Photoelectric sensors

Carlo Gavazzi offers a wide range of photoelectric sensors designed to be used extensively in applications such as material handling, packaging machinery, automatic door systems, etc. A variety of sensing principles are covered, to fit the requirements of virtually any application: diffuse-reflective (D), background suppression (B), retro-reflective (R) with or without polarization (P), for transparent objects (G), and through-beam (T).
The sensors featuring IP69K ratings and ECOLAB approvals are designed for harsh environments.

Stand alone through beam

- Supply voltage: DC 3-wire
- Sensing distance: < 20 m
- Output: NPN/PNP - NO/NC
- Connectivity: cable or pig-tail
- Housing: PC, IP67
- Features: sensor mute input, T type
- Approvals: CE - cULus

M18 PA18

- Supply voltage: DC 4-wire
- Sensing distance: < 20 m
- Output: NPN/PNP NO+NC
- Connectivity: cable or M12 connector
- Housing: PBTP, IP67, IP68, IP69K
- Sensor types: D, B, R, P and T
- Approvals: CE - cULus - ECOLAB

PH18

- Supply voltage: DC 4-wire
- Sensing distance: < 20 m
- Output: NPN/PNP NO+NC
- Connectivity: cable or M12 connectors
- Housing: PBTP, IP67, IP68, IP69K
- Sensor types: D, B, R, P and T
- Approvals: CE - cULus - ECOLAB

Miniaturised PD30

- Supply voltage: DC 4-wire
- Sensing distance: < 15 m
- Output: NPN/PNP NO+NC
- Connectivity: cable or M8 connectors
- Housing: ABS; IP67
  Stainless Steel; IP69K
- Sensor types: D, B, R, P, G and T
- Approvals: CE - cULus - ECOLAB

PD30 with IO-Link

- Applications: Pattern Recognition, Speed & Length detection, Divider function, Object and Gap Monitoring
- Time Delays, Logic Functions
- Outputs: NPN, PNP, Push-Pull, External inputs
- Diagnostic function: QoT, QoR, Dust & Temp. Alarm, Operation hours, Power & Detection cycles, Max. and Min. Temp., Short-circuit, Maintenance, No of changes

LD30 ToF with IO-Link and infrared laser

- IO-Link Ver. 1.1
- BGS - Time of flight sensor
- Time delay, ON, OFF, One shot
- Logic: AND, OR, XOR, Gated SR-FF
- Housing: ABS; IP67
  Stainless Steel; IP69K
- Output and diagnostic function: from PD30 with IO-Link

Compact PC50

- Supply voltage: DC 4-wire, AC/DC 5-wire
- Sensing distance: < 20 m
- Output: NPN/PNP - NO+NC, SPDT 3 A
- Connectivity: cable or M12 connector
- Housing: ABS/PC, IP67
- Sensor types: D, B, R, P and T
- Approvals: CE - UL - CSA

PM...

- Supply voltage: AC/DC 5-wire
- Sensing distance: < 20 m
- Output: SPDT 3 A
- Connectivity: cable outlet, terminals
- Housing: ABS/PC, IP67
- Sensor types: D, R, P and T
- Approvals: CE - UL325 - UL508

Remote amplified sensors MOF...

- Supply from system: S142A, B or C
- Sensing distance: < 50 m
- Output from system: SPDT 10 A
- Connectivity: 11 pin socket
- Housing: syst. PPO, sens. PC IP67
- Sensor types: T, ATEX zone 22
- Approvals: CE - UL - CSA

PA18CL..

- Supply voltage: AC 2-wire
- Sensing distance: < 3 m
- Output: AC 500 mA
- Connectivity: cable or M12 connector
- Housing: PBTP or NPB, IP67
- Features: D, R or P type
- Approvals: CE - UL- CSA

EO/ER/EP/ET18 NPB housing

- Supply voltage: DC 4-wire
- Sensing distance: < 20 m
- Output: NPN/PNP NO+NC
- Connectivity: cable or M12 connector
- Housing: NPB, IP67
- Sensor types: D, R, P and T
- Approvals: CE - cULus

Liquid level VP-sensor

- Supply voltage: DC 3-wire, AC 2-wire
- Sensing distance: direct contact
- Output: NPN/PNP/NO/NC, AC NO/NC
- Connectivity: cable or M12 connector
- Housing: PA12, PSU, Glass, NPB, stainless steel, IP67
- Approvals: CE - UL - CSA

Photoelectric sensors

Carlo Gavazzi offers a comprehensive range of sensors for Doors, Gates and Entrances, all approved to meet the latest European and North American regulations.
The motion and presence sensors are based on vision technology and have been developed for straight or curved sliding pedestrian doors. They provide easy set-up, easy adjustment of the detection zone and a cross-walk elimination function.

Fork sensor PF74, for lifts

- Supply voltage: DC 3-wire
- Slot width: < 30 mm
- Output: NPN+PNP NO/NC
- Connectivity: cable outlet
- Housing: PC, IP65
- Features: High dust immunity, T type
- Approvals: CE

Automatic doors PD98

- Supply voltage: AC/DC 5-wire
- Sensing distance: < 30 m
- Output: SPDT 1 A
- Connectivity: cable outlet, terminals
- Housing: PC/ABS, IP54
- Features: sensor mute input, T type
- Approvals: CE - UL325

Automatic doors PD86

- Supply voltage: AC/DC 5-wire
- Sensing distance: < 20 m
- Output: SPDT 3 A
- Connectivity: cable outlet, terminals
- Housing: PC/ZAMAK, PMMA, IP66
- Features: sensor mute input, T type
- Approvals: CE - UL325 - UL508

Automatic doors PD140

- Supply voltage: AC/DC 5-wire
- Sensing distance: < 60 m
- Output: SPST 1 A
- Connectivity: cable outlet, terminals
- Housing: Aluminium/PC, IP65
- Features: sensor mute input, T type
- Approvals: CE - UL325, EN 12445, EN 12453, EN12978,
- EN/ISO 13849-1 ESPE2

Automatic doors PD180

- Supply voltage: AC/DC 5-wire, battery
- Sensing distance: < 30 m
- Output: SPST 1 A
- Connectivity: cable outlet, terminals
- Housing: PC, IP55
- Features: sensor mute input, T type
- Approvals: CE - UL325, EN 12445, EN 12453, EN12978
- EN/ISO 13849-1 ESPE2

Long range BGS PD112

- Supply voltage: DC 4-wire
- Sensing distance: < 2.5 m
- Output: NPN/PNP NO+NC
- Connectivity: cable or M12 connector
- Housing: PC, IP67
- Features: B, industrial or door mode
- Approvals: CE - cULus

Automatic doors wireless safety

- Supply voltage: AC/DC, battery
- Wireless distance: < 10 m
- Output: 3 x SPST, NO 8,2 or NC
- Connectivity: cable outlet, terminals
- Housing: ABS or PC or PA6, IP66/IP67
- Main- and sub-module, 2.4 GHz duplex
- Approvals: CE - cULus - FCC

Automatic gates wireless safety

- Supply voltage: AC/DC, battery
- Wireless distance: < 15 m
- Output: 3 x SPST, NO 8,2 or NC
- Connectivity: cable outlet, terminals
- Housing: ABS or PC or PA6, IP66/IP67
- Main- and sub-module, 2.4 GHz duplex
- Approvals: CE - cULus - FCC

Automatic doors MPF system

- Supply voltage: AC/DC or AC
- Sensing distance: < 15 m
- Output: 2 x SPST 0.5 A or 2 A
- Connectivity: terminals
- System: PC, IP40 sensor: PC+SS, IP67
- Features: sensor mute input, T type
- Approvals: CE - UL325 - UL508 - TÜV

Automatic doors PD70

- Supply voltage: DC 3-wire
- Sensing distance: < 12 m
- Output: NPN/PNP - NO/NC
- Connectivity: cable or M8 connector
- Housing: PC, IP67
- Features: sensor mute input, T type
- Approvals: CE - cULus

Reflectors

- High quality retro-reflectors
- Housing shape: square or round
- Round shape: Ø25 to Ø84 mm
- Square shape: 13x17 to 100x100 mm
- Mounting: adhesive or screws
- Material: PMMA/ABS

Mounting brackets AMB series

- Bracket style: Straight or angled
- Sensor size: Ø4, M8, M12, M18 or M30
- Bracket material: galvanized steel or stainless steel AISI316L or Nylon 66 plastic housing
- Adjustability: ±32°
- Head can be rotated 360°

Capacitive sensors

Carlo Gavazzi is renowned for its TRIPLESHIELD™ capacitive proximity sensors with outstanding electromagnetic immunity. The 4th Generation TRIPLESHIELD™ sensors feature several significant upgrades, including superior electromagnetic immunity and refined sensitivity adjustment with stability indication and are now also available with on-board IO-Link communication. New benefits include a dust and temperature alarm function. Featuring an ECOLAB certified sensor housing rated to IP69K standard, these sensors are exceptionally well suited for a precise detection in environments subject to high temperatures, harsh chemicals, steam and high-pressure cleaning. The sensors are ideal for a wide range of applications that require reliable measurements or monitoring of solid materials or fluids.

M12 Tripleshield™

- Supply voltage: DC 4-wire
- Sensing distance: < 8 mm (F/NF)
- Output: NPN/PNP - NO+NC
- Connectivity: cable or M12 connector
- Housing: PBT, IP67
- Features: high immunity to EMI
- Approvals: CE - UL - CSA

M18 and M30 Tripleshield™

- Supply voltage: AC 2-wire
- Sensing distance M18: < 12 mm (F/NF)
- Sensing distance M30: < 25 mm (F/NF)
- Output: SCR NO+NC
- Connectivity: cable or M12 connector
- Housing: PBT, IP67
- Features: high immunity to EMI
- Approvals: CE - UL - CSA

CD34

- Supply voltage: DC 4-wire
- Sensing: water-based liquids
- Output: NPN/PNP NO/NC
- Connectivity: cable or M8 4-pin pig-tail
- Housing: PBT, IP65, IP66, IP67, IP68, IP69K
- Features: automatic tankwall suppression
- Approvals: CE - cULus - ECOLAB

CD46 Tripleshield™

- Supply voltage: DC 4-wire
- Sensing distance: < 10 mm (F/NF)
- Output: NPN/PNP NO/NC, Teach
- Connectivity: cable or M12 pig-tail
- Housing: PBT, IP68
- Features: high immunity to EMI
- Approvals: CE - UL - CSA

EC55 (VC55) Tripleshield™

- Supply voltage: DC 4-wire
- Sensing distance: < 25 mm (F/NF)
- Output: NPN/PNP NO+NC
- Connectivity: cable or M12 pig-tail
- Housing: PC, IP67
- Features: high immunity to EMI
- Approvals: CE - UL - CSA

CA18 and CA30 4th Gen. Tripleshield™

- Supply voltage: DC 4-wire
- Sensing distance M18: < 15 mm (F/NF)
- Sensing distance M30: < 30 mm (F/NF)
- Output: NPN/PNP NO+NC
- Connectivity: cable or M12 connector
- Housing: PBT, IP67, IP68, IP69K
- Features: superior immunity to EMI

CA18 and CA30 with IO-Link 4th Gen. Tripleshield™

- Additional specifications: from standard IO-Link Ver. 1.1
- Time delay, ON, OFF, One shot
- Logic: AND, OR, XOR, Gated SR-FF
- External input
- Outputs: NPN, PNP or Push-Pull
- Diagnostic functions: Operation hours, Power cycles, Detection cycles, Temperatures, Short-circuit, Maintenance

M18 Chemical resistant

- Supply voltage: DC 4-wire
- Sensing distance: < 12 mm (F/NF)
- Output: NPN/PNP NO+NC
- Connectivity: cable
- Housing: PP or PVC, IP67
- Features: high chemical resistance
- Approvals: CE

CD50

- Supply voltage: DC 4-wire
- Sensing distance: < 10 mm (F)
- Output: NPN/PNP NO/NC
- Connectivity: cable
- Housing: PPE-TPE, IP67
- Approvals: CE

Ø18 ATEX Zone 22

- Supply voltage: DC 4-wire, AC 2-wire
- Sensing distance: < 12 mm (NF)
- Output: NPN/PNP NO+NC, SCR NO/NC
- Connectivity: cable
- Housing: PBT, IP67
- Features: fixed ON-delay 30 sec
- Approvals: CE - UL - CSA - ATEX

Ø32 VC11/12

- Supply voltage: AC/DC 5-wire, AC 5-wire
- Sensing distance: < 20 mm (NF)
- Output: SPDT 2 A
- Connectivity: cable
- Housing: PBT, IP67
- Features: adj. ON or OFF delay 600 sec
- Approvals: CE - cULus (M24), ATEX

Ø32 ATEX Zone 20

- Supply voltage: AC/DC 5-wire, AC 5-wire
- Sensing distance: < 20 mm (NF)
- Output: SPDT 2 A
- Connectivity: cable
- Housing: PBT, IP67
- Features: adj. ON or OFF delay 600 sec
- Approvals: CE - ATEX

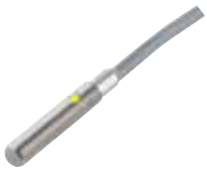
Inductive sensors

Carlo Gavazzi offers a broad range of inductive sensors, primarily used for reliable contactless detection of machine moving or rotating parts. These extremely accurate and robust sensors are used in packaging and plastics machines, conveyor systems, agriculture and mobile equipment. They are available in a wide variety of styles, including cylindrical housings (from 4 to 30 mm) with a sensing distance of up to 40 mm, flat pack, and 40 x 40 rotable head. The ICS E1 series resists to high levels of shock and vibrations, wide temperature variations, voltage peaks of up to 200 V, high pressure and high temperature wash-down thanks to IP69K rating, and have an outstanding immunity to radiated noise of up to 200 V/m. The miniature series, from Ø4 to M8, can reach a frequency of up to 6 kHz and is also available with on-board IO-Link communication, as is the new ICB series, fully embracing the Industry 4.0 requirements.

Ø4

- Supply voltage: 3-w DC
- Sensing distance: ≤ 1.3 mm (F)
- Output: NPN/PNP - NO/NC
- Connectivity: cable or M8 connector
- Housing: stainless steel, IP67
- Special features: miniature series, operating frequency up to 6 kHz
- Approvals: CE - UL - CSA

M5



- Supply voltage: 3-w DC
- Sensing distance: ≤ 1.3 mm (F)
- Output: NPN/PNP - NO/NC
- Connectivity: cable or M8 connector
- Housing: stainless steel, IP67
- Special features: miniature series, operating frequency up to 6 kHz
- Approvals: CE - UL - CSA

Ø6.5

- Supply voltage: 3-w DC
- Sensing distance: ≤ 4 mm (F/NF)
- Output: NPN/PNP - NO/NC
- Connectivity: cable, M8 connector or M12 connector (M8)
- Housing: stainless steel, IP67
- Special features: miniature series
- Approvals: CE - UL - CSA

Ø4 - M5 - M8 with IO-Link

- Additional specifications: from standard IO-Link Ver. 1.1
- Time delay, ON, OFF, One shot
- Outputs: configurable NO or NC; NPN, PNP or Push-Pull
- Switching mode: single point, two point or window
- Adjustable Sn and hysteresis
- Revolution counter, rotational speed monitoring & temperature alarm

M12

- Supply voltage: 2-w, 3-w DC, Namur, 2-w AC
- Sensing distance: ≤ 10 mm (F/QF/NF)
- Output: NPN/PNP - NO/NC
- Connectivity: cable or M12 connector
- Housing: NPB, stainless steel, IP67
- Special features: complete range, short, long and extra-short body
- Approvals: CE - UL - CSA

M18

- Supply voltage: 2-w, 3-w DC, Namur, 2-w AC
- Sensing distance: ≤ 20 mm (F/QF/NF)
- Output: NPN/PNP - NO/NC
- Connectivity: cable or M12 connector
- Housing: NPB, stainless steel, IP67
- Special features: complete range, short or long body
- Approvals: CE - UL - CSA

M30

- Supply voltage: 2-w, 3-w DC, Namur, 2-w AC
- Sensing distance: ≤ 40 mm (F/NF)
- Output: NPN/PNP - NO/NC
- Connectivity: cable or M12 connector
- Housing: NPB, stainless steel, IP67
- Special features: complete range, short or long body
- Approvals: CE - UL - CSA

M12 - M18 - M30 with IO-Link

- Additional specifications: from standard IO-Link Ver. 1.1
- Time delay, ON, OFF, One shot
- Outputs: configurable NO or NC; NPN, PNP or Push-Pull
- Switching mode: single point, two point or window
- Adjustable Sn and hysteresis
- Revolution counter, rotational speed monitoring & temperature alarm

M12 - M18 - M30 E1

- Supply voltage: 3-w DC
- Sensing distance: ≤ 22 mm (F/NF)
- Output: NPN/PNP - NO/NC
- Connectivity: cable or M12 connector
- Housing: stainless steel, IP67, IP68, IP69K
- Special features: Mobile equipment applications. 8-60 VDC, Load dump protection, 200 V/m radiated immunity
- Approvals: CE - cULus - E1

M12 - M18 - M30 Full metal

- Additional specifications: from IO-Link
- Condition monitoring: Low margin alarm, Proximity alarm, Activation Level
- Find my sensor function
- Full metal face resistant up to 260 bar pressure for M12, 200 bar for M18 and 100 bar for M30
- Housing: stainless steel, IP67, IP68, IP69K
- Approvals: CE - cULus - ECOLAB

Rotatable head

- Supply voltage: 4-w DC
- Sensing distance: ≤ 40 mm (F/NF)
- Output: NPN/PNP - NO+NC
- Connectivity: M12 connector
- Housing: PBT, IP67, IP68, IP69K
- Special features: rotatable sensing face, quick mounting system, 4 corner LEDs
- Approvals: CE - cULus

Loop detector

- Supply voltage: 24-240 VAC/VDC, 12-36 VAC/VDC [LDP]
- Input: 1 loop or dual loop
- Output: 2 x SPDT, relay output
- Mounting: plug [LDP], DIN-rail [LDD]
- Special features: automatic sensitivity boost, automatic frequency tuning, fail safe/fail secure, advanced diagnostics
- Approvals: CE - UL [LDP] - CSA [LDP] - cULus [LDD]

Ultrasonic sensors

The ultrasonic sensors from Carlo Gavazzi provide superior sensing solutions for a variety of industrial applications. The UA sensors are excellent for contactless position and distance measurement and are able to detect any sound reflecting targets regardless of colour, transparency or surface. Due to their resistance to temperature variations and immunity against dust, steam and fumes, these sensors are especially well suited to harsh environments. The sensors come in a two switching output version and a combined version with one switching and one analogue output. Thanks to improved technology, an extended sensing distance and a reduced housing length, these sensors provide a state-of-the-art sensor family with high accuracy, versatility and resilience.

M18 Short body PBT housing

- Supply voltage: DC 4-wire
- Sensing distance: 300 or 800 mm teach-by wire
- Output: NPN/PNP - NO/NC
- Output: analogue 4-20 mA/0-10 V
- Connectivity: cable or M12 connector
- Housing: PBT, IP67
- Features: switching, positive or negative slope
- Approvals: CE - cULus

M18 Short body stainless steel

- Supply voltage: DC 4-wire
- Sensing distance: 300 or 800 mm teach-by wire
- Output: NPN/PNP - NO/NC
- Output: analogue 4-20 mA/0-10 V
- Connectivity: cable or M12 connector
- Housing: AISI316L stainless steel, IP67
- Features: switching, positive or negative slope
- Approvals: CE - cULus

M18 Switching output

- Supply voltage: DC 4-wire
- Sensing distance: < 2.2 m teach-in
- Output: NPN/PNP - NO+NC
- Connectivity: cable or M12 connector
- Housing: PBT, IP67
- Features: switching
- Approvals: CE - cULus

M18 Analogue output

- Supply voltage: DC 4-wire
- Sensing distance: < 2.2 m teach-in
- Output: analogue 4-20 mA/0-10 V
- Connectivity: cable or M12 connector
- Housing: PBT, IP67
- Features: positive or negative slope
- Approvals: CE - cULus

M30 Switching output

- Supply voltage: DC 4-wire
- Sensing distance: < 3.5 m teach-in
- Output: NPN/PNP - NO+NC, analogue
- Connectivity: cable or M12 connector
- Housing: PBT, IP67
- Features: switching
- Approvals: CE - cULus

M30 Analogue output

- Supply voltage: DC 4-wire
- Sensing distance: < 2.2 m teach-in
- Output: analogue 4-20 mA/0-10 V
- Connectivity: cable or M12 connector
- Housing: PBT, IP67
- Features: positive or negative slope
- Approvals: CE - cULus

M18 Stainless steel

- Supply voltage: DC 4-wire
- Sensing distance: < 2.2 m teach-in
- Output: NPN/PNP - NO+NC
- Connectivity: cable or M12 connector
- Housing: AISI316L stainless steel, IP67
- Features: switching
- Approvals: CE - cULus

M18 Stainless steel

- Supply voltage: DC 4-wire
- Sensing distance: < 2.2 m teach-in
- Output: analogue 4-20 mA/0-10 V
- Connectivity: cable or M12 connector
- Housing: AISI316L stainless steel, IP67
- Features: positive or negative slope
- Approvals: CE - cULus

M30 Stainless steel

- Supply voltage: DC 4-wire
- Sensing distance: < 3.5 m teach-in
- Output: NPN/PNP - NO+NC, analogue
- Connectivity: cable or M12 connector
- Housing: AISI316L stainless steel, IP67
- Features: switching
- Approvals: CE - cULus

M30 Stainless steel

- Supply voltage: DC 4-wire
- Sensing distance: < 2.2 m teach-in
- Output: analogue 4-20 mA/0-10 V
- Connectivity: cable or M12 connector
- Housing: AISI316L stainless steel, IP67
- Features: positive or negative slope
- Approvals: CE - cULus

M12 Stainless steel

- Supply voltage: DC 4-wire
- Sensing distance: < 400 mm teach-in
- Output: NPN/PNP NO/NC
- Connectivity: cable or M12 pig-tail
- Housing: stainless steel, IP67
- Features: switching, 4-20 mA/0-10 V
- Approvals: CE

M30 (Ø39 mm)

- Supply voltage: DC 4-wire
- Sensing distance: < 3.5 m teach-in
- Output: NPN/PNP - NO+NC, analogue
- Connectivity: cable or M12 connector
- Housing: PBT, IP67
- Features: switching, 4-20 mA/0-10 V
- Approvals: CE - cULus

Magnetic sensors

Carlo Gavazzi offers a comprehensive range of proximity magnetic sensors to be used in detection applications. They are employed in conjunction with an external magnet: when the sensor approaches the magnet, the output from the sensor changes the status. There is a wide variety of styles available including rectangular, cylindrical and slotted. Safety magnetic sensors with special coded magnets are available in compact or standard rectangular housings, the ideal solution to monitor sliding, hinged and removable safety guards. Magnetic sensors are frequently used for elevators and lifts, gate control, level detection and access control. Some proximity and level sensors are certified for use in explosive environments (ATEX).

Ø 6

- Max. switch. power contact: 10 VA
- Operating distance: > 8 mm
- Output: NO
- Connectivity: 0.5 m twin lead cable
- Housing: plastic, IP67
- Special features: cylindrical series
- Approvals: CE

Ø 13,5

- Max. switch. power contact: up to 120 VA
- Operating distance: 3 - 12 mm
- Output: NO, NC, CO
- Connectivity: 0.5 m PVC cable
- Housing: plastic, IP67
- Special feature: cylindrical series
- Approvals: CE

M8

- Max. switch. power contact: up to 10 VA
- Operating distance: 8 - 28 mm
- Output: NO, CO
- Connectivity: 2 m PVC cable
- Housing: stainless steel or NPB, IP67
- Special feature: cylindrical series
- Approvals: CE

M10

- Max. switch. power contact: up to 120 VA
- Operating distance: 7 - 36 mm
- Output: NO, CO
- Connectivity: 2 m PVC cable
- Housing: brass or NPB, IP67
- Special feature: cylindrical series
- Approvals: CE

M12

- Max. switch. power contact: up to 120 VA
- Operating distance: 2 - 20 mm
- Output: NO, NC, CO, bistable
- Connectivity: 2 m PVC cable or 2 m silicone cable
- Housing: brass, NPB, plastic, IP67
- Special feature: includes a special family for elevators
- Approvals: CE

M16

- Max. switch. power contact: up to 100 VA
- Operating distance: 5 - 32 mm
- Output: CO, Bistable
- Connectivity: 2 m PVC cable or 0.5 m silicone cable
- Housing: brass, plastic, IP67
- Special features: includes a special family up to 150°C
- Approvals: CE

Flat type

- Max. switch. power contact: up to 120 VA
- Operating distance: 5 - 40 mm
- Output: NO, NC, CO, bistable
- Connectivity: PVC cable, pig tail, twin lead cable
- Housing: plastic, IP67
- Special features: includes a family with 2xNC outputs
- Approvals: CE

Level (inox)

- Max. switch. power contact: up to 120 VA
- Float diameter: Ø 28, Ø 53
- Output: NO, NC, CO, NO/NC
- Connectivity: silicone cable, XLPE cable
- Housing: stainless steel, IP67, IP68
- Special feature: includes a family up to 200°C
- Approvals: CE

Level (plastic)

- Max. switch. power contact: up to 120 VA
- Float diameter: Ø 25, 17.5, 31, 44, 45 mm
- Output: NO, CO, NO/NC
- Connectivity: PVC cable, silicone cable, XLPE cable
- Housing: plastic, IP67, IP68
- Special feature: possibility to reverse the output function
- Approvals: CE

ATEX

- Max. switch. power contact: up to 100 VA
- Operating distance: 8 - 35 mm
- Output: NO, NC, CO
- Connectivity: silicone, HF PUR, PVC cable
- Housing: stainless steel, self-ext. plastic, IP66, IP67
- Special features: Category 2G, 2D or 1G, 1D
- Approvals: CE - TUV Sud

Safety sensors (standard)

- Max. switch. power contact: 6 W
- Operating distance (Sao): 5 mm, 8 mm, 18 mm depending on actuator
- Output: 2 NO, 1 NO + 1 NC, 2 NO + 1 NC
- Connectivity: PVC cable, M8-plug, pig-tail with M12 connector
- Housing: rectangular, plastic, IP67, IP69K [Plug version without LED]
- Approvals: CE - cULus

Safety sensors (compact)

- Max. switch. power contact: 6 W
- Operating distance (Sao): 5 mm
- Output: 2 NO, 1 NO + 1 NC, 2 NO + 1 NC
- Connectivity: PVC cable, M8-plug
- Housing: rectangular, plastic, IP67, IP69K [Plug version without LED]
- Special features: compact dimensions, left or right exit, with or without LED
- Approvals: CE - cULus

Connectivity, industrial networking and wind sensors

To support its wide range of sensors, Carlo Gavazzi also offers a number of accessories and connectors for all market needs, that are characterized by high quality standards. The SCTL55 is the Industry 4.0 portable and user-friendly configurator for IO-Link sensors, providing simple configuration, monitoring and advanced diagnostic data. Y-series IO-Link masters allow connection of up to 8 smart devices to the higher-level control system and support EtherNet/IP™, PROFINET IO, and MODBUS TCP. Thanks to the integrated web server and IODD interpreter it is easy to configure and access diagnostic information via a web browser, also remotely from PC or tablets. Wind sensors are designed for measuring wind direction and wind speed in a wide variety of applications including wind turbines, cranes, weather stations and solar panels.

YN Series IO-Link masters

- DIN rail fielbus module
- IO-Link v1.1 and v1.0
- Integrated web server accessible via browser
- 8 IO-Link outputs, 2 Ethernet ports
- EtherNet/IP™ or PROFINET IO, Modbus TCP
- OPC UA support
- Pluggable push-in and screw terminal connectors
- Approvals: CE - UL - FCC

YL Series IO-Link masters

- Machine mount fielbus module
- IO-Link v1.1 and v1.0
- Integrated web server accessible via browser
- 8 IO-Link outputs, 2 Ethernet ports
- EtherNet/IP™ or PROFINET IO, Modbus TCP
- M12 connectors
- OPC UA support
- Approvals: CE - UL - FCC

SCTL55 Smart configurator

- Handheld device for easy monitoring, diagnostics, configuration and cloning of IO-Link sensors
- IO-Link v1.1
- 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: CE - FCC - IC

CONE1 Straight and Angled

- M12 connector
- Straight version [-S..]
- Angled version [-A..]
- 2/5 m cable length
- 3/4/5 wire DC version
- UL approval
- IP67 rating
- PVC cable or PUR cable on request

CONE5 Straight and Angled

- M8 connector
- Straight version [-S..]
- Angled version [-A..]
- 2/5 m cable length
- 3 or 4 wire DC version
- UL approval
- IP67 rating
- PVC cable or PUR cable on request

CONH6 Straight and Angled

- M12 connector
- Straight version [-S.]
- Angled version [-A.]
- 2 or 5 m cable length
- 2 wire AC version
- IP67 rating
- PVC cable

CONE14NF-S/-A Connector only

- M12 connector only
- Straight version [CONE14NF-S]
- Angled version [CONE14NF-A]
- Field-wireable
- 4 wire version
- IP67 rating

DWS-D Wind direction

- Wind vane
- Measures wind direction
- 0° to 360° measurement
- 90° measurement interval
- PNP or NPN output
- -20°C to +60°C
- IP54 rating
- Built-in heater, High ESD protection

DWS-V Wind speed

- Anemometer
- Measures wind speed
- 2 to 30 m/s
- PNP or NPN output
- PVC cable connection
- -20°C to +60°C
- IP54 rating
- Built-in heater, High ESD protection

DWS-V-AGP Wind speed

- Anemometer, 4-20 mA output
- Measures wind speed
- 2 to 50 m/s
- PNP or NPN output
- M16 plug
- -20°C to +60°C
- IP54 rating
- Built-in heater, High ESD protection

Level sensors

The Carlo Gavazzi range of conductive level sensors is well suited to most level control applications. The new CL-series of intelligent conductive level controllers is used for conductive liquid level monitoring and pump controlling. CLH models with a flexible conductive level probe can accommodate up to five rods for four different levels of control. Operating levels in the tank can easily be modified by extending or cutting short the length of the electrodes. The typical applications of conductive sensors are level control and flow detection in agriculture, the chemical sector, food and beverage, water distribution and water treatment industries.

CLD 1

- 5 KΩ to 150 kΩ
- Filling or emptying
- 17.5 mm width slim housing
- ON or OFF delay timer
- 1 X 8 A / 250 VAC output

CLD 2EB

- 250 Ω to 500 kΩ
- Filling or emptying
- 17.5 mm width slim housing
- 24-240 VAC/DC supply
- 1 X 8 A / 250 VAC output

CLP 2EB

- 5 KΩ to 150 kΩ
- Filling or emptying
- 35.5 mm width housing
- Simple amplifier
- 1 X 8 A / 250 VAC output

CLP2 Plug-in

- 250 Ω to 500 kΩ
- Filling or emptying
- 35.5 mm width housing
- 3 conductive ranges (L/S/H)
- 2 X 8 A / 250 VAC output

CLD2 DIN-rail

- 250 Ω to 500 kΩ
- Filling or emptying
- 35.5 mm width housing
- 3 conductive ranges (L/S/H)
- 2 X 8 A / 250 VAC output

CLP2 Master-Slave

- 250 Ω to 500 kΩ
- Filling or emptying
- Cascade up to 7 amplifiers
- Many different levels
- 1 X 8 A / 250 VAC output

CLP4 Plug-in

- 250 Ω to 500 kΩ
- Many different functions
- Up to 4 levels
- Tank well function
- 2 X 8 A / 250 VAC output

CLD4 DIN-rail

- 250 Ω to 500 kΩ
- Many different functions
- Up to 4 levels
- Tank well function
- 2 X 8 A / 250 VAC output

CLH

- 3 or 5 electrodes
- Standard 1 m length
- Length can be extended
- Electrode isolation
- Flexibility

VN/VT

- Up to 4 electrodes
- Standard 1 m length
- Stainless steel electrodes
- Electrode isolation
- Different housing materials

VH

- 1 electrode
- Level hanging probe
- UV resistant PVC or Neoprene cable
- Stainless steel electrodes
- Suitable for swimming pools

A94-10

- 2 electrodes
- Level hanging probe
- 5 m PVC cable
- Polyester housing
- Suitable for swimming pools

Limit switches and Safety switches

Carlo Gavazzi offers a complete range of limit and safety switches, providing machine manufacturers and panel builders with global and exhaustive solutions which allow machinery to operate correctly, minimizing process stops and personnel risk. Switches may be operated by process variables such as pressure, temperature, flow, current, voltage and force, acting as sensors in a process and used to automatically control a system.

PS21L
30 mm series

- Plastic or Metal housing
- 1 NO + 1 NC, 2 NO or 2 NC contacts, snap or slow action
- Selectable actuator type
- Selectable cable gland or pre-wired M12 plug connection
- IP65 or IP66 degree of protection

PS31L
40 mm series

- Plastic or Metal housing
- 1 NO + 1 NC, 1 NO + 2 NC, 2 NO + 1 NC, 2 NO, 2 NC, 3 NO or 3 NC contacts, snap or slow action
- Selectable actuator type
- Selectable cable gland or pre-wired M12 plug connection
- IP65 or IP66 degree of protection

PS42L
50 mm series

- Plastic or Metal housing
- 1 NO + 1 NC, 2 NO or 2 NC contacts, snap or slow action
- Selectable actuator type
- Selectable cable gland connection
- IP65 or IP66 degree of protection

PS43L
60 mm series

- Metal housing
- 1 NO + 1 NC, 1 NO + 2 NC, 2 NO + 1 NC, 2 NO, 2 NC, 3 NO or 3 NC contacts, snap or slow action
- Selectable actuator type
- Selectable cable gland connection
- IP65 or IP66 degree of protection

PS21M/PS31M
prewired series

- Plastic or Metal housing
- 1 NO + 1 NC, snap or slow action
- Selectable actuator type
- Prewired 1m PVC cable
- IP67 degree of protection

PS21K
with manual reset

- Plastic or Metal housing
- 1 NO + 1 NC or 2 NC contacts, snap or slow action
- Selectable actuator type
- Selectable cable gland connection
- IP65 or IP66 degree of protection

PS38H
safety hinge

- Plastic housing
- 2 NO + 2 NC or 1 NO + 3 NC contacts, slow action
- Interlock type 1 as per EN14119
- M12 plug or cable connection
- IP67 degree of protection

ESI
safety interlock

- Plastic housing
- 1 NO + 1NC (coil) + 1 NC (actuator), 1 NO + 1NC (coil) + 1 NO (actuator), 2 NC (coil) + 1 NO+1 NC (actuator)
- Interlock type 2 as per EN14119
- Adjustable head for key actuator
- IP65 degree of protection

PS21S/31S/42S/43S
actuated by key

- Plastic or Metal housing
- 1 NO + 1 NC, 1 NO + 2 NC, 2 NO + 1 NC, 2 NO, 2 NC, 3 NO or 3 NC contacts, snap or slow action
- Selectable actuating key; optional adjustable key
- Selectable cable gland connection
- IP65 or IP66 degree of protection

PS21R/31R/42R/43R
actuated by pull wire

- Metal housing
- 1 NO + 1 NC, 1 NO + 2 NC, 2 NO + 1 NC, 2 NO, 2 NC, 3 NO or 3 NC contacts, snap or slow action
- Manual or automatic reset
- Selectable cable gland connection
- IP66 degree of protection

PS21H-HC
actuated by hinge

- Plastic housing
- 1 NO + 1 NC, 2 NO or 2 NC contacts, snap or slow action
- Operated by hinge
- Selectable cable gland connection
- IP65 degree of protection

PS21H-HZ
actuated by hinge

- Plastic housing
- 1 NO + 1 NC, 2 NO or 2 NC contacts, snap or slow action
- Operated by hinged shaft
- Selectable cable gland connection
- IP65 degree of protection

Solid state relays

Carlo Gavazzi offers a comprehensive range of solid state relays (SSRs) covering AC and DC switching, 1-phase and 3-phase, suited for a wide range of applications. SSRs are used extensively in the plastics, packaging, food processing, semiconductor manufacturing and HVAC industries primarily for temperature control. Thanks to their fast switching capability, SSRs are the most reliable switching components for process accuracy. Over the years, SSRs have become the preferred switching solution compared to mechanical contactors as they can perform a very large number of switching cycles without breaking down. This ensures low machine downtime and hence lower running costs.

PCB mounting RP1A, RP1D

- AC or DC output switching
- Zero Cross [RP1A], Instant On [RP1B] or DC [RP1D]
- Ratings up to 480 VAC, 5.5 AAC [RP1A/B]
- Ratings 350 VDC / 1 ADC, 60 VDC / 8 ADC [RP1D]
- Approvals: CE - cURus - VDE - [RP1A/B] - EAC - UKCA

1-phase SSR RF1

- Zero Cross [RF1A] or Instant On [RF1B] switching
- Ratings up to 280 VAC, 25 AAC
- Integrated transil for output protection
- Control ON LED
- Approvals: CE - UR - CSA - VDE - EAC - UKCA

1-phase SSR RA

- Zero Cross output switching
- Ratings up to 660 VAC, 110 AAC, 18000 A^2s
- High blocking voltage option
- Control ON LED
- Approvals: CE - UR - CSA - EAC - UKCA

1-phase SSR RM1, RAM1

- Zero Cross [RM1A/RAM1A] or Instant On [RM1B/RAM1B] switching
- Ratings up to 759 VAC, 125 AAC, 18000 A^2s
- Integrated varistor for output protection
- Control ON LED
- Approvals: CE - UR - CSA - CCC - EAC - UKCA - VDE [RAM1]

2-pole SSR RA2A

- 2-poles in 1 housing, independent control
- Ratings up to 660 VAC, 40 AAC per pole
- Zero Cross switching
- DC control voltage
- Approvals: CE - UR - EAC - UKCA - CSA (excl. RA2A..C)

2-pole SSR RKD2, RK2

- 2-poles in 1 housing, independent control [RKD2] or common control [RK2]
- Ratings up to 660 VAC, 75 AAC per pole, 9800 A^2s
- Zero Cross or Instant On switching
- DC control voltage
- Approvals: CE - UR - CSA - VDE - EAC - UKCA

3-phase SSR RZ3A

- 3-phase Zero Cross switching
- Suitable for resistive and inductive loads
- Ratings up to 759 VAC, 75 AAC
- Control ON LED
- Approvals: CE - UR - CSA - EAC - UKCA

DC SSR RM1D

- DC switching
- Ratings up to 100 A /60 VDC, up to 50 A / 200 VDC, up to 10 A / 500 VDC
- DC control voltage
- Control ON LED
- Approvals: CE - UR - CSA - EAC - UKCA

Slim line SSR RGS1

- Compact, 17.5 mm wide
- Zero Cross [RGS1A] or Instant On [RGS1B] switching
- Ratings up to 759 VAC, 90 AAC, 18000 A^2s
- AC or DC control
- Approvals: CE - UR - CSA - VDE - EAC - UKCA - GL (50 AAC only)

Slim line SS contactors RGC1

- Min. product width 17.5 mm (37 AAC) up to 70 mm (85 AAC)
- Ratings up to 660 VAC, 85 AAC, 18000 A^2s
- E-type (contactor) or U-type (SSR) terminal layout
- 100 kA UL short circuit current rating
- Approvals: CE - cULus - VDE - EAC- UKCA - GL (up to 30 AAC)

Slim line SS contactors RGH1

- Zero Cross switching, Blocking voltage up to 1600 V_P
- Ratings up to 759 VAC, 65 AAC, 6600 A^2s
- Integrated varistor on output (up to 660 VAC)
- 100 kA UL short circuit current rating
- Approvals: CE - cULus - VDE - EAC - UKCA

3-phase SS contactors RGC2A, RGC3A

- 3-pole [RGC3A] or 2-pole switching + 1 direct pole [RGC2A]
- Ratings up to 660 VAC, 75/65 AAC [RGC2/3]
- Motor ratings up to 11 kW/ 15 HP @ 400 VAC
- RGC..M for system malfunction monitoring
- Approvals: CE - cULus - EAC - CCC - UKCA - VDE [RGC..10]

Solid state relays

Carlo Gavazzi now offers additional features to the switching function of the SSR. Integrated monitoring of loads or SSR malfunction ensures a timely failure detection and so scrap and rework costs in production plants are kept to a minimum. SSRs with a communication interface embrace Industry 4.0. Data is accessible from SSRs in real time and can be used to predict machine abnormalities in a timely manner to avoid stoppages.
Carlo Gavazzi also offers a range of accessories that complement the solid state relay solutions, such as heatsinks, terminal adaptors, protection covers and thermal interfaces. Carlo Gavazzi's SSRs conform to international standards.

Proportional controllers RM1E

- Phase angle switching
- Ratings up to 660 VAC, 125 AAC, 18000 A²s
- 4-20 mA or 0-10 VDC analogue input
- Integrated varistor for output protection
- Approvals: CE - UR - CSA - EAC - UKCA

Proportional controllers RGS1P

- Selectable switching mode - Phase angle, full cycle, advanced full cycle switching or soft start
- 4-20 mA or 0-10/0-5/1-5 V input
- Ratings up to 660 VAC, 90 AAC
- Integrated varistor for output protection
- Approvals: CE - UR - CSA - EAC - UKCA

Proportional controllers RGC1P

- Selectable switching mode - Phase angle, full cycle, advanced full cycle switching or soft start
- 4-20 mA or 0-10/0-5/1-5 V input
- Ratings up to 660 VAC, 63 AAC
- Integrated varistor for output protection
- Approvals: CE - cULus - EAC - UKCA

Proportional controllers RGC2P, RGC3P

- Phase angle, full cycle, advanced full cycle switching or soft start
- 0-20/4-20/12-20 mA or
- 0-10/0-5/1-5 V input
- RGC2P ratings (2-phase): 660 VAC, 75 AAC/pole
- RGC3P ratings (3-phase): 660 VAC, 65 AAC/pole
- Integrated monitoring for load loss or SSR malfunction
- Approvals: CE - cULus - EAC - CCC - UKCA

System monitoring RA..S

- Monitoring for mains loss, load or SSR failure
- Ratings up to 530 VAC, 110 A
- DC control voltage, DC external supply
- Normally open or normally closed alarm output
- Approvals CE - UR - CSA - EAC - UKCA

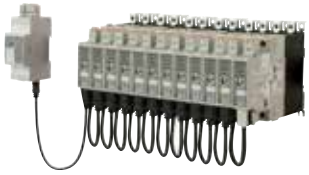
System monitoring RGS..M, RGC..M

- Monitoring for system fault (mains loss, load loss, SSR open and short circuit), SSR internal error and supply out of range
- Ratings up to 660 VAC, 90 AAC
- DC control voltage, DC external supply
- Transistor output for remote alarm signalling
- Approvals CE - UR - CSA - cULus [RGC] - EAC - UKCA

Current sensing RGS1S, RGC1S

- Zero Cross switching with integrated current measurement
- Partial load failure detection (1/6)
- Monitoring for system malfunction with alarm output
- Ratings up to 660 VAC, 90 AAC, 18000 A²s
- Approvals: CE - UR - CSA - cULus [RGC] - EAC - UKCA

Communication interface NRG



- PROFINET, EtherNet/IP™, EtherCAT, Modbus RTU / TCP
- 32 SSRs per bus chain
- ON/OFF, Full cycle, Advanced full cycle, Burst, Phase angle and soft start switching
- Read-outs: current, voltage, frequency, power, energy, running hours and diagnostics
- Ratings up to 660 VAC, 90 AAC
- Approvals: CE - cULus - UR - CSA - EAC - UKCA - CCC

Integrated over temperature protection RGC..P

- Ratings up to 660 VAC, 85 AAC, 18000 A²s
- Output protected against overheating, automatic re-start after cool down
- Transistor alarm output for remote signalling
- Control ON and Fault LED indication
- Approvals: CE - cULus - VDE - EAC - UKCA

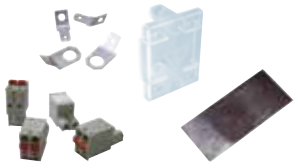
Peak switching RM1C

- Ideal for switching of transformers and highly inductive loads
- Ratings up to 660 VAC, 100 A
- DC control voltage
- Control ON LED
- Approvals: CE - cURus - CSA - EAC - UKCA

Heatsinks

- A wide range of heatsinks suitable for DIN, panel or thru wall mounting
- Thermal resistance values from 5.4 to 0.4°C/W
- 24 VDC, 115 VAC or 230 VAC supply voltage for heatsinks with integrated fan
- RoHS compliant

Accessories



- A wide range of other accessories suitable for use with SSRs: thermal pads, touch protection covers, varistors, terminal adaptors, cable accessories
- Optionally pre-assembled from factory
- All accessories are RoHS compliant

Energy meters and analysers

Main electrical metering is essential to monitor all the electrical variables coming from the submetering. Installations are becoming more and more demanding, some of them powering critical loads, so power quality with harmonic analysis is vital. Carlo Gavazzi's range provides various mounting and installation solutions to meet different application requirements. In many cases the meters, in an electrical installation, have to measure high currents, which is why Carlo Gavazzi offers a comprehensive range of current transformers, compatible with both the main meters and the submeters.

Energy transducer ET112

- DIN-rail mounting
- 1-phase, 120 or 240 VAC, 100 AAC
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, optical port
- Approvals: CE - UKCA

Energy transducer ET330

- DIN-rail mounting
- 400 to 480 V_{LL} AC, 5 AAC
- Class 0.5S (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, optical port
- Approvals: CE - cULus

Energy transducer ET340

- DIN-rail mounting
- 208 to 400 V_{LL} AC, 65 AAC
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, optical port
- Approvals: CE

Power analyzer WM15

- Panel mounting
- 208 to 600 V_{LL} AC, 5(6) A
- Class 1 or Class 0.5S (kWh), 0.5% RDG (V, A)
- Pulse/alarm output, optional Modbus RS485 or M-Bus port
- Approvals: CE - MID - cULus - UKCA

Modular power analyzer WM20

- Panel mounting
- 230 or 690 VAC, 5 AAC
- Class 0.5S (kWh), 0.2% RDG (V, A)
- Up to 2 outputs, optical port, Modbus RS485 and Ethernet, BACnet MSTP and IP, Profibus
- Approvals: CE - cULus - UKCA

Modular power quality analyzer WM30

- Panel mounting
- 230 or 690 VAC, 5 AAC
- Class 0.5S (kWh), 0.2% RDG (V, A)
- Up to 4 outputs, optical port, Modbus RS485 and Ethernet, BACnet MSTP and IP, Profibus
- Approvals: CE - cULus

Modular power quality analyzer WM40

- Panel mounting
- 230 or 690 VAC, 5 AAC
- Class 0.5S (kWh), 0.2% RDG (V, A)
- Up to 6 inputs, up to 8 outputs, optical port, Modbus RS485 and Ethernet, BACnet MSTP and IP, Profibus
- Approvals: CE - cULus

Modular branch circuit analyzer WM50

- Panel mounting
- 208 to 480 VAC, 5 AAC + TCD
- Main unit: Class 0.5S (kWh), 0.2% RDG (V, A). TCD: 0.5% (V,A)
- Up to 96 sub-metering 65 A ch. Up to 6 digital inputs, up to 6 outputs, optical port, Modbus RS485 and Ethernet
- Approvals: CE - cULus

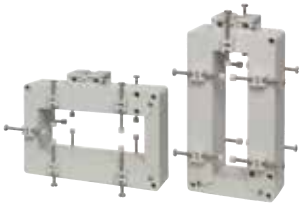
Power transducer CPT

- DIN-rail mounting
- 208 or 600 VAC, 1 or 5 AAC
- Class 1 (kWh), 0.5% F.S. (V, A)
- RS485 port, relay, open collector, or analogue output or Dupline® bus
- Approvals: CE - cURus - CSA

Current transformer CTD X

- DIN-rail, cable or bus-bar mounting
- Solid core current transformers
- Primary: from 40 to 1600 AAC
- Secondary: 5 A or 1 A
- Approvals: EN 61869-2 - cURus - CSA

Current transformer CTD V/H



- Bus-bar mounting
- Solid core current transformers
- Primary: from 100 to 4000 AAC
- Secondary: 5 A or 1 A
- Approvals: EN 61869-2 - cURus - CSA

Current transformer CTD S

- Bus-bar mounting
- Split core current transformers
- Primary: from 100 to 3200 AAC
- Secondary: 5 A or 1 A
- Approvals: EN 61869-2 - cURus - CSA

Energy meters and analysers

A comprehensive range of energy meters, analyzers and transducers (AC and DC) focused on submetering and cost allocation. Carlo Gavazzi provides a solution to industrial, commercial, residential, power generation and EV chargers applications where accuracy, standard compliance (including MID), electrical variable metering, analysis and communication are all important factors.

Energy analyzer EM110

- DIN-rail mounting
- 1-phase, 120 or 230 VAC, 32 A direct connection
- Class 1 (kWh)
- Pulse output
- Approvals: CE - MID - cULus

Energy analyzer EM111

- DIN-rail mounting
- 1-phase, 120 or 230 VAC, 32 A direct connection, 5 A or 333 mV CT input
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, M-Bus port, or pulse output
- Approvals: CE - MID - cULus

Energy analyzer EM112

- DIN-rail mounting
- 1-phase, 120 or 230 VAC, 100 A direct connection
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, M-Bus port, or pulse output
- Approvals: CE - MID

Energy analyzer EM330

- DIN-rail mounting
- 400 to 480 V_{LL} AC, 5 A CT input
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, M-Bus port, or pulse utput
- Approvals: CE - MID - UL

Energy analyzer EM340

- DIN-rail mounting
- 208 to 400 V_{LL} AC, 65 A direct connection
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, M-Bus port, or pulse output
- Approvals: CE - MID

Energy analyzer EM511

- DIN-rail mounting
- 1-phase, 120 to 240 VAC, 45 A direct connection
- Class 1 (kWh), 0.5% (V, A)
- RS485 Modbus port, M-Bus port, or digital output (pulse or alarm)
- Approvals: CE - cULus - UKCA - MID

Energy analyzer EM530

- DIN-rail mounting
- 208 to 415 V_{LL} AC, 5A CT input
- Class 0.5S (kWh), 0.3% (A), 0.2% (V) RS485 Modbus port, M-Bus port, or digital output (pulse or alarm)
- Approvals: CE - cULus - UKCA - MID

Energy analyzer EM540

- DIN-rail mounting
- 208 to 415 V_{LL} AC, 65 A direct connection
- Class 1 (kWh), 0.5% (V, A)
- RS485 Modbus port, M-Bus port, or digital output (pulse or alarm)
- Approvals: CE - cULus - MID

Energy analyzer EM24 W1 I

- DIN-rail mounting
- 208 to 480 V_{LL} AC, 5A CT or 65 A direct connection
- Class 1 (kWh), 0.5% RDG (V, A)
- M-Bus, RS485 Modbus, Modbus TCP Ethernet port or wireless M-Bus (internal or external antenna)
- Approvals: CE - cULus - MID

Power transducer CPA

- Contactless power analyzers
- 1-phase AC (from 1 to 400 Hz) or DC systems
- RS485 communication port (Modbus)
- Current range:
  [CPA050] 50 AAC / 50 ADC
  [CPA300] 300 AAC / 400 ADC
- Voltage range: 800 VAC / 1000 VDC
- Approvals: CE - cURus

DC Energy meter VMU E - VMU X

- DIN-rail mounting
- 400 VDC, 1000 A (20 A direct)
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port or static output
- Approvals: CE

DC Energy transducer DCT1

- DIN-rail mounting
- 150 to 1000 VDC, 300 or 600 A max
- Class 1 according to iEC 62053-41, class B according to VDE-AR-E 2418-3-100 Annex A (kWh), 0.5% (V, A)
- RS485 Modbus port (256-bit or 384-bit signature), SML port
- Approvals: CE - cURus - UKCA

Energy meters and analysers

Up-to-date designs, quality, attention to details, such as installation features and installation time, all mean that Carlo Gavazzi products are very competitive in the market. A full retrofit range of meters offering metering and monitoring solutions to meet every need can be found in our product portfolio.

Retro-fit energy analyzer EM210AV

- DIN-rail and panel mounting
- 230 or 415 VAC, 5 A CT input
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, static output
- Approvals: CE - cULus

Retro-fit energy analyzer EM210MV

- DIN-rail and panel mounting
- 230 or 415 VAC, or 60 to 800 AAC measured by CTV or ROG current sensors
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, static output
- Approvals: CE - cULus - UKCA

Quick-fit energy meter EM270 and TCD X

- DIN-rail and panel mounting
- 230 or 415 VAC, 160 to 630 AAC measured by up to 2 TCD X triple current transformers
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, static output
- Approvals: CE - cULus - UKCA

Quick-fit energy meter EM271 and TCD M

- DIN-rail and panel mounting
- 230 or 415 VAC, 60 to 400 AAC measured by up to 2 TCD M split-core triple current sensors
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, static output
- Approvals: CE - cULs - UKCA

Quick-fit energy transducer ET272 and TCD M

- DIN-rail mounting
- 277 to 415 VAC, 60 to 400 AAC measured by up to 2 TCD M split-core triple current sensors
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port with self-addressing capability
- Approvals: CE - cULus

Quick-fit energy meter EM280 and TCD06BX

- DIN-rail and panel mounting
- 230 or 415 VAC, 32 AAC measured by 6-channel TCD06B current transformer block (solid core)
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, static output
- Approvals: CE - cULus

Quick-fit energy meter EM280 and TCD06BS

- DIN-rail and panel mounting
- 230 or 415 VAC, 32 AAC measured by 6-channel TCD06B current transformer block (split core)
- Class 1 (kWh), 0.5% RDG (V, A)
- RS485 Modbus port, static output
- Approvals: CE - cULus

EM200-96 Adapter

- 96x96 panel mounting adapter for EM210, EM270, EM271 and EM280

Rogowski current sensors ROG4X

- Cable mounting
- Rogowski split core current sensors for EM210 MV
- Primary: up to 4000 AAC
- Secondary: direct connection to EM210 MV without any external converter
- Approvals: CE - cURus

Rogowski current sensors ROG4U

- Cable mounting
- Rogowski split core current sensors for EM210 MV and EM50 RG5
- Primary: up to 2000 AAC
- Secondary: direct connection to EM210 MV or EM50 RG5 without any external converter
- Approvals: CE - cULus (UL2808)

Current sensor CTV

- Cable mounting
- Miniature split core current sensors
- Primary: from 60 to 800 AAC
- Secondary: 333 mV
- Approvals: CE - cURus

Split-core current transformers CTA

- Cable mounting split-core current transformers
- Primary: from 100 to 600 AAC
- Secondary: 5 A
- Approvals: CE - cURus

IIoT data management, communication and control

The mounting of a power analyzer or an energy meter on a power distribution unit is not enough to effectively manage the whole electrical installation, because the data available on the display would seldom be read and controlled. To be effective, remote reading and reporting of historical data is required. A control room can gather the readings while the data can be analysed and used as a basis for decision-making, all thanks to a fully automated system. Carlo Gavazzi can provide solutions for small, medium size and large plants for energy efficiency monitoring, photovoltaic monitoring and datacenter monitoring.

MAIA Cloud

- Cloud solution for remote management of IoT devices
- Compatible with UWP4.0, UWP4.0 SE and XAP.
- Secure VPN Management
- User authentication and organization management
- Remote connection to gateways, connected endpoints and connected meters

Em²-Server

- Cloud or On-Premise solution for multi-site energy management
- Virtual machine software integrating database and web-server
- Data aggregation from up to 100 sites/installations
- Advanced data management functions
- Management of up to 100 UWP units

HMI displays BTM series

- 7", 10"and 15.6" colour HMI displays
- Fully programmable by the dedicated BTM-PC- IDE software
- IIoT data distribution via MQTT and OPC UA
- BACnet, Modbus and KNX protocols with gateway/routing capabilities
- Ethernet, serial and USB ports

Multi-function IIoT Edge XAP10RSEXX

- Controller and Gateway, PLC for Building Automation Functions and energy management.
- Fully programmable by the dedicated BTM-PC- IDE software
- Codesys and Node-RED capabilities
- Ethernet, serial and USB ports

IIoT Edge devices UWP 4.0 / UWP 4.0 SE

- Datalogger/Gateway/Controller with Web-Server, for energy efficiency management applications
- Security Capabilities Verified by UL to level SILVER (SE)
- MAIA Cloud secure remote access
- Dashboards and reports

Long range wireless gateway UWPM

- LoRa master concentrator that permits UWP to gather data from multiple UWPA adapters.
- Long-range wireless (EU868 and US915 Bands, Europe and North America)
- Comprehensive solution for integrating CG meters and analysers into CG private LoRa network
- Universal power supply

Long range wireless solution UWP A

- Endpoint adapter that provides LoRa® or LoRaWAN® communication to an RS485 Carlo Gavazzi meter
- Long range wireless (EU868 and US915 Bands, Europe and North America)
- Up to 10 km range in open air, 1 km in typical applications.
- Universal power supply

M-Bus to Modbus/TCP Gateway SIU-MBM-02

- M-Bus to Modbus/TCP gateway
- 20 wired M-Bus devices and 32 wireless M-Bus devices
- Compatible with SIU-MBC radio transmitter (pulse output counter)
- Set-up by free UCS software
- Approvals: CE
- Rapid and automatic integration with the UWP 4.0

M-Bus to Modbus/TCP Gateway SIU-MBM01

- M-Bus to Modbus/TCP gateway
- Up to 20 M-Bus devices (SIU-MBM-01)
- Up to 160 M-Bus devices (SIU-MBM-01-160)
- Set-up by free UCS software
- Approvals: CE
- Rapid and automatic integration with the UWP 4.0

M-bus to Modbus converter VMU B

- DIN-rail mounting
- RS485 Modbus master
- For EM210, EM270, EM271, EM280, WM15
- M-Bus output port
- Approvals: CE

Pulse concentrator VMU-MC

- Remote input status reading / tariff management / pulse counting
- Can be used singularly or with the addition of VMU-OC modules (from 1 to 3)
- Plug'n'play connection to UWP 4.0 or UWP 4.0 SE
- 6 digits LCD display

Pulse concentrator VMU-OC

- Pulse counter accessory module
- Powered by VMU-MC
- Totalizers calculation and Modbus/RTU communication
- Each unit handles up to 3 S0 inputs
- Suited for small spaces and existing systems with pulse output meters

IIoT field devices

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

Dupline® bus generators SH2MCG24

- Connection to UWP 4.0 via internal bus or terminals via the high-speed bus
- Up to 7 SH2MCG24 can be connected on the same network
- Dimensions: 2-DIN modules
- Advanced management of input and output signals for monitoring and control functions

Wireless Dupline® bus generators SH2WBU230N

- Connection to UWP 4.0 via internal bus or terminals via the high speed bus
- Wireless transmission based on IEEE 802.15.4, @ 2.4 GHz
- Max. wireless nodes per network: 250
- Operating distance: 700 m in the open air with one repeater
- Dimensions: 2-DIN modules

DALI-2 bus generators DLI-MCG024

- DALI-2 Master module
- DALI driver for DT6 and DT8 LEDs
- Up to 64 control gears
- Up to 64 control devices
- Tunable white management
- Dimensions: 2-DIN modules

Repeater modules SB2REP230

- Regenerates the Dupline® carrier signal with 300 mA output
- Extends network length
- Isolates the primary and secondary Dupline®
- 230 VAC power supply
- Dimensions: 2-DIN housing
- Dimensions: 2-DIN modules

Wireless repeater modules SBP2WREP230

- Smart-Dupline wireless repeater
- Extends wireless network coverage
- 230 VAC / 24 VDC power supply
- Operating distance: 700 m in the open air with one repeater
- Dimensions: 2-DIN modules

Phase angle dimmer modules SH2D500WE230

- Universal dimmer switch for R, L, C up to 500 W and LED loads
- Automatic load detection for L, R, C loads
- Integrated heat sink for temperature dissipation
- Connection to other cabinet modules via local bus
- Dimensions: 2-DIN modules

0-10V Dimmer modules SH2D10V424

- 1-10V dimmer to control up to 4 1-10 V Ballasts
- 24 VDC power supply
- Max. load capacity: 50 mA on each output
- Connection to other cabinet modules via local bus
- Dimensions: 2-DIN modules

Relay modules SH2RE16A4

- Smart-Dupline output module, 4 Relays, up to 16 A
- LED indications for supply, bus, and output status
- Push button for local on/off switching
- Supplied by the Dupline® bus on the local bus
- Dimensions: 2-DIN modules

Relay modules SH2SSTRI424

- Smart-Dupline output module, 4 solid state relays
- LED-indications for supply, bus and output status
- Push button for local on/off switching
- 24 VDC power supply
- Dimensions: 2-DIN modules

Digital input modules SH2INDI424

- 4 digital inputs NPN, PNP, voltage free
- The 4 inputs can be configured as contact or counter
- LED indication for power supply, Dupline® bus, input activated
- Connection to other cabinet modules via local bus
- Dimensions: 2-DIN modules

Rollerblind modules SH2ROAC224

- Up/down control of 2 AC/DC rollerblind motors
- LED indication for power supply, Dupline® bus, motor up, motor down
- Push button for local on/off switching
- Connection to other cabinet modules via local bus
- Dimensions: 2-DIN modules

Fire damper modules SBB

- I/O module to control two fire dampers
- Box ready for wall mounting near dampers
- Four contact inputs, two relay outputs 230 VAC / 5 A
- Power supply: 24 to 230 VAC
- Degree of protection: IP55

IIoT field devices

The Dupline® bus provides several advantages to building automation systems. The simplified wiring and high flexibility of the bus-powered sensors and decentralized I/O modules can provide considerable installation cost reductions. Due to the cost-effective design of the smart-house modules, this can be achieved by using materials with a cost comparable to the traditional hardwired solutions.
The issue is to interface Dupline® and Energy Meters to the building automation controllers and building management systems and with the UWP 3.0 BACnet controller, all data points from Dupline® and Energy Meters are now automatically made available as BACnet objects, ready to be used by any building automation controller or BMS from the major suppliers.

Wired/Wireless light switches SH series

- 4 individually programmable push buttons
- Blue and red LEDs for wireless field power and battery level
- Battery supplied /bus supplied
- SHA4xxx: developed to fit into wall sockets and frames from Fuga, NIKO and Bticino
- SHE5xxx: developed to fit into wall sockets and frames from Elko, Gira and Jung

Temperature displays SH series

- Temperature controller with display
- Shows current room, outdoor and auxiliary temperature
- Bus powered, no external supply required
- SHA: Developed to fit into wall sockets from Fuga, NICO and Bticino
- SHE: Developed to fit into wall sockets from Elko, Gira and Jung

PIR detectors + Luxmeter SH / SHQ series

- Passive infrared detector (PIR)
- Detects movement end presence
- Bus powered, no external supply required
- Walk test: LED indication
- Programmable sensitivity

DALI- 2 PIR detectors DLI-P360

- Passive infrared detector (PIR) with built-in luxmeter, and temperature sensor
- Programmable and operated by UWP 4.0 or any DALI-2 controller
- Detection range up to 24 square meters
- Walk test: LED indication
- Programmable sensitivity

Wireless relay SHJWRE10A

- Small sized single relay output for eurobox mounting
- Energy reading
- Range up to 700 m in open air
- Load: 10 A/250 VAC
- Capacitive touch buttons for a plug&play replacement of standard switches (Bticino only)

Wireless energy meter SHJWEM16A

- Small sized for eurobox mounting
- Values readout: A, V, W, Wdmd, VA, var, PF, kWh
- Range up to 700 m in open air
- Direct connection up to 16 A

Wireless dimmer SHJWD200WE

- Universal dimmer switch for R, L, C up to 200 W and LED loads
- Automatic load detection for L, R, C loads
- Range up to 700 m in open air
- Capacitive touch buttons for a plug&play replacement of standard switches (Bticino only)

Wireless input and pulse counter module SHJWINS0

- Input module with 4 configurable inputs: S0 class B pulse counter or voltage free input
- Count values are stored in non-volatile memory
- Counts up to 99999999 with rollover
- Range up to 700 m in open air

Environmental sensors SHS series

- CO_2, temperature and humidity sensors
- CO_2 measuring range: 0 to 2000 ppm
- Temperature measuring range: -20°C to 50 °C
- Humidity measuring range: 0 to 100 %R
- LCD Display and touch function to activate backlight and change signal type

Decentralised analogue input/output modules SHPIN/SHPOUT

- Output modules with two 0-10 V outputs
- Input modules for thermistor, resistor and voltage measuring: pt1000, ni1000, 10K3 thermistor input, 1-11K resistor input, 0-10 V input, 4-20 mA
- Small dimensions for decentralized installations
- 24 VDC power supply

Decentralised Input module / Pulse counters BDB/SHPINCT

- Input module with 4 configurable inputs: S0 class B pulse counter or voltage free input
- Count values are stored in non-volatile memory
- Counts up to 99999999 with rollover
- 24 VDC power supply

Decentralised relay modules BDA-RE13A-U

- Small sized single relay output
- Load: 13 A / 250 VAC
- Withstands 130 A inrush current
- Supplied by Dupline® bus

Soft starters

Carlo Gavazzi offers a comprehensive range of soft starting and motor reversing solutions for single and three phase squirrel cage a.c. induction motors. Carlo Gavazzi offers solutions specifically designed for scroll compressors (RSBS, RSBD, RSBT, HDMS). For other applications such as centrifugal pumps, ventilators, dryers, mixers, fans, hydraulic pumps and piston compressors, general purpose solutions such as the RSGD and RSGT are available. Carlo Gavazzi soft starters are designed with self-learning algorithms for ease of use and better load matching. The RGTS is a fully solid-state soft starter for single phase applications that require high frequency switching. In addition, customized solutions to satisfy specific customer requests can be provided.

Scroll compressor soft starters RSBD 45 mm

- Operational current: 12 to 45 A
- Self-learning algorithm with current balancing
- Top of ramp and alarm relay indication
- Max. starts per hour: 12
- Approvals: CE - cULus - EAC

Scroll compressor soft starters RSBD 75 mm

- Operational current: 55 to 95 A
- Self-learning algorithm for current reduction
- No user adjustments required
- Max starts per hour: 12
- Approvals: CE - cULus - EAC

Scroll compressor soft starters RSBT 45 mm

- Operational current: 16 to 32 A
- Self-learning algorithm with high pressure function
- No user adjustments required
- Optional: serial communication (Modbus) [VC1HP]
- Max. starts per hour: 12
- Approvals: CE - cULus - VDE - CCC

Scroll compressor soft starters RSBT 120 mm

- Operational current: 55 to 95 A
- Self-learning algorithm for improved current reduction
- Optional: serial communication (Modbus) [VC]
- Max. starts per hour: 12
- Approvals: CE - cULus - CCC - EAC

General purpose soft starters RSGT 45 mm

- Operational current: 12 to 25 A
- Operational voltage: 220 - 600 VAC
- Self-learning algorithm with current ramp and current limit
- 3-phase control with internal bypass
- Optional: serial communcation (Modbus) [V10C]
- Approvals: CE - cULus - EAC

General purpose soft starters RSGT 75 mm/120 mm

- Operational current: 32 to 90 A
- Operational voltage: 220 - 600 VAC
- Self-learning algorithm with current ramp and current limit
- 3-phase control with internal bypass
- Serial communication (Modbus) on all models
- Approvals: CE - cULus - EAC

General purpose soft starters RSGD 45 mm

- Operational current: 12 to 45 A
- Operational voltage: 220 - 600 VAC
- Self-learning algorithm with current ramp and current limit and current balancing
- 2-phase control with internal bypass
- Optional: motor overload protection (Class 10) [V210]
  Serial communication (Modbus) [210C]
- Approvals: CE - cULus - CCC - EAC

General purpose soft starters RSGD 75 mm

- Operational current: 55 to 100 A
- Operational voltage: 220 - 600 VAC
- Self-learning algorithm with current ramp and current limit and current balancing
- PTC input and remote reset of alarms
- Serial communication (Modbus) on all models
- Approvals: CE - cULus - CCC - EAC

Motor reversing relay RR2A

- Operational current: up to 11 A
- Motor reversing relay
- Built-in interlock function
- Integrated voltage transient protection
- Approvals: CE - UL - cUL

1-phase solid state soft starter RGTS

- Operational current: 12/16/25 A
- Operational voltage: 100 - 240 VAC
- 100 kA short circuit current rating
- Max. starts per hour: 10
- Approvals: CE - cULus

1-phase compressor soft starter RSBS

- Operational current: 32 A
- Current limit starting with a high pressure function
- Max. starts per hour: 10
- Approvals: CE - cULus - EAC

1-phase dynamic motor starter HDMS

- Operational current: 12 to 37 A
- Eliminates the need for a start capacitor typically used to start single phase motors
- >70% start current reduction on scroll compressors and submersible pumps
- Tool-free terminals
- Approvals: CE - cULus

Frequency drives

Carlo Gavazzi offers a range of variable frequency drives (VFDs) for general purpose applications (RVLF). Carlo Gavazzi also offers PC software that facilitates parameter configuration and also makes it is easy to download the configuration onto multiple VFDs.

General purpose VFD RVLF 1-phase 100 V

- V/F Control + Sensorless Vector control
- Input voltage 1-phase 100-120 VAC
- 0.4 kW and 0.75 kW
- Built-in RJ45 for MODBUS and BACNet communication
- Panel mount or DIN-rail (with accessory)

General purpose VFD RVLF 1-phase 200 V

- V/F Control + Sensorless Vector control
- Input voltage 1-phase 200-240 VAC
- 0.4 kW to 2.2 kW
- Built-in RJ45 for MODBUS and BACNet communication
- Built-in Class 2 EMI filter
- Panel mount or DIN-rail (with accessory)

General purpose VFD RVLF 3-phase 200 V

- V/F Control + Sensorless Vector control
- Input voltage 3-phase 200-240 VAC
- 0.4 kW to 2.2 kW
- Built-in RJ45 for MODBUS and BACNet communication
- Panel mount or DIN-rail (with accessory)

General purpose VFD RVLF 3-phase 480 V

- V/F Control + Sensorless Vector control
- Input voltage 3-phase 380-480 VAC
- 0.75 kW to 11 kW
- In built RJ45 for MODBUS and BACNet communication
- Built-in Class 2 EMI filter
- Panel mount or DIN-rail (with accessory)

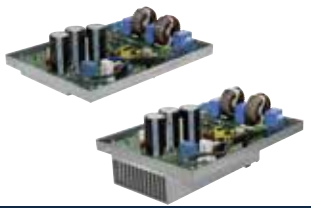
General purpose VFD RVBS 1-phase 230 V

- V/F control
- Input voltage 1-phase 200-240 VAC
- 0.55kW and 0.75kW
- Built-in Modbus communiction
- Panel mounting

Doors and entrances VFD RVDS 1-phase 230 V

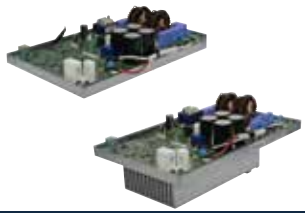
- Sensorless vector control
- Input voltage 1-phase 200-240 VAC
- 0.55kW and 0.75kW
- Built-in RJ45 for Modbus communiction
- Panel mounting

Compressor VFD RVPM 1-phase 230 V



- V/F control + Sensorless vector control
- Input voltage 1-phase 200-240 VAC
- Up to 4.5kW
- Built-in RJ45 for Modbus communiction
- Panel mounting

Compressor VFD RVPM 3-phase 400 V



- V/F control + Sensorless vector control
- Input voltage 3-phase 380-480 VAC
- Up to 8 kW
- Built-in RJ45 for Modbus communiction
- Panel mounting

Keypad RVDS

- Remote keypad LED display + Cable
- Low-voltage industrial components
- Frequency converter ≤ 1 kV

PFC reactor and DC choke RVPM

- PFC reactor for 1ph RVPM [RVDC0500]
- DC choke for 3ph RVPM [RVDC0800]
- Low-voltage industrial components
- Frequency converter ≤ 1 kV

DIN-clip RVLF size A and B

- Plastic DIN-clip and mounting screws for RVLF Size A and B models

USB connection cable RVLF

- Isolated USB to RJ45 cable for RVLF configuration

Monitoring relays

Carlo Gavazzi offers a comprehensive range of monitoring relays for the detection of: phase loss, incorrect phase sequence, phase unbalance, over/under current, over/under load, over/under frequency, over/under voltage and overtemperature. Our products include monitors for: current, voltage, power, power factor, 3-phase systems, motor temperature and also current transformers. These monitors can be used in a wide range of applications for protecting motors against improper supply and overload (elevators, compressors, pumps, air conditioning systems, mixing tanks), and also protect properties against the risk of fire caused by loss of insulation or current leaks.

3-phase relays DPA51/DPA52

- Phase sequence
- Phase loss/regenerated voltage detection
- No setup required
- 5 A SPDT relay output

3-phase relays DPA55

- Phase sequence
- Phase loss
- Voltage window
- Incorrect connection proof (208-480 VAC power supply)
- 5 A SPDT relay output

3-phase relays DPB51/DPB52

- Phase sequence
- Phase loss
- 3P systems, 3P+N systems [DPB51]
- Independent overvoltage and undervoltage settings
- Adjustable alarm ON delay
- 5 A SPDT relay output

3-phase relays DPB01

- 3P systems, 3P+N systems, up to 400 Hz [CM44]
- Phase sequence and phase loss
- Independent overvoltage and undervoltage settings
- Adjustable alarm ON delay
- 8 A SPDT relay output

3-phase relays DPB02

- 3P systems, 3P+N systems, up to 400 Hz [CM44]
- Phase sequence and phase loss
- Voltage asymmetry setting
- Adjustable alarm ON delay
- 8 A SPDT relay output

3-phase relays DPC01

- 3P systems, 3P+N systems, up to 400 Hz [DM44]
- Phase sequence and phase loss
- Independent overvoltage and undervoltage setting + asymmetry and tolerance setting
- Separate adjustable alarm ON delays
- 2 x 8 A SPDT relay output

3-phase relays DPC02

- 3P systems, 3P+N systems, up to 400 Hz [DM44]
- Phase sequence and phase loss
- Independent overvoltage and undervoltage setting + overfrequency and underfrequency setting
- Separate adjustable alarm ON delays
- 2 x 8 A SPDT relay output

3-phase relays DPD02

- 3P systems, 3P+N systems, up to 400 Hz
- NFC device configuration and real time reading, through dedicated Android, IoS or Windows App
- All 3-phase voltage values can be monitored and combined to each relay
- Alarm ON or OFF delay and hysteresis individually set for each variable
- 2 x 8 A SPDT relay output

Current relays DIA01/DIA02

- 0.5 - 5 AAC/DC [DIA01]
- 2 mA - 5 AAC/DC [DIA02]
- Overcurrent setting
- 8 A SPDT relay output

Current relays DIA53/EIS H

- 200 mA - 60 AAC range [EIS H]
- 2 A -100 AAC range [DIA53]
- No power supply required
- Overcurrent setting [DIA53] ON/OFF monitoring (no adjustment required) [EIS H]
- NPN/PNP transistor output [DIA53] AC/DC solid state output [EIS H]

Current relays DIB01/DIB02

- 0.1 mA to 5 AAC/DC [DIB01]
- 60 mV/150 mV [DIB02]
- 2 A to 100 AAC [100A]
- Overcurrent or undervoltage setting
- Adjustable alarm ON delay
- 8 A SPDT relay output

Current transformers A82

- Wall mounting
- Cable hole
- 5 types of input up to 500 AAC
- 3 types of output: 4 - 20 mADC, 0 - 20 mADC, 0 - 10 VDC
- LED indication for power supply

Monitoring relays

The possibilities for monitoring relays are countless: verification of machinery operation, detection of broken heater elements, lighting monitoring in critical areas (airport runways, buildings aircraft warning lights, tunnels), monitoring of ventilation fans and in building automation systems. Protection can be provided against people, fire, earth current leakage, or protecting from incorrect mains or cables connections. Also cabling and mounting is eased using different types of housing, double cage terminals, or pass-through connections for current measurement. Setup is always easy and accurate with the front dials and DIP switches.

Current transformers E83

- DIN-rail or wall mounting
- Small size
- 12 mm cable hole
- 7 selectable input ranges up to 50 AAC
- LED indication for power supply
- Output 4 - 20 mADC

Voltage relays DUA01/DUB01

- AC/DC TRMS over or undervoltage monitoring
- Range up to 500 VAC or DC
- Adjustable delay and hysteresis [DUB01]
- Programmable latching / inhibit
- 1 x 8 A SPDT relay output

Voltage relays DUA52

- DC battery undervoltage monitoring
- 12 V, 24 V and 48 V battery systems
- Adjustable voltage and hysteresis settings
- 1 x 5 A SPDT relay output

Voltage relays DUA55

- Voltage window relay
- Nominal voltage from 208 to 240 VAC
- Monitoring of own supply
- Incorrect connection proof (208-480 VAC power supply)
- 5 A SPDT relay output

Voltage relays DUB02/DUB03

- Over and undervoltage monitoring
- Measure own supply 24 V, 115 V, 230 VAC [DUB02], 24-240 VAC/DC [DUB03]
- Adjustable delay on alarm ON or on recovery
- Programmable latch / inhibit function
- 1 x 8 A SPDT output

Current/Voltage relays DIC01/DUC01

- TRMS AC or DC voltage monitoring
- Over + over or over + under or under + under
- Separately adjustable delays, adjustable hysteresis
- Programmable latch / inhibit function
- 2 x 8 A SPDT relay output

Thermistor relays DTA01/02, DTA71/72

- Motor thermistor relays for PTC connection
- Remote or local, automatic or manual alarm reset
- PTC open or short circuit information LED for status and troubleshooting
- 1 or 2 relays output

Thermistor relay DTA04

- Motor thermistor relays for PTC connection
- Remote or local, automatic or manual alarm reset
- PTC open or short circuit. Information LED for status and troubleshooting
- 2 x 8 A SPST relay output
- Relay outputs for contactor opening and signalling
- 24 V to 240 VAC/DC power supply voltage

Earth Leakage DEA71/DEB71

- Fixed [DEA71] or adjustable IΔn threshold [DEB71]
- Warning output @ 60% IΔn
- Trip Output @ 80% IΔn
- Adjustable time delay [DEB71]
- 2 SPDT relay outputs
- Sealable antitampering lid [DEB71]
- Works with CTG core balance transformers with openings from 35 mm to 210 mm

Frequency relays DFB01/DFC01

- Over and underfrequency monitoring
- Rated frequency 50 Hz or 60 Hz
- Adjustable delay on alarm ON or on recovery
- Programmable latch / inhibit function
- 1 x 8 A SPDT output [DFB01]
  2 x 8 A SPDT output [DFC01]

Power relays DWA01/DWB

- Cosφ or Active power monitoring
- Direct reading up to 5 A, 10 A or through "MI" current transformers for higher currents
- Adjustable Cosφ or selectable independent upper and lower values
- Adjustable delay ON
- 1 x 8 A SPDT relay output

Pump alternating relays DLA71/DLA73

- For 2 or 3 pumps
- Pump rotation and multiple pumps activation
- Overflow relay output [DLA73]
- 2 x 5 A SPST relay output [DLA71 2P]
- 3 x 5 A SPST relay output [DLA71 3P, DLA73]

Timers

Timers are frequently used in a wide range of applications in automation, such as motor control centres, packaging machinery, HVAC equipment, control panels and process control systems. The Carlo Gavazzi timer portfolio is complete and offers solutions for different mountings (DIN-rail, panel or plug-in), functions (ON and OFF delay, interval, one-shot, recycler, star-delta) and output (SPDT, DPDT, 4PDT relay, or static output).

Delay on operation DAA/PAA

- Mini-DIN, DIN-rail or plug-in housing
- Time range 0.1 s to 100 h
- Universal power supply
- SPDT or DPDT relay output
- Approvals: CE - UL - CSA - RINA

Delay on release DBA/PBA

- Mini-DIN, DIN-rail or plug-in housing
- Time range 0.1 s to 100 h
- Universal power supply
- SPDT relay output
- Approvals: CE - UL - CSA

True delay in release DBB/PBB

- Mini-DIN, DIN-rail or plug-in housing
- Time range 0.1 s to 10 h
- Universal power supply
- SPDT or DPDT relay output
- Approvals: CE - UL - CSA

Star-delta DAC/PAC

- Mini-DIN, DIN-rail or plug-in housing
- Time range 0.1 s to 600 s
- Universal power supply
- SPDT relay output
- Approvals: CE - UL - CSA

Recycler DCB/PCB

- Mini-DIN, DIN-rail or plug-in housing
- Time range 0.1 s to 100 h
- Universal power supply
- 1x or 2x SPDT relay output
- Approvals: CE - cULus

Multifunction DMB/PMB

- Mini-DIN, DIN-rail or plug-in housing
- 7 functions (0.1 s to 100 h)
- Universal power supply
- 1x, 2x SPDT or DPDT output
- Approvals: CE - UL - CSA

Multifunction DMC/PMC

- DIN-rail or plug-in housing
- 7 functions (0.1 s to 100 h)
- Remote time setting connections
- NPN, PNP, Namur sensors input
- 1x, 2x SPDT or DPDT output
- Approvals: CE - UL - CSA

Multifunction FAA/FMB

- Panel or plug-in mounting
- 7 functions (0.02 s to 300 h)
- Universal power supply
- DPDT output
- Approvals: CE - UL - CSA

Multifunction HAA

- Plug-in mounting
- 4 functions (0.1 s to 100 h)
- Universal power supply
- DPDT or 4PDT output
- Approvals: CE - UL - CSA

Mini-E EAS/EBS/ECS

- DIN-rail or panel mounting
- 3 functions (0.5 s to 10 m)
- Extended power supply
- Static output
- Approvals: CE - UL - CSA

Fieldbus - Dupline® and DuplineSafe

Dupline® is a field and installation bus that offers unique solutions for a wide range of industrial applications. The system is capable of transmitting multiple digital and analogue signals over several kms, via an ordinary 2-wire cable. Its modular design and simple operating principle enables it to be implemented easily in new or existing applications. Solutions can be engineered by combining products from the wide range of Dupline® modules, including digital and analogue I/O modules, PLC and PC interfaces, HMIs and Modems. All modules in an installation connect to the same 2-wire cable, which is used to exchange data between modules and between a central controller and modules.

Channel generator

- Generates Dupline® carrier signal
- Up to 128 Dupline® channels
- 2 and 3-wire operation with DC-power on the 3rd wire
- All Dupline® protocols are supported
- 24 VDC power supply
- Dimensions: 2-DIN housing

Fieldbus gateways

- Gateways for Profibus-DP, Devicenet, Modbus-RTU, Modbus/TCP
- Built-in channel generator
- Split I/O option
- AC and DC power supply
- DIN-rail mounting

Digital input modules - DIN

- Contact and voltage input modules
- Relay and solid state output modules
- Bus-powered types
- AC and DC power supply
- DIN and decentral mounting

Analogue input modules - decentral

- 4 universal analogue inputs or outputs
- Types: 0-20 mA, 4-20 mA or 0-10 V
- Galvanically isolated inputs
- AC and DC power supply
- Dimensions: 4-DIN housing

Repeaters

- Repeater for extending the Dupline® transmission distance
- Optical repeaters allow part of the Dupline® system to run on multimode fibre
- Dimensions: 4/8-DIN housing

Programming and test units

- Programming tool for assigning addresses to Dupline® modules
- Test unit for monitoring and control of Dupline® channels
- Handheld
- Battery / bus powered

DuplineSafe output module

- Configurable safety relay
- Monitors up to 63 safety switches connected via Dupline®
- Force guided contacts
- TUV approved for SIL3
- Dimensions: 8-DIN housing

DuplineSafe input module

- Input module for E-stops and safety pull cords
- Transmits dynamically on two Dupline® channels
- TUV approved for SIL3
- Powered from the bus
- Dimensions: 57 x 36 x 16 mm

DuplineSafe gateways

- Profinet, Profibus-DP and Modbus-RTU gateways for DuplineSafe monitoring
- Can also monitor and control standard Dupline® signals in the same system
- Dimensions: 8-DIN housing

DuplineSafe repeater

- Repeater for extending the DuplineSafe transmission distance
- Isolation between primary and secondary Dupline®
- Can be cascaded
- Dimensions: 8-DIN housing

DuplineSafe optical converter

- Optical repeaters allow part of the DuplineSafe system to run on multimode fibre
- Electrical-to-optical and optical-to-electrical units
- Dimensions: 4-DIN housing

DuplineSafe programmer

- Optical repeaters allow part of the DuplineSafe system to run on multimode fibre
- Electrical-to-optical and optical-to-electrical units
- Dimensions: 4-DIN housing

Safety

Carlo Gavazzi's range of safety modules includes modules for light curtains, safety mats, two hand control (anti-tie down devices), magnetic and safety switches and emergency stops. They are suitable for use in applications up to Performance Level "e" and Safety Integrity Level SIL 3. We also offer extension units which can be used to increase the number of safety outputs. Our safety modules are cUL and TUV approved.
Our modules are powered by 24 VAC/DC and feature LED status indicators.

SMS20/SMS31 Emergency stop

- Emergency stop and safety gate modules up to Performance Level "e" for category 0 emergency stops
- 2 NO safety outputs (SMS20) or 3 NO safety outputs plus 1 NC auxiliary (SMS31) with automatic, manual and monitored manual start
- Detachable screw terminals

SMSA31 Safety gates

- Safety gate modules, with antivalent function, up to Performance Level "e" for safety magnetic switches
- 3 NO safety outputs plus 1 NC auxiliary with automatic, manual and monitored manual start
- Detachable screw terminals

SM2H21 Two hand control

- Safety module, up to Performance Level "e", for Two-hand controls Type IIIC (EN 574)
- For high risk applications such as presses and punches
- Detachable screw terminals

SMS20 Lift levelling

- Designed to be used in lift plants for floor levelling of the cabin.
- Compliant with standards EN 81-20, EN 81-50
- 2 NO safety outputs
- Detachable screw terminals

SME41 Expansion modules

- The expansion module is used to increase the number of safety outputs, up to Performance Level "e"
- 4 NO instantaneous relay outputs plus 1 NC auxiliary output for feedback
- Detachable screw terminals

Multifunction module delayed outputs

- The device can be connected with different types of input: E-stop, E-gate, limit switch, non-contact switch, safety light curtains (ESPE Type 4, Type 2), safety light beam (single beam), safety mat
- 2 x OSSD direct +2 x OSSD delayed
- Selectable delay time. Can be easily set-up through the hex-switch, from 0 to 30 sec.

Multifunction modules instantaneous outputs

- The device can be connected with different types of input: E-stop, E-gate, limit switch, non-contact switch, safety light curtains (ESPE Type 4, Type 2), safety light beam (single beam), safety mat
- 3 x OSSD (NO) + 1 OSSD Auxiliary (1 NC) (CM30D1A) or 4 x OSSD (NO) (CM40D0A)
- 4 LEDs on the front panel indicate the status and any errors during operation

NLG Light curtains

- Control Electro Sensitive Protective Equipment (ESPE) with static PNP or relay outputs reaching Performance Level "e"
- 2 NO safety outputs (NLG02) or 3 NO safety outputs plus 1 NC auxiliary (NLG13) with automatic/manual or monitored manual reset version
- Fixed or detachable screw terminals

Configurable master module

- Configurable Master safety controller
- Simultaneous monitoring of several safety devices and commands
- 8 digital safety inputs
- 2 OSSD digital safety output pairs
- 4 Test outputs and 2 programmable status outputs and separate EDM and Start/Restart

Speed monitoring modules

- 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 therefore capable of controlling up to two independent axes
- RJ45 for encoder connections and terminal blocks for connection of proximity (up to 2 proximity per module)

I/O Expansion modules

- I/O module: 8I + 2O + 4 test outputs and 2 programmable status outputs
- I + Test O module: 12I + 8TO and separate EDM and Start/Restart
- Input only modules: 8/16 safety inputs + 4 test O
- Output only modules: 2/4 OSSD and separate EDM and Start/Restart
- Relay Output modules: different versions with NO and NC configurations

Power supplies and UPS

Carlo Gavazzi presents a complete range of power supplies and battery chargers for both the automation industry and building automation. These are available in 3 different types: cabinet DIN-rail mounting, low profile DIN-rail mounting for electrical distribution panels and enclosed type. Power supplies are also available with DC, 1-phase, 2-phase and 3-phase inputs. Output voltages range from 5 to 48 VDC, with output powers from 15 W to 800 W. Battery chargers are 120 W, and availabe in 2 voltages: 12 V and 24 V.

SPDE DIN-rail 1-phase power supplies

- From 75 to 240 W output power
- 1-Ph 90 V to 264 VAC or 120 V to 370 VDC input voltage
- Adjustable output
- Screw terminals
- DC OK indication
- CE - UKCA - cULus - cURus

SPDE R DIN-rail 1-phase power supplies

- From 120 to 480 W output power
- 1-Ph 90 V to 264 VAC or 120 V to 370 VDC input voltage
- Adjustable output
- Screw terminals
- DC OK indication
- Available with PFC and DC OK output relay
- CE - UKCA - cULus

SPDE DIN-rail 2-phase power supplies

- From 120 to 240 W output power
- 2-Ph 180 VAC to 600 VAC, 2-Ph 254 VDC to 848 VDC,
- DC OK indication
- PFC 240 W
- CE - UKCA - cULus

SPDE DIN-rail 3-phase power supplies

- From 240 to 480 W output power
- 3-Ph 320 VAC to 600 VAC / 3-Ph 450 VDC to 850 VDC
- DC OK indication
- PFC 480 W
- Parallel operation switch (only 3Ph 480 W)
- CE - UKCA - cULus

SPDC - DIN-rail 1-phase power supplies

- 120 W and 480 W output power
- 85 to 264 VAC or 127 V to 375 VDC input voltage
- Available with PFC
- Compact dimension
- Parallel connection output
- DC OK indication
- CE - cULus - cURus

SPDM - DIN-rail 1-phase power supplies

- 120 W to 240 W output power
- 90 VAC / 264 VAC or 127 V to 370 VDC input voltage
- Compact dimensions
- Adjustable output
- DC OK indication
- CE - cULus - cURus

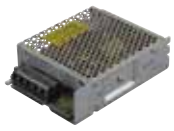
SPMA - Low profile DIN-rail power supplies

- From 12 to 100 W output power, 85 or 264 VAC or 120 to 350 VDC input voltage
- Overvoltage, Overload and Short circuit protection
- Compact dimension
- 4 kV insulation, UL Class 2 output
- CE - UKCA - cULus - cURus - UL 1310 Class 2 UL ISA 12.12.01 Class I Div2

SPME - Low profile DIN-rail power supplies

- From 15 to 100 W output power, 85 or 264 VAC or 120 to 370 VDC input voltage
- Overvoltage, Overload and Short circuit protection
- Compact dimensions
- 4 kV insulation, Over Voltage Category III
- CE - UKCA - cURus

SPPC Enclosed type 25 W ~ 75 W



- 90 V to 264 VAC or 127 to 370 VDC input voltage
- Wide operating temperature -25°C to 70°C
- Conformal coated PCB
- Cooling fan w/ speed control
- Adjustable output
- CE - cURus

SPPC FC Enclosed type 150 W ~ 800 W

- 90 V to 264 VAC or 127 to 370 VDC input voltage
- Wide operating temperature -25°C to 70°C
- Conformal coated PCB
- Cooling fan w/ speed control
- Adjustable output
- Available with PFC
- CE - cURus

SPUBC - 120 W 24 VDC UPS & power supply

- 12 - 24 V power supply, Battery Charger and UPS
- Smart battery diagnostics and Charge management
- For batteries up to 50 Ah
- DIN-rail mounting
- CE - UKCA - cURus

SPUBAT24 DIN-rail battery bank 1.2 to 12 Ah

- Stainless steel battery rack for UPS and battery chargers
- 24 V VRLA Battery bank
- Front panel screw terminals for easy connection
- DIN-rail or wall mounting
- Built-in easily replaceable fuse
- CE

Digital panel meters

Carlo Gavazzi offers a comprehensive range of digital panel meters, digital displays (for current meters, ammeters, voltmeters, frequency meters, temperature meters and temperature controllers, tachometers, and rate meters) and signal conditioners for OEM, panel builder, instrumentation and MRO customers.
Covering most input types, our digital panel meters are well suited to any display requirements. With the modular types it is possible to realize any sort of configuration and the analogue signal can also be retransmitted to show the readings. The displayed colour can be set to change at specific thresholds, allowing any type of anomaly to be easily seen.

HMI displays BTM series

- 7", 10"and 15.6" colour HMI displays
- Fully programmable by the dedicated BTM-PC- IDE software
- IIoT data distribution via MQTT and OPC UA
- BACnet, Modbus and KNX protocols with gateway/routing capabilities
- Ethernet, serial and USB ports

Modular indicator/ controller UDM35

- 3½ DGT LED
- AC/DC V-I, Temperature and Resistance, Speed, Frequency and Period measurement
- Up to 4 independent alarm set-points, 20 mA/10 VDC analogue output
- RS485 or RS232, MODBUS RTU
- Panel mounting
- Degree of protection: IP67, NEMA12, NEMA4x

Modular indicator/ controller UDM40

- 4 DGT LED
- AC/DC V-I, Temperature and Resistance, Speed, Frequency and Period measurement
- Up to 4 independent alarm set-points, 20 mA/10 VDC analogue output
- RS485 or RS232, MODBUS RTU
- Panel mounting
- Degree of protection: IP67, NEMA12, NEMA4x

Modular controller USC

- Modular signal's conditioner
- AC/DC V-I, Temperature and Resistance, Speed, Frequency and Period measurement
- Up to 4 independent alarm set-points, 20 mA/10 VDC analogue output
- RS485 or RS232, MODBUS RTU
- DIN-rail mounting
- Degree of protection: IP20

Indicator/controller LDI35

- 3½ DGT LED or 3 DGT LED + "0" dummy µP-based
- AC/DC V-I, Temperature and Resistance
- 1 independent alarm set-point
- 48 x 96 mm
- Panel mounting
- Degree of protection: IP50 (IP65 on request)

Indicator/controller LDM35H

- 3½ DGT LED
- AC/DC V-I
- Up to 2 independent alarm set-points
- 48 x 96 mm
- Panel mounting
- Degree of protection: IP65

Indicator LDM30

- 3 DGT LED + "0" dummy µ-based
- AC V-I
- Dip-switch-selectable ranges
- 48 x 96 mm
- Panel mounting
- Degree of protection: IP50 (IP65 on request)

Indicator DI3-DIN

- 3 DGT µP-based
- AC/DC V-I, Frequency
- 20 Selectable CT/VT primary range
- 3-DIN modules
- DIN-rail mounting
- Degree of protection: IP40

Indicator DI3-72

- 3 DGT µP-based
- AC/DC V-I, Frequency
- 18 Selectable CT/VT primary range
- 72 x 72 mm
- Panel mounting
- Degree of protection: IP50 (IP65 on request)

Industrial relays and sockets

Carlo Gavazzi offers a comprehensive range of electromechanical relays for industrial automation.
These are available in plug-in and PCB mounting. Many of the relays come as standard with a push-to-test button as well as a LED indicator. Carlo Gavazzi relays are frequently used in control panels, in HVAC control systems, pump and compressor control and electronic and consumer products. They are typically used to switch loads such as heaters, lights and motors. Carlo Gavazzi also offers a complete range of sockets (DIN-rail mounting) for industrial and PCB relays.

Industrial RCP

- 8 or 11-pin socket mounting
- 2 or 3 change-over contacts
- Matching sockets available
- AC coils 6 to 230 VAC/DC coils 6 to 110 VDC
- Standard with LED, Push arm and Flag

Midi industrial RPY

- High switching power
- 10 or 16 A switching capacity
- 1 or 2 or 3 or 4 pole configuration
- DC coils from 6 to 110 V/AC coils from 6 to 230 V
- Flanged pins 5 mm (0.20")

Midi industrial RMI

- High switching power
- Contact rating 10 A [RMI2] 5 A [RMI4]
- 2 pole [RMI2] 4 pole [RMI4] configuration
- AC coils 6 V to 230 V/DC coils 6 to 110 V
- Standard with LED, Push arm and Flag

Power NF/NB

- Switching capacity 30 A
- DC coils 6 to 110 VDC / AC coils 12 to 240 VAC
- 1 or 2 normally open contact
- Faston terminals [NF] / PCB terminals [NP] / Bolt terminals [NB]

Power CF/CS

- High switching power
- Switching capacity 30 A
- 2 normally open contacts, 2 change over contacts
- DC coils from 5 to 110 V / AC coils from 24 to 277 V
- Faston terminals / PCB terminals

Slim RSLM

- 5 mm width
- Switching capacity 6 A
- 1 normally open contacts or 1 change over contact
- DC coils from 12 to 60 V
- PCB terminals

Slim industrial RPYS

- Slim Relay solution
- 8 or 12 A switching capacity
- 1- or 2- pole configuration
- DC coils 12 - 24 V,
  AC coils 24 - 115 - 230 V
- UL 508 cURus

Slim sockets ZPYS

- Sockets for RPYS relays
- Rated voltage 300 VAC
- Rated current 16 A
- Screw and Push-in terminals
- Pre-mounted solutions with Relay + Socket + Clamp

Sockets ZPD

- Sockets for RCP relays
- Rated voltage 300 VAC
- Rated current 10 A
- Terminal type screw cage
- Contact material nickel plated - CuZn33

Sockets ZMI

- Sockets for RMI relays
- Rated voltage 300 VAC
- Rated current 10 A
- Terminal type screw cage
- Contact material Cu Ni

Sockets ZPY

- Sockets for RPY relays
- Rated voltage 300 VAC
- Rated current 16 A
- Terminal type screw cage
- Contact material nickel plated - CuZn33

Sockets ZRLS

- Sockets for RSLM relays
- Rated voltage up to 250 VAC
- Rated current 6 A
- Screw terminals or spring terminals
- Options: various AC/DC voltage inputs