatic/manual version, and monitored manual reset version available.

Safety Gate **NSO & NSC**



Special purpose safety relay module, designed for safety gate and safety magnetic sensor applications. Meets EN60204-1, EN292-1/-2, EN418 and EN1088. Safety Category 4, Performance Level "e". Automatic/manual and monitored manual restart version available.

Light Curtain **NLG**



Special purpose safety relay module, designed to monitor safety light curtains with PNP or relay outputs, according to 98/37/EC Machinery Directive. Provides up to Safety Category 4, Performance Level "e". Automatic/manual and monitored manual restart versions available.

Elevator Leveling **NA12DLIFT**



Special purpose safety relay module, designed for elevator door unlocking and elevator cabin leveling control, according to Lift Directive 95/16/CE and to safety circuits requirements of EN81-1, -2, EN12015 and EN12016 Standards. Provides up to Safety Category 4.

Expansion Module **NE14D**



Zero delay safety relay expansion module provides a simple means to increase the number of safety outputs on the various safety relay modules. Meets EN60204-1, EN202/1 and EN202/2, EN418, EN1088 and EN954-1. Includes a NC feedback output to control the internal force guided relay integrity.

Safety Controller **CERTUS**



The CERTUS system consists of one CMM Master Control module and up to 14 Expansion I/O modules, providing up to 128 inputs and 16 output pairs. The **CBT** Bus Transfer module allows connection with up to six remote locations.

Data & Diagnostics **CERTUS**



The CERTUS Data and Diagnostic module supports communication of critical data on a variety of popular industrial communication networks, including Profibus DP, DeviceNet, CANopen, Ethernet IP, EtherCAT, PROFINET, and USB.

Speed Monitor **CERTUS**



The CERTUS Speed Monitor module provides monitoring and control of zero speed, maximum speed, speed range and direction. Up to 4 configurable speed thresholds for up to 2 outputs, for control of 2 independent axes.

Safety Light Curtain **SC**



Safety light curtains support Category 2 (**SC2**) and Category 4 (**SC4**) for presence control (90mm), hand protection (30mm), and finger protection (14mm). Ideal for industrial applications, in heights from 150mm to 1,650mm.

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 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

Channel Generator	Digital I/O	Analog I/O	Fieldbus Gateways	Repeaters
-------------------	-------------	------------	-------------------	-----------



Generates Dupline signal carrier. Up to 128 Dupline channels. The maximum number of channels is selectable (8, 16, 24, 32, 40, 48, 56, 64, 96 or 128), thus increasing the fieldbus reaction speed. AC or DC supply voltage and a 4-DIN housing.



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 housings for decentralized installations.



Input or output modules for 0-20mA, 4-20mA and 0-10VDC signals. Each device can handle four input or output signals. Output modules are offered in DIN-rail housings and input modules are available in various compact, bus-powered housings for decentralized installations.



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. Gateways also have an integrated channel generator, therefore a channel generator isn't required.



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

DuplineSafe Safety Receiver	DuplineSafe Input Transmitter	DuplineSafe Gateway / Repeater	DuplineSafe Optical Converter	Programming and Test Units
-----------------------------	-------------------------------	--------------------------------	-------------------------------	----------------------------



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



Completely bus-powered safety input has a voltage-free input and uses two Dupline channels for redundancy. Typically mounted by customers inside of a bulk cord or rope pull switch. Available in plug-in or pigtailed versions.



Passive gateway with safety mapping is DIN-rail mounted and reads and controls up to 128 inputs and outputs through Profibus-DP. Also offered is an isolated DuplineSafe repeater, for extending the transmission distance. These can be cascaded.



Optical repeaters allow part of the DuplineSafe system to run on multimode fiberoptics. Electrical to optical and optical to electrical devices.



The hand-held configuration unit for DuplineSafe 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 more compact programming and test unit is for Dupline Industrial.

Dupline® Parking Guidance (Carpark) System

Carlo Gavazzi's innovative parking technology is built upon our extremely flexible and durable Dupline® Fieldbus. This system has been successfully deployed in over 180,000 tough applications, in industries such as off-shore oil drilling, rock quarries, and even to control the elevators on NASA launch pads. Carlo Gavazzi brings two of its core competencies together, sensors and fieldbuses, to provide the most robust system available today to withstand the harsh environments of parking garages.

We offer 'single-space', 'count-by-level', and 'zone counting' solutions. Furthermore, Carlo Gavazzi makes the only parking guidance system that can be used for lighting and ventilation control over the same parking bus, which is easily integrated via BACnet for inclusion into larger building management systems with an enterprise wide strategy.



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

Parking Sensors	Dupline® and Carpark Modules	Master Zone Counter	Parking Software	Configuration and Test Unit
-----------------	------------------------------	---------------------	------------------	-----------------------------



Ultrasonic sensors used for car detection, feature high reliability and built-in LED illumination of available or occupied spaces (green/red). Accessible (handicap) spaces (blue/red) and 3-color versions which include amber as another color option for reserved spaces.



Channel Generator featuring an RS485 port with Modbus-RTU protocol. Programmable Carpark monitors for parking space counting with RS485 port for communication to displays. Allows totalizing of multiple carpark lanes or zones.



Programmable device for carpark zone counting. Drives Dupline 3-wire bus for count sensors. Can accommodate up to 3,840 parking spaces per Master Zone Counter.



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.



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.

Carpark Direction Displays	Carpark Numeric Direction Displays	Carpark Accessible (Handicap) Displays	Carpark Totalizing Displays	Carpark Monument Signs
----------------------------	------------------------------------	--	-----------------------------	------------------------



Carpark displays for guiding drivers to the nearest available parking space. Dynamic green direction arrow and red cross (meaning there is no parking spaces available). Available with accessible (handicap) symbol.



Carpark displays which show the available parking spaces and guide drivers to the nearest available parking space. Dynamic green direction arrow and red cross (meaning there is no parking spaces available).



Carpark displays which show the available parking spaces and guide drivers to the nearest available parking space. Dynamic green direction arrow and red cross (meaning there is no parking spaces available). Available with accessible (handicap) symbol.



Carpark totalizing displays with 8 or 9 alphanumeric characters. Display of available spaces on a floor or in the complete parking facility. RS485 communications for the parking facility owner to show the text of their choice.








Carlo Gavazzi has partnerships with reputable monument sign manufacturers and installer across North America. We have a reference guide of installed parking guidance jobs and pictures available upon request.





Dupline® Building Automation

Carlo Gavazzi's modular concept for home and building automation is based on a patented digital bus, the two-wire Dupline® and controlling and monitoring applications such as for lighting, roller blinds, heating, air-conditioning and alarms. This innovative system allows considerable savings in energy consumption, increasing comfort and safety. Operation, service and maintenance are simplified, with complete status overview anytime and anywhere. It can also be interfaced to any building automation system via BACnet/IP.



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

Master Controllers	Dupline Bus Generators	Wireless Bus Generators	DALI Bus Generators	Repeaters
				
BTL certified BACnet controller, converts Dupline and Energy Meter data points to BACnet/IP objects. Ethernet port, two RS485 ports (Modbus/TCP and Modbus-RTU). Also provides data transfer using USB or SD card.	Connection to Dupline Master Controllers via internal bus or terminals via the high speed bus. Up to seven Dupline Master Controllers can be connected to one Dupline Bus Generator. Maximum of 250 slave modules.	The same as the Dupline Bus Generator, except it's a wireless device. It is based on IEEE 802.15.4 @ 2.4 GHz.	DALI Master for communication from Dupline Building Automation to DALI ballasts. Integrated DALI power supply. Up to seven DALI masters on one Dupline network. Up to 64 lighting actuators on one DALI bus.	Extends the transmission distance by regenerating the carrier signal and providing 300mA bus output. Acts as an isolator between primary and secondary Dupline networks.

Digital Input Modules	Relay Output Modules	Dimmer Modules	Roller Blind Control Modules
			
Four digital inputs (NPN, PNP, dry contact). They can be configured as inputs or counters.	Four separate 5A SPST relay output module. Also available with four 16A bistable outputs with an energy measurement feature. Additionally, a four 10W solid state output modules is offered.	Universal dimmer for up to 500W for resistive, inductive and capacitive loads, as well as LED lamps. Also offered is an analog output dimmer for up to four adjustable ballasts controlled by 1-10V.	Relay output module for up and down control of up to two DC roller blind motors.

Dupline® Building Automation (continued)

The Dupline® bus can provide several advantages in building automation systems. The simplified wiring and high flexibility in using the bus-powered sensors and decentralized I/O modules can provide considerable installation cost reductions. Due to the cost-effective design of the SBWEB modules and associated I/O devices, this can be achieved by using materials with cost comparable to the traditional hardwired solutions. The issue is to interface Dupline® and Energy Meters to the building automation controllers and building management systems. With the new SBWEB BACnet gateway, all data points from Dupline® and Energy Meters are now automatically made available as BACnet objects, ready to be used by any building automation controller or BMS from the major suppliers.



Pulse Counter Modules	Decentral I/O Modules	Decentral Relay Module	Decentral Analog Inputs	Decentral Analog Outputs
-----------------------	-----------------------	------------------------	-------------------------	--------------------------



Compact bus-powered decentral pulse counter module with 4 SO class B inputs. Count values are stored in non-volatile memory, and can accrue up to 99,999,999.



Compact bus-powered decentral 4 or 8 I/O for pushbuttons or dry contacts.



Small bus-powered single relay output rated for up to 13A.



Bus powered input modules for measuring 2, 3 or 4 thermistor, resistor or voltage analog inputs. Different types of inputs: Pt1000, Ni1000, 10K3 thermistor, 1-11K Ω resistor, 0-10VDC or 4-20mA.



Output module providing up to two 0-10VDC outputs.

PIR Detectors and Luxmeters	Environmental Sensors with Display	Environmental Sensors with LED	Environmental Sensors	Touch Display
-----------------------------	------------------------------------	--------------------------------	-----------------------	---------------



Various types of bus powered PIR/luxmeters with 90° or 360° sensing angle patterns. Some are designed for indoor or both indoor/outdoor use. For wall or ceiling mount. Sensing range of up to 15m (49 feet).



Bus powered (indoor) room sensor with LCD numeric display for measurement of CO₂, temperature and relative humidity. For wall mounting.



Bus powered (indoor) room sensor with LED indicator for measurement of CO₂, temperature and relative humidity. The LED indicator is green, amber or red, to alarm of high CO₂ levels.



Bus powered (indoor) room sensor for measurement of CO₂, temperature and relative humidity. For wall mounting. This is a discrete looking device with no LCD numeric display or LED indication



4.3 and 7" color touch display specifically designed for the Dupline Building Automation system. BACnet, Modbus and KNX gateway with Ethernet connection.

GAVAZZI APP

CARLO GAVAZZI offers a free, information laden app for your Apple and Android mobile devices.

As we all strive to share knowledge in a more efficient method, this provides you with the ability to view or email brochures, data sheets or manuals from your 'smart device'. Users can also see the available inventory and pricing in seconds.



The Complete Product Package

Sensors

Inductive and Capacitive Sensors
Photoelectric Sensors
Ultrasonic Sensors
Wind Sensors
Radar Sensors
Motion/Presence Vision Sensors
Conductive Level Sensors
Magnetic Switches
Safety Interlocks and Light Curtains

Switches

Solid State Relays
Contactors and Overloads
Manual Motor Starters/Protectors
Circuit and Motor Protection
Soft Starters
Variable Frequency Drives
Hybrid Relays
Electromechanical Relays
Limit Switches
Push Buttons and Pilot Lights

Controls

Energy Management
Switching Power Supplies
Timers and Counters
Monitoring Controls and CTs
Human Machine Interfaces
Digital Panel Meters
PID Controllers
PV String Monitoring
Safety Control Modules
Solar Monitoring and Control

Fieldbuses

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

A Global Force in Industrial and Building Automation

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.

USA
CARLO GAVAZZI INC.
750 Hastings Lane
Buffalo Grove, IL 60089
Tel: 847.465.6100
Fax: 800.222.2659
Sales@CarloGavazzi.com

CANADA
CARLO GAVAZZI (CANADA) INC.
2660 Meadowvale Boulevard
Mississauga, ON L5N 6M6
Tel: 888.575.2275
Fax: 905.542.2248
Gavazzi@CarloGavazzi.com

MEXICO
CARLO GAVAZZI MEXICO S.A. de C.V.
Calle La Montaña no. 28, Fracc. Los Pastores
Naucalpan de Juárez, EDOMEX CP 53340
Tel & Fax: 55.5373.7042
MexicoSales@CarloGavazzi.com

Regional / Area Sales Office
District Sales Office

Argentina • Australia • Austria • Bahrain • Belgium • Bolivia • Bosnia • Brazil • Brunei • Bulgaria • Canada
Chile • China • Columbia • Croatia • Cyprus • Czech • Denmark • Dominican Republic • Egypt • Estonia
Finland • France • Germany • Greece • Hungary • Hong Kong • Iceland • India • Indonesia • Iran • Ireland
Italy • Japan • Jordan • Kenya • Korea • Kuwait • Lebanon • Malaysia • Malta • Morocco • Mauritius • Mexico
Netherlands • New Zealand • Norway • Pakistan • Papua New Guinea • Paraguay • Peru • Philippines
Poland • Portugal • Qatar • Romania • Russia • Saudi Arabia • Serbia • Singapore • Slovakia • Slovenia
South Africa • Spain • Sultanate of Oman • Sweden • Switzerland • Taiwan • Thailand • Tunisia • Turkey
Ukraine • United Arab Emirates • United Kingdom • Uruguay • United States • Venezuela • Vietnam • and many more countries

Your Authorized Distributor:

CARLO GAVAZZI
Automation Components

USA Tel: 847.465.6100 Fax: 800.222.2659

Canada Tel: 888.575.2275 Fax: 905.542.2248

Mexico Tel and Fax: 55.5373.7042

www.GavazziOnline.com • Info@CarloGavazzi.com

twitter.com/CarloGavazziNA facebook.com/CarloGavazziNA

CARLO GAVAZZI

Download our mobile app: **GAVAZZI APP**

