

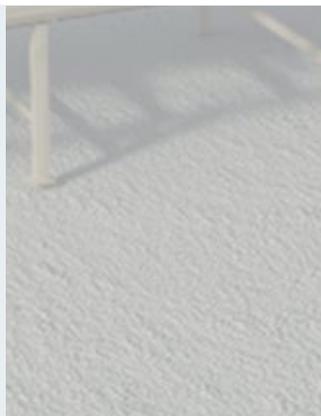


Solutions

Mining Machinery

Mining machinery

Solutions for



Long conveyors in mining, tunneling and cement factories

Motor control and monitoring of energy consumption

Pumping systems and services

Crushing equipment

ABOUT CARLO GAVAZZI

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

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

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

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

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

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

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

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

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



DESIGNED TO MEET MARKET REQUIREMENTS

The global mining equipment market is primarily driven by factors such as increasing mining activities in developing countries and the rising demand for technically advanced solutions across the globe.

Several large projects planned in Brazil, Russia, Australia, Africa and other regions are expected to drive the mining equipment industry in the coming years.

Coal mining and other underground mining activities taking place in the emerging markets, especially in the Americas and Asia Pacific, are leading to a huge demand for mining equipment in these regions.

Carlo Gavazzi offers its DuplineSafe system to monitor long conveyors in order to control the operation and check the safety status.

DuplineSafe is based on the Dupline® fieldbus, a system that has been used in more than 120,000 installations worldwide in the harshest industrial environments. Dupline® is especially in demand due to its reliability, simplicity and ability to transmit signals over long distances - no need for special network modules or special handling. This is one of the main reasons why DuplineSafe is the leading safety bus system worldwide for long conveyors in mines, tunnels, cement factories, stone mills etc.

In addition, Carlo Gavazzi offers a wide range of soft starters and variable frequency drives to control starting/

stopping, torque, ramp-up and ramp down of pumps in de-watering plants, as well as the soft start and stop of the motors in crushers, conveyors and other equipment used in mining production sites.

Mining Machinery

Long conveyors in mining, tunneling and cement factories



Safety relay output module

GS3830

Profibus DP gateway

GS3891

Dupline® Profinet gateway + master channel generator

**GS3391
GS3390**

Input modules

GS7510

Along bulk material conveyors in mines, tunnels, cement factories etc. there are several emergency stop switches connected to a pull-wire, enabling the workers to stop the belt at any point in case of an emergency situation or a fault on the belt.

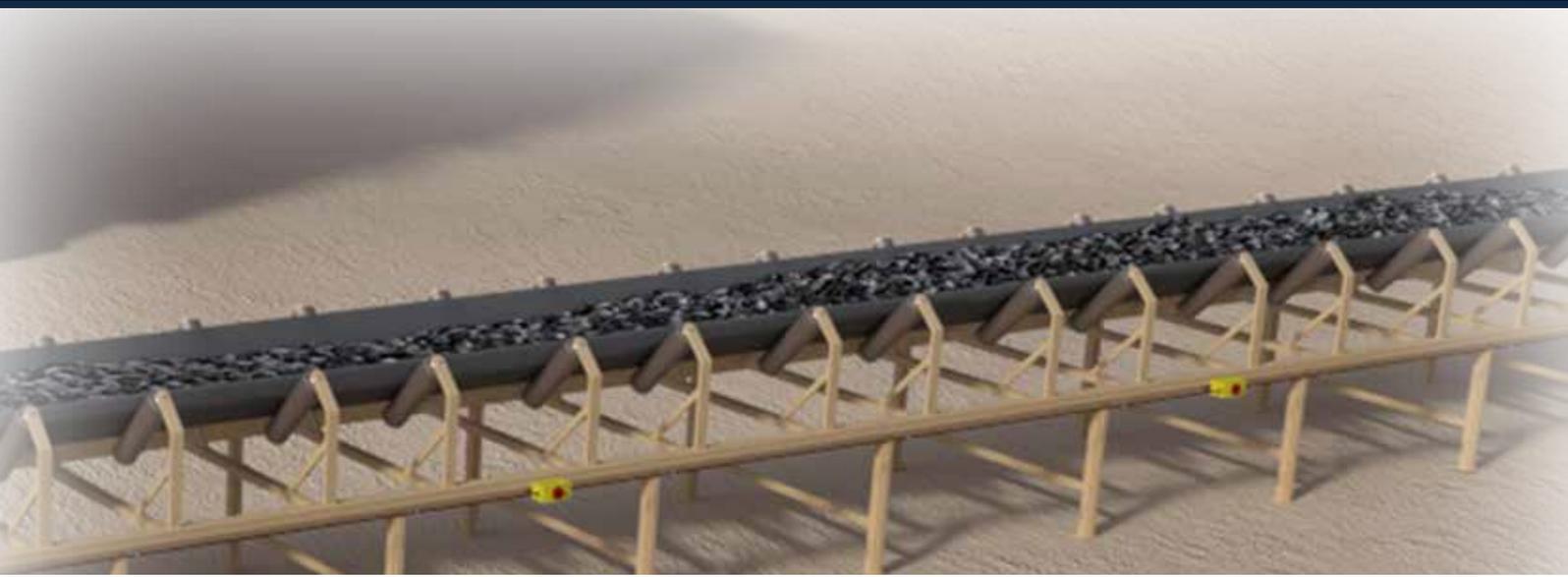
In order to reduce costly downtime of

the belt, it is important that the location and nature of the problem is identified as quickly as possible.

The traditional wiring solution does not provide the diagnostics, it merely stops the belt. Parallel wiring is a high-cost solution, since long conveyors may have more than 50 switches installed.

DuplineSafe represents a simple, flexible and cost-effective solution. A single two-wire bus cable is pulled along the conveyor. At each pull-wire safety switch, a small DuplineSafe input module is connected to the two bus wires and to the normally closed contact set of the safety switch. The input module continuously transmits the status of the safety switch in a dynamic way using the DuplineSafe address assigned to the module. The power supply for the input module is derived from the two-wire bus, hence no local power supply is required. In the machine room, a DuplineSafe relay output module is continuously monitoring the bus and the status of all the safety switches. If one of the safety





Handheld programming and test tools

GS7380



Optical converters

**GS3492
GS3493**



Modbus RS485 gateway

GSTI50



Configurable safety modules

CMM

switches is activated, or if a bus fault is detected, the output module will deactivate its safety relay and thereby stop the belt. The status of the safety switches can be monitored from e.g. a HMI or LED mimic panel, providing fast and precise diagnostics.

The signals can also be monitored from a PLC or PC, for example by using the Profinet gateway or the Modbus interface. The new Dupline® Profinet gateway allows the use of Dupline® and DuplineSafe as a field level sub-system under Profinet, and also allows for accurate integration in a Profinet based PLC environment. Up to 7 Dupline® master generators can be plugged into the Profinet main unit.

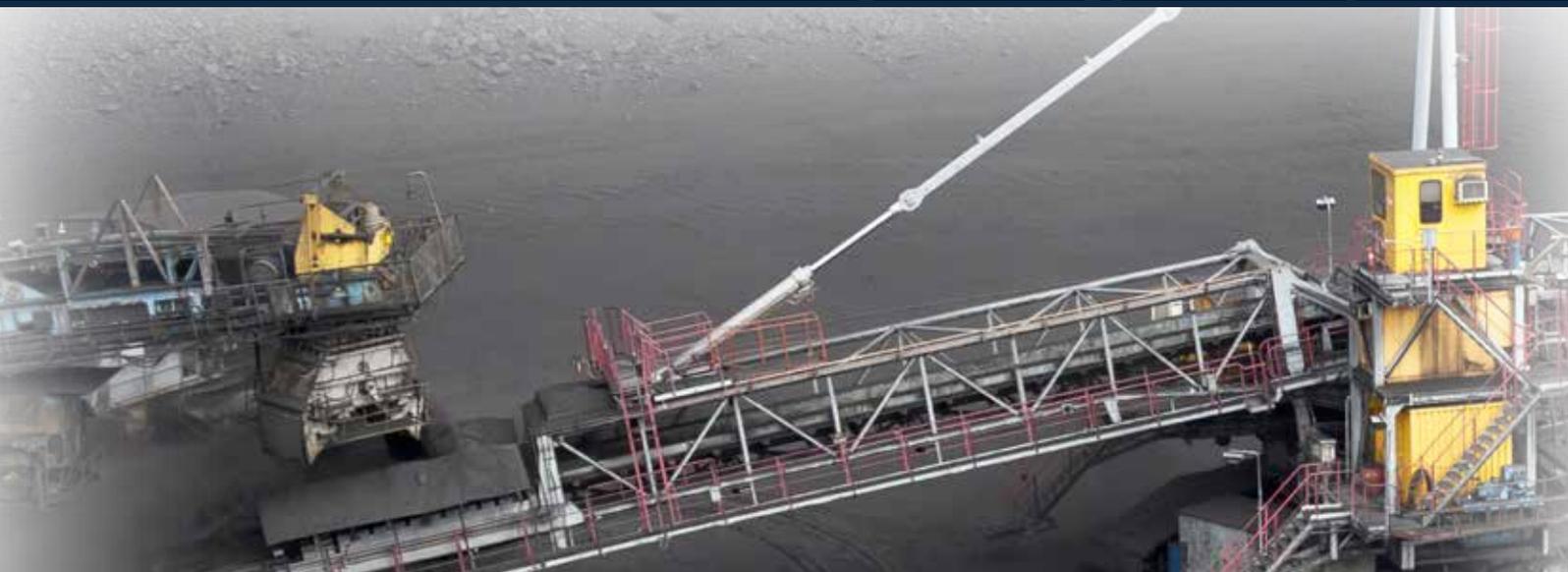
DuplineSafe keeps up production and makes your plant safer

- Immediate and precise diagnostics
- Up to 5 km (3.1 miles) transmission distance without a repeater
- Bus-powered input modules
- Easy to design, install and expand
- Multiple safety relays can read the same inputs
- TÜV-approved



Minina Machinery

Motor control and monitoring of energy consumption



Motor thermistor relays

**DTA04
DTA72**

Multifunction monitoring relay with NFC

DPD02

Current monitoring relay

DIB

Load guard monitoring relays

DWB01

Earth leakage relay

DEB71

We know how crucial the control of conveyor belts is for material handling in ore and mining productivity.

In a coal mine the ore is transported via a series of conveyors for thousands of metres (yards) from trains to stockpile areas.

If a conveyor motor fails, there is loss of production. The Corlo Gavazzi range of monitoring relays can provide an easy way to keep the main source of possible problems under control: DTA relays monitor motor temperature, the DPD can

be used either for motors or for generators as it can monitor both 3-phase voltage and frequency as well as asymmetry. DIB and DWB relays can guard from overloads by monitoring current, $\cos\phi$ and active power.





Core balance transformers

CTG

Graphical displays

**BTM-T4
BTM-T7**

Variable frequency drives

RVLF

Inductive sensors

**ICS12
ICS18
ICS30**

In mining applications there is often a lot of moisture in the environment and this makes it very important to monitor earth current leakage.

DEB71 is a Modular Residual Current monitoring relay which, together with the external CTG Core Balance Transformer, is able to detect any current leakage and provide protection according to the EN60947-2 Annex M Norm.

The measured earth current leakage can be shown by the LED bar indicator on the front face of the relay itself.

A Pre-alarm output is provided at 60% of the set trip threshold in order to pre warn before the alarm tripping takes place.

Conveyors are typical applications where variable frequency drives offer a number of advantages.

The Carlo Gavazzi RVLF variable frequency drives are used for speed control of conveyors for optimal process control, as

well as high starting torque whilst reducing stresses on the belts and shafts.

The products conform to EMI radio standard and EMC immunity standard EN 61800-3 for the second environment (Industrial sites).



Mining Machinery

Pumping systems and services



Soft starters

RSWT

Soft starters

RSGD

Variable frequency drives

RVLF

Pump alternating monitoring relays

**DLA71/DLA73
DPA51
DTA71/DTA72**

Power transducers

CPT DIN

Energy analysers

**EM24
WM15**

The reliability of pumping equipment is crucial for removing water in an effective mining operation.

The RSWT soft starters are designed with a dedicated and self-learning algorithm to ensure that the pump starts and stops smoothly.

The algorithm is self-learning, so as to remove as many settings as possible. In fact, we are the first to come up with a soft-starter which requires just a 1-knob setting for complete soft-starting and soft-stopping.

The Carlo Gavazzi product range, to ensure the reliable operation of pumping systems, includes the RSGD series soft starters and the RVLF variable frequency drives.

The DLA71/DLA73 monitoring relays are specifically made for pumping systems where two or three pumps have to work in parallel: they manage the signals from the inputs, sequentially activating the

working cycle of the pumps. In addition, Carlo Gavazzi products are used for the control of ventilation plants, as well as the monitoring of energy parameters and consumption.



Crushing equipment



Variable frequency drives

RVLF

Load guard monitoring relays

DWB01

Inductive sensors

**ICB12
ICB18
ICB30**

Photoelectric sensors

**MOF
S142**

Multifunction safety modules

SMS31

Safety magnetic sensors

MC36

Mining crusher machines are extremely important to the mining process, in order to reduce the material to a fine consistency for the processing and using of precious excavated resources. Jaw crushers are very robust and they have sufficient torque to break the stone. They use over dimensioned electric motors and large flywheels to accumulate kinetic energy. The load characteristics in the case of jaw crushers continuously vary, due to the various sizes of the rock entering the feed. The motor goes to overload peaks and comes down. Starting needs to be smooth to minimize mechanical stresses and eliminate high starting currents.

The RVLF variable frequency drives provide an effective way to meet the smooth starting requirements and motor speed variations, by automatically adjusting the torque. Inductive sensors ICB series, certified Class 1, Division 2 for hazardous environment, are also used in these plants. The MOF S142 photoelectric sensors with an amplifier can be used to detect stones on conveyor belts. The safe operation of the crushers is also guaranteed by preventing undesired access to the control panel, which could lead to malfunctions and potential hazardous situations. The protection is usually performed with

emergency stop buttons and safety magnetic switches (MC36) protecting the door opening, in conjunction with a safety module (SMS31) to stop the operation of the equipment.



Mining Machinery

Our product range

Safety relay output module

Profibus DP gateway

Input modules



GS3830

- Dimensions: 77 x 144 x 70 mm
- Monitors up to 63 safety input modules
- For mounting on DIN-rail (EN50022)
- 230 VAC power supply
- Approvals/Marks: cULus approved
- Approved by TÜV Rheinland Group according to IEC/EN 61508-SIL3, IEC/EN 62061-SIL3 and ISO/EN 13849-1 PL e

MAIN FEATURES

- Automatic or manual restart
- Status output for external equipment
- Easy configuration and testing with a handheld programming tool



GS3891

- Dimensions: 77 x 144 x 70 mm
- Profibus-DP slave according to EN50170
- For mounting on DIN-rail (EN50022)
- 230 VAC power supply
- Approvals/Marks: cULus approved

MAIN FEATURES

- Makes DuplineSafe diagnostics available on Profibus-DP
- Several gateways can be connected to the same bus
- Useful for interfacing to PLCs and PCs



GS7510

- Dimensions: 36 x 57.5 x 16.4 mm
- Powered by the bus
- IP67 rating
- Approvals/Marks: cULus approved
- Approved by TÜV Rheinland Group according to EC/EN 61508-SIL3, IEC/EN 62061-SIL3 and ISO/EN 13849-1 PL e

MAIN FEATURES

- Easy coding and testing with a handheld programming tool
- Small dimensions (57.5 x 36.0 x 16.4 mm) for decentralized installation at the actual location of the safety switch

Handheld programming and test tool

Optical converters

Modbus RS485 gateway



GS7380

- Dimensions: 145 x 90 x 28 mm
- Used for address coding of GS75102101 and configuration of GS38300143230
- Battery-powered

MAIN FEATURES

- Can be connected at any point on the bus to read out the status of all safety signals
- Easy-to-use



GS3492 / GS3493

- Dimensions: 77 x 72 x 70 mm
- Runs on optical multimode fibre pairs (50/125, 62.5/125)
- ST type connector
- For mounting on DIN-rail (EN50022)
- AC power supply

MAIN FEATURES

- Up to 5 km / 3.1 miles optical transmission distance with 62.5/125 fibre
- Converts DuplineSafe for transmission on optical fibre



GST150

- Dimensions: 55 x 70 x 15 mm
- Enables monitoring of safety signals from text displays, touchscreens, PLCs and PCs
- Power supply from bus and text display
- Approvals/Marks: cULus approved

MAIN FEATURES

- Small dimension housing for mounting directly to the text display
- Several GST150s can be connected to the same bus

Our product range

Dupline® profinet gateway



GS3391

- Dimensions: 90 x 35 x 58.5 mm
- 24 VDC power supply
- For mounting on DIN-Rail
- Profinet-DP slave
- Approvals/Marks: CE - cULus - UL60950

MAIN FEATURES

- Makes DuplineSafe diagnostics available on Profinet-DP
- Up to 7 master generators can be connected via the HS RS485 bus (side connector)
- Built-in mini-webserver
- Interfacing with PLCs and PCs

Dupline® master channel generator



GS3390

- Dimensions: 90 x 35 x 58.5 mm
- 24 VDC power supply
- For mounting on DIN-Rail
- Module that generates 128 Dupline® channels and power to the bus modules
- Extended digital output mode for Profinet
- Approvals/Marks: CE - cULus - UL60950

MAIN FEATURES

- Generates Dupline® carrier signal
- Supports digital I/O, Analink I/O, Mux BCD I/O, 8-digit I/O

Graphical displays



BTM-T4 / BTM-T7

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

MAIN FEATURES

- Ethernet connection
- BACnet protocol available
- USB port, SD memory, Modbus RTU serial port
- KNX compatibility plug-in

3-phase pump and ventilator soft starters



RSWT

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

MAIN FEATURES

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

3-phase general purpose soft starters



RSGD

- Operational voltage range: 187 - 440 VAC, 187 - 660 VAC
- Operational current range: 12 AAC up 100 AAC
- Control voltage: 24 VAC/DC, 110 - 400 VAC
- 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

Variable frequency drives



RVLF

- Compact dimensions, with ratings up to 11kW
- V/F and SLV control inbuilt
- Drive voltage ratings: 100 - 120 VAC; 200-240 VAC; 380-480 VAC
- Drive kW rating: - 0.4 kW - 11kW (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

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Our product range

Inductive sensors



ICB12 / ICB18 / ICB30

- M12, M18 and M30 NPB housing in short or long barrel lengths
- Standard, double and triple distance sensing ranges
- Output functions: NO or NC, NPN or PNP
- Two metre oil resistant PVC cable or M12 plug version
- Approvals/Marks: CE - cULus - cCSAus

MAIN FEATURES

- CSA certified for hazardous location - Class 1 Division 2
- High precision and reliability thanks to microprocessor technology
- 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

- CSA certified for hazardous location - Class 1 Division 2
- Short-circuit and overload LED indication
- Extended temperature range: -40°C to +80°C (-40°C to +85°C for ICS30)

Photoelectric sensors



MOFT / MOFR

- Ø 10 mm polycarbonate housing or M12 or M14 stainless steel
- Range: 20 m or 50 m
- For amplifier series S142. and S143.
- Modulated infrared light
- Degree of protection: IP 66 / IP 67
- Approvals/Marks: CE - Atex

MAIN FEATURES

- Water proof, for dirty environment, i.e. water, dust, steam
- High immunity to ambient light

Photoelectric amplifiers



S142

- µ-Processor controlled, amplifier relay for photoelectric switches
- Rated operational voltage: 24 VAC/DC, 24 VAC, 115 VAC or 230 VAC
- Self diagnostic functions
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES

- Automatic or manual emitter power regulation
- Self-diagnostic function

Motor thermistor relays



DTA04 / DTA72

- 80 x 22.5 x 99.5 mm [DTA04]; 1 x 35.5 x 67.2 mm [DTA72]; DIN-rail housing
- 2 SPST 8A [DTA04], 2 SPDT 8A [DTA72] Relay Outputs
- For motor protection with built-in PTC sensors
- Power supply 24 V - 240 VAC/DC
- Approvals/Marks: CE - cULus

MAIN FEATURES

- Multicolour LED with alarm discrimination
- Auto or manual, local or remote reset and test function
- Ready for reset function

Earth leakage protection relays



DEB71

- 81 x 35.5 x 67.2 mm; DIN-rail housing
- 2 SPDT 5 A Relay Outputs
- LED leakage level indicator
- Power supply 24 - 240 VAC
- Approvals/Marks: CE (IEC EN 60947-2 Annex M compliant) - cULus

MAIN FEATURES

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

Our product range

Core balance current transformers



CTG

- 6 Sizes from 35 mm to 210 mm
- Solid round core type
- Screw terminals connection
- Approvals/Marks: CE (IEC EN 60947-2 Annex M Compliant), cUL (when used with DEA71 and DEB71)

MAIN FEATURES

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

Fully programmable 3-phase voltage relay



DPD02

- 80 x 22.5 x 99.5 mm; DIN-rail housing
- Voltage and frequency monitoring
- 2 SPDT 8 A relay outputs
- NFC configuration and value reading
- Approvals/Marks: CE - cULus - CCC

MAIN FEATURES

- Up to 10 configurable set points
- Apps for Android and Windows PC
- 208 to 480VAC mains voltages

3-phase monitoring relays



DPA51 / DPA52

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

MAIN FEATURES

- Motor protection from reverse running and phase loss
- 1 DIN module width. Suitable for NORM panels
- No setup needed (plug&play)

Current monitoring relay



DIA / DIB

- 80 x 22.5 x 99.5 mm; DIN-rail housing
- Over or under current relay
- 1 phase AC or DC
- Power supply from 24 to 48 VAC/DC or 115/230 VAC
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES

- Detect any variation of the desired current level
- Direct connection, by CT or by external shunt
- Time delay to avoid undesired nuisance tripping [DIB]

Load guard monitoring relays



DWB01

- 80 x 45 x 99.5 mm; DIN-rail housing
- TRMS load guard for 1-phase or 3-phase balanced applications
- Measure if the power factor is within set limits
- LED indication for relay, alarm and power supply ON
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES

- Automatic and manual start and stop of the system
- Separately adjustable upper/lower level on absolute scale
- Programmable latching or inhibit at set level

Pump alternating relays



DLA71 / DLA73

- 81 x 35.5 x 67.2 mm; DIN-rail housing
- Pump alternating relay for 2 or 3 pumps
- Galvanically separated power supply, 24/48 VAC or 115/230 VAC
- 2x or 3x 5 A SPST output
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES

- Built-in function for automatic rotation of the pumps
- Built-in delay for the second or third pump in case of simultaneous activation is required
- Built-in function for automatic rotation of the pumps

Mining Machinery

Our product range

Multifunction safety modules



SMS31

- Dimensions 110,8 x 17,5 x 121,1 mm DIN-rail housing
- Auto, manual or monitored manual start
- 3 NO safety relay outputs
- 1 NC auxiliary relay output
- Detachable screw terminals
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

- Dual channels simultaneity infinite
- Safe monitoring of emergency stops, interlocks, safety magnetic and limit switches
- Front LED's for safety channel diagnosis
- PL e as per ISO EN 13849-1

Multifunction safety module



CM22D0A

- Up to 4 OSSD safety outputs
- Up to 2 OSSD auxiliary outputs
- Selectable delayed safety output
- Compact dimension, 1 DIN, W x H x D: 18 x 90 x 63 mm
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

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

Multifunction safety module



CM40D0A / CM30D1A

- 4 OSSD safety outputs (CM40D0A)
- 3 OSSD safety outputs + 1 auxiliary output (CM30D1A)
- Safety solution for basic machines, equipment and production lines
- Compact dimension, 1 DIN, W x H x D: 18 x 90 x 63 mm
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

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

Configurable safety modules



CMM

- 4 non-safety test outputs for sensor monitoring
- 2 non-safety programmable digital signal outputs
- 2 non-safety inputs for Start / Restart interlock and EDM
- LOG file with 5 configuration modifications
- Connection with other exp. units via rear bus
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

- Also usable as a stand-alone device, able to control any other expansion unit
- 8 safety digital inputs
- 2 safety OSSD pairs (400 mA Output)
- Cat.4, PL e (ISO 13849-1), SIL 3 (IEC 62062), SILcl 3 (IEC 61508),

Configurable I/O expansion modules



C I/O

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

MAIN FEATURES

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

Speed monitoring modules



CES

- Exp. units to monitor speed (Ple): Zero speed, Max speed, Speed range Motion direction; rotation / translation.
- RJ45 for encoder connections and terminal blocks for connection to proximity switches (up to 2 proximity switches per module).
- Inputs frequency: Encoder up to 500 KHz (300 KHz for HTL), Proximity up to 5 KHz.
- Approvals/Marks: CE - cULus - TÜV

MAIN FEATURES

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

Our product range

Safety hinges



PS38H

- Dimensions 110 x 30 x 15 mm
- Integrated safety circuit
- Conforms to IEC / EN Standards, ISO 13849-1 (SIL3, PL e)
- Stainless steel components
- Contact configurations: 2NO + 2NC / 1NO + 3NC
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES

- Five different configurations for connection
- Minimum installation width: 30 mm

Pull wire limit switch Safety type



PS31R/PS43R

- Metal body
- Max. wire length 16 m
- Cable gland PG13,5, M20, 1/2" NPT with reset for Emergency stop
- IP 66
- Approvals/Marks: CE - UL - CSA

MAIN FEATURES

- Slow/snap action contact block
- Compact dimensions

Safety magnetic sensors



MC36CH / MC36CM

- Rectangular plastic housing: 36 x 26 x 13 mm
- Assured switching distance (S_{ao}) 5 mm
- Assured switch-off distance (S_{ar}) 15 mm
- Output functions: 2 NO or 1 NO + 1 NC
- 2 meter PVC cable or M8 plug version
- Approvals/Marks: CE - cULus

MAIN FEATURES

- Up to Cat. 4, PL e in accordance with EN ISO 13849-1, with suitable safety module
- Flexibility: left or right exit connection versions
- LED version available for all variants

Web server and data logger



VMUC-EM

- Dimensions: 83.5 x 45 x 98.5 mm
- Micro PC with Web-server and Web service capability
- Internal 4GB memory and 16GB SDHC card back-up memory
- Management of up to 32 energy meters and 11 remote I/O module groups
- Approvals/Marks: CE - cULus

MAIN FEATURES

- Energy analysis of each single load
- Energy bill evaluation
- Alarms control with automatic e-mailing and SMS management

Modular power analysers



WM30 / WM40

- Dimensions: 96 x 96 mm
- Panel mounting housing.
- Accuracy 0.2 % (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- Approvals/Marks: CE - cULus

MAIN FEATURES

- Modular housing to build the instrument according to the real application needs
- Modbus (RTU and TCP/IP, BACnet (MS/TP and IP) and Ethernet/IP and ProfiBus DP V0 communication ports available

3-phase power analysers



WM15

- 96 x 96 mm panel mounting housing
- Accuracy 0.5 % (voltage, current)
- Class 1 EN62053-21 and Class B EN50470-3 (MID)
- Self or aux. power supply
- Digital output and serial port
- Optical port
- Approvals/Marks: CE - MID (for 3-phase with Neutral and Aaron connections) - cULus approved

MAIN FEATURES

- Suitable to measure generated and consumed energy, with relevant hour meters
- Easy and error-proof programming
- Fast commissioning, in a few minutes, thanks to UCS software or Android App freeware

Mining Machinery

Our product range

3-phase energy analysers



EM24

- Dimensions: 90 x 72 x 67 mm
- 1-phase and 3-phase energy meters with direct connection
- Current rates up to 65 A
- Class 1 (kWh) acc. to EN62053-1
- Pulse open collector output or Modbus (RTU or TCP/IP) or M-bus (wired or wireless with integrated or external antenna) port

MAIN FEATURES

- Direct measurement in a very compact housing to save space
- Enables and simplifies energy cost allocation
- MID Annex D certification available retransmission (optional)

3-phase power transducers



CPT DIN

- 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
- Approvals/Marks: CE - cURus - CSA

MAIN FEATURES

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

Switching Power Supply



SPD

- Output power 5W to 480W
- Universal input range of 110-240VAC, or, up to 370VDC
- Short Circuit, overload and overvoltage protection
- PFC > 100W
- Approvals/Marks: CE - cULus - CURus - UL1310 Class 2 (up to 90W) - ISA 12.12.1 CLASS I DIV2 - TUV - CCC

MAIN FEATURES

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

Switching Power Supply



SPDM

- Output power 30W to 240W
- Universal input range of 110-240 VAC, or, up to 370 VDC
- Short circuit, overload, overvoltage and over temperature protection
- Plastic and metal enclosures
- Approvals/Marks: CE (all) - cULus (all except 240 W) - cURus (only 120 W) - UL1310 Class 2 (up to 72 W, for 72 W only for 24 VDC models)

MAIN FEATURES

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

Switching Power Supply



SPDC

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

MAIN FEATURES

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

Switching Power Supply



SPUBC / SPUC

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

MAIN FEATURES

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

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