



Solutions

Plastics Machinery

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Solutions for



Injection machines

Extrusion machines

Blow moulding machines

Blown film extrusion machines

Thermoforming machines

Plastic dryers & Dosing systems

ABOUT CARLO GAVAZZI

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

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

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

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

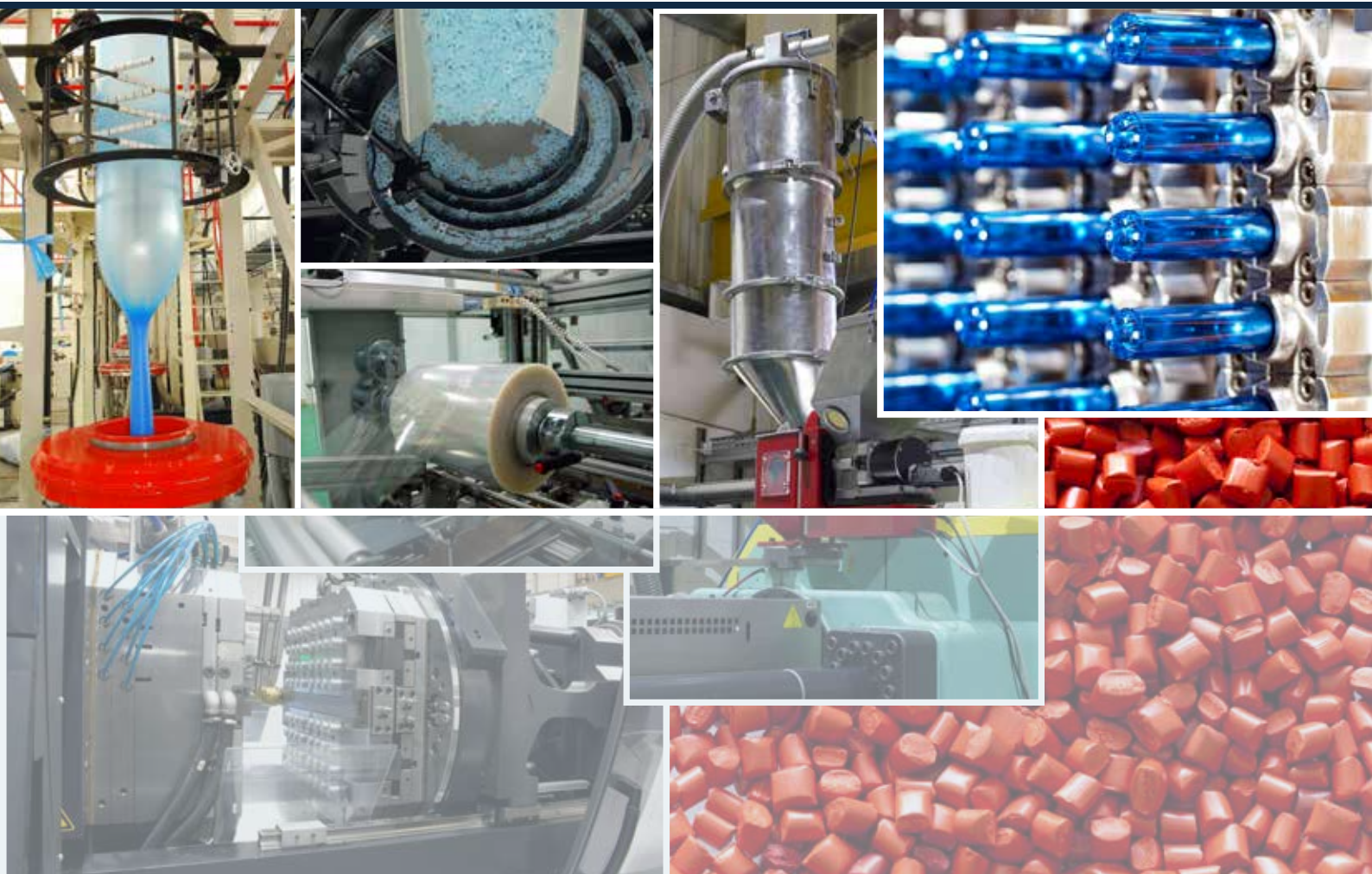
We operate worldwide through 22 of our own sales companies and also selected representatives in more than 65 countries, from the United States in the West to the Pacific Rim in the East.

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

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

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

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



DESIGNED TO MEET MARKET REQUIREMENTS

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

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

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

The production efficiency of machines for plastics has continuously increased over the last few decades. Appropriate

temperature control is essential to ensure good quality of the final outcome.

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

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

Carlo Gavazzi's patented Tripleshield™ capacitive sensors have become the standard all other manufacturers are measured against. Capacitive sensors will detect most materials, conductive and non conductive. This makes them ideal for level detection in raw plastic delivery systems.

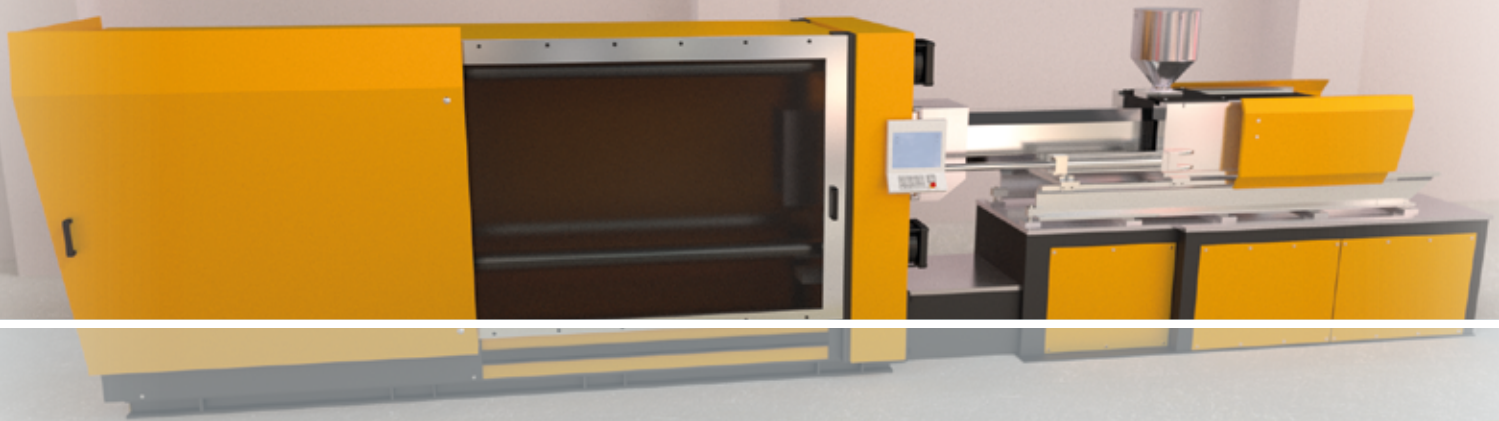
Carlo Gavazzi's ultrasonic, photoelectric and inductive sensors are also used extensively in plastics machinery.

In order to protect the working area, ensuring the safety of operators and the safe operation of the machines, Carlo Gavazzi provides configurable and standard safety modules and safety magnetic sensors.

The CERTUS 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, safety light curtains, photocells, emergency stops, two-hand controls, mechanical switches, laser scanners and safety mats.

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Injection machines



Solid state switches	Solid state switches	Capacitive sensors with IO-Link	Safety magnetic sensors	Certus configurable safety modules	Certus multifunction safety modules	Electromagnetic safety interlocks	Safety modules
RGS1A RGCI A RM1A	NRG	CA18..IO CA30..IO	SMS CLS	CERTUS	CM22D0A	ESI	NES NLG

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

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

or safety magnetic switches. In plastics machines, the gates must often be opened under safety conditions: the NES provides a safety-related interruption of a safety circuit. For applications that require flexible logic or the multiple coordination of 3 or more safety devices, the CERTUS configurable safety module delivers a superior product vs its competitors, in terms of features and competitive price. CERTUS is certified to the highest safety levels: SIL+, SILCL 3, PL e and Cat.4; it offers intuitive and quick logical configuration software, easy to set-up tamper proof safety systems, and a reduction in components and wiring.

Extrusion machines



Solid state switches

**RGC1A
RGS1A
RM1A**

Solid state switches

**RGC1S
RGS1S**

Solid state contactors

**RGC3A
RGC2A**

Capacitive sensors

**CA18
CA30
EC30**

Ultrasonic sensors

**UA18
UA30**

Switching power supplies

**SPD
SPPC
SPDM**

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



Gavazzi offers a wide range of solid state solutions for temperature control of the barrel zones. The RGC1, RGS1 and RM1 series are 1-phase solutions, whilst the RGC3 series provides 3-phase switching solutions. The RM and RG series meet the industry EMC immunity requirements without the need for additional external components. Additionally, the RG series utilises wire bonding technology that reduces the thermal stress of the solid state switch, guaranteeing extended lifetime over other SSRs. The RGC1S and RGC3..M versions integrate detection of malfunction of the load or the SSR, where an alarm output is readily available for immediate intervention.

Capacitive, photoelectric and ultrasonic sensors are used to detect any interruption in the extruded pipe. They ensure prompt intervention in the case of interruption and round-the-clock monitoring of the extrusion process.

In both injection machines and extrusion machines, Carlo Gavazzi's switches and sensors ensure smooth and efficient production processes. Capacitive sensors in particular are widely used in silos.

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Blow moulding machines



Solid state switches	Inductive sensors with IO-Link	Photoelectric sensors	Monitoring relays	Gateway and controller	Certus multifunction safety modules	Electromagnetic safety interlocks
RGC1S RGS1S RGC1A	ICB12...IO ICB18...IO ICB30...IO	PA18	DPA51 DPB52 DIA53	UWP 3.0	CM22D0A CM40D0A CM30D1A	ESI

Reliable thermal process control is key in determining the quality of the final outcome in blow moulding. An accurate thermal process can only be guaranteed by continuous monitoring of the load and system parameters. The RGC1S series offers the ideal solid state switching solution. The RGC1S is equipped with integrated current measurement and so is able to detect variations in load current, which will ultimately affect temperature. The integration of current measurement within the solid state switch eliminates the need for additional external monitoring and so gives more panel space as well as less needing installation time.

The load current is continuously monitored and if a deviation is observed a partial load failure alarm is issued. The RGC1S is also able to detect load and solid state switch malfunction.

Photoelectric sensors and inductive sensors are installed along the machinery for part counting, detection and verification and for mould position detection.

The UWP 3.0 is a comprehensive web-based monitoring solution to keep track of energy consumption in industrial facilities and to improve the energy efficiency of the installation.



Blown film extrusion machines



Solid state switches	Ultrasonic sensors	Capacitive sensors	Safety magnetic sensors	Inductive sensors with IO-Link	Monitoring relays	Power transducers
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RGC1A RGC1S RGS1S	UA18 UA30	CA18 CA30 EC30	SMS CLS	ICB12...IO ICB18...IO ICB30...IO	DPA51 DPB52 DIA53	CPT
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It is essential that plastics processing machines operate without breakdown. When the machine restarts after a breakdown, the material might have to be scrapped: this is typical of blown film extrusion. By using an ultrasonic sensor to check film loop tension, film breakage is prevented



and interruptions in the production cycle are minimized. Three ultrasonic sensors placed round the cylinder of blown plastic film, measuring the diameter of the cylinder, are used for controlling the air pressure and maintaining a controlled diameter and thickness of the plastic film.

If the distance of the bubble surface from the machinery is not controlled, dangerous contacts can occur. Several analogue ultrasonic sensors can be positioned to constantly check the size and the shape of the bubble. The IO-link ICB inductive sensors allow easy exchange of process data, remote configurations and events with simple and inexpensive 3-wire

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

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Thermoforming machines



Solid state switches

**RGC1F
RGC1A
RGC1P**

Solid state switches

NRG

Soft starters

**RSGD
RSWT**

Inductive sensors with IO-Link

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

Certus configurable safety modules

CERTUS

Certus multifunction safety modules

**CM22D0A
CM40D0A
CM30D1A**

Energy analyzers

**EM210
EM24 DIN**

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

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

reliable.

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



Plastic dryers & Dosing systems



Solid state switches

**RM1A
RK**

Solid state switches

**RGC1A
RGC2A
RGC3A**

Proportional controllers

**RGC1P
RGC2P
RGC3P**

Photoelectric sensors

PD30ET

Capacitive sensors with IO-Link

**CA18..IO
CA30..IO**

3-phase power analyzers

WM20

Touch screen/ Datalogger

**BTM-T4-24
BTM-T7-24**

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



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

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

Plastics Machinery

Our product range

1-phase solid state relays



RAM1A / RM1A

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

MAIN FEATURES

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

1-phase solid state switches



RGS1A / RGC1A

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

MAIN FEATURES

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

1-phase solid state switches with current monitoring



RGS1S / RGC1S

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

MAIN FEATURES

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

1-phase solid state contactors



RGC1F

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

MAIN FEATURES

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

2-pole solid state relays



RK

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

MAIN FEATURES

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

3-phase solid state contactors



RGC2A / RGC3A

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

MAIN FEATURES

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

Our product range

1 and 3-phase proportional controllers



RGC1P / RGC2P / RGC3P

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

MAIN FEATURES

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

Solid state switches with fieldbus interface



NRG

- Ratings up to 660 VAC, 90 AAC
- DC control voltage: 4 - 32 VDC
- Modbus RTU over RS485
- Up to 48 RG..N solid state relays with 1 NRG controller
- 24 VDC supply for the NRG controller

MAIN FEATURES

- Read-out of variables: current, voltage, frequency, power, energy consumption, running hours
- Diagnostics information to identify failure mode for fast troubleshooting
- Autoconfiguration for easy and quick set-up
- Test button for check of internal bus

3-phase pumps and ventilators soft starters



RSWT

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

MAIN FEATURES

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

3-phase general purpose soft starters



RSGD

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

MAIN FEATURES

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

Capacitive sensors



EC30

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

MAIN FEATURES

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

Capacitive sensors



CA18 / CA30

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

MAIN FEATURES

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

Plastics Machinery

Our product range

Capacitive sensors with IO-Link



CA18..IO / CA30..IO

- Dimensions: M18/M30 (Plastic)
- 4th generation TRIPLESIELD™ Technology
- IO-Link communication with timer, diagnostics and logic functions
- Sensing distance up to 30 mm
- Approvals/Marks: CE, cULus approved

MAIN FEATURES

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

Photoelectric sensors



PA18

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

MAIN FEATURES

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

Photoelectric sensors



PD30ET

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

MAIN FEATURES

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

Inductive sensors with IO-Link



ICS05 / ICS08

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

MAIN FEATURES

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

Inductive sensors with IO-Link



ICB12 / ICB18 / ICB30

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

MAIN FEATURES

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

Smart configurator for IO-Link sensors



SCTL55

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

MAIN FEATURES

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

Our product range

Ultrasonic sensors



UA18 / UA30

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

MAIN FEATURES

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

Safety magnetic sensors



CLS / SMS

- Rectangular housing
- Connection: PVC cable or pigtail solution
- Housing material: Plastic
- Approvals/Marks: CE - cULus

MAIN FEATURES

- Multiple flux coding
- Several combinations of safety and auxiliary outputs available
- Operating temperature -25°C to +70°C

3-phase Monitoring Relays



DPA51 / DPA52

- Dimensions 81x17.5x67.2mm DIN-rail housing
- Phase sequence and loss relay
- 3 phase AC (own power supply); regenerated voltage
- Power supply from 208 to 480 VAC
- Approvals/Marks: cULus - CCC approved

MAIN FEATURES

- Motor protection from reverse running and phase loss
- 17.5 mm width. Suitable for NORM panels.
- Plug and play: no settings needed

3-phase Monitoring Relay



DPB52

- Dimensions 81x17.5x67.2mm DIN-rail housing
- Phase sequence and loss relay
- Over/under voltage monitoring with adjustable time delay
- Power supply from 208 to 480 VAC
- Approvals/Marks: cULus - CCC approved

MAIN FEATURES

- Motor protection from reverse running and phase loss
- 17.5 mm width. Suitable for NORM panels.
- Plug and play: easy setup via front dials

Monitoring relays



DIA 53

- Dimensions: 81x17.5x67.2 mm DIN-rail housing with 12 mm hole for current measurement
- Current monitoring relay with built-in current transformer
- 20, 50 or 100 A full scale
- Self powered
- Approvals/Marks: UL - CSA - CCC

MAIN FEATURES

- 2 wire connection
- Knob adjustable setpoint
- Integrated solid state NPN PNP output

Energy analyzers



EM210

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

MAIN FEATURES

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

Plastics Machinery

Our product range

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
- Modbus RTU or Ethernet or M-bus communication port

MAIN FEATURES

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

3-phase power analyzers



WM20

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

MAIN FEATURES

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

Monitoring gateway and controller



UWP 3.0

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

MAIN FEATURES

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

Power transducers



CPT

- Dimensions: 83.5x45x98.5 mm DIN-rail housing
- Accuracy 0.5 % (voltage, current)
- Measurement by CT and VT
- Front protection degree IP20
- Analogue, digital, pulse or serial outputs available

MAIN FEATURES

- Very compact size power transducer
- Provides electrical variables set to a PLC to manage compressors and other loads
- Suitable for on-board panel installation

Touch screen/ Datalogger



BTM-T4-24 / BTM-T7-24

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

MAIN FEATURES

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

True delay on release timers



DBB01 / PBB01

- Dimensions: 22.5 mm Euronorm for DIN-rail or 36 mm plug-in version
- Multi voltage true delay on release timer
- Combined AC and DC power supply
- Repeatability: < 0.2%
- Approvals/Marks: UL - CSA

MAIN FEATURES

- Time range 0.1 to 600s - capacitor powered
- 4 time ranges selectable by DIP-switches, knob time setting
- Output: 8 A SPDT or 8 A DPDT relay

Our product range

Asymmetrical recycler timers



DCB01 / PCB01

- Dimensions: 22.5 mm Eurornorm for DIN-rail or 36 mm plug-in version
- Asymmetrical Recycler timer with 4 functions
- Combined AC and DC power supply
- Repeatability: < 0.2%
- Approvals/Marks: UL - CSA

MAIN FEATURES

- Time range 0.1s to 100h
- 4 time ranges selectable by DIP-switches, knob time setting
- Output: 1 or 2 x SPDT relay

ON delay and multifunction timers



DAA51 / DMB51

- Dimensions: 81x17.5x67.2 mm DIN-rail housing
- Delay on operate function [DAA], multifunction [DMB]
- Combined AC and DC power supply
- Repeatability: < 0.2%
- Approvals/Marks: UL - CSA - RINA

MAIN FEATURES

- Delay on operate/release; interval (manual/automatic start);
- Double interval; symmetrical recycler (ON or OFF first)
- Time range from 0.1s to 100h

1-phase DIN-rail power supplies



SPD

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

MAIN FEATURES

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

Metal enclosed power supplies



SPPC

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

MAIN FEATURES

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

Low profile DIN-rail power supplies



SPM

- Output power from 7.5 W to 100 W
- Input 110 / 240 V 1-phase and DC 120 V to 370 V
- Short circuit, overload protection
- From -25°C to +60°C operation w/out derating
- Approvals/Marks: CE - cULus - cURus - UL1310 Class 2 (up to 91.2 W) - ISA 12.12.1 Class I Div2 - TÜV

MAIN FEATURES

- Operating temperature w/o derating from -25° to +60°C
- Short circuit and Overload protection
- High efficiency (up to 89%)

Compact DIN-rail power supplies



SPDM

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

MAIN FEATURES

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

Plastics Machinery

Our product range

Compact DIN-rail power supplies



SPDC

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

MAIN FEATURES

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

Battery chargers & UPS



SPUC / SPUBC

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

MAIN FEATURES

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

CERTUS configurable safety module



CMM

- 4 non-safety test outputs for sensor monitoring
- 2 non-safety programmable digital signal outputs
- 2 non-safety inputs for Start / Restart interlock and EDM
- LOG file with 5 configuration modifications
- Connection with other expansion units via rear bus

MAIN FEATURES

- Also usable as a stand-alone device, able to control any other expansion unit
- 8 safety digital inputs
- 2 safety OSSD pairs (400 mA Output)
- Certified to the highest safety levels: SIL 3 - SILca 3 - PL e - Cat.4 - CE - TUV - cULus

CERTUS configurable I/O expansion modules



C I/O

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

MAIN FEATURES

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

CERTUS speed monitoring modules



CES

- Expansion units to monitor speed (PI e): Zero speed, Max speed, Speed range Motion direction; Rotation / Translation.
- RJ45 for encoder connections and terminal blocks for connection of proximity (up to 2 proximity switches per module).
- Inputs frequency: Encoder up to 500 KHz (300 KHz for HTL), Proximity up to 5 KHz.

MAIN FEATURES

- The modules allow the configuration of up to 4 speed thresholds for each logic output (axis)
- Each module integrates two logic outputs configurable via the MSD and is capable of controlling up to two independent axes

Safety modules



NES / NLG Series

- Safety modules for gate and emergency stop [NES] and light curtain [NLG]
- 3 normally open safety outputs
- < 30 ms response time
- IP40 protection for housing and IP20 protection for terminals
- Approvals/Marks: CE - UL - TUV - cULus

MAIN FEATURES

- Safety category 4
- < 30 msec response time
- Performance Level PL:e in accordance with ISO 13849-1
- SILca:3 in accordance with IEC 62061

Our product range

CERTUS multifunction safety module

CERTUS multifunction safety module

Electromagnetic safety interlocks



CM22D0A

- Up to 4 OSSD safety outputs
- 2 OSSD auxiliary outputs
- Safety solution for enhanced safety and high protection in inertia machinery
- Compact dimensions, 1 DIN, W x H x D: 18 x 90 x 63 mm

MAIN FEATURES

- Configurable pre-set delayed safety outputs, set via the hex-switch
- Can be used in applications with: e-stop, e-gate, limit switch, non-contact switch, safety light curtains, safety light beam, safety mat
- Cat.4 PL e (ISO 13849-1), SIL 3 (IEC 62061), SILcl 3 (IEC 61508)
- Approval by TUV
- Manual or automatic start selectable



CM40D0A / CM30D1A

- 4 OSSD safety outputs [CM40D0A]
- 3 OSSD safety outputs + 1 auxiliary output [CM30D1A]
- Safety solution for basic machines, equipment and production lines
- Compact dimensions, 1 DIN, W x H x D: 18 x 90 x 63 mm

MAIN FEATURES

- Can be used in applications with: e-stop, e-gate, limit switch, non-contact switch, safety light curtains, safety light beam, safety mat
- Cat.4 PL e (ISO 13849-1), SIL 3 (IEC 62061), SILcl 3 (IEC 61508)
- Approval by TUV
- Manual or automatic start selectable



ESI

- Improving safety for applications requiring access to remain closed and locked until potential hazards have stopped or come to a predetermined safe state
- Standards compliance. SIL 3 in accordance with EN 62061, PL e in accordance with EN ISO 13849-1, interlock type 2 in accordance with EN ISO 14119
- Approvals/Marks: CE - cULus - IMQ

MAIN FEATURES

- Ensures protection in inertia machinery
- Protects machines from interruptions
- Prevents entry into a dangerous area until the unlock signal
- Manual unlock device for emergency
- Block controlled by solenoid

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