Agriculture

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 include sensors, monitoring relays, timers, energy management system, solid state relays, safety devices and fieldbus systems.

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

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

Tractors and agricultural machinery

Silos

Feed distribution systems

Irrigation
DESIGNED TO MEET MARKET REQUIREMENTS

Agricultural mechanization has brought major changes to agriculture and eased the burden on farm workers and advances in tractor technology have made tractors more versatile and suitable for a wider range of farming tasks.

Machinery for ploughing and cultivation have contributed to boosting production. For example special machinery is used to plant seeds and apply fertilizer through mulch at the correct depth and in irrigation, technologies such as micro sprinklers or drip irrigation, which save water and consume less power, are the environmentally friendly solutions for now and the future.

The global agricultural machinery industry also provides more support to smallholders and other farmers with equipment designs and models that suit their needs and those of service providers.

Carlo Gavazzi offers, among other things, a wide range of sensors to measure speed and rotational direction of wheels in farm tractors, harvesting machines etc.

Carlo Gavazzi’s capacitive sensors are widely used for level measurements of seed, fodder and liquids in silos and in animal feeding machinery and ultrasonic sensors are mainly used for level measurements of liquids (e.g. milking machinery).

Reliable irrigation systems are highly important for agricultural production. The well proven Dupline® fieldbus with its up-to-the-minute technology, has become known as an extremely user-friendly and flexible fieldbus able to transmit signals over long distances – features that make Dupline® ideal as a fieldbus for irrigation systems.

Finally – thanks to Carlo Gavazzi’s wide product range – most agricultural application challenges can be met by one supplier.
Agricultural machinery needs reliable and durable parts and components able to work long hours in difficult outdoor conditions, exposed to every kind of stress. Carlo Gavazzi offers a comprehensive range of components for most applications in agricultural and earth-moving vehicles, from passive magnetic pick up sensors (PA2PK) to inductive proximity sensors. The pick up sensors detect and measure the speed of phonic or toothed wheels and generally of any rotating device built-in a ferromagnetic material and provided with slots and cogs, for example in engines and in tractors.

Inductive sensors are used for non-contact measurements - for example to count revolutions of the axle in machinery or to monitor the bucket position in a backhoe loader. The IO-Link ICB inductive sensors allow easy exchange of process data, remote configurations and events with simple and inexpensive 3-wire cabling, without needing to change the existing architecture. The ICB series, available from M12 to M30, can be completely configured to enable new functionalities such as the divider and speed control functions.

Safety and positional mechanical switches in different versions and configurations are also available. Capacitive level sensors (CD34CNF series) mounted outside plastic tanks, can detect the level of water-based chemicals while ignoring foam, film or build-up.

Ultrasonic sensors (UA series) are also used to monitor sprayer heights in self-propelled row-crop sprayers. A particular application of ultrasonic sensors with analog output is the control of the driving direction of the wagon or a motorized chassis equipped with one or more fixed or mobile platforms, for example for harvesting fruit.
The CA18 and CA30 CAN/CAF sensors are excellent for accurate measurement of dry grain regardless of its degree of humidity. The sensor provides a stable and precise signal of yield per unit area. Knowing these areas makes it easy to adjust the amount of fertilizers and herbicides in exactly the right way. As a result, cost can be reduced and the environmental impact minimized.

The capacitive sensors EC30 (AC version) have a long sensing distance that allows easy detection of the grain.

The VC11/12 sensors are available in multivoltage power supplies with relay outputs and used in many agricultural applications.

The conductive level program by Carlo Gavazzi comprises of a complete range of intelligent conductive level controllers for liquids such as in slurry tanks (CL-series) and the CLH electrode probes (3 or 5 electrodes).

Various adjustment possibilities enable the controller to perform filling operations, emptying operations or a combination of the two.
Feeding distribution systems are critical to the quality and safety of farms with pig, poultry and dairy sectors. It is important to feed all the chickens at the same time and manual handling is eliminated. The distribution is controlled by sensors (capacitive, inductive, photoelectric), normally combined with solid state relays and soft starters. IO-Link sensors can be used to remotely change parameters in the sensor to adapt to different feeds. The capacitive level sensors with IO-link are suitable for this application as they provide easy diagnostic and setting, increasing up-time of the feeding systems. Thanks to their advanced settings it is possible to detect the type of feed, preventing faults that might occur when the feed supplier changes. The VC11/12 sensors are able to directly drive a contactor or a small motor. The LD30 sensor can be used to directly detect the cow or pig when it enters the feeding station. The LD30 and PD30 stainless steel sensors work perfectly even in the harshest environments. The high-quality stainless steel housing guarantees maximum mechanical resistance, and prescribed cleaning schedules are smoothly met without costly machine downtime. Ultrasonic sensors or capacitive sensors control the levels in the silos and monitor emptying to ensure the efficiency of the process. Carlo Gavazzi soft starters (RSGD) soft start and soft stop pumps, screw feeders, ventilators as well as chillers (RSBT). Temperature control in animal farms is optimised with the RGC1P proportional controller which, through an analog input, regulates the power of heating lamps. The RGC3P (in special version) is used for optimal speed control of ventilators in egg incubators.
Traditional irrigation systems are characterized by complex and expensive wiring. The Carlo Gavazzi Dupline® irrigation bus reduces installation costs and increases flexibility in agricultural irrigation systems, where the valves are usually distributed over a large area. Any type of irrigation controller, whether it is a PLC, PC or dedicated controller, can use Dupline® as a remote I/O system. The wiring topology is completely free, with no limitation to the number and length of branches. The Dupline® Fieldbus is the ideal system to control levels, monitor pumps and activate valves over a large area and from a distance.

The RSWT soft starter series is a 3-phase soft starter designed to limit the starting current and water hammering in centrifugal pumps. Minimal settings and a compact design facilitates the replacement of star-delta and mechanical contactors. The RSWT’s self learning algorithm ensures that the pump starts with optimal settings even under different load conditions. The HDMS is a single phase dynamic motor soft starter for borehole pumps. The innovative HDMS algorithm (patent pending) is designed to reduce the start current by 70% with respect to a direct on line start resulting in less disturbances to generators or weak voltage grids. With HDMS the start capacitor is no longer required as it generates sufficient starting torque through a unique algorithm using IGBTs.

The DEA71 and DEB71 protect electric installations against the risk of fire or electrocution due to current leaks. They are ideal for protection of pumps, submersible pumps and motors. They detect insulation and/or grounding failure via the external core balance current transformer (CTG), provide a warning signal at 60% and trip the MCB when the fault current exceeds the preset fault current.
# Agriculture

## Our product range

<table>
<thead>
<tr>
<th>Capacitive sensors PBT, AISI316L or PTFE with IO-Link</th>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CA18..IO / CA30..IO</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Sensing distance: 0.5 - 12 mm (M18), 2 - 30 mm (M30)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Selectable: NPN, PNP, Push-Pull, External Input, N.O. and N.C. output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• IO-Link 1.1 with timer, diagnostics and logic functions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - ECOLAB</td>
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</tr>
</tbody>
</table>

### MAIN FEATURES

- 4th Generation TRIPLESHIELD™ with superior EMC performance
- IP67, IP66 and IP69K
- Diagnostics tools: Quality of Run & Quality of Teach & Alarms
- Housing material: PBT, PTFE or Stainless Steel

<table>
<thead>
<tr>
<th>Capacitive sensors ATEX version</th>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CA18CAN/CAF CA30CAN/CAF</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dimensions: M18 / M30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Plastic housing, DC versions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Adjustable sensing distance up to 20 mm flush and 30 mm non-flush</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Protection: short circuit, transient and reverse polarity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Degree of protection: IP67, IP68 and IP69K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - Ecolab</td>
<td></td>
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</tr>
</tbody>
</table>

### MAIN FEATURES

- 4th-generation TRIPLESHIELD™ technology
- Dust and humidity compensation
- Dust and temperature alarm outputs
- Increased temperature stability
- Sensing face can withstand temperatures up to 120°C

<table>
<thead>
<tr>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CA30CLN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Level sensor for solid, fluid or granulated substances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dimensions: M30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Adjustable sensing distance: 4-12 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Thermoplastic polyester housing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Multi voltage supply 20.4 to 255 VAC/DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MAIN FEATURES

- Available with/without built-in time delay
- Dust and humidity compensation
- Rear side with integrated trimmer shaft
- Laser printing of main specifications on the sensor’s surface

<table>
<thead>
<tr>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VC11/12</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Capacitive level sensors for solid, liquid or granulated substances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dimensions: Ø32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Adjustable sensing distance: 4-12 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Multivoltage supply 20.4 to 255 VAC/DC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus</td>
<td></td>
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</tr>
</tbody>
</table>

### MAIN FEATURES

- New back-part with integrated trimmer shafts
- SPDT relay output
- Time delay on operate or release

<table>
<thead>
<tr>
<th>Capacitive sensors</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>CB32</strong></td>
<td></td>
</tr>
<tr>
<td>• TRIPLESHIELD™ sensor protection</td>
<td></td>
</tr>
<tr>
<td>• Adjustable sensing distance: 4-20 mm</td>
<td></td>
</tr>
<tr>
<td>• Dimensions: Ø32</td>
<td></td>
</tr>
<tr>
<td>• Capacitive level sensors for solid, fluid or granulated substances</td>
<td></td>
</tr>
<tr>
<td>• Protection: transients and reverse polarity</td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE</td>
<td></td>
</tr>
</tbody>
</table>

### MAIN FEATURES

- Approved acc. to ATEX directive for operation in potentially explosive dust
- Relay output
- With or without adjustable time delay

<table>
<thead>
<tr>
<th>Capacitive sensors</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>CA18CL</strong></td>
<td></td>
</tr>
<tr>
<td>• TRIPLESHIELD™ sensor protection</td>
<td></td>
</tr>
<tr>
<td>• Sensing distance: 0.5-12 mm (M18)</td>
<td></td>
</tr>
<tr>
<td>• Plastic housing, AC versions</td>
<td></td>
</tr>
<tr>
<td>• Automatic detection of NPN or PNP load</td>
<td></td>
</tr>
<tr>
<td>• Selectable “make or break” switching by means of Teach function</td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - UL - CSA</td>
<td></td>
</tr>
</tbody>
</table>

### MAIN FEATURES

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

<table>
<thead>
<tr>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EC30</strong></td>
<td></td>
</tr>
<tr>
<td>• TRIPLESHIELD™ sensor protection</td>
<td></td>
</tr>
<tr>
<td>• Sensing distance up to 25 mm</td>
<td></td>
</tr>
<tr>
<td>• Plastic housing, AC versions</td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - UL - CSA</td>
<td></td>
</tr>
</tbody>
</table>

### MAIN FEATURES

- Detection of substances/foodstuff e.g., corn or feed
- Sensing face can withstand temperatures up to 120°C
- Protection: short circuit, transients and reverse polarity

<table>
<thead>
<tr>
<th>Capacitive sensors</th>
<th>Capacitive sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CD34CNF</strong></td>
<td></td>
</tr>
<tr>
<td>• Dimensions 8 x 16 x 34 mm</td>
<td></td>
</tr>
<tr>
<td>• Power supply: 10-30 VDC</td>
<td></td>
</tr>
<tr>
<td>• Output: NPN / PNP / NO or NC</td>
<td></td>
</tr>
<tr>
<td>• Power supply from 208 to 480 VAC (± 15%)</td>
<td></td>
</tr>
<tr>
<td>• Connectivity: Cable or M8 4-pin Pigtail</td>
<td></td>
</tr>
<tr>
<td>• Approvals/Marks: CE - cULus - ECOLAB</td>
<td></td>
</tr>
</tbody>
</table>

### MAIN FEATURES

- Detects water-based liquids (up to 50 mS)
- Automatic adaptation to tank wall thickness
- Eliminates influence from build-up or foam
- IP65, 66, 67, 68, 69K NEMA type 1, 2, 4, 4X, 5, 12
- Protection: reverse polarity, short circuit and transients
## Our product range

**Photoelectric sensors**

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
</table>
| **LD30C.. / 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 only for LD30E) |
| **PD30ET** | - World standard housing 11 x 31.5 x 21 mm  
- Supply voltage: DC 12-24V  
- Output: NPN/PNP NO+NC  
- Sensor types: D, B, R, P and T  
- Connectivity: Cable or M8 connectors  
- Approvals/Marks: CE - cULus (UL508, CSA C22.2) - ECOLAB |
| **PA18** | - Standard M18 cylindrical housing  
- Power supply: 10 to 30 VDC  
- Separate models available for NPN or PNP outputs  
- Sensing types: Diffuse reflective, BOS, Pol. Retro-reflective, Through beam  
- Sensitivity adjustment by potentiometer  
- Approvals/Marks: CE - cULus |
| **PH18** | - Square sensor with M18 front  
- Power supply: 10 to 30 VDC  
- Separate models available for NPN or PNP outputs  
- Sensing types: Diffuse reflective, BOS, Pol. Retro-reflective, Through beam  
- Sensitivity adjusted by potentiometer  
- Approvals/Marks: CE - cULus |
| **PA2PK** | - Dimensions: diameter M20 x 1.5 length 60, 70, 107 mm  
- Pulse output function  
- Cylindrical nylon with 30% glass fiber  
- Protection degree IP65  
- Approvals/Marks: CE |
| **UA18 / UA30** | - Dimensions: M18, M30  
- Ultrasonic sensors with an integrated amplifier providing a digital and/or analog output and integrated amplifier  
- Up to 6 m sensing distance  
- Switching output with two setpoints  
- Housing material: plastic or AISI316L stainless steel  
- Approvals/Marks: CE - cULus - CSA |
| **CLD / CLP / CLH** | - 17.5 mm slim housing, 22.5 mm & 35 mm housing available  
- Multiple filling and emptying functions  
- 24-240 VAC/DC (CLD2EB1BU24)/24 VDC, 115 VAC, 230 VAC  
- Flexible modular probes up to 5 electrodes (CLH5)  
- Extendable probes for longer length |
| **SCTL55** | - Handheld device for IO-Link sensors  
- 5.5” HD touch screen display  
- Automatic IODD file download via Wi-Fi  
- High capacity rechargeable battery  
- M8 3-wire, M8 4-wire and M12 connectors  
- Approvals/Marks: CE, FCC, IC  
- IO-Link v1.1 |
| **LD30.. / LD30E..** | - Adjustment: back or top potentiometer  
- IP67, IP68, IP69K only for LD30E  
- NEMA type 1, 2, 4, 4x, 5, 6, 6P only for LD30E  
- Diagnostics tools: Quality of Run & Quality of Teach, Alarms and transients |
| **PD30ET** | - Stainless Steel housing AISI 316L  
- Resistant to high-pressure washdown and aggressive cleaning agents.  
- IP67, IP68, IP69K, NEMA type 1, 2, 4, 4x, 5, 6, 6P  
- Protection: reverse polarity, short circuit and transients |
| **PA18** | - IP69K / ECOLAB approved / CE-marking / cULus approved acc. to UL508  
- Diagnostic LED indication (green and yellow LED)  
- Short circuit, reverse polarity and overload protection |
| **PH18** | - IP69K / ECOLAB approved / CE-marking / cULus approved acc. to UL508  
- Diagnostic LED indication (green and yellow LED)  
- Short circuit, reverse polarity and overload protection |
| **PA2PK** | - Main features:  
- Dimensions:  
- Operating frequency > 100 Hz |
| **UA18 / UA30** | - MAIN FEATURES  
- Dimensions:  
- Operating frequency > 100 Hz |
| **CLD / CLP / CLH** | - MAIN FEATURES  
- Dimensions:  
- Operating frequency > 100 Hz |
| **SCTL55** | - MAIN FEATURES  
- Dimensions:  
- Operating frequency > 100 Hz |
### Agriculture

#### Our product range

<table>
<thead>
<tr>
<th>Inductive sensors with IO-Link</th>
<th>Inductive sensors</th>
<th>Inductive sensors</th>
<th>Magnetic sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ICB12..IO / ICB18..IO / ICB30..IO</strong></td>
<td><strong>ICB12 / ICB18 / ICB30</strong></td>
<td><strong>ICS12 / ICS18 / ICS30</strong></td>
<td><strong>S series</strong></td>
</tr>
<tr>
<td>- Nickel-plated brass M12, M18 or M30 cylindrical threaded barrel housings</td>
<td>- M12, M18 and M30 Nickel-plated brass housing in short or long barrel lengths</td>
<td>- M12, M18 and M30 stainless steel housing</td>
<td>- Type: rectangular plastic housing</td>
</tr>
<tr>
<td>- Sensing distance from 4 mm to 22 mm</td>
<td>- Standard, double and triple distance sensing ranges</td>
<td>- Sensing distance from 2 mm up to 22 mm</td>
<td>- Dimensions: 79 x 21.2 x 11.5 mm</td>
</tr>
<tr>
<td>- Output functions: programmable NO or NC, NPN, PNP or post-pull</td>
<td>- 3-wire and 4-wire versions</td>
<td>- Degree of protection: IP67, IP68 and IP69K</td>
<td>- Side operated</td>
</tr>
<tr>
<td>- 2 meter oil resistant PVC cable or M12 plug version</td>
<td>- Two metre oil resistant PVC cable or M12 plug version</td>
<td>- Approvals/Marks: CE - cULus - cCSAus - ECOAB</td>
<td>- Operating temperature -25°C to 75°C</td>
</tr>
<tr>
<td>- Approvals/Marks: CE, cULus - IO-Link V1.1</td>
<td>- Approvals/Marks: CE - cULus - cCSAus - ECOLab</td>
<td>- Protection degree IP67</td>
<td>- Easy and fast mounting</td>
</tr>
</tbody>
</table>

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

**RGS1 / RGC1**
- Product width: 17.5 mm up to 70 mm, DINrail or panel mount
- Ratings: up to 660 VAC, 90 AAC, 18000 A2 s
- Integrated output overvoltage protection
- Controlling/monitoring ranges: 4-32 VDC, 20-275 VAC (24-190 VDC)
- Approvals/Marks: CE - EAC - cULus (RGC) - UR (RGS) - CSA (RGS) - VDE - GL (RGC up to 30 AAC)

**MAIN FEATURES**
- Integrated heatsink (RGC) or without heatsink (RGS)
- 100 kA short circuit current rating
- Optional over current protection (RGC)

**ICB12 / ICB18 / ICB30**
- Product width: 35 mm up to 70 mm, DIN or panel mount
- 1-phase with heatsink (RGC1P) or for panel mount (RGS1P), 3-phase with heatsink (RGC3P)
- Ratings: up to 660 VAC, 90 A (1-phase), 75 A/pole (2-phase), 65 A/pole (3-phase)
- Control input: 0-20 mA, 4-20 mA, 12-20 mA, 0-10 VDC, 0-5 VDC, 1-5 VDC
- Approvals/Marks: CE - EAC - cULus - UR (RGS1P) - CSA (RGS1P) - CCC (RGC2P, RGC3P)

**MAIN FEATURES**
- Selectable switching modes
- Integrated overvoltage protection
- Monitoring for SSR and load circuit malfunctions (RGC2P, RGC3P)

**RSBD / RSBT**
- Operational voltage range: 187-440 VAC, 187-660 VAC
- Operational current range: 12 AAC up to 100 AAC
- Control voltage: 24 VAC/DC, 110-400 VAC
- Serial communication (Modbus 2-wire) (RSGD 75 mm models)
- Approvals/Marks: cULus - CCC - EAC

**MAIN FEATURES**
- Easy to use and set-up
- Self-learning algorithm to adapt to different loads
- Auxiliary relays for top of ramp and alarms

<table>
<thead>
<tr>
<th>1-phase solid state switches</th>
<th>1 and 3-phase proportional controllers</th>
<th>3-phase scroll compressor soft starters</th>
<th>3-phase general purpose soft starters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RGS1 / RGC1</strong></td>
<td><strong>RGC1P / RGC2P / RGC3P</strong></td>
<td><strong>RSBD / RSBT</strong></td>
<td><strong>RSGD</strong></td>
</tr>
<tr>
<td>- Nickel-plated brass M12, M18 or M30 cylindrical threaded barrel housings</td>
<td>- Enhanced current reduction capability with patented auto-adaptive algorithm</td>
<td>- Plug and play: no user settings required</td>
<td>- Operational voltage range: 187-440 VAC, 187-660 VAC</td>
</tr>
<tr>
<td>- Sensing distance from 4 mm to 22 mm</td>
<td>- Motor rating: 3-phase up to 45 kW @ 400 V</td>
<td>- Typically &gt; 50% scroll compressor inrush current reduction</td>
<td>- Operational current range: 12 AAC up to 100 AAC</td>
</tr>
<tr>
<td>- Output functions: programmable NO or NC, NPN, PNP or post-pull</td>
<td>- Integrated diagnostic functions</td>
<td>- Internally bypassed and internally supplied</td>
<td>- Control voltage: 24 VAC/DC, 110-400 VAC</td>
</tr>
<tr>
<td>- 2 meter oil resistant PVC cable or M12 plug version</td>
<td>- 2- and 3-phase controlled solutions</td>
<td>- Easy and fast mounting</td>
<td>- Serial communication (Modbus 2-wire) (RSGD 75 mm models)</td>
</tr>
<tr>
<td>- Approvals/Marks: CE, cULus - IO-Link V1.1</td>
<td>- Approvals/Marks: CE - cULus - cCSAus - ECOLab</td>
<td>- Protection degree IP67</td>
<td>- Approvals/Marks: cULus - CCC - EAC</td>
</tr>
</tbody>
</table>

**MAIN FEATURES**
- Operating temperature: -25°C to +70°C (-13°F to +158°F), and -40°C to +70°C (-40°F to +158°F) for M12 plug version
Our product range

1-phase dynamic starter for submersible pumps
- Operational current: Up to 37 AAC
- Operational voltage: 110 - 230 VAC 50/60 Hz
- Current reduction vs DOL: Up to 75%
- Compliant with residential (Class B) limits for emissions
- Approvals/Marks: cULus approved

DPA51
- 81 x 17.5 x 67.2 mm; DIN-rail housing
- Phase sequence and phase loss, regenerated voltage detection
- 3 phase AC (own power supply)
- Power supply 208-480 VAC
- Approvals/Marks: CE - UL - CSA - CCC

HDMS
- Main features:
  - No need for a start capacitor
  - Self-learning algorithm - plug and play
  - Plug and play: no user settings required
  - Modbus RTU over RS485 serial communication
  - NFC technology for data download of 32 starts

1-phase solid state soft starter for pumps and ventilators
- Operational current: Up to 25 AAC
- Operational voltage: 110 - 230 VAC 50/60 Hz
- Current reduction vs DOL: Up to 45%
- Fully solid state solution
- Approvals/Marks: cULus approved

DIA53
- 81 x 17.5 x 67.2 mm; DIN-rail housing
- Current monitoring relay with built-in current transformer
- 20 A, 50 A or 100 AAC
- Self powered
- Approvals/Marks: CE - cULus - CSA

MAIN FEATURES
- Only 2 wire connection
- Adjustable current tripping setpoint
- Integrated solid state NPN PNP output

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

RSWT
- Main features:
  - Easy to configure (only 2 settings required)
  - Multi-voltage operation
  - Panel/DIN rail mount
  - QR code for troubleshooting

3-phase monitoring relays
- 3-phase monitoring relays
- AC Current relays
- 3-phase voltage relays
- Current monitoring relays

DPB52
- Operational current: Up to 67.2 mm; DIN-rail housing
- Phase sequence and phase loss, overvoltage and undervoltage detection + time delay
- 3 phase connection; 3 phase + neutral connection (DPB51)
- Power supply 208-480 VAC
- Approvals/Marks: CE - cULus - CCC

MAIN FEATURES
- Complete mains monitoring in a space saving solution
- Neutral loss protection (DPB51)
- Small size for the control panel

DIB02 / PIB02
- 80 x 22.5 x 99.5 mm; DIN-rail housing
- DC or AC current measurement
- 3-phase overcurrent measurement with MP3 current transformer
- DC current measurement by means of an external shunt

Variable frequency drives
- 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

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

Variable frequency drives
- Easy to use and setup
- Self-learning algorithm to improve pump starts/stops
- Integrated overload protection (Class 10)
- Approvals/Marks: CE - cULus

MAIN FEATURES
- Plug and play: no user settings required
- Modbus RTU over RS485 serial communication
- NFC technology for data download of 32 starts

3-phase voltage relays
- DC or AC current measurement
- 3-phase overcurrent measurement with MP3 current transformer
- DC current measurement by means of an external shunt

MAIN FEATURES
- Only 2 wire connection
- Adjusts the current tripping setpoint
- Integrated solid state NPN PNP output

3-phase monitoring relays
- Neutral loss protection (DPB51)
- Small size for the control panel

MAIN FEATURES
- Complete mains monitoring in a space saving solution
- Neutral loss protection (DPB51)
- Small size for the control panel

DIB02 / PIB02
- 80 x 22.5 x 99.5 mm; DIN-rail housing
- DC or AC current measurement
- 3-phase overcurrent measurement with MP3 current transformer
- DC current measurement by means of an external shunt

MAIN FEATURES
- Only 2 wire connection
- Self-powered
- Approvals/Marks: CE - cULus

DV702
- 81 x 17.5 x 67.2 mm; DIN-rail housing
- Phase sequence and overcurrent detection
- 3 phase AC (own power supply)
- Power supply 208-480 VAC
- Approvals/Marks: CE - UL - CSA - CCC
### Current transformers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
</table>
| DEA71  | - 81 x 35.5 x 67.2 mm; DIN-rail housing  
- 2 SPDT 5 A relay outputs  
- LED leakage Level indicator  
- Power supply 24 - 240 VAC  
- CE (IEC EN 60947-2 Annex M compliant), cULus |
| DEB71  | - 81 x 35.5 x 67.2 mm; DIN-rail housing  
- 2 SPDT 5 A relay outputs  
- LED leakage Level indicator  
- Power supply 24 - 240 VAC  
- CE (IEC EN 60947-2 Annex M compliant), cULus |
| CTG    | - 6 Sizes from 35 mm to 210 mm  
- Solid round core type  
- Screw terminals connection  
- Approvals/Marks: CE (IEC EN 60947-2 Annex M compliant), cULus |
| E83    | - 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 |

#### MAIN FEATURES
- Fixed Trip Current Setting
- Remote Test / Reset push button input
- Warning Indication and output

### Timers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
</table>
| CTD / TADK | - CTD: currents from 40 to 4000 A  
- TADK: 1-250 A  
- Removable panel fixing clips  
- DIN-rail and panel mounting facility  
- Double screw terminals (CTD)  
- Sealable covers  
- Case: ABS, self-extinguishing level UL 94 V-0  
- Accuracy class: 0.5 |
| DAA51 / DMB51 | - 81 x 17.5 x 67.2 mm; DIN-rail housing  
- Delay on operate function [DAA], multifunction [DMB]  
- Combined AC and DC power supply  
- Repeatability: < 0.2%  
- CE, UL, CSA, RINA [DMB51] |
| FMB01 / FAA | - 48 x 48 x 96.1 mm; for 11 pin socket or panel mounting  
- Multifunction timer  
- DPDT relay output  
- Power supply voltage: 12 - 240 VAC/DC  
- Approvals/Marks: CE - cUL - CSA |
| CPT    | - Dimensions: 83.5 x 45 x 98.5 mm  
- DIN-rail housing  
- Accuracy 0.5 % (voltage, current)  
- Measurement by CT and VT  
- Front protection degree IP20  
- Analogue, digital, pulse or serial outputs available |

#### MAIN FEATURES
- Adjustable time setting via front dial
- Selectable time ranges from 0.05 s to 300 h
- Delay on operate, delay on release, DIN/ OFF first symmetrical recycle, single/double interval on trigger open/close

### Multifunction timers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
</table>
| DAA51 / DMB51 | - Wide range of timing functions [DMB51]  
- Timing range 0.1 s to 100 h  
- 5 A SPDT relay |
| FMB01 / FAA | - Adjustable time setting via front dial  
- Selectable time ranges from 0.05 s to 300 h  
- Delay on operate, delay on release, DIN/OFF first symmetrical recycle, single/double interval on trigger open/close |
| CPT    | - Compact size power transducer  
- Provides electrical variables set to a PLC to manage compressors and other loads  
- Suitable for on-board panel installation |

### 3-phase power transducers

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
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</table>
| DEB71  | - 81 x 35.5 x 67.2 mm; DIN-rail housing  
- 2 SPDT 5 A relay outputs  
- LED leakage Level indicator  
- Power supply 24 - 240 VAC  
- CE (IEC EN 60947-2 Annex M compliant), cULus |
| DEA71  | - 81 x 35.5 x 67.2 mm; DIN-rail housing  
- 2 SPDT 5 A relay outputs  
- LED leakage Level indicator  
- Power supply 24 - 240 VAC  
- CE (IEC EN 60947-2 Annex M compliant), cULus |
| CTG    | - 6 Sizes from 35 mm to 210 mm  
- Solid round core type  
- Screw terminals connection  
- Approvals/Marks: CE (IEC EN 60947-2 Annex M compliant), cULus |
| E83    | - 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 |

#### MAIN FEATURES
- Easy PLC interfacing
- True RMS measurement
- Load status information to the PLC
## Our product range

<table>
<thead>
<tr>
<th>3-phase energy analysers for direct current up to 65A</th>
<th>3-phase energy analysers</th>
<th>Dupline® digital I/O modules</th>
<th>Dupline® valve controls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EM340</strong></td>
<td><strong>EM24</strong></td>
<td><strong>GH3440 4412</strong></td>
<td><strong>GH6440 4412</strong></td>
</tr>
<tr>
<td>• 3 DIN modules</td>
<td>• 3-phase energy analyser with direct connection</td>
<td>• Module for controlling 3-wire latching valves</td>
<td>• Module for controlling 3-wire latching valves</td>
</tr>
<tr>
<td>• Backlit touch LCD</td>
<td>• Direct connection up to 65 A or by CT</td>
<td>• 2 outputs to open and close the valve</td>
<td>• 2 outputs for open and close the valve</td>
</tr>
<tr>
<td>• Measurement of voltage, current, power, power factor and frequency</td>
<td>• Dimensions: 4-DIN-rail module housings</td>
<td>• 2 inputs for e.g., pulse counting, tamper switch or status feedback</td>
<td>• 2 inputs for e.g. pulse counting, tamper switch or status feedback</td>
</tr>
<tr>
<td>• Bi-directional energy metering, 3x 8-digit, cl. B (EN50470)</td>
<td>• Pulse open collector output</td>
<td>• Supplied by bus - no external power needed</td>
<td>• Built-in charge capacitor, gas arrester and microcontroller</td>
</tr>
<tr>
<td>• Measuring inputs: 230 to 400 VLL AC, 65 A</td>
<td>• Optional serial port (Modbus RS485 or TCP, M-Bus wired or wireless and Dupline®), digital input and outputs</td>
<td>• Sealable terminal covers</td>
<td>• Can be buried in the ground at the actual valve position</td>
</tr>
<tr>
<td>• Approvals/Marks: CE - MID (PFA and PF8)</td>
<td><strong>MAIN FEATURES</strong></td>
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</tr>
<tr>
<td></td>
<td>• Self-powered</td>
<td>• Built-in microcontroller for correct coil-pulsing and charge monitoring</td>
<td>• Built-in Gas-arrester for lightning protection</td>
</tr>
<tr>
<td></td>
<td>• Dual tariff management</td>
<td>• Valve closes in case of bus fault</td>
<td>• Up to 7 km transmission distance</td>
</tr>
<tr>
<td></td>
<td>• Pulse output or RS485 Modbus or M-Bus port</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Sealable terminal covers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### MAIN FEATURES
- Self-powered
- Dual tariff management
- Pulse output or RS485 Modbus or M-Bus port
- Sealable terminal covers

### 3-phase energy analysers

**EM340**
- 3 DIN modules
- Backlit touch LCD
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering, 3x 8-digit, cl. B (EN50470)
- Measuring inputs: 230 to 400 VLL AC, 65 A
- Approvals/Marks: CE - MID (PFA and PF8)

### MAIN FEATURES
- Self-powered
- Dual tariff management
- Pulse output or RS485 Modbus or M-Bus port
- Sealable terminal covers

### 3-phase energy analysers

**EM24**
- 3-phase energy analyser with direct connection
- Direct connection up to 65 A or by CT
- Dimensions: 4-DIN-rail module housings
- Class B (EN50470)
- Pulse open collector output
- Optional serial port (Modbus RS485 or TCP, M-Bus wired or wireless and Dupline®), digital input and outputs

### MAIN FEATURES
- Self-powered
- Dual tariff management
- Pulse output or RS485 Modbus or M-Bus port
- Sealable terminal covers

### Dupline® digital I/O modules

**GH3440 4412**
- Module for controlling 3-wire latching valves
- 2 outputs to open and close the valve
- 2 inputs for e.g., pulse counting, tamper switch or status feedback
- Supplied by bus - no external power needed

### MAIN FEATURES
- Built-in microcontroller for correct coil-pulsing and charge monitoring
- Valve closes in case of bus fault

### Dupline® valve controls

**GH6440 4412**
- Module for controlling 3-wire latching valves
- 2 outputs for open and close the valve
- 2 inputs for e.g. pulse counting, tamper switch or status feedback
- Built-in charge capacitor, gas arrester and microcontroller

### 3-phase energy analysers

**GH3485 0000**
- Generates 28 V Hi-Line signal
- Supplies and controls up to 64 valve I/O modules over two wires
- LED indications for Dupline® carrier, Hi-Line carrier and supply

### MAIN FEATURES
- Built-in Gas-arrester for lightning protection
- Up to 7 km transmission distance

### Dupline® converters

**GH3485 0000**
- Generates 28 V Hi-Line signal
- Supplies and controls up to 64 valve I/O modules over two wires
- LED indications for Dupline® carrier, Hi-Line carrier and supply

### MAIN FEATURES
- Built-in Gas-arrester for lightning protection
- Up to 7 km transmission distance

### Dupline® test units

**GHTU8**
- Portable test unit
- 12 key tactile keyboard
- Dual group reading
- Analog BCD reading

### MAIN FEATURES
- Monitoring of Hi-line channel status with LCD display
- Designed as part of the Dupline® irrigation concept

### DIN-rail switch mode power supplies

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

### MAIN FEATURES
- DC OK signal
- Parallel connection feature
- Screw, spring or detachable terminal connectors

### Compact DIN-rail power supplies

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

### MAIN FEATURES
- Saves up to 20% panel space
- High efficiency and wide operating temperature
- Screw or spring terminal connectors

---

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

Our product range

<table>
<thead>
<tr>
<th>Low profile DIN-rail power supplies</th>
<th>Metal enclosed power supplies</th>
<th>DC UPS</th>
</tr>
</thead>
</table>

### SPMA
- Compact DIN rail low profile enclosure
- Universal input 85-264 VAC / 120-350 VDC
- Output powers from 12 W (1DIN) to 100.8 W (4DIN)
- Output options of 5 VDC, 12 VDC, 15 VDC or 24 VDC
- Approvals/Marks: CE, cULus, cURus 62368-1, UL1310

**MAIN FEATURES**
- 4 kVAC isolation voltage
- Overvoltage, Overload and Short circuit output
- High efficiency (up to 89%)  

### SPPC
- Output power from 15 W to 800 W
- Universal input range of 110-240 VAC
- Short circuit, overload and over voltage protection
- PFC function available >75 W
- Approvals/Marks: CE - cULus

**MAIN FEATURES**
- Adjustable output ±10%
- Compact dimensions
- Wide operating temperature range up to 70°C

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

**MAIN FEATURES**
- Power supply independent from charger (SPUBC), to be used in addition to 12 or 24 V power supply (SPUC)
- Remote indication for battery operation and battery low
- “Start from battery” and “Empty battery charging” features (SPUBC)

### Industrial relay

### Limit switches

### RSLM
- SPST or SPDT option
- Contact rating for 6 A, 250 VAC / 30 VDC
- Coil voltage of 12 VDC to 60 VDC
- Built-in battery diagnosis
- Approvals/Marks: VDE - CQC - cULus - CSA

**MAIN FEATURES**
- Ultra slim, 5 mm width
- DIN-rail mount [ZRLS socket] or PCB mount [ZRLP]
- Surge voltage of up to 6 kV

### PS
- Material: plastic, metal
- Horizontal / vertical control available
- Minimum actuation force / torque
- Approvals/Marks: CE - UL - CSA

**MAIN FEATURES**
- Mechanical life > 15,000,000 cycles
- Precise operating point

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Illustrations are for example only.
**OUR COMPETENCE CENTRES AND PRODUCTION SITES**

**DENMARK**
Carlo Gavazzi Industri A/S
Hodsten

**MALTA**
Carlo Gavazzi Ltd
Kopitium

**ITALY**
Carlo Gavazzi Controls SpA
Belluno

**LITHUANIA**
Uab Carlo Gavazzi Industri Kaunas
Kaunas

**HEADQUARTERS**
Carlo Gavazzi Automation SpA
Via Milano 13
I-20045 - Lainate (MI) - ITALY
Tel.: +39 02 931 761
info@gavazziautomation.com