



## **Solutions**

# **Agriculture**

# Agriculture

## Solutions for



### Tractors and agricultural machinery

### Silos

### Feed distribution systems

### Irrigation

#### ABOUT CARLO GAVAZZI

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

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

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

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

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

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

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

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

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





## DESIGNED TO MEET MARKET REQUIREMENTS

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

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

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

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

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

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

Finally – thanks to Carlo Gavazzi's wide product range – most agricultural application challenges can be met by one supplier.

# Agriculture

## Tractors and agricultural machinery



### Inductive sensors

ICB12  
ICB18  
ICB30

### Capacitive level sensors

CD34CNF

### Pick up sensors

PA2PK

### Ultrasonic sensors

UA18  
UA30

### Limit switches

PS

Agricultural machinery needs reliable and durable parts and components able to work long hours in difficult outdoor conditions, exposed to every kind of stress.

Carlo Gavazzi offers a comprehensive range of components for most applications in agricultural and earth-moving vehicles, from passive magnetic pick up sensors (PA2PK) to inductive proximity sensors.

The pick up sensors detect and measure the speed of phonic or toothed wheels and generally of any rotating device built-in a ferromagnetic material and provided with slots and cogs, for example in engines and in tractors.

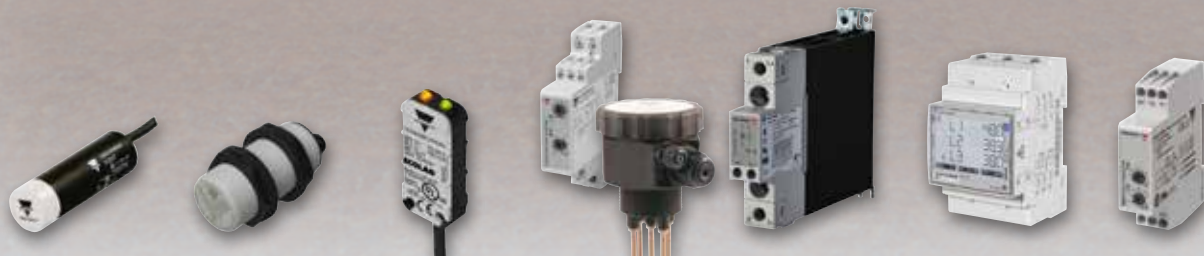
Inductive sensors are used for non-contact measurements - for example to count

revolutions of the axle in machinery or to monitor the bucket position in a backhoe loader. Safety and positional mechanical switches in different versions and configurations are also available. Capacitive level sensors (CD34CNF series) mounted outside plastic tanks, can detect the level of water-based chemicals while ignoring foam, film or build-up. Ultrasonic sensors (UA series) are also used to monitor sprayer heights in self-propelled row-crop sprayers. A particular application of ultrasonic sensors with analog output is control of the driving direction of the wagon or a motorized chassis equipped with one or more fixed or mobile platforms, for example for harvesting fruit.





# Silos



Capacitive sensors	Capacitive sensors	Capacitive level sensors	Conductive level controllers / probes	1-phase solid state switches	Energy analysers	Timers
CB32 VC11/12	CA30CAN/CAF CA18CAN/CAF EC30	CD34CNF	CLD CLP CLH	RGC1 RGS1	EM340 EM24	DAA51 DMB51



Carlo Gavazzi offers very efficient means for liquid and solid level measurement, both in large silos and in small storage containers.

Our 4<sup>th</sup> generation TRIPLESIELD™ capacitive sensors are designed to detect objects with a dielectric constant (DC) of as low as 1.5. The CA18 and CA30 CAN/CAF sensors are excellent for accurate measurement of dry grain regardless of degree of humidity. The sensor provides a stable and precise signal of yield per unit area.

Knowing these areas makes it easy to adjust the amount of fertilizers and herbicides in exactly the right way. As a result, cost can be reduced and the

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

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

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

Various adjustment possibilities enable the controller to perform filling operations, emptying operations or a combination of the two.

# Agriculture

## Feed distribution systems



### Magnetic sensors

S series

### Capacitive sensors

CA18CL  
CA30CLN

### Capacitive sensors

VC11/12  
CB32

### Photoelectric sensors

PD30ET  
PA18/PH18

### Inductive sensors

ICS12  
ICS18  
ICS30

### 1 & 3-phase proportional controllers

RGC1P  
RGC2P  
RGC3P

### Soft starters

RSGD  
RSBT

### Switching power supplies

SPD  
SPPC  
SPM

Feeding distribution systems are critical to the quality and safety of farms with pig, poultry and dairy sectors. It is important to feed all the chickens at the same time and manual handling is eliminated.

The distribution is controlled by sensors (capacitive, inductive, photoelectric),



normally combined with solid state relays and soft starters. Carlo Gavazzi capacitive level sensors are excellent for use in the agricultural sector (detection of feed, fluids etc.). The VC11/12 sensors are able to directly drive a contactor or a small motor.

The PD30 Stainless steel sensors work perfectly even in the harshest environments. The high-quality stainless steel housing guarantees maximum mechanical resistance, and prescribed cleaning schedules are smoothly met without costly machine downtime. Ultrasonic sensors or capacitive sensors control the levels in the silos and monitor emptying to ensure the efficiency of the process.

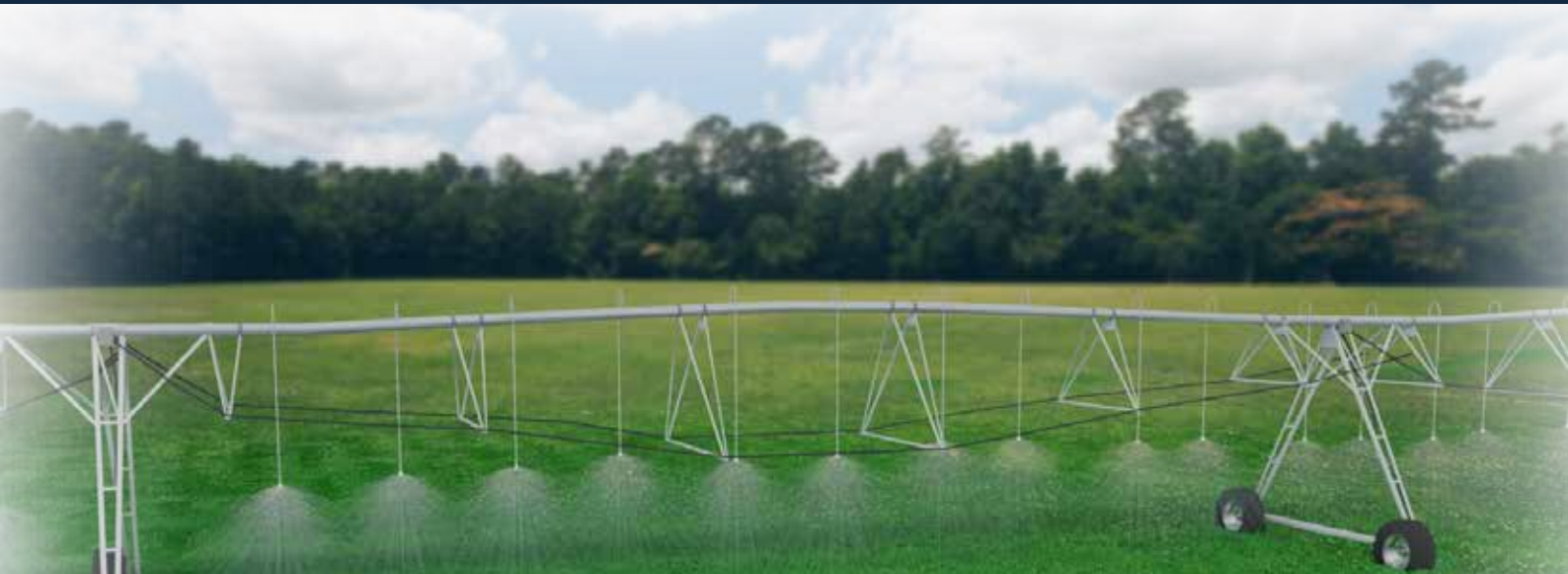
Carlo Gavazzi soft starters (RSGD) soft start and soft stop pumps, screw feeders, ventilators as well as chillers (RSBT).

Temperature control in animal farms is optimised with the RGC1P proportional controller which, through an analog input, regulates the power of heating lamps.

The RGC3P (in special version) is used for optimal speed control of ventilators in egg incubators.



# Irrigation



### Dupline® digital I/O modules

**GH3440  
4412  
GH6440  
4412**

### Dupline® converters

**GH3485  
0000**

### Conductive level controllers / probes

**CLD  
CLP  
CLH**

### 3-phase pump and ventilators soft starters

**RSWT**

### Timers

**DAA51  
DMB51**

### Monitoring relays

**DPA51  
DPB52**

### Earth leakage relays

**DEA71  
DEB71**

Traditional irrigation systems are characterized by complex and expensive wiring. The Carlo Gavazzi Dupline® irrigation bus reduces installation costs and increases flexibility in agricultural irrigation systems, where the valves are usually distributed over a large area. Any type of irrigation controller, whether it is a PLC, PC or dedicated controller, can use Dupline® as a remote I/O system. The wiring topology is completely free, with no limitation to the number and length of branches. The Dupline® Fieldbus is the ideal system to control levels, monitor pumps and activate valves over a large area and from a distance.

In centrifugal pump applications the RSWT softstarter provides a plug and

play solution to easily replace star-delta starters and contactors. This soft starter only requires 1 setting for the ramp-up and ramp down time for the pump. All the rest is taken care of by the RSWT self-learning algorithm that is active during every start and makes sure that the pump is started within the set time, whilst optimising the pump starts and stops.

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

fault current exceeds the set fault current. The Carlo Gavazzi product range includes a variety of automation components suitable for use in irrigation, landscaping and green-houses: monitoring relays, inductive, capacitive and ultrasonic sensors, digital panel meters and energy meters.



# Agriculture

## Our product range

### Capacitive sensors



#### CA18CAN/CAF / CA30CAN/CAF

- Dimensions: M18 / M30
- Plastic housings, DC versions
- Adjustable sensing distance up to 20 mm flush and 30 mm non-flush
- Protection: short circuit, transient and reverse polarity
- Degree of protection: IP67, IP68 and IP69K
- Approvals/Marks: CE - cULus - Ecolab

#### MAIN FEATURES

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

### Capacitive sensors



#### CA30CLN

- Level sensor for solid, fluid or granulated substances
- Dimensions: M30
- Adjustable sensing distance: 4-12 mm
- Thermoplastic polyester housing
- Multi voltage supply 20.4 to 255 VAC/DC
- Approvals/Marks: CE - cULus

#### MAIN FEATURES

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

### Capacitive sensors



#### VC11/12

- Capacitive level sensors for solid, fluid or granulated substances
- Dimensions: Ø32
- Adjustable sensing distance: 4-12 mm
- Multivoltage supply: 20.4 to 255 VAC/DC
- Approvals/Marks: CE - cULus

#### MAIN FEATURES

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

### Capacitive sensors ATEX version



#### CB32

- TRIPLESIELD™ sensor protection
- Adjustable sensing distance: 4-20 mm
- Dimensions: Ø32
- Capacitive level sensors for solid, fluid or granulated substances
- Protection transients and reverse polarity
- Approvals/Marks: CE

#### MAIN FEATURES

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

### Capacitive sensors



#### CA18CL

- TRIPLESIELD™ sensor protection
- Sensing distance: 0.5-12 mm (M18)
- Plastic housing, AC versions
- Automatic detection of NPN or PNP load
- Selectable "make or break" switching by means of Teach function
- Approvals/Marks: CE - UL - CSA

#### MAIN FEATURES

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

### Capacitive sensors



#### EC30

- TRIPLESIELD™ sensor protection
- Sensing distance up to 25 mm
- Dimensions: M30
- Plastic housing, AC versions
- Approvals/Marks: CE - UL - CSA

#### MAIN FEATURES

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



# Our product range

## Capacitive level sensor



### CD34CNF

- Dimensions 8 x 16 x 34 mm
- Power supply: 10-30 VDC
- Output: NPN / PNP / NO or NC
- Power supply from 208 to 480 VAC (+/- 15%)
- Connectivity: Cable or M8 4-pin Pig-tail
- Approvals/Marks: CE - cULus - ECOLAB

#### MAIN FEATURES

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

## Pick up sensors



### PA2PK

- Dimensions: diameter M20 x 1.5 length 60, 70, 107 mm
- Pulse output function
- Cylindrical nylon with 30% glass fiber
- Protection degree IP65
- Approvals/Marks: CE

#### MAIN FEATURES

- AMP connector Superseal
- Suitable for applications where the measurement of gear speed is required.
- Operating frequency > 100 Hz

## Ultrasonic sensors



### UA18 / UA30

- Dimensions: M18, M30
- Ultrasonic sensors with integrated amplifier providing a digital and/or analog output and integrated amplifier
- Up to 6 m sensing distance
- Switching output with two setpoints
- Housing material: plastic or AISI316L stainless steel
- Approvals/Marks: CE - cULus - CSA

#### MAIN FEATURES

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

## Conductive level controllers / probes



### CLD / CLP / CLH

- 17.5 mm slim housing, 22.5 mm & 35 mm housing available
- Multiple filling and emptying functions
- 24-240 VAC/DC [CLD2EB1BU24]/24 VDC, 115 VAC, 230 VAC
- Flexible modular probes up to 5 electrodes [CLH5]
- Extendible probes for longer length

#### MAIN FEATURES

- Wide operational supply voltage range
- Slim compact housing
- Wide sensitivity adjustment 250 Ω to 500 KΩ
- Cascading amplifiers for more levels [CLP2FA]

## Photoelectric sensors



### PD30ET

- World standard housing style 11 x 31.5 x 21 mm
- Supply voltage: DC 4-wire
- Output: NPN/PNP NO+NC
- Sensor types: D, B, R, P and T
- Connectivity: Cable or M8 connectors
- Approvals/Marks: CE - cULus (UL508, CSA C22.2) - ECOLAB

#### MAIN FEATURES

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

## Photoelectric sensors



### PA18

- Standard M18 cylindrical housing
- 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 adjustment by potentiometer
- Approvals/Marks: CE - cULus

#### MAIN FEATURES

- IP69K / ECOLAB approved / CE marking / cULus approved acc. to UL508
- Diagnostic LED indication (green and yellow LED)
- Short circuit, reverse polarity and overload protection

# Agriculture

## Our product range

### Photoelectric sensors



#### 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

- IP69K / ECOLAB approved / CE-marking / cULus approved acc. to UL508
- Diagnostic LED indication (green and yellow LED)
- Short circuit, reverse polarity and overload protection

### Inductive sensors



#### ICB12 / ICB18 / ICB30

- M12, M18 and M30 Nickel-brass housing in short or long barrel lengths
- Standard, double and triple distance sensing ranges
- 3-wire and 4-wire versions
- Two metres oil resistant PVC cable or M12 plug version
- Approvals/Marks: CE - cULus - cCSAus

#### MAIN FEATURES

- High precision and reliability thanks to the microprocessor technology
- Short circuit and overload LED indication
- Laser engraved information on the front cap, permanently legible

### Inductive sensors



#### ICS12 / ICS18 / ICS30

- M12, M18 and M30 stainless steel housing
- Sensing distance from 2 mm up to 22 mm
- Degree of protection: IP67, IP68 and IP69K
- Approvals/Marks: CE - cULus - cCSAus - ECOLAB

#### MAIN FEATURES

- Certified compatibility with most of the detergents and disinfectants available on the market
- Short circuit and overload LED indication
- Extended temperature range: -40°C to +80°C (-40°C to +85°C for ICS30)

### Magnetic sensors



#### S series

- Type: rectangular plastic housing
- Dimensions: 79 x 21.2 x 11.5 mm
- Side operated
- Operating temperature -25°C to 75°C
- Protection degree IP67

#### MAIN FEATURES

- Several operating distances thanks to the wide range of magnetic units [CL series]
- Easy and fast mounting

### 1-phase solid state switches



#### RGS1 / RGC1

- Product width: 17.5 mm up to 70 mm, DIN-rail or panel mount
- Ratings: up to 660 VAC, 90 AAC, 18000 A<sup>2</sup>s
- Integrated output overvoltage protection
- Control input ranges: 4-32 VDC, 20-275 VAC (24-190 VDC)
- Approvals/Marks: CE - EAC - cULus [RGC] - UR [RGS] - CSA [RGS] - VDE - GL (RGC up to 30 AAC)

#### MAIN FEATURES

- Integrated heatsink [RGC] or without heatsink [RGS]
- 100 kA short circuit current rating
- Optional over temperature protection [RGC]

### 1 and 3-phase proportional controllers



#### RGC1P / RGC2P / RGC3P

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

#### MAIN FEATURES

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



# Our product range

## 3-phase scroll compressor soft starters



### RSBD / RSBT

- Enhanced current reduction capability with patented auto-adaptive algorithm
- Motor rating: 3-phase up to 45 kW @ 400 V
- Integrated diagnostic functions
- 2- and 3-phase controlled solutions
- Approvals/Marks: cUL listed

#### MAIN FEATURES

- Plug and play; no user settings required
- Typically > 50% scroll compressor inrush current reduction
- Internally bypassed and internally supplied

## 3-phase general purpose soft starters



### RSGD

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

#### MAIN FEATURES

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

## 3-phase pumps and ventilators soft starters



### RSWT

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

#### MAIN FEATURES

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

## Variable frequency drives



### RVLF

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

#### MAIN FEATURES

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

## Monitoring relays



### DPA51

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

#### MAIN FEATURES

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

## 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

#### MAIN FEATURES

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

# Agriculture

## Our product range

### Monitoring relays



#### DPB52

- Dimensions 81 x 17.5 x 67.2 mm DIN-rail housing
- Phase sequence and phase loss, regenerated V detection
- 3 phase AC (own power supply)
- Power supply from 125 to 624 VAC (rated 208 to 480 VAC)
- Approvals/Marks: UL - CSA - CCC

#### MAIN FEATURES

- Overvoltage/undervoltage setting with alarm ON delay
- 1 DIN module width. Suitable for NORM panels
- Switch mode power supply

### Monitoring relays



#### DIB02 / PIB02

- Dimensions: 22.5 mm for DIN-rail [DIB] or 35.5 mm for plug in [PIB]
- Overcurrent or undercurrent detection
- DC current measurement by means of external shunt
- Power supply 115/230 VAC, 24/48 VAC, 24 VDC, 48 VDC
- Adjustable time delay

#### MAIN FEATURES

- Motor protection from overload
- DC or AC current measurement
- 3-phase overcurrent measurement with MP3 CT

### Earth leakage relays



#### DEA71

- 35 mm Mini-DIN Housing
- 2 SPDT 5 A Relay Outputs
- Disconnected CT detection
- Power supply from 24 V to 240 VAC
- Approvals/Marks: UL and CE (IEC EN 60947-2 Annex M Compliant)

#### MAIN FEATURES

- Fixed Trip Current 30 mA or 300 mA
- Remote test / reset push button input
- Warning indication and output

### Earth leakage relays



#### DEB71

- 35 mm Mini-DIN Housing
- 2 SPDT 5 A Relay Outputs
- LED leakage level indicator
- Power supply from 24 V to 240 VAC
- Approvals/Marks: UL and CE (IEC EN 60947-2 Annex M Compliant)

#### MAIN FEATURES

- Adjustable Trip Current Setting from 30 mA to 30 A
- Remote test / reset push button input
- Warning indication and output

### Core balance current transformers



#### CTG

- 6 sizes from 35 mm to 210 mm
- Closed Round Core type
- Screw terminals connection
- 1:1000 ratio
- Approvals/Marks: UL and CE (IEC EN 60947-2 Annex M Compliant)

#### MAIN FEATURES

- 1:1000 current reduction ratio
- Current transformer
- Single and three phase

### Current transformers



#### E83-2050

- DIN-rail or surface mounting 22.5 mm Euronorm housing with 12 mm hole for current measurement
- AC current transformer with 4-20 mADC secondary
- 1-phase AC current measurement
- Power supply from 10 to 40 VDC
- Approvals/Marks: UL

#### MAIN FEATURES

- 7 knob-selectable ranges from 5 to 50 AAC
- Easy interface to PLC or monitoring relays

### Current transformers



#### CTD / TADK

- CTD: currents from 40 to 4000 A
- TADK2: 1-250 A
- Removable panel fixing clips
- DIN-rail and panel mounting facility
- Double screw terminals [CTD]
- Sealable covers
- Case: ABS, self-extinguishing level UL 94 V-0
- Accuracy class: 0.5

#### MAIN FEATURES

- Wound primary / solid core or split-core
- Compliance with IEC 60185, VDE 0414-1 regulations
- Removable DIN-rail mounting holder

### Timers



#### DAA51 / DMB51

- Dimensions: 81 x 17.5 x 67.2 mm DIN-rail housing
- Delay on operate function [DAA], multifunction [DMB]
- Combined AC and DC power supply
- Repeatability: < 0.2%
- Approvals/Marks: UL - CSA - RINA

#### MAIN FEATURES

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



# Our product range

Timers	3-phase power transducers	3-phase energy analysers for direct current up to 65A	3-phase energy analysers
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### FMB01 / FAA

- Dimensions: 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



### CPT

- Dimensions: 83.5 x 45 x 98.5 mm DIN-rail housing
- Accuracy 0.5 % (voltage, current)
- Measurement by CT and VT
- Front protection degree IP20
- Analogue, digital, pulse or serial outputs available

#### MAIN FEATURES

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



### EM340

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

#### MAIN FEATURES

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



### EM24

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

Dupline® digital I/O modules	Dupline® valve controls	Dupline® converters	Dupline® test units
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### GH3440 4412

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

#### MAIN FEATURES

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



### GH6440 4412

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

#### MAIN FEATURES

- Can be buried in the ground at the actual valve position
- Supplied by bus — no external power needed



### GH3485 0000

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

#### MAIN FEATURES

- Built-in Gas-arrestor for lightning protection
- Up to 7 km transmission distance



### GHTU8

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

#### MAIN FEATURES

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

# Agriculture

## Our product range

### Switching power supplies



#### SPD

- Output power 5 W to 480 W
- Universal input range of 110-240 VAC, or up to 370 VDC
- Short circuit, overload and overvoltage protection
- PFC > 100 W
- UL1310 Class 2 (up to 90 W)
- Approvals/Marks: cULus - TUV - CCC - ISA C1D2

#### MAIN FEATURES

- DC OK signal
- Parallel connection
- Screw, spring or detachable terminal connectors

### Switching power supplies



#### SPDM

- Output power 30 W to 240 W
- Universal input range of 110-240 VAC, or up to 370 VDC
- Short circuit, overload, overvoltage and over temperature protection
- UL1310 Class 2 (up to 75 W)

#### MAIN FEATURES

- Saves up to 20% panel space
- High efficiency and wide operating temperature range
- Screw or spring terminal connectors
- Class I DIV2

### Switching power supplies



#### SPM

- Output power from 7.5 W to 100 W
- Universal input range of 110-240 VAC, or up to 370 VDC
- Short circuit and overload protection
- Derating starts from +60°C
- Approvals/Marks: cULus - TUV - CCC - ISA C1D2

#### MAIN FEATURES

- UL1310 Class 2 (up to <91W)
- Adjustable output +/- 10%
- Low voltage LED indication

### Switching power supplies



#### SPPC

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

#### MAIN FEATURES

- Adjustable output +/- 10%
- Compact dimensions
- Wide operating temperature range up to 70°C

### DC UPS



#### SPUC / SPUBC

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

#### MAIN FEATURES

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

### Industrial relay



#### RSLM

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

#### MAIN FEATURES

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

### Limit switches



#### PS

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

#### MAIN FEATURES

- Mechanical life > 15,000,000 cycles
- Precise operating point



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