CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

Industrial Automation

Solutions for
Food and Beverage

Solutions for Food and Beverage

**Coffee
and vending machines**

**Heating and
cooking equipment**

**Ice makers
and cooling systems**

ABOUT CARLO GAVAZZI

Carlo Gavazzi Automation is a multinational electronics group active in designing, manufacturing and marketing of 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 four product lines: Sensors, Switches, Controls and Fieldbuses.

Our wide array of products includes 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 airconditioning devices.

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

DESIGNED TO MEET MARKET REQUIREMENTS

With over 40 years of expertise in manufacturing components for food and beverage equipment, Carlo Gavazzi can provide a wide range of advanced and reliable products for commercial heating and cooking equipment, ice making technology and cleaning processes.

Carlo Gavazzi is a market leader in solid state relay technology, offering innovative solutions in very compact dimensions for the control of heater loads. The range of products includes solid state relays for PCB mounting, chassis mounting as well as solutions ready for use with a built-in heatsink.

The number of switching cycles in food and beverage equipment is quite substantial and a reliable switching solution that guarantees a long, maintenance free lifetime can be provided only with solid state switching.

Carlo Gavazzi sensors are widely used to detect door closure or to check water level in coffee machines.
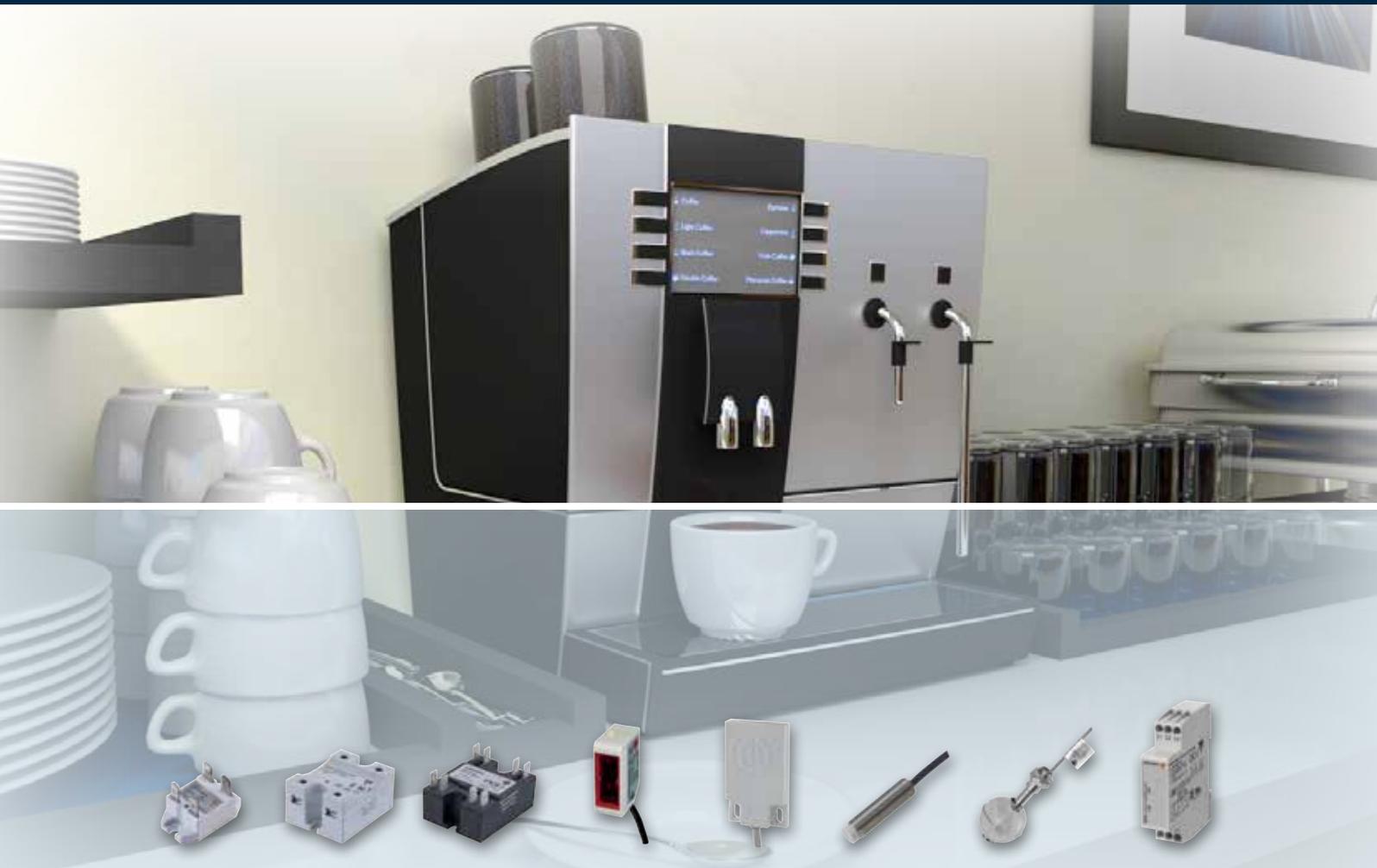
Food and beverage processes demand equipment capable of working in harsh environments and conditions.

The Carlo Gavazzi range of sensors includes new photoelectric and capacitive types (Ecolab and IP69K approved) capable of withstanding high pressure and steam cleaning.

Monitoring relays, timers, switching power supplies and energy meters complete the range of Carlo Gavazzi products to ensure safe operation and monitoring of equipment, while increasing longevity.

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3

Food and Beverage

Solid state relays	Solid state relays	Solid state relays	Photoelectric sensors	Capacitive sensors	Inductive proximity sensors	Magnetic level sensors	Monitoring relays
RF1	RAM1A..G	RA2A	PD30 PA18 PH18	CD50CNF CA18CLF	IA08	ILM ILSP	DPA51 DPB51 DIB71 DWA01

Coffee machines, for both domestic and commercial use, must be reliably monitored in order to avoid any damage to the electromechanical elements such as the pump or the electric resistance. Carlo Gavazzi products provide efficient control and ensure the reliability of equipment.

Level sensors are the best solution to check the water level. The sensor may be installed directly in the bottom of the tank. Usually, plastic propylene sensors (ILSP, ILM series) are used for this purpose. A second solution consists of a float in the tank controlled by means of magnetic sensors.

The switching of heaters can be carried out reliably with the RF1, RAM1..G or RA2A series which are fully solid state solutions and hence are not so susceptible to problems concerning contacts and arcing as is the case with electromechanical solutions. The RAM1 and RA2A series are also suitable for motor switching.

In the vending market, quality of dispensed drinks (hot and cold), reliability, easy cleaning and maintenance are the keys for success.

In coffee machines, the PD30 sensors with background suppression detect the cups to prevent the coffee from spillage, while CD50 sensors detect the levels of coffee beans.

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Heating and cooking equipment

Solid state relays	Solid state relays	Solid state contactors	Proportional controllers	Safety magnetic sensors	Switching power supplies	Energy meters
RF1	RAM1A..G RM1	RGC1A RGC2A RGC3A	RGC2P RGC3P	SMS CLS	SPD24 SPPC	EM23 DIN EM24 DIN

Manufacturers of cooking equipment such as ovens, griddles, steamers and toasters need to ensure food quality and safety, improving production processes and ensuring long operating lifetime.

Global legislation enforces restrictions and bans on the use of mercury. Carlo Gavazzi solid state relays and contactors are RoHS compliant and are mercury free.

They can operate in humid conditions without being affected by vapours that may be present in surrounding environmental conditions.

The Carlo Gavazzi solid state solutions integrate protection against uncontrolled transients and over voltages to guarantee reliable operation.

Additionally, the materials used for the RF1, RAM..G and RG conform to the glow wire requirements of IEC/EN 60335-1 (Safety of Household and Similar Electrical Appliances).

The RF1 and RG series offer the possibility of panel space optimisation. The RF1 occupies only 30% of the space required by other panel mount solid state relays whilst RG solutions are available in a width as small as 17.5 mm.

The RGCxP series enables analog inputs to be connected directly to the relay when it is necessary to control the output power in proportion to the level of control input.

Machinery protection from voltage surges, overcurrent or phase loss is ensured by Carlo Gavazzi compact monitoring relays, thus prolonging their lifetime.

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5

Ice makers and cooling systems

Photoelectric sensors	Inductive proximity sensors	Timers	Capacitive sensors	Soft starters	Energy meters	Digital panel meters
PA18	IA08	HAA08	CD50CNF	RSWT	EM10 DIN	UDM 40
PH18		HAA14		RSGD	EM23 DIN	LDM 40
		FMB01			EM24 DIN	

Thanks to the progress in energy efficiency, reduced size and low refrigerant charge there are many applications of ice making technology, with millions of ice makers around the world. You can find ice makers in hotels, bars and restaurants as well as in hospitals, laboratories, supermarket and in the food industry.

The wide range of inductive, capacitive, photoelectric and ultrasonic sensors by Carlo Gavazzi includes some types suitable to be installed. An inductive sensor - specifically designed for this application - detects low speed of the gear motor, sending a signal to the PC board which stops the ice machine operation.

Carlo Gavazzi photoelectric sensors can be used for ice level control. The sensor will signal the P.C. board to stop the machine when a beam of light sent by the optical device is sheltered by ice. The ice machine will stop making ice before the bin or dispenser is full.

Capacitive sensors also enable accurate control of water levels sending a water fill signal to the controller. RSWT and RSGD soft starters are also used to soft start and soft stop high pressure pumps in industrial washing equipment.

Cleaning processes

Photoelectric sensors	Capacitive sensors	Washdown inductive sensors	Washdown connectors
PA18 PH18	CA30CA CA18CA	ICS12 ICS18 ICS30	CONB14NF

In Food and Beverage applications, systems and components have to withstand harsh cleaning conditions.
In the food industry it is necessary to clean the conveyor with water jets, as well as alkaline foam cleaning, chlorine containing foam and acidic foam disinfectant.

The new series of photoelectric sensors - PA18 series - can resist 80°C water at 80 – 100 bar, also cleaning agents and disinfectants, complying with the requirements set out by ECOLAB, IP67, IP69K.

These new devices are distinguished by their reliability under the harshest cleaning conditions.

Offered in a compact M18 threaded ABS housing, this new sensor series provides a space saving solution, available in both axial (straight) and radial (90° right angled) versions. Thanks to the built-in microprocessor, the new M18 powerful photoelectric sensors guarantee advanced filtering and detection, ensuring secure and flexible customized solutions.

ECOLAB

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7

Food and Beverage

Our product range

1-phase solid state relays	1-phase solid state relays	1-phase solid state relays

RF1

- Dimensions 36 x 21 x 24 mm, panel mount
- Rated operational voltage: up to 280 VAC
- Rated current: up to 25 AAC
- Control input: 5 VDC, 12 VDC, 24 VDC
- Approvals/Marks: CE - cURus - CSA - VDE (pending)

MAIN FEATURES
- Zero cross or Random switching
- Suited for resistive loads
- Integrated output overvoltage protection

RM1

- Dimensions 58.2 x 44.8 x 28.8mm, panel mount
- Rated operational voltage: up to 660VAC
- Rated current: 25AAC, 50AAC, 75AAC, 100AAC
- Control input: 4-32VDC, 20-280VAC
- Approvals/Marks: CE - cURus - CSA - CCC

MAIN FEATURES
- Zero cross or Random switching
- Integrated output overvoltage protection
- 1400 Vp blocking voltage

RAM1A..G

- Dimensions 58.2 x 44.8 x 28.8mm, panel mount
- Rated operational voltage: up to 660VAC
- Rated current: 25AAC, 50AAC, 100AAC, 125AAC
- Control input: 4-32VDC, 20-280VAC
- Approvals/Marks: CE - cURus - CSA - CCC - VDE

MAIN FEATURES
- Zero cross switching
- Integrated output overvoltage protection
- Certified to EN 60335 glow wire requirements

1 / 2-phase solid state relays	1-phase solid state relays	1-phase solid state contactors

RA2A / RA2A..C

- Dimensions: 57.8 x 44.5 x 31.7 mm, panel mount
- Rated operational voltage: up to 660 VAC
- Rated current per pole: up to 40 AAC
- Control input: 4-32 VDC
- Approvals/Marks: CE - cURus - CSA

MAIN FEATURES
- 2 separately controlled relays in a compact platform
- Zero cross switching
- LED per pole for control status indication

RGS1A

- Dimensions 90 x 17.8 x 51mm, panel mount
- Ratings: up to 660VAC, 90AAC, 18,000A^{2}s
- Integrated output overvoltage protection
- Control input: 4-32VDC, 20-275VAC (24-190VDC)
- Approvals/Marks: CE - cURus - CSA - VDE - GL (50AAC)

MAIN FEATURES
- Zero cross or Random switching
- 100kA short circuit current rating
- Certified as a motor switching device

RGC1A

- Product width 17.5mm up to 70mm, DIN or panel mount
- Ratings: up to 660VAC, 85AAC, 18,000A^{2}s
- Integrated output overvoltage protection
- Control input: 4-32VDC, 20-275VAC (24-190VDC)
- Approvals/Marks: CE - cULus - VDE - GL (up to 30AAC)

MAIN FEATURES
- Zero cross or Random switching
- 100kA short circuit current rating
- Optional integarted overtemperature protection

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Our product range

3-phase solid state contactors	3-phase proportional controllers	Photoelectric sensors

RGC2A / RGC3A

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

MAIN FEATURES
- 3-phase; 2-pole or 3-pole switching
- Optional monitoring for load and SSR malfunction
- 100 kA short circuit current rating

RGC2P / RGC3P

- Product width up to 70 mm, DIN rail mount
- Rated operational voltage: 180 - 660 VAC
- Rated current: up to 75 AAC (RGC2P), 65 AAC (RGC3P) @ 40 °C
- Control input: 0-20 mA, 4-20 mA, 12-20 mA, 0-10 V, 0-5 V, 1-5 V, external potentiometer
- Approvals/Marks: CE - cULus

MAIN FEATURES
- Integrated output overvoltage protection
- Phase angle, Distributed full cycle or Soft start as switching modes
- Integrated monitoring for SSR and load circuit malfunction

PD30

- World standard housing style 10x30x20 mm
- Power supply: 10 to 30 VDC
- NPN or PNP transistor output
- Connection cable or built in M8 connector
- Approvals/Marks: CE - UL 508

MAIN FEATURES
- Distance and output setting by means of teach-button
- Long detecting distances
- Protection: reverse polarity, short circuit and transients

Photoelectric sensors	Photoelectric sensors	Capacitive sensors

PA18

- Standard M18 cylindrical housing
- Power supply: 10 to 30 VDC
- Separate models available for NPN or PNP outputs
- Range: 1 m (Axial), 0.8 m (Radial)
- Sensitivity adjustment by potentiometer
- Approvals/Marks: CE - cULus

MAIN FEATURES
- ECOLAB approved/CE-marking /cULus approved according to UL508
- Diagnostic LED indication (Green and Yellow LED)
- Short-circuit, reverse polarity and overload protection

PH18

- Square sensor with M18 front
- Power supply: 10 to 30 VDC¨
- Separate models available for NPN or PNP outputs
- Sensing types: Diffuse reflective, BGS, Pol. Retro-reflective, Through beam
- Sensitivity adjusted by potentiometer
- Approvals/Marks: CE - cULus

MAIN FEATURES
- ECOLAB approved/CE-marking/ cULus approved according to UL508
- Diagnostic LED indication (Green and yellow LED)
- Short circuit, reverse polarity and overload protected

CA18CA / CA30CA

- Sensing distance: 0.5 - 12 mm (M18), 2 - 30 mm (M30)
- NPN or PNP versions with N.O. and N.C. output
- Dust or temperature alarm output
- Approvals/Marks: CE - cULus

MAIN FEATURES
- ECOLAB approved
- IP69K
- Diagnostic LED indication (Green and yellow LED)
- 4th Generation TRIPLESHIELD™

Our product range

Capacitive sensors	Washdown ECOLAB approved inductive sensors	Washdown ECOLAB certified connectors

CD50CNF

- Dimensions 50x30x7 mm
- Supply 10-30 VDC or 5 VDC
- 3-wire DC sensors with open collector NPN or PNP transistor output
- Approvals/Marks: CE

MAIN FEATURES
- Basic capacitive water level sensor
- Detection of excess water in the tank
- Mounting by screws or glued on the outside of any non-metallic tank

ICS12 / ICS18 / ICS30

- Standard M12, M18 and M30 cylindrical housing
- Power supply: 10 to 36 VDC
- Sensing distance from 2 mm up to 22 mm
- Housing: stainless steel, IP67, IP68 and IP69K
- Approvals/Marks: CE - cULus

MAIN FEATURES
- ECOLAB approved / cULus approved according to UL508
- Short-circuit and overload LED indication
- Extended temperature range: -40°C to +80°C

CONB14NF

- M12 connector
- Straight and angled versions
- 2 or 5 m cable length
- 4-wire version
- Degree of protection IP69K

MAIN FEATURES
- ECOLAB approved/ UL approved
- Extended Temperature range: -40°C to +105°C
- LED version also available

Inductive proximity sensors	Level magnetic sensors	Safety magnetic sensors

IA08

- Stainless steel housing M8
- Sensing distance: 1.5 mm or 2.5 mm
- Power supply: 10 to 30 VDC
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES
- Miniature inductive proximity switches with reduced body length
- LED-indication for output ON
- Protection: Short-circuit

ILSP/ILM

- Cylindrical, float diameter 17.5 to 53 mm
- Reversible output function by float overturning
- High temperature versions available
- Degree of protection: IP67 minimum

MAIN FEATURES
- Cylindrical non-toxic polypropylene or stainless steel housing
- Vertical or horizontal mounting
- NO, NC or change-over output function

CLS / SMS

- Rectangular housing
- Output function: NO+NC
- Housing material: Plastic - Stainless steel (CLSA2M)
- Approvals/Marks: CE - cULus

MAIN FEATURES
- Multiple flux coding
- 1 NC auxiliary output (SMS03NC only)
- Operating temperature -25° to +70°C

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Our product range

Energy meters	Energy meters	Energy analyzers

EM10 DIN

- 1-phase energy meters with direct connection
- Current input up to 32 A
- 1 DIN module dimension
- Class 1 (kWh) acc. to EN62053-1, Class B (kWh) acc. to EN50470-3
- Pulse open collector output

MAIN FEATURES
- Direct measurement in a very compact housing to save space
- Suitable to measure generated energy
- MID Annex D certification available

EM23 DIN

- 3-phase energy meters with direct connection
- Current input up to 65 A
- 4 DIN module dimension
- Class 1 (kWh) acc. to EN62053-1, Class B (kWh) acc. to EN50470-3
- Pulse open collector output

MAIN FEATURES
- Direct measurement in a very compact housing to save space
- Suitable to measure generated energy
- MID Annex D certification available

EM24 DIN

- 3-phase energy meter with direct connection
- Direct connection up to 65 A or by CT
- Dimensions: 4-DIN-rail module housings
- Class 1 (kWh) acc. to EN62053-1, Class B (kWh) acc. to EN50470-3
- Pulse open collector output
- Modbus 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

Multifunction meters	Monitoring relays	Monitoring relays

WM14 / WM12

- Dimensions: 6 DIN rail module or 96 x 96 mm panel mounting housings
- 3-phase multifunction indicator (WM12) or analyser (WM14)
- Accuracy 0.5 % (voltage, current)
- Front protection degree IP65, NEMA4X, NEMA12

MAIN FEATURES
- Available models from a simple indicator up to an advanced analyser
- Allows the serial re-trasmission of the main parameters to a PLC for full control of the system
- Suitable for DIN-rail or panel mounting

DPA51

- Dimensions: 81 x 17.5 x 67.2 mm DINrail housing
- Phase sequence and loss relay
- 3-phase AC (own power supply); regenerated voltage
- Power supply from 208 to 480 VAC
- Approvals/Marks: UL, CSA and CCC approved

MAIN FEATURES
- Protection from reverse running and phase loss
- 17.5 mm width: the smallest in the market
- Plug and play: no settings needed

DPB51

- Dimensions: 81 x 17.5 x 67.2 mm DINrail housing
- TRMS 3-phase over/under voltage, phase sequence and loss relay
- 3-phase AC (own power supply)
- Power supply from 208 to 480 VAC
- Approvals/Marks: UL and CSA approved

MAIN FEATURES
- Detects the phase-phase or phase neutral voltage
- 17.5 mm width: the smallest in the market
- Independent voltage setpoints and built-in delays

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11

Our product range

Monitoring relays	Monitoring relays	Monitoring relays

DIA53

- Dimensions: 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, 50 or 100 A full scale
- Self powered
- Approvals/Marks: UL - CSA - CCC approved

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

DIB71

- Dimensions: 81 x 35.5 x 67.2 mm DINrail housing
- Over or under current monitoring relay 1-phase AC/DC TRMS
- Power supply from 24 to 2380 VAC (± 15%)
- Approvals/Marks: UL, CSA and CE approved

MAIN FEATURES
- Solution to simply monitor oveload LED indication for relay, alarm and power supply ON
- 35.5 mm wide housing suitable both for both back and front panel mounting

DWA01

- Dimensions: 83 x 22.5 x 99.5 mm DINrail housing
- Cos Φ monitoring relays
- 3-phase AC (own power supply)
- Power supply from 208 to 240 VAC or from 380 to 480 VAC
- Approvals/Marks: UL and CSA approved

MAIN FEATURES
- Detects any potentially dangerous change of the cos phì
- Direct current connection or by CT
- Easy setup

3-phase centrifugal pump soft starters	3-phase general purpose soft starters	Soft starters

RSWT

- Motor rating: Up to 30 kW (55 A)
- 3-phase controlled & internally bypassed
- Ramp-up/Ramp-down time: up to 20 sec
- Operational voltage:
    RSWT40: 220 - 400 VAC, RSWT60: 220 - 600 VAC
- PTC input, Alarm - Top of Ramp - Run relay indication

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

RSGD

- Motor Rating: Up to 22 kW in 45 mm
- Ramp up time: 1 - 20 sec
- Internally bypassed
- Mutli-voltage operation:
    RSGD40: 220 - 400 VAC
    RSGD60: 220 - 600 VAC
- Wide Control voltage range:
    Option E: 110 - 400 VAC
    Option F: 24 VAC/DC

MAIN FEATURES
- Easy to use and setup
- Current balancing algorithm
- Auxiliary relays for top of ramp and alarms

RSBS / RSBS HP

- Current limit starting
- Advanced diagnostic functions
- Internally bypassed
- Up to12 starts per hour
- Approvals/Marks: cULus listed, EN60335-2-40 approval

MAIN FEATURES
- Plug&Play: no external settings needed
- Space saving IP20 design
- Integrated starting capacitor
- Optimised algorithm for high pressure starts (RSBS HP)

Our product range

Timers	Timers	Switching power supplies

HAA08 / 14

- 21.5 x 28 mm housing for 8 pin or 14 pin blade socket
- Multifunction timer
- DPDT or 4PDT output
- Universal power supply
- Approvals/Marks: cUR and CSA approved

MAIN FEATURES
- Front knob adjustable time setting
- Selectable time ranges from 0.1 s to 100 h
- Delay on operate/release, ON/OFF first symmetrical recycle, single/double interval on trigger open/close

FMB01

- 48 x 48 mm housing for 11 pin socket or panel mounting
- Multifunction timer with 7 functions
- DPDT output
- Universal power supply
- Approvals/Marks: cUR - CSA

MAIN FEATURES
- Front knob adjustable time setting
- Selectable time ranges from 0.05 s to 300 h
- Delay on operate/release, ON/OFF first symmetrical recycle, single/double interval on trigger open/close

SPD - DIN rail type (5 W...960 W)

- DIN-rail housing
- Short circuit and overload protection
- 1-Phase and 3-phase
- Universal supply voltage AC/DC
- Approvals/Marks: cUL listed and TUV/CE approved

MAIN FEATURES
- High efficiency
- LED indicator for DC power on
- Parallel versions available
- Active PFC ≥ 90 W
- Class II output ≤ 90 W

Switching power supplies	Digital panel meters	Digital panel meters

SPPC - Enclosed type - 25 W...800 W

- Compact dimensions
- Universal input voltage range: 85 VAC ~264 VAC / 120 VDC~370 VDC (SPPC150F type)
- 105°C long life electrolytic capacitors
- Adjustable output

MAIN FEATURES
- High efficiency and compact size
- DC output: 5, 12, 15, 24 and 48 V
- Built-in active PFC (Power Factor Correction) function: PF >0.98 @115 VAC and PF > 0.95@ 230 VAC (SPPC150F type)

UDM40

- Panel mounting 48 x 96 x 105 mm
- Multi input modular 4DGT LED meter & controller
- AC/DC current and voltage, °C & °F temperature, resistance, frequency measurement
- Serial Port RS485/RS232 Modbus, JBUS protocol
- Approvals/Marks: CE, UL and CSA approved

MAIN FEATURES
- Particularly indicated for process control
- Up to 4 independent alarms and set points
- Linearization of V, A and Hz inputs up to 16 points

LDM40

- Dimensions: 48 x 96 x 83 cm
- Multi input instrument 4DGT LED
- AC/DC current/voltage measurements: selectable full scales (200 µA to 5 A / 200 mV to 500 V)
- Approvals/Marks: CE, cURS, CSA

MAIN FEATURES
- Measuring ranges and functions easily programmable from the front key pad
- Accuracy class 0.1% reading

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13

Notes

CARLO GAVAZZI

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