Solutions

Packaging Machinery
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Solutions for

ABOUT CARLO GAVAZZI

Carlo Gavazzi Automation is an international group active in designing, manufacturing and marketing electronic equipment targeted at the global markets of industrial and building automation.

Our history is full of firsts and our products are installed in a huge number of applications all over the world. With more than 80 years of successful operation, our experience is unparalleled.

We have our headquarters in Europe and numerous offices around the world.

Our R&D competence centres and production sites are located in Denmark, Italy, Lithuania, Malta and the People’s Republic of China.

We operate worldwide through 22 of our own sales companies and also selected representatives in more than 65 countries, from the United States in the West to the Pacific Rim in the East.

Our core competence in automation spans three product lines: Sensors, Switches and Controls.

Our wide array of products includes sensors, monitoring relays, timers, energy management systems, solid state relays, safety devices and fieldbus systems.

We focus our expertise on offering state-of-the-art product solutions in selected market segments.

Our customers include original equipment manufacturers of packaging machines, plastic-injection moulding machines, food and beverage production machines, conveying and materials handling equipment, door and entrance control systems, lifts and escalators, as well as heating, ventilation and air-conditioning devices.

Filling

Inspection

Wrapping and sealing

Labelling
DESIGNED TO MEET MARKET REQUIREMENTS

The growing markets in consumer goods and packaged pharmaceuticals drive the development of packaging equipment. Filling and sealing machines, also labelling and coding devices, are important to ensure product safety throughout the supply chain.

To meet these needs, the industry has gradually introduced more automation and more sophisticated electronic controls.

In today’s packaging production lines, the different stages are completed in minutes rather than in hours, as compared to years past.

In all types of packaging machinery - in all sectors of industry - each component must meet the strict requirements of the individual application.

This is to guarantee the continuity of production and the conformity of the packaged product to quality standards.

For many years, Carlo Gavazzi photoelectric, inductive and capacitive sensors have proven to be the best solution in applications for filling and checking.

In shrink wrapping applications, careful control of heating is essential for good results. Solid state relays are used to switch the heaters on and off in order to maintain the correct temperature.

The packaging industry also needs safety devices to guarantee the safety of the operators engaged in the work area, ensuring safe operation of the machines.

Carlo Gavazzi’s comprehensive safety range includes products that detect intrusions within the non-safe zones and shut down the machinery in a controlled manner via standard and/or configurable safety modules.

Carlo Gavazzi products all offer easy installation, high precision and long term reliability.
Carlo Gavazzi offers a complete range of automation components for the packaging industry. UA ultrasonic sensors are used in a bottling line to verify that the appropriate level of a product is in the container before it is sealed and shipped. Ultrasonic sensors are also used to measure the level of ingredients – either liquid or solid – in a container. The continual analog output signal allows for better control of the process. The levels of solid material, such as ground coffee, coffee beans or flour, are accurately detected using photoelectric sensors. The PA18/PH18 sensors come with a mounting bracket which allows fast mounting and space saving. Axial, radial and square versions are also available. An important benefit is that the conveyor can be cleaned much more easily.

For accurate control of the filling process, PD30 sensors provide an output signal when the product is at the appropriate fill level. The PD30E and LD30E stainless steel sensors are designed for wet as well as dry areas. The stainless steel housing and high-end plastic materials guarantee maximum resistance against IP69K and Ecolab cleaning processes. The IO-Link sensors allow easy exchanges of process data, remote configurations and events with simple and inexpensive 4-wire or 3-wire cabling, without the need to change the existing architecture. The IO-Link ICB series, available from M12 to M30, can be completely configured to enable new functionalities such as the divider and speed control functions.
Carlo Gavazzi products have many applications in the inspection-detection field. For bottling lines that have darker or less transparent bottles, PA18 through beam sensors can be used to detect the presence of the bottles. This family of products is from 40% to 60% smaller than existing housings.

The PD30 stainless steel (background suppression) sensors detect all colours on objects at the same distance from the sensor, and their durable design withstands daily cleaning processes. The specialised optics of the PD30CNG - combined with a reflector - are perfect for detecting clear bottles on a conveyor. In some confectionery applications, it is necessary to detect if a cake decoration is present or properly positioned. The PD30 diffuse sensor recognises the decoration on top of the cake.

The fiber optic amplifier FA1 and the series of fiber optic cables FUR & FUT offer even more flexibility for sensing. To verify that a bottle cap is present on the bottle a FA1 fiber optic amplifier with a fiber optic cable and lens are positioned above the bottles and programmed to detect the reflection from the bottle cap. Thanks to the IO-Link capacitive sensors advanced settings, it is possible to detect the presence and the content of packages. With two configurable switching signal channels, each IO-Link capacitive sensor works as two different sensors at the same time.

Once connected to the Y-series IO-Link Masters, all process, event, and service data will be accessible to the upper level control system via EtherNet/IP™, PROFINET IO and MODBUS TCP, increasing the visibility of the processes and providing continuous feedback on the machine status. The integrated OPC UA server allows simultaneously access to the data of the smart devices attached from cloud-based applications via OPC UA clients in the direction of IIoT and Internet 4.0 requirements.

The integrated multi-language web-server and IODD interpreter allow easy access to detailed diagnostics and configuration of the module and IO-Link devices from a web browser, even remotely.
Multiple bottles are often bundled together and shrink-wrapped. Carlo Gavazzi’s solid state relays allow fast switching of heaters that enable accurate control of the process temperature, thus maintaining an even shrink of the plastic wrap. The RG range offers a wide variety of solutions, starting from solid state switching of heaters to more intelligent solutions that integrate monitoring features that immediately detect load malfunctions (RGC1S). This ensures that the expected quality of the end-product or process is maintained. The NRG series adds a communication interface whereby measurement and diagnostic data can be accessed in real-time. Downtime of machines can be reduced or eliminated by using this accessible data to predict failures. In order to verify that the shrink-wrap has been added, a PD30CNG clear object sensor is positioned to focus on the level of the bottle necks. If the shrink-wrap is present, the clear object sensor will have a continuous output as the package passes by.

Diffuse reflective photoelectric sensors with long detecting distances (PD112) detect goods on a pallet to ensure that wrapping is stopped at the required height. In hot-melt heating systems the high temperature ECH sensors have proven their capability and reliability. Other applications include automatic continuous processes of thermoforming, filling and sealing. The RG range offers a wide variety of solutions, starting from solid state switching of heaters to more sophisticated solutions that, apart from the switching function, integrate monitoring features that are able to detect load and system malfunctions to guarantee a reliable thermal process.
Once a container is filled, the next step is to apply the appropriate label. A fiber optic amplifier FA1 is used to detect the presence of a mark on a bottleneck label, which confirms that the bottle is in the correct position for the main label to be applied. These sensors also detect the presence of security bands which are required on many bottles and containers. They recognise the difference between the security band and the bottle cap. The FA1 is compact and highly intuitive for easy setup. It is equipped with two 4-digit LED displays for clear and concise reading. An adjustable signal level, selectable response time and different timer functions provide full flexibility. Coupled with the robust and complete range of fiber optic cables FUR & FUT, this amplifier can be used in many applications. Detection of labels, marks and double sheets, as well as holes and edges, are typical applications for the PF80 fork sensor. Precise control of all labels is an important part of the packaging process. The surfaces of the labels are often reflective and the photoelectric proximity sensors provide the necessary sensitivity for maximum reliability.
Carlo Gavazzi’s safety devices are used to prevent access to dangerous areas, until the machines have completely stopped. For example, the configurable safety module offers up to 128 inputs and 16 pairs of programmable solid state outputs in a compact modular system, managing and monitoring safety sensors and commands such as: safety light curtains, photocells, emergency stops, two-hand controls, mechanical switches, laser scanners and safety mats at the same time. Protection of the operators from dangerous moving parts of the machine is ensured by using our SM or CM series safety module, able to monitor multiple safety functions of machinery.

With the configuration of the right delay time, by means of the hex-switch, and in combination with our electromagnetic safety interlock ESI, we can guarantee the safety of the operator, as the machinery remains operative for only a short time after the stop signal, due to mechanical inertia of the moving parts. Around the packaging machine photoelectric sensors (PD30, PA18 and PH18) are widely used to detect the position of the items to be packed and/or to detect the position of the carton box. When packaging products into a carton box, the boxes are stacked up unfolded on one side of the machine. Two photoelectric sensors are used:

- One to detect that there are enough unfolded carton boxes in the pipeline, the other to detect when an unfolded carton box is ready to be fed into the packaging machine. If this box is not present then the stack of unfolded carton boxes is pushed forward until the sensor detects the first box.
Safety devices and energy efficiency

Our safety magnetic sensors (SMS, CLS) are particularly designed for safety gates that allow entry to machines with dangerous movements. Carlo Gavazzi offers a vast array of products to improve energy efficiency and to ensure the monitoring of entire processes.

Energy management components provide vital information for operators to identify consumption trends and take appropriate action. The WM20 power analyzer, the EM210 energy analyzer or the ET340 energy transducer can monitor all the main parameters of an electric line or load.

Energy management components

<table>
<thead>
<tr>
<th>3-phase power analyzers</th>
<th>Energy analyzers / transducers</th>
<th>Monitoring relays</th>
<th>Switching supplies</th>
<th>DC UPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>WM20</td>
<td>EM210</td>
<td>DPA01/DPB01</td>
<td>SPD</td>
<td>SPUC</td>
</tr>
<tr>
<td></td>
<td>ET112</td>
<td>DIA/DIB/DTA</td>
<td>SPPC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ET340</td>
<td></td>
<td>SPM</td>
<td></td>
</tr>
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</table>

DPA01 monitoring relays monitor phase sequence and phase loss of motors: DPB01 also monitors mains over and under voltages. Overloads can be prevented with the DIA and DIB current relays whilst the DTA04 relays stop motors in case of overheating.

Carlo Gavazzi timers - available in four different housings (standard DIN-rail, Plug-in, 48x48 and MiniD) - provide correct and reliable solutions for every application.

The SPUC and the SPUBC modules guarantee power supply and electrical continuity in case of mains failure.
**Our product range**

### Inductive sensors with IO-Link

**ICB12..IO / ICB18..IO / ICB30..IO**
- Nickel-plated brass M12, M18 or M30 cylindrical threaded barrel housings
- Sensing distance from 4 mm to 22 mm
- Output functions: programmable NO or NC, NPN, PNP or push-pull
- 2 meter oil resistant PVC cable or M12 plug version
- Approvals/Marks: CE - cULus
- IO-Link v1.1

**MAIN FEATURES**
- Operating temperature: -25°C to +70°C (-13° to +158°F), and -40°C to +70°C (-40° to +158°F) for M12-plug version
- Adjustable sensing distance and hysteresis and configurable output
- Up to 2 kHz operating frequency

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### Capacitive sensors

**PBT, AISI316L or PTFE with IO-Link**

**LD30C..**
- Background Suppression based on ToF
- Infrared Class 1 Laser
- Selectable: NPN, PNP, Push-Pull, External Input, N.O. and N.C. output
- IO-Link 1.1 with timer, diagnostics and logic functions
- Approvals/Marks: CE - cULus

**MAIN FEATURES**
- Adjustment: back or top potentiometer
- IP67, NEMA type 1
- Diagnostics tools: Quality of Run & Quality of Teach, Alarms and transients

**LD30E..**
- Background Suppression based on ToF
- Infrared Class 1 Laser
- Selectable: NPN, PNP, Push-Pull, External Input, N.O. and N.C. output
- IO-Link 1.1 with timer, diagnostics and logic functions
- Approvals/Marks: CE - cULus - ECOLAB

**MAIN FEATURES**
- Adjustment: back or top potentiometer
- IP67, IP68, IP69K, NEMA type 1, 2, 4, 4x, 5, 6, 6P
- Diagnostics tools: Quality of Run & Quality of Teach, Alarms and transients

**SCTL55**
- Handheld device for IO-Link sensors
- 5.5” HD touch screen display
- Automatic IODD file download via Wi-Fi
- High capacity rechargeable battery
- MB 3-wire, MB 4-wire and M12 connectors
- Approvals/Marks: CE, FCC
- IO-Link v1.1

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

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### Photoelectric sensors

**ABS with IO-Link**

**CA18..IO / CA30..IO**
- Sensing distance: 0.5 - 12 mm (M18), 2 - 30 mm (M30)
- Selectable: NPN, PNP, Push-Pull, External Input, N.O. and N.C. output
- IO-Link 1.1 with timer, diagnostics and logic functions
- Approvals/Marks: CE - cULus - ECOLAB

**MAIN FEATURES**
- 4th Generation TRIPLESHIELD™ with superior EMC performance
- IP67, IP68 and IP69K
- Diagnostics tools: Quality of Run & Quality of Teach and Alarms

**YN115..IO / YL212..IO**
- DIN rail mount enclosure for control cabinet installation (YN) or fully encapsulated housing for machine mounting (YL)
- 8 ports configurable as standard DI, DO or IO-Link
- Additional digital input on every port
- EtherNet/IP™ or PROFINET IO, OPC UA
- Approvals/Marks: CE, cULus, FCC
- IO-Link v1.0 and v1.1, COM1, COM2 and COM3 support

**MAIN FEATURES**
- Integrated multi-language web-server and IODD interpreter for remote configuration and diagnostics
- Simultaneous access to smart devices attached from cloud-based applications via OPC UA clients and from standard industrial machine control systems
- Pluggable push-in and screw terminal connectors for a quick and error-proof start-up (YN)
- Future-proof L-coded M12 power connector for higher current in more compact dimensions (YL)

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### Smart configurator for IO-Link sensors

**PNB, AISI316L or PTFE with IO-Link**

**LD30C..**
- Background Suppression based on ToF
- Infrared Class 1 Laser
- Selectable: NPN, PNP, Push-Pull, External Input, N.O. and N.C. output
- IO-Link 1.1 with timer, diagnostics and logic functions
- Approvals/Marks: CE - cULus

**MAIN FEATURES**
- Adjustment: back or top potentiometer
- IP67, NEMA type 1
- Diagnostics tools: Quality of Run & Quality of Teach, Alarms and transients

**LD30E..**
- Background Suppression based on ToF
- Infrared Class 1 Laser
- Selectable: NPN, PNP, Push-Pull, External Input, N.O. and N.C. output
- IO-Link 1.1 with timer, diagnostics and logic functions
- Approvals/Marks: CE - cULus - ECOLAB

**MAIN FEATURES**
- Adjustment: back or top potentiometer
- IP67, IP68, IP69K, NEMA type 1, 2, 4, 4x, 5, 6, 6P
- Diagnostics tools: Quality of Run & Quality of Teach, Alarms and transients

**SCTL55**
- Handheld device for IO-Link sensors
- 5.5” HD touch screen display
- Automatic IODD file download via Wi-Fi
- High capacity rechargeable battery
- MB 3-wire, MB 4-wire and M12 connectors
- Approvals/Marks: CE, FCC
- IO-Link v1.1

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

<table>
<thead>
<tr>
<th>Photoelectric sensors</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>PA18 / PH18</strong></td>
<td><strong>PD30C</strong></td>
<td><strong>PD30ET</strong></td>
</tr>
<tr>
<td>- Standard M18 cylindrical housing</td>
<td>- World standard housing style 10.8 x 30 x 20 mm</td>
<td>- World standard housing style 11 x 31.5 x 21 mm</td>
</tr>
<tr>
<td>- Power supply: 10 to 30 VDC</td>
<td>- Power supply: 10 to 30 VDC</td>
<td>- Supply voltage: DC 4-wire</td>
</tr>
<tr>
<td>- Separate models available for NPN or PNP outputs</td>
<td>- NPN or PNP transistor output</td>
<td>- Output: NPN/PNP NO+NC</td>
</tr>
<tr>
<td>- Range: 1 m (Axial), 0.8 m (Radial)</td>
<td>- Sensitivity adjustment by Teach-in or by potentiometer</td>
<td>- Sensor types: D, B, R, P and T</td>
</tr>
<tr>
<td>- Sensitivity adjustment by Teach-in or by potentiometer</td>
<td>- Approvals/Marks: CE - cULus (UL508, CSA C22.2)</td>
<td>- Connectivity: Cable or M8 connectors</td>
</tr>
<tr>
<td>- Approvals/Marks: CE - cULus - ECOLAB</td>
<td>- Approvals/Marks: CE - cULus (UL508, CSA C22.2) - ECOLAB</td>
<td>- Approvals/Marks: CE - UL - CSA</td>
</tr>
</tbody>
</table>

**MAIN FEATURES**

- Complying with the requirements of ECOLAB, IP67, IP69K
- Approved according to UL508
- Diagnostic LED indication (green and yellow LED)
- Short circuit, reverse polarity and overload protection

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<table>
<thead>
<tr>
<th>Photoelectric sensors</th>
<th>Photoelectric sensors</th>
<th>Fiber optic amplifiers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PC50</strong></td>
<td><strong>PD112</strong></td>
<td><strong>FA1</strong></td>
</tr>
<tr>
<td>- Dimensions: 17 x 50 x 50 mm</td>
<td>- Dimensions: 25 x 45 x 112 mm</td>
<td>- 2 x 4 digit LED display for signal and threshold level</td>
</tr>
<tr>
<td>- Sensing distance up to 20 m</td>
<td>- Long range background suppression (BGS) sensor</td>
<td>- Easy setup 3 way adjustment switch</td>
</tr>
<tr>
<td>- Modulated infrared light</td>
<td>- Power supply receiver: 10 to 30 VDC</td>
<td>- Selectable response time and timing delay functions</td>
</tr>
<tr>
<td>- Selectable make and break switching function</td>
<td>- NPN and PNP NO or NC output</td>
<td>- 100 mA NPN PNP NO NC Switching</td>
</tr>
<tr>
<td>- Cable and plug version</td>
<td>- Emitter with Mute Input for testing sensor’s functions</td>
<td>- Varieties of through beam and reflective fiber optic cable</td>
</tr>
<tr>
<td>- Approvals/Marks: CE - UL - CSA</td>
<td>- 2.5 m sensing distance</td>
<td>- Ø 0.25, 0.5 or 1.0 mm inner fiber diameter for different applications</td>
</tr>
</tbody>
</table>

**MAIN FEATURES**

- Adjustable sensitivity
- High EMC immunity
- Protection: reverse polarity, short circuit and transients

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**MAIN FEATURES**

- Light beam approved to Safety Category 2
- UL325, UL508, EN12445, EN12453, EN12978
- Long detection range of black objects

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**MAIN FEATURES**

- 2 x 4 digit LED display for signal and threshold level
- Easy setup 3 way adjustment switch
- Selectable response time and timing delay functions
- 100 mA NPN PNP NO NC Switching

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**MAIN FEATURES**

- Varieties of through beam and reflective fiber optic cable
- Ø 0.25, 0.5 or 1.0 mm inner fiber diameter for different applications
- Extra overmoulding on fiber units for better fiber curvature protection
**Packaging Machinery**

**Our product range**

<table>
<thead>
<tr>
<th>Ultrasonic sensors</th>
<th>Capacitive sensors</th>
<th>Capacitive level sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UA18 / UA30</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dimensions: M18, M30</td>
<td>• 4th generation TRIPLESHEILD™ technology</td>
<td>• Dimensions: M18 / M30</td>
</tr>
<tr>
<td>• Ultrasonic sensors with integrated amplifier providing a digital and/or analog output</td>
<td>• Dimensions: M18 / M30</td>
<td>• Plastic housing DC versions</td>
</tr>
<tr>
<td>• Housing material: plastic and stainless steel</td>
<td>• Sensing distance up to 30 mm</td>
<td>• Sensing distance up to 30 mm</td>
</tr>
<tr>
<td>• Sensing distance up to 6 mm</td>
<td>• Approvals/Marks: CE - cULus - ECOLAB</td>
<td>• Approvals/Marks: CE - cULus - ECOLAB</td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - CSA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MAIN FEATURES**

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

<table>
<thead>
<tr>
<th><strong>UA18 / UA30</strong></th>
<th><strong>CA18 / CA30</strong></th>
<th><strong>CD34CNF</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Dimensions: M18, M30</td>
<td>• Dimensions: M18 / M30</td>
<td>• Dimensions 8 x 16 x 34 mm</td>
</tr>
<tr>
<td>• Plastic housing DC versions</td>
<td>• Plastic housing DC versions</td>
<td>• Power supply: 10-30 DC</td>
</tr>
<tr>
<td>• Sensing distance up to 30 mm</td>
<td>• Sensing distance up to 30 mm</td>
<td>• Output: NPN / PNP / NO or NC</td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - ECOLAB</td>
<td>• Approvals/Marks: CE - cULus - ECOLAB</td>
<td>• Power supply from 208 to 480 VAC (+/- 15%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Connectivity: Cable or M8 4-pin Pigtail</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**MAIN FEATURES**

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

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**MAIN FEATURES**

- Detecting water-based liquids (up to 50 mS)
- Automatic adaption to tank wall thickness
- Eliminating influence from build-up or foam
- IP65, 66, 67, 68, 69 NEMA type 1, 2, 4, 4X, 5, 12
- Protection: reverse polarity, short circuit and transients

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**Capacitive sensors**

<table>
<thead>
<tr>
<th><strong>ECH</strong></th>
<th><strong>PF80</strong></th>
<th><strong>CLD / CLH</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sensor diameter: M30, teflon and stainless steel</td>
<td>• Dimensions: 12 x 37.5 x 80 mm. Slot width 3 mm</td>
<td>• 17.5 mm slim housing, 22.5 mm &amp; 35 mm housing available</td>
</tr>
<tr>
<td>• Adjustable sensing distance: 4 to 15 mm, factory set for 10 mm</td>
<td>• Teach-Trc: push button or by wire</td>
<td>• Multiple filling and emptying functions</td>
</tr>
<tr>
<td>• Output: transistor NPN or PNP, make &amp; break switching</td>
<td>• Rated operational voltage 10-30 VDC</td>
<td>• 24-240 VAC/DC (CLDZEB1B2U24) / 24 VDC, 115 VAC, 230 VAC</td>
</tr>
<tr>
<td>• Power supply: 10 to 40 VDC</td>
<td>• Aluminium housing</td>
<td>• Flexible modular probes up to 5 electrodes (CLH5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Extendable probes for longer length</td>
</tr>
</tbody>
</table>

**MAIN FEATURES**

- Provided with a separate teflon sensor head in M30 for temperatures within the range of -196°C to +180°C
- Protection: reverse polarity, short circuit, transients

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</tr>
</tbody>
</table>

**MAIN FEATURES**

- High speed detection
- Detection of transparent material
- Detection of labels, marks and double sheets

<table>
<thead>
<tr>
<th><strong>ECH</strong></th>
<th><strong>PF80</strong></th>
<th><strong>CLD / CLH</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sensor diameter: M30, teflon and stainless steel</td>
<td>• Dimensions: 12 x 37.5 x 80 mm. Slot width 3 mm</td>
<td>• 17.5 mm slim housing, 22.5 mm &amp; 35 mm housing available</td>
</tr>
<tr>
<td>• Adjustable sensing distance: 4 to 15 mm, factory set for 10 mm</td>
<td>• Teach-Trc: push button or by wire</td>
<td>• Multiple filling and emptying functions</td>
</tr>
<tr>
<td>• Output: transistor NPN or PNP, make &amp; break switching</td>
<td>• Rated operational voltage 10-30 VDC</td>
<td>• 24-240 VAC/DC (CLDZEB1B2U24) / 24 VDC, 115 VAC, 230 VAC</td>
</tr>
<tr>
<td>• Power supply: 10 to 40 VDC</td>
<td>• Aluminium housing</td>
<td>• Flexible modular probes up to 5 electrodes (CLH5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Extendable probes for longer length</td>
</tr>
</tbody>
</table>

**MAIN FEATURES**

- High speed detection
- Detection of transparent material
- Detection of labels, marks and double sheets

---

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

<table>
<thead>
<tr>
<th>Multifunction safety modules</th>
<th>Multifunction safety modules</th>
<th>Expansion safety module</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CM22D0A / CM40D0A / CM30D1A</strong></td>
<td><strong>SMS31</strong></td>
<td><strong>SME41</strong></td>
</tr>
<tr>
<td>• Compact dimension, 1 DIN, W x H x D: 18 x 90 x 63 mm.</td>
<td>• Dimensions 110.8 x 175 x 121, 1 mm DIN-rail housing</td>
<td>• Dimensions 110.8 x 175 x 121, 1 mm DIN-rail housing</td>
</tr>
<tr>
<td>• Safety solution for basic machines, equipment and production lines</td>
<td>• Auto, manual or monitored manual start</td>
<td>• Expansion relays module</td>
</tr>
<tr>
<td>• 4 LEDs on the front panel indicate the status and any errors during operation</td>
<td>• 3 NO safety relay outputs</td>
<td>• 4 NO safety relay outputs</td>
</tr>
<tr>
<td>• Up to 4 OSSD safety outputs</td>
<td>• 1 NC auxiliary relay output</td>
<td>• 1 NC auxiliary relay output</td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - TÜV</td>
<td>• Detachable screw terminals</td>
<td>• Detachable screw terminals</td>
</tr>
<tr>
<td><strong>MAIN FEATURES</strong></td>
<td><strong>MAIN FEATURES</strong></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td>• Selectable delay time</td>
<td>• Extension of safety relay outputs</td>
<td>• Extension of safety relay outputs</td>
</tr>
<tr>
<td>• Can be used in applications with: e-stop, e-gate, limit switch, non contact switch, safety light curtains, safety light beam and safety mat</td>
<td>• Safe monitoring of emergency stops, interlocks, safety magnetic and limit switches</td>
<td>• Safe monitoring of emergency stops, interlocks, safety magnetic and limit switches</td>
</tr>
<tr>
<td>• Cat.4, PL e (ISO 13849-1), SIL 3 (IEC 62061), SILcl 3 (IEC 61508)</td>
<td>• Front LED’s for safety channel diagnosis</td>
<td>• Front LED’s for safety channel diagnosis</td>
</tr>
<tr>
<td>• 2 OSSD auxiliary outputs</td>
<td>• PL e as per ISO EN 13849-1</td>
<td>• PL e as per ISO EN 13849-1</td>
</tr>
<tr>
<td><strong>CMM</strong></td>
<td><strong>C I/O</strong></td>
<td><strong>DDC + CBT</strong></td>
</tr>
<tr>
<td>• 4 non-safety test outputs for sensor monitoring</td>
<td>• Wide range of Input/Output, Input only or Output only (both OSSD and standard relay) expansion units to serve different application requirements</td>
<td>• DDC: Expansion unit for Diagnostics and Data Comm.:</td>
</tr>
<tr>
<td>• 2 non-safety programmable digital signal outputs</td>
<td>• Models offer a variety of non-safety Inputs/Outputs such as: inputs for Start/Restart interlock and EDM, test outputs</td>
<td>- C PFBUS - Profibus DP</td>
</tr>
<tr>
<td>• 2 non-safety inputs for Start / Restart interlock and EDM</td>
<td>• Approvals/Marks: CE - cULus - TÜV</td>
<td>- C DNET - DeviceNET</td>
</tr>
<tr>
<td>• LED with 5 configuration modifications</td>
<td>• Connection with other exp. units via rear bus</td>
<td>- C CAN - CANOpen</td>
</tr>
<tr>
<td>• Connection with other exp. units via rear bus</td>
<td>• Approvals/Marks: CE - cULus - TÜV</td>
<td>- C EIP - Ethernet IP</td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - TÜV</td>
<td><strong>MAIN FEATURES</strong></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td><strong>MAIN FEATURES</strong></td>
<td>• Bus Transfer: interface module allowing the connection of remote expansions via bus</td>
<td>• Bus Transfer: up to 100 m for each connection, Maximum 5 CBT expansions. Ideal solution for the interconnection of the safety functions of several machines in a production line</td>
</tr>
<tr>
<td>• Also usable as a stand-alone device, able to control any other expansion unit</td>
<td>• Models offer eight combinations: - 8 Inputs 2 Outputs; 12 Inputs 8 test Outputs - 8 Inputs, 16 Inputs, - 2 OSSD, 4 OSSD - 2 relay Outputs, 4 relay Outputs</td>
<td></td>
</tr>
<tr>
<td>• 8 safety digital inputs</td>
<td></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td>• 2 safety OSSD pairs (400 mA Output)</td>
<td></td>
<td>• Bus transfer: up to 100 m for each connection, Maximum 5 CBT expansions. Ideal solution for the interconnection of the safety functions of several machines in a production line</td>
</tr>
<tr>
<td>• Cat.4, PL e (ISO 13849-1), SIL 3 (IEC 62062), SILcl 3 (IEC 61508),</td>
<td></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td><strong>DDC + CBT</strong></td>
<td></td>
<td>• Bus Transfer Interface module allowing the connection of remote expansions via bus</td>
</tr>
<tr>
<td>• DDC: Expansion unit for Diagnostics and Data Comm.:</td>
<td></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td>- C PFBUS - Profibus DP</td>
<td>- DDC: allows communication with most common industrial fieldbus systems</td>
<td>• DDC: allows communication with most common industrial fieldbus systems</td>
</tr>
<tr>
<td>- C DNET - DeviceNET</td>
<td>• Approvals/Marks: CE - cULus - TÜV</td>
<td>• Approvals/Marks: CE - cULus - TÜV</td>
</tr>
<tr>
<td>- C CAN - CANOpen</td>
<td><strong>Data and diagnostic modules + bus transfer</strong></td>
<td><strong>Data and diagnostic modules + bus transfer</strong></td>
</tr>
<tr>
<td>- C EIP - Ethernet IP</td>
<td></td>
<td>• Bus Transfer: Interface module allowing the connection of remote expansions via bus</td>
</tr>
<tr>
<td>- C ECAT - EtherCAT</td>
<td></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td>- C PFNET - PROFINET</td>
<td></td>
<td>• Bus Transfer: Interface module allowing the connection of remote expansions via bus</td>
</tr>
<tr>
<td>- C DMNS - Universal Serial Bus</td>
<td></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td><strong>MAIN FEATURES</strong></td>
<td></td>
<td>• Bus Transfer: up to 100 m for each connection, Maximum 5 CBT expansions. Ideal solution for the interconnection of the safety functions of several machines in a production line</td>
</tr>
</tbody>
</table>

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

### Our product range

<table>
<thead>
<tr>
<th>Electromagnetic Safety Interlock</th>
<th>Safety magnetic sensors and units</th>
<th>Safety magnetic sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ESI</strong></td>
<td><strong>CLS / SMS</strong></td>
<td><strong>MC36CH / MC36CM</strong></td>
</tr>
<tr>
<td>Enhancing safety. Ideal for applications that require access to remain closed and locked until potential hazards have stopped or come to a predetermined safe state.</td>
<td>Protecting machines from production interruptions</td>
<td>Rectangular plastic housing: 36 x 26 x 13 mm</td>
</tr>
<tr>
<td>Protecting machines from production interruptions</td>
<td>Standards compliance. SIL 3 (EN 62061), PL e in accordance with EN ISO 13849-1, interlock type 2 in accordance with EN ISO 14119.</td>
<td>Assured switching distance (Sao) 5 mm</td>
</tr>
<tr>
<td>Approvals by IMQ - CE - cULus</td>
<td></td>
<td>Output functions: 2 NO or 1 NO + 1 NC</td>
</tr>
<tr>
<td><strong>MAIN FEATURES</strong></td>
<td><strong>MAIN FEATURES</strong></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td>Ensure protection in inertia’s machineries</td>
<td>Multiple flux coding</td>
<td>Up to Cat. 4, PL e in accordance with EN ISO 13849-1, with suitable safety module</td>
</tr>
<tr>
<td>Prevents entry into a dangerous area until the unlock signal</td>
<td>Several combinations of safety and auxiliary outputs available</td>
<td>Flexibility: left or right exit connection versions</td>
</tr>
<tr>
<td>With a manual unlock device for emergency</td>
<td>Operating temperature -25°C to +70°C</td>
<td>LED version available for all variants</td>
</tr>
<tr>
<td>Block controlled by solenoid</td>
<td>Long operating distance up to 20 mm</td>
<td>Suitable for applications where greater tolerances are required</td>
</tr>
</tbody>
</table>

### 1-phase solid state relays

<table>
<thead>
<tr>
<th>RM1.. / RAM1..</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions: 58.2 x 44.8 x 28.8 mm, panel mount</td>
</tr>
<tr>
<td>Rated operational voltage: up to 660 VAC</td>
</tr>
<tr>
<td>Rated operational current: 25, 50, 75, 100, 125 AAC</td>
</tr>
<tr>
<td>Control input ranges: 4-32 VDC, 20-280 VAC</td>
</tr>
<tr>
<td>Approvals/Marks: CE - EAC - cURus - CSA - CCC - VDE (RAM1)</td>
</tr>
</tbody>
</table>

**MAIN FEATURES**
- Zero cross or random switching
- Low noise emission - EN55011 class B conformance (RM1A..L)
- Integrated overvoltage protection (RM1)

### 1-phase solid state switches

<table>
<thead>
<tr>
<th>RGS1A.. / RGC1A..</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product width: 17.5 mm up to 70 mm, DIN or panel mount</td>
</tr>
<tr>
<td>Ratings: up to 660 VAC, 90 AAC, 18000 A's</td>
</tr>
<tr>
<td>Integrated output overvoltage protection</td>
</tr>
<tr>
<td>Control input ranges: 4-32 VDC, 20-275 VAC (24-190 VDC)</td>
</tr>
<tr>
<td>Approvals/Marks: CE - EAC - VDE - cULus (RGC) - cURus (RGS) - CSA (RGS) - GL (RGC up to 30 AAC)</td>
</tr>
</tbody>
</table>

**MAIN FEATURES**
- Integrated heatsink (RGC1..), without heatsink (RGS1..) |
- 100 kA short circuit current rating |
- Optional overtemperature protection

### 1-phase solid state switches with current monitoring

<table>
<thead>
<tr>
<th>RGS1S.. / RGC1S..</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product width: 22.5 mm up to 70 mm, DIN or panel mount</td>
</tr>
<tr>
<td>Ratings: up to 660 VAC, 90 AAC, 18000 A's</td>
</tr>
<tr>
<td>Integrated output overvoltage protection</td>
</tr>
<tr>
<td>Control input range: 4-32 VDC</td>
</tr>
<tr>
<td>Approvals/Marks: CE - EAC - cULus (RGC1S) - cURus (RGS1S) - CSA (RGS1S)</td>
</tr>
</tbody>
</table>

**MAIN FEATURES**
- Partial load failure detection (1/6) |
- Monitoring for SSR and load circuit malfunction |
- TEACH by local push button or remote signal
**Our product range**

<table>
<thead>
<tr>
<th>Solid state contactors</th>
<th>Digital solid state switches</th>
<th>General purpose soft starters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RGC3A... / RGC2A...</strong></td>
<td><strong>DPA01</strong></td>
<td><strong>DPB01</strong></td>
</tr>
<tr>
<td>3-phase; 2-pole (RGC2) or 3-pole (RGC3) switching</td>
<td>80 x 22.5 x 99.5 mm; DIN-rail housing</td>
<td>80 x 22.5 x 99.5 mm; DIN-rail housing</td>
</tr>
<tr>
<td>Monitoring for SSR and load circuit malfunction (RGC3, M)</td>
<td>Phase sequence and phase loss, regenerated voltage detection</td>
<td>Phase sequence and load; overvoltage and undervoltage detection + time delay</td>
</tr>
<tr>
<td>100 kA short circuit current rating</td>
<td>3-phase AC (own power supply)</td>
<td>3 phase connection; 3 phase + neutral connection</td>
</tr>
<tr>
<td><strong>NRG</strong></td>
<td><strong>MAIN FEATURES</strong></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td>Modbus RTU or PROFINET for NRG controller</td>
<td>ON/OFF, Distributed Full Cycle, Advanced Full Cycle or Burst switching mode</td>
<td>Easy to use and setup</td>
</tr>
<tr>
<td>Up to 32 solid-state switches with 1 NRG controller</td>
<td>Real-time measurement: current (A), voltage (V), power (W or VA), energy consumption (kWh) and running hours</td>
<td>Self-learning algorithm to adapt to different loads</td>
</tr>
<tr>
<td>Switching through communication interface</td>
<td>Predictivity of load failures by detection of load resistance changes</td>
<td>Auxiliary relays for top of ramp and alarms</td>
</tr>
<tr>
<td>Ratings: 1-phase, max. 660 VAC, up to 90 A</td>
<td>Immediate failure detection of load loss, SSR damage or operation out of set ranges</td>
<td></td>
</tr>
<tr>
<td><strong>RSGD</strong></td>
<td><strong>MAIN FEATURES</strong></td>
<td><strong>MAIN FEATURES</strong></td>
</tr>
<tr>
<td>Operational voltage range: 187-440 VAC, 187-660 VAC</td>
<td>Operational current range: 12 A AC up to 100 A</td>
<td>Compact dimensions, with ratings up to 11 kW</td>
</tr>
<tr>
<td>Operational current range: 12 A AC up to 100 A</td>
<td>Control voltage: 24 V/DC, 110-400 VAC</td>
<td>Inbuilt V/F and SLV control</td>
</tr>
<tr>
<td>Serial communication (Modbus 2-wire) (RSGD 75 mm models)</td>
<td>Serial communication (Modbus 2-wire)</td>
<td>Drive voltage ratings: 100-120 VAC; 200-240 VAC; 380-480 VAC</td>
</tr>
<tr>
<td>Approvals/Marks: CE, cULus - UR - CSA - CCC</td>
<td></td>
<td>Drive kW rating: - 0.4 kW - 11 kW (0.5 HP - 15 HP)</td>
</tr>
<tr>
<td>Approvals/Marks: CE, cULus - EAC - CCC</td>
<td>Approvals/Marks: CE, cULus - EAC - CCC</td>
<td>Approvals/Marks: CE - cULus - EAC - CCC</td>
</tr>
</tbody>
</table>

**Variable frequency drives**

**3-phase monitoring relays**

**3-phase monitoring relays**

**RVLF**

- Compact dimensions, with ratings up to 11 kW
- Inbuilt V/F and SLV control
- Drive voltage ratings: 100-120 VAC; 200-240 VAC; 380-480 VAC
- Drive kW rating: - 0.4 kW - 11 kW (0.5 HP - 15 HP)
- Approvals/Marks: CE - cULus

**DPA01**

- 80 x 22.5 x 99.5 mm; DIN-rail housing
- Phase sequence and phase loss, regenerated voltage detection
- 3-phase AC (own power supply)
- Variants from 208 to 690 VAC
- Approvals/Marks: CE - UL - CSA - CCC

**DPB01**

- 80 x 22.5 x 99.5 mm; DIN-rail housing
- Phase sequence and load; overvoltage and undervoltage detection + time delay
- 3 phase connection; 3 phase + neutral connection
- Power supply 208-480 VAC
- Approvals/Marks: CE - cULus - CCC

**Digital solid state switches**

**3-phase monitoring relays**

**3-phase monitoring relays**

**MAIN FEATURES**

- Ease of use with minimal settings
- Precision low speed control with SLV algorithms
- Inbuilt filters on most models to reduce harmonics disturbance

**MAIN FEATURES**

- Motors protection from reverse running and phase loss
- 2-relays output available for more flexibility
- No setup needed (plug&play)

**MAIN FEATURES**

- Complete mains monitoring in 3 or 4 wires systems
- Neutral loss protection
- Double-cage terminal for easier daisy-chain connections

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

### Motor thermistor relays
- **DTA04**
  - 80 x 22.5 x 99.5 mm; DIN-rail housing
  - 2 SPST 8A Relay Outputs
  - For motor protection with built-in PTC sensors
  - Power supply 24 V - 240 VAC/DC
  - Approvals/Marks: CE - cULus

### AC Current relays
- **DIA53**
  - 81 x 17.5 x 67.2 mm; DIN-rail housing with 12 mm hole for current measurement
  - Current monitoring relay with built-in current transformer
  - 20 A, 50 A or 100 A AC
  - Self powered
  - Approvals/Marks: CE - cULus - CSA

### Current monitoring relays
- **DIA /DIB**
  - 80 x 22.5 x 99.5 mm; DIN-rail housing
  - Over or under current relay
  - 1 phase AC or DC
  - Power supply from 24 to 48 VAC/DC or 115/230 VAC
  - Approvals/Marks: CE - UL - CSA

### MAIN FEATURES
- **DTA04**
  - Multicolour LED with alarm discrimination
  - Auto or manual, local or remote reset, test function

- **DIA53**
  - Only 2 wires connection
  - Adjustable current tripping setpoint
  - Integrated solid state NPN PNP output

- **DIA /DIB**
  - Detect any variation of the desired current level
  - Direct connection, by CT or by external shunt
  - Time delay to avoid undesired nuisance tripping (DIB)

### AC Current transformers
- **A82**
  - 95 x 67.5 x 20 mm; 27 mm hole for current measurement
  - 25 A to 500A AC inputs
  - Output 4-20 mA, 0-20 mA, 0-10V DC
  - Approvals/Marks: CE - UL

### 3-phase power analyzers
- **WM20**
  - 96 x 96 mm panel mounting housing
  - Accuracy 0.2% (voltage, current)
  - Class 0.5S (kWh)
  - Universal power supply
  - Front protection degree IP65, NEMA4X, NEMA12
  - Approvals/Marks: cULus

### Energy analyzers
- **EM210**
  - 3-phase energy meters with CT connection
  - Solid or split-core 5 A CT
  - Dimensions: 4 DIN modules or 72 x 72 mm housing
  - Class 1 (kWh) acc. to EN62053-1
  - Class B (kWh) acc. to EN50470-3
  - Pulse open collector or serial RS485 output

### MAIN FEATURES
- **A82**
  - Easy PLC interfacing
  - True RMS measurement
  - Load status information to the PLC

- **WM20**
  - Provides installation data to a SCADA to manage the whole system
  - Modular housing to build the instrument according to real application needs
  - Modbus, Ethernet, Profibus, BACnet (IP and MS/TP) communication ports

- **EM210**
  - Very compact and space saving meter
  - Can be installed both on DIN-rail or on the panel
  - MID annex D certification available
  - Approvals/Marks: CE - cULus

---

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

<table>
<thead>
<tr>
<th>1 and 3-phase energy transducers</th>
<th>Timers</th>
<th>DIN-rail switch mode power supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPUC / SPUBC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Power supply, UPS and battery charger “All in one”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 12 or 24 VDC 5 A output (up to 30 A SPUC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 2 DIN size; DIN-rail mounting (ET112)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 3 DIN size; DIN-rail mounting (ET340)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - cURus - UL1310 Class 2 (up to 90W) - ISA 12.12.1 Class I Div2 - TÜV - CCC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ET112 / ET340</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 2 DIN size; DIN-rail mounting (ET112)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 3 DIN size; DIN-rail mounting (ET340)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Measurement of voltage, current, power, power factor and frequency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Bi-directional energy metering, 2 tariffs, cl. 1 (EN62053-1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - cURus - UL1310 Class 2 (up to 90W) - ISA 12.12.1 Class I Div2 - TÜV - CCC</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DAA51 / DMB51</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• 81 x 17.5 x 67.2 mm; DIN-rail housing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Delay on operate function (DAA), multifunction (DMB)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Combined AC and DC power supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Repeatability: &lt; 0.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE, UL, CSA, RINA (DMB51)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SPD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Output power 5 W to 960 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Universal input range of 110-240 VAC or up to 370 VDC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Short Circuit, overload and overvoltage protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• PFC &gt; 100 W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - cURus - UL1310 Class 2 (up to 90W) - ISA 12.12.1 Class I Div2 - TÜV - CCC</td>
<td></td>
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<tr>
<td><strong>SPPC</strong></td>
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<tr>
<td>• Output power from 25 W to 800 W</td>
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<tr>
<td>• Input 110/240 VAC single phase</td>
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<tr>
<td>• Short circuit, overload and overvoltage protection</td>
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<tr>
<td>• PFC function available &gt;75 W</td>
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<tr>
<td>• Approvals/Marks: CE - cULus - cURus</td>
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<tr>
<td><strong>SPM</strong></td>
<td></td>
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<tr>
<td>• Compact DIN-rail housing - 1/3/4/5 Din width, and battery charger versions available</td>
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<tr>
<td>• Universal input from 90-264 VAC</td>
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<tr>
<td>• Integrated short circuit and overload protection with built-in input filters</td>
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<tr>
<td>• High efficiency of up to 89%</td>
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<tr>
<td>• Approvals/Marks: CE - cULus - cURus - UL1310 Class 2 (up to 91.2 W) - ISA 12.12.1 Class I Div2 - TÜV</td>
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<td></td>
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<tr>
<td><strong>SPUC / SPUBC</strong></td>
<td></td>
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<tr>
<td>• Power supply independent from charger (SPUBC), to be used in addition to 12 or 24V power supply (SPUC)</td>
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<tr>
<td>• Remote indication for battery operation and battery level</td>
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<tr>
<td>• “Start from battery” and “Empty battery charging” features (SPUBC)</td>
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<tr>
<td><strong>SPPC</strong></td>
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<td></td>
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<tr>
<td>• Adjustable output +/- 10%</td>
<td></td>
<td></td>
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<tr>
<td>• Compact dimensions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Wide operating temperature range up to 70°C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Our Sales Network in Europe

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**Malta**  
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Zejtun

**Italy**  
Carlo Gavazzi Controls SpA  
Belluno

**Lithuania**  
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