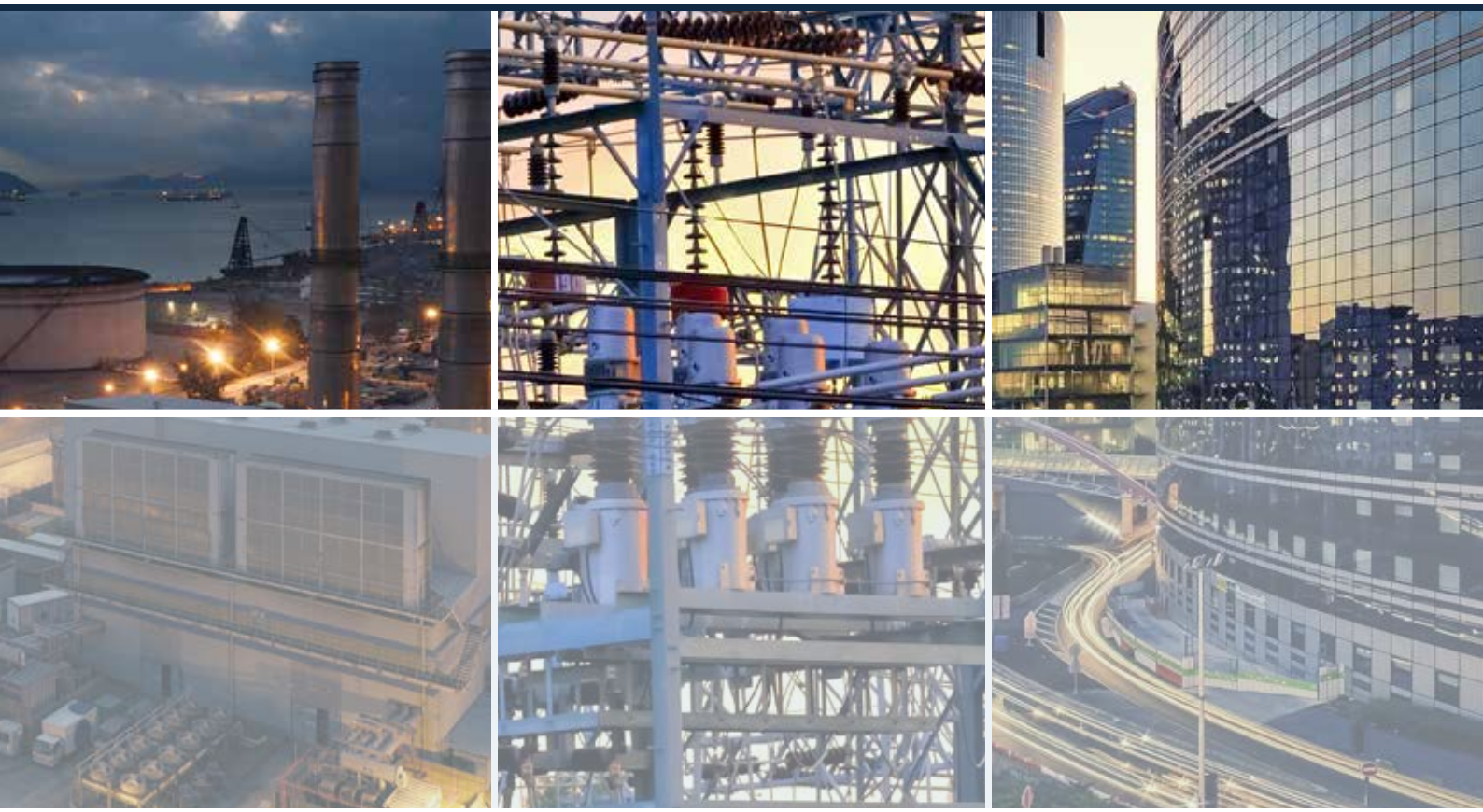
CARLO GAVAZZI
Automation Components

CARLO GAVAZZI



## Solutions

# Conventional Energy

# Conventional Energy Solutions for

**Power plants and substations** | **Generator sets** | **Large and heavy industries** | **Commercial buildings** | **Residential buildings**

## ABOUT CARLO GAVAZZI

Carlo Gavazzi Automation is a multinational electronics group active in the design, manufacture 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.

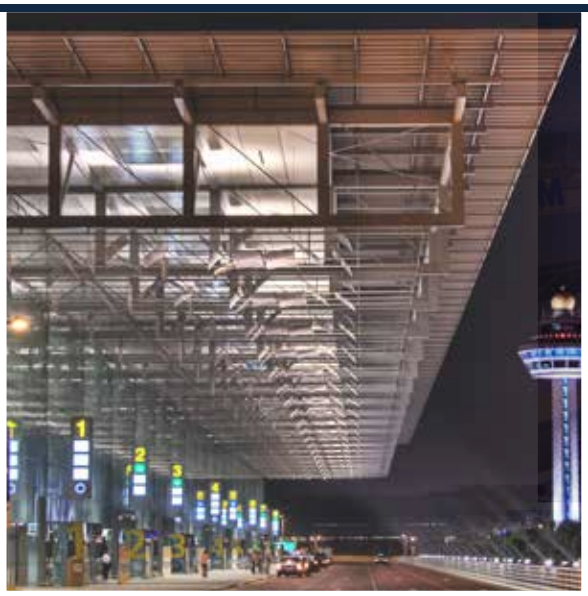
We operate worldwide through 22 of our own sales companies and also selected representatives in more than 65 countries, from the United States in the West to the Pacific Rim in the East.

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

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

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

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







## DESIGNED TO MEET MARKET REQUIREMENTS

Energy has always been a crucial element of human life, economic growth and technological progress. Until recently, its reserves have seemed endless. Today this is no longer the case. To achieve the objectives of better provision and use of energy it is fundamental to meet the needs of today, optimising them without compromising the ability of future generations to satisfy their own needs.

More and more the best use of resources, power control and reduction and optimization of consumption are playing a decisive role in contemporary geopolitics and industrial development. Therefore a well considered use of energy from different sources is not only possible, but absolutely necessary.
Carlo Gavazzi is one of the first companies to deal with this, providing a complete series of meters to measure and analyse the power distributed across the network and to predict and calculate the related energy consumption. We provide comprehensive solutions for energy monitoring, metering and management, utilising many years of experience and multinational expertise.

Carlo Gavazzi's products for applications in the conventional energy market comprise energy meters, power quality and energy analyzers, current-voltage-frequency monitoring relays, digital panel meters, timers and current transformers. The range is completed with energy monitoring systems. The accurate measurement of energy consumption (by MID certified energy meters) provides billing information for operators who are sub-billing the energy. The energy analyzers help the operators to identify consumption trends and take corrective action. The power quality analysis improves on-site efficiency and eases negotiation with utility companies.

Without doubt Carlo Gavazzi makes a major contribution to optimising energy use in residential and commercial buildings and in all kinds of industries and infrastructures, improving efficiency, saving costs and reducing $CO_2$ emissions.

# Conventional Energy

## Power plants and substations

| Power analyzers | Power transducers | Power quality analyzers | Web servers |
|---|---|---|---|
| WM15 | CPT-DIN | WM40<br>WM30<br>WM20 | UWP 3.0 |

Carlo Gavazzi offers solutions for any size of power plant. In the case of mini- or micro-hydroelectric systems, a full control solution is available using our wide power analyzer range, while the mechanical variables can be monitored by relays and digital panel meters. The most basic plants are equipped with a monitoring relay, such as the DPD02, which controls both the voltage and the frequency levels at the same time.

The more advanced plants add the monitoring of the alternator temperature by means of the DTA72 or DTA04 and of the reservoir water level by means of the DLA71, which can control the water acting on the pumps or on the motors of the floodgates, to empty them or fill them to the right level. The water flow or any other process variables, can also be monitored and displayed, correctly scaled in the original engineering unit, by means of the UDM40, belonging to the Digital Panel Meters family.

When the plant is privately owned, production needs to be measured by a certified meter, in order to be correctly paid by the public grid authorities.

The WM15 with MID certification is the right solution and can be connected to the same serial bus of the above-mentioned control devices in order to allow complete remote-plant supervision. Medium and large power



| Web servers | Current transformers | Monitoring relays | Timers | Digital panel meters |
|---|---|---|---|---|
| Em²-Server | CTD<br>TADK | DLA71<br>DTA/PI-DIN<br>DPC02/DPC72 | DAA<br>DMB<br>HAA | UDM40<br>USC |

plants (hydro, thermal, nuclear), as well as substations, are controlled by sophisticated DCSs, whose electrical input data (relevant to the different systems composing the whole plant) can be provided by Carlo Gavazzi's power quality analyzers, such as the WM20, WM30 or WM40 via the serial port, by using the Modbus RTU or TCP protocol, or through an OPC server. If communication is interrupted for any reason, the WM40 can, if required, be equipped with a datalogger module, allowing the system to recover the missing information.
The flexible and comprehensive ability of these meters to manage the information and convert it into alarms or warnings - thanks to their PLC-like AND/OR logic - allows money and space to be saved, as all the features of any additional components are implemented in our hardware. When dealing with single distribution-gear, control-gear or switch-gear (present not only in generation facilities but also in production sites and other infrastructures), whereas in the past 3 analogue ammeters and a voltmeter (whose input was selected by a rotary switch) were used, the target is to replace these with a single multifunction meter or more high-performing digital meters. This results in the saving of both space and money.

# Generator sets

| Energy analyzers | Power analyzers | Power/energy transducers | Power quality analyzers | Web servers | Monitoring relays | DC UPS |
|---|---|---|---|---|---|---|
| EM210<br>EM210 MV | WM15 | ET340/ET330<br>ET112<br>CPT-DIN | WM20<br>WM30<br>WM40 | UWP 3.0<br>Em²-Server | DPD02/DTA<br>DFB01/DPC02<br>PI-DIN | SPUBC<br>SPUC |

Generator sets must offer reliability, low maintenance and long life wherever they are installed: construction sites, infrastructures, industries, agriculture. In generator sets it is necessary to measure, display and control all the main variables relevant to the power produced, including harmonic distortion.
The "Advanced" version of the 3-phase power analyzer WM14-DIN and of the correspondent transducer model CPT-DIN, are the optimum for this application. The PLC-type alarm control on 16 variables allows the anomalies to be divided into two groups: critical problems (phase loss, under-voltage, frequency, with OR logic) can automatically lead to the disconnection of the generator set, with a horn or lamp warning; non-priority anomalies can be transmitted to the supervisor system via the serial port.

The WM14 and CPT "Advanced" give the possibility of counting the generation hours and to monitor different parameters (from the current to harmonic distortion), also storing the peak and trough values. The most critical gen-set applications need an even more sophisticated control system: the modular power quality analyzers carry out this task perfectly, also with data-logging capabilities in the case of the WM40.

When all the control functions are carried out by the supervisory system, the ET energy transducers are the ideal solution to retransmit via Modbus all the electrical variables and energy data.

The frequency and/or voltage of the generators can be monitored with the DFB01 for frequency or DPC02 for 3-phase voltage and frequency, or with NFC programmable DPD02 relay. Generator temperature can be monitored with the DTA series, whilst co-generation systems, which feed the public grid need "Interface Protection". PI-DIN0126 is approved according to specific National Grid standards and can be used for interface protection.

# Large and heavy industries

| Energy analyzers | Analyzers and power transducers | Power quality analyzers | Web servers | Monitoring relays | Timers | Contactless power analyzers |
|---|---|---|---|---|---|---|
| EM24 DUPLINE® | WM15<br>CPT-DIN | WM40<br>WM30<br>WM20 | UWP 3.0<br>Em²-Server | DPA51<br>DPB52<br>DIA/DIB | DMB/DAA<br>FMB/FAA | CPA050<br>CPA300 |

In the large and heavy industry markets, as well as in airports, or other large installations, it is important to have effective control of the mains, since medium voltage systems and high currents are involved. Because of the type of loads, a low level of harmonics is crucial to allow the installation to work in a correct and reliable way. The solution proposed by Carlo Gavazzi involves two modular series of power quality analyzers, which can be tailored according to requirements, offering many I/O combinations with PLC-like AND/OR logic, serial, Ethernet, or optical ports, different protocols (such as Modbus, BACnet, Profibus or Ethernet/IP), integrated data logger, harmonic analysis and multi-tariff management.

All this can be integrated into any SCADA or BMS system or managed by our monitoring solution, UWP 3.0: it allows all the installation parameters to be monitored and controlled by a local or remote (via e-mail or SMS) warning to the maintenance staff. By means of its logging and analysis functions, the operator is able to program regular maintenance or to introduce additional maintenance. Nowadays all manufacturing companies need to have a cost control system in their production sites. Efficient cost allocation can be achieved by using power analyzers such as the WM15, which provides all the data from each department.

Cost and consumption forecasts are also available, in a user-friendly way, even in the case of multi-site applications, by using the UWP 3.0, which pushes the data to a Em²-Server, able to aggregate and centralise all the information in the main control area.

Carlo Gavazzi meters and analyzers can be used in combination with the Dupline® fieldbus, achieving the ideal solution in very noisy industrial plants, by exploiting the robustness of the Dupline® bus when compared with the traditional serial communication buses.

The CPA family is the ideal solution to be used in industrial processes in order to monitor AC or DC variables.

# Commercial buildings

| Energy meters / analyzers | Power analyzers | MID energy analyzers | Quick-fit energy analyzers | Web servers | MBUS concentrators/ pulse counter | DC UPS |
|---|---|---|---|---|---|---|
| EM340/EM330<br>EM110/EM111<br>EM112<br>EM210 MV | WM15 | EM24<br>EM24 DUPLINE® | EM280<br>EM270/EM271<br>TCD | UWP 3.0<br>Em²-Server | SIU-MBM-01<br>SIU-MBM-02<br>SIU-MBC-XX | SPUBC<br>SPUC |

Deregulation in the energy market and the constant increase in electrical energy costs have led to a fast growing demand for fiscal metering.

A flat rate of energy consumption for each shop in a shopping mall, or for each tenant in a residential building, has become unacceptable: either the provider or the user could lose money, so both of them require a "certified" value of energy used. In 2006 the European Union released a Measuring Instrument Directive (called MID, revised in 2014), involving a number of metering issues.

The scope of this directive was to guarantee users a high level of safety and reliability in the measuring instruments, protected against data corruption, whilst at the same time ensuring the free circulation of certified measuring instruments within the EU.

For years Carlo Gavazzi has been providing a whole range of MID-certified energy meters, for all requirements in any 1-phase or 3-phase application, either by direct current measurement or by current transformers. These range from the simple, compact single phase EM110 and EM111 up to the advanced EM24 and WM15 for 3-phase systems.

Carlo Gavazzi is one of the first energy meter manufacturers to have an internal MID-approved Test Laboratory, from which the meters are supplied, certified and sealed, ready for installation.

Thanks to the SIU-MBM gateways, it is now possible to put together measured data from MBUS meters, wireless MBUS meters and environmental sensors.

Via wireless MBUS the SIU-MBC pulse counter transmits the result of the totalized pulse inputs from indoor and outdoor utility meters, while EM24_W1 is the first meter on the market having an embedded antenna for wireless M-bus data retransmission, with MID certification.

All the data can be aggregated and therefore analysed and shared among the tenants using the new web-server solutions for energy management: UWP 3.0 and Em²-Server.

# Residential buildings

| Retrofit energy analyzer | MID energy meters | MID energy analyzers | Split-core CTs | Quick-fit energy analyzers | Web servers | MBUS concentrators/ pulse counter |
|---|---|---|---|---|---|---|
| EM210 MV | EM330/EM340<br>EM110/EM111<br>EM112 | EM24 DUPLINE® | CTA | EM280<br>EM270/EM271<br>TCD | UWP 3.0<br>Em²-Server | SIU-MBC-XX<br>SIU-MBM-01<br>SIU-MBM-02 |

In new constructions, it is absolutely essential to achieve maximum energy efficiency and to avoid situations where a load (a fan, a light or a heating system) is working whenever is not needed. This is also the goal of building automation systems. Carlo Gavazzi offers its energy management products, connected to the Dupline® field- and installation-bus, together with its home automation system, as a unique control solution capable of transmitting multiple digital and analogue signals over long distances via the Dupline® 2-wire bus. The controller connects to Carlo Gavazzi energy meters via Modbus RS485, and Dupline® pulse count input modules are also available as a general solution for interfacing with meters measuring consumption of energy, water, gas, heat etc.

However, it is a different situation when dealing with old buildings which are completely lacking in building automation or in monitoring systems.

In this case the best and cheapest solution is retrofitting the various switch gears with the implementation of a specifically developed energy measuring system, like the EM210 MV and EM271 "Retrofit" versions.

CTA are split core current transformers, allowing to easily retrofit any installation by any meter with 5 A inputs.

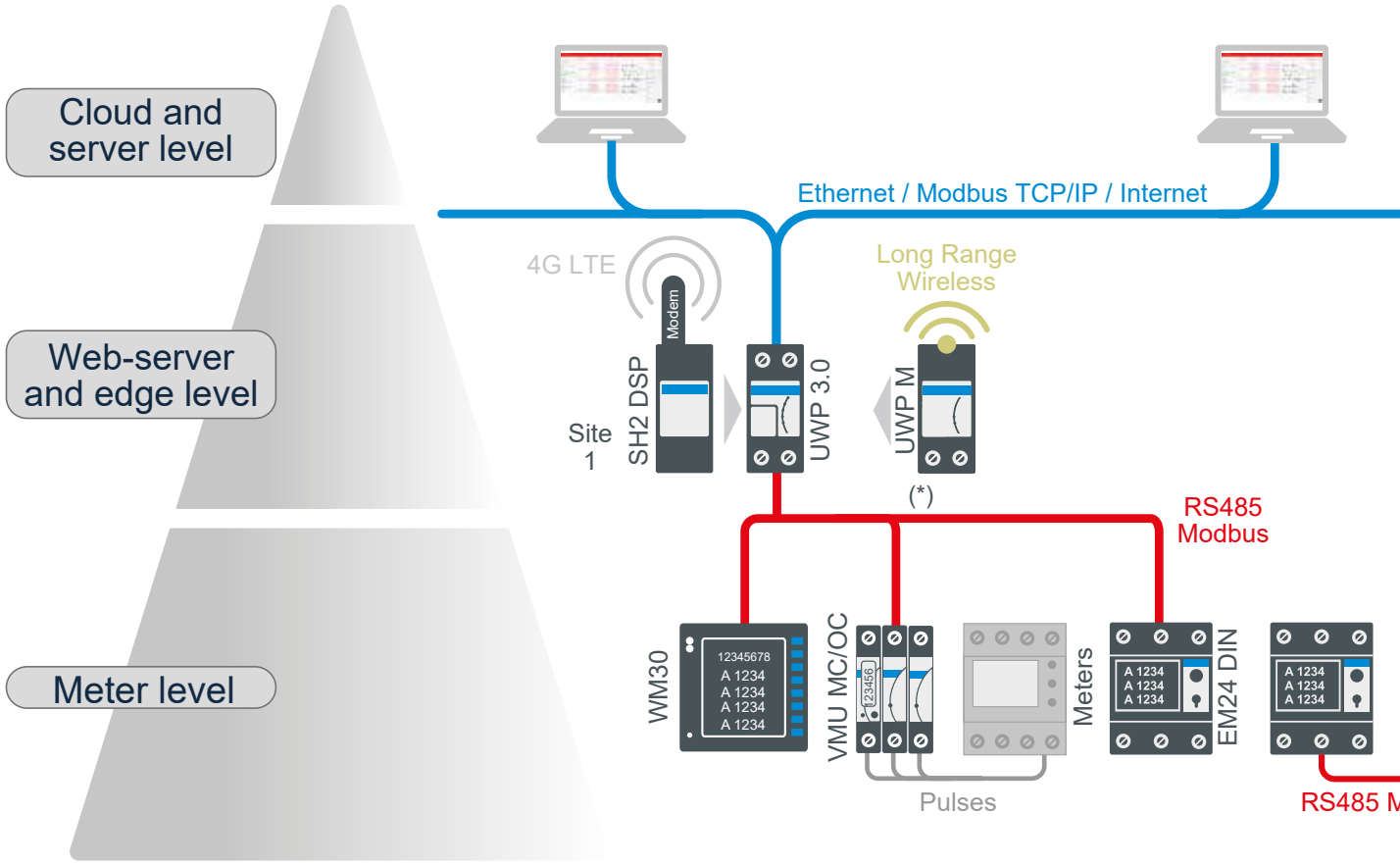
By using these energy meters, it is possible to obtain the current measurement simply by installing the split-core current sensors onto the wires, without disconnecting them or switching off the mains.

The meter can be mounted in any type of panel frame, being extremely compact and suitable both for panel mounting (72x72 mm) and for DIN-rail mounting (only 4-DIN modules).

When several loads are to be controlled, the EM270 and the EM280 energy meters provide a complete monitoring solution, which is very compact and easily installed, saving 90% of the installation time when compared to a traditional monitoring system.

In new installations, the EM100/300 series provides different metering solutions, both 1- and 3-phase, and different communication capability on-board, including Modbus and M-bus protocols.

# Diagrams



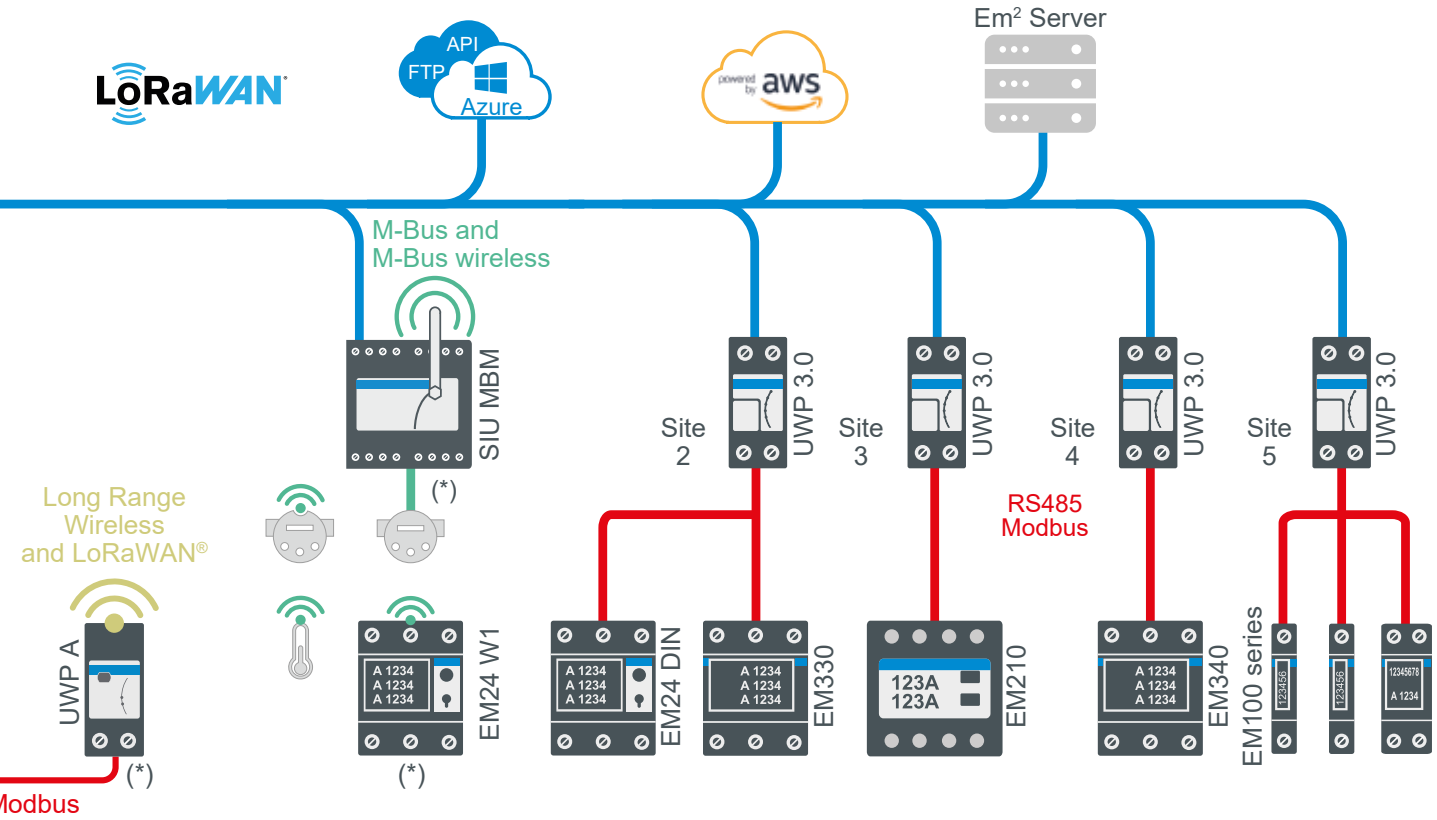

**UWP 3.0 in an Energy Monitoring structure**

The UWP 3.0 is the core solution for effective Energy Monitoring in applications of all sizes. It collects measurements from energy meters through the fieldbus; it stores information (variables and alarms) in its local database and displays it through its web-based graphical user interface.

The system is set-up by the UWP 3.0 Tool and the operation is possible via the UWP 3.0 web interface, without any external software.

The UWP 3.0 can exchange data with other systems by means of FTP, MQTT, Rest-API, BACNet or Modbus/TCP communication. Multi-site applications can be managed by adding either the Em²-Server or the UWP 3.0 powered installations.

- Compact monitoring gateway and controller
- Improved IT security
- Application-focused software embedded inside industrial grade hardware: no need for a dedicated PC for monitoring
- On-site database
- Data concentrator via multiple field-buses, data-logger, local and remote gateway, Web-Server, Building Automation Controller, Car Park Guidance System
- Modular solution for additional inputs/outputs
- Optional modular modem for Mobile connections
- Scalability to multi-site applications by means of Em²-Server




(*) Certified for Europe only

## Em²-Server multi-site solution

- Multi-site management software based on Virtual Machine concept
- Flexible operation and set-up
- Reliable data communication with UWP 3.0.
- Up to 100 geographically different sites can be managed with a single unit
- A single supplier for energy meters, gateways and data management solutions
- Scalable solution up to 3200 meters

## M2M integration and user interaction

- Multi-site management software embedded in compact hardware
- Local SCADA and BMS compatibility via BACNet and Modbus/TCP
- Rest-API, FTP, SFTP,FTPS for remote server integration
- UWP 3.0 is Microsoft Azure Certified for IoT
- UWP 3.0 is compatible with Amazon AWS IoT
- Online or scheduled reporting in XLSX or CSV format
- Customizable web interface

# Our product range

## Monitoring gateway and controller

### UWP 3.0

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

**MAIN FEATURES**
- Energy efficiency monitoring
- Building automation control
- Car parking guidance

## Long range wireless gateways

### UWP A

- 2-DIN module
- Long range wireless, LoRaWAN®
- 868 MHz ISM Band (Europe)
- Power supply 24 VDC, 115-240 VAC
- CE, LoRaWAN Certified[Cm]

**MAIN FEATURES**
- Converts RS485 meters into IoT devices
- Compatible with most Carlo Gavazzi meters and analyzers
- Plug and play commissioning via UCS Software

## Long range wireless gateways

### UWP M

- 2-DIN module
- Long range wireless
- 868 MHz ISM Band (Europe)
- Power supply 24 VDC, 115-240 VAC
- CE

**MAIN FEATURES**
- Works in combination with the UWP 3.0 monitoring controller
- Compatible with UWP A
- Up to 50 UWP A each UWP M

## USB dongle connection modules

### SH2DSP24

- USB port to supply dongle modems
- Support for Wi-Fi USB key
- Watchdog features to prevent common mobile network glitches

**MAIN FEATURES**
- Dimensions: 2-DIN modules
- 24 VDC supplied

## Multi-site aggregation server

### Em²-Server

- Software for energy data management
- Multi-site monitoring management
- Flexible and scalable architecture
- VMware® technology compatibility
- Cloud or On-site installation

**MAIN FEATURES**
- Load profile management
- Data analysis and benchmark
- Data and event logging
- Customizable graphical synoptic
- All data exported in format compatible with Excel or other spread sheets
- Tariffs and multi contract management
- Alarms management
- Database replication from up to 100 UWP 3.0

## Pulse counter with wireless MBUS output

### SIU-MBC-XX

- Dimensions 105 x 27 x 60 mm DIN-rail housing
- Pulse counter (2 pulse inputs)
- Wireless MBUS output
- Battery power supply
- Indoor or outdoor installation (IP67)

**MAIN FEATURES**
- 12 years battery lifetime
- Compatible with SIU-MBM-02 concentrator
- Wireless MBUS T1 mode, 868 MHz

# Our product range

## MBUS and wireless MBUS concentrator

### SIU-MBM-01 / SIU-MBM-02

- Dimensions 95 x 71 x 60 mm DIN-rail housing
- MBUS input
- SIU-MBM-01: MBUS input
  SIU-MBM-02: MBUS and wireless MBUS input
  SIU-MBM-01-160: up to 160 MBUS connectable devices
- MODBUS TCP/IP output
- Power supply from 15 to 21 VAC, from 18 to 35 VDC
- Ethernet port

### MAIN FEATURES

- SIU-MBM-01: up to 20 MBUS connectable devices
  SIU-MBM-02: up to 20 MBUS connectable devices and 32 wireless MBUS devices
- MBUS and wireless MBUS network scan feature
- Set-up by UCS software
- SIU-MBM-01-160: up to 160 MBUS connectable devices

## 3-phase multifunction meters

### WM12 / WM14

- 6-DIN rail module housings
- 3-phase multifunction indicator (WM12) or analyzer (WM14)
- Accuracy 0.5 % (voltage, current)

### MAIN FEATURES

- Available models from as a simple indicator up to an advanced analyzer
- Allows the serial re-transmission of the main parameters to a PLC for full control of the system

## 3-phase energy analyzers

### EM24 / EM24 DUPLINE®

- 4-DIN rail module housings
- 3-phase energy meter with direct connection
- Direct connection up to 65 A
- Class B (EN50470)
- Optional serial port (Modbus RS485 or TCP, M-bus wired or wireless and Dupline®), digital input and outputs

### MAIN FEATURES

- Direct measurement in compact housing to save space
- On request, MID annex D certification available
- Allows integration of energy management in the Dupline® fieldbus system
- Dupline® port for energy and inst. variable retransmission (optional)

## 1-phase energy meters up to 45 A

### EM110

- 1 DIN module
- Electromechanical totalizer
- Bi-directional energy metering, 7 digits cl. B (EN50470)
- Measuring inputs: 115/230 VAC, 32 A (max 45 A)
- CE, MID (PFB)

### MAIN FEATURES

- Self-powered
- Pulse output
- Sealable terminal covers

## 1-phase energy analyzers up to 45 A

### EM111

- 1 DIN module
- Backlit touch LCD
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering, 7 digits cl. B (EN50470)
- Measuring inputs: 115/230 VAC, 32 A (max 45 A)
- 5 A input by CT available for RS485 non-MID version
- CE, MID (PFA and PFB), cULus (only 115V)

### MAIN FEATURES

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

## 1-phase energy analyzers

### EM112

- 2 DIN size; DIN-rail mounting
- Backlit touch LCD
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering, 8 digits, cl. B (EN50470)
- Measuring inputs: 115/230 VAC, 100 A
- CE, MID (PFA and PFB), cULus (only 115V)

### MAIN FEATURES

- Self-powered
- Pulse output or as an alternative: RS485 Modbus, M-Bus
- Sealable terminal covers

# Our product range

## 3-phase energy analyzers for 5A or 0.333mV CTs

### EM210 / EM210 MV

- 4 DIN modules or 72 x 72 mm
- LCD with two installation options
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering, 3 x 3-digit or 8-digit readout, cl. B (EN50470)
- Voltage inputs: 3x230(400) VAC; Current inputs: 5 A CT (AV version) or 0.333mV from CTV-xX sensors (MV version)
- CE, cULus, MID (only 5 A, aux power supply version)

**MAIN FEATURES**

- Self-power supply (230-400V aux power supply in MID version)
- Pulse output and optionally: RS485 Modbus RTU, high speed (up to115 kbps)
- Sealable terminal covers

## Quick-fit 3-phase energy analyzers

### EM270 / EM271 + TCD X / TCD M

- 4-DIN rail module or 72 x 72 mm housing
- Two 3-phase energy analyzers with sum function
- Current measurement by triple CT, solid core (EM270), split-core (EM271) with RJ plug
- Equivalent to class 1 (kWh)
- Two pulse open collectors and serial RS485 outputs

**MAIN FEATURES**

- Save 90% of the installation time
- Voltage and serial bus daisy chain connection
- Fast and error-proof CT connection with CT ratio self-recognition

## Quick-fit 3-phase energy analyzers

### EM280 + TCD06BX/BS

- 4 DIN modules or 72 x 72 mm
- 6-channel energy meter
- Current measurement by 6-channel CT blocks with RJ plugs: solid core (TCD06BX), split core (TCD06BS)
- Equivalent to class 1 (kWh)
- Two pulse open collectors and serial
- RS485 outputs

**MAIN FEATURES**

- Branch monitoring in new and retrofit applications, saving 90% of the installation time
- Voltage and serial bus daisy chain installation
- Multichannel retrofit up to 6 x 32 A
- Fast and error-proof CT connection with CT ratio self-recognition

## 3-phase energy analyzers for direct current up to 65A

### 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 VLL AC, 65 A
- CE, MID (PFA and PFB)

**MAIN FEATURES**

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

## 3-phase energy analyzers

### EM330

- 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 480 VLL AC, 5 A
- CE, MID (PFA and PFB), CULus

**MAIN FEATURES**

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

## 3-phase power analyzers

### WM15 96

- 96 x 96 mm housing, only 45 mm behind the panel
- 3-phase energy meters with CT connection
- Primary current input: 5 A
- Class B (kWh) acc. to EN50470
- Pulse/alarm output
- Modbus communication port
- Optical port
- CE, MID, cULus

**MAIN FEATURES**

- Power analyzer in a very compact housing to save space
- Suitable to measure generated and consumed energy, with relevant hourmeter
- Easy and guided programming with error-proof features
- Fast commissioning in few minutes thanks to the freeware UCS software or Android App

# Our product range

## 3-phase power analyzers

### WM20

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

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

## 3-phase power quality analyzers

### WM30

- 96 x 96 mm panel mounting housing
- Accuracy 0.2 % (voltage, current)
- Class 0.5S (kWh)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- Optional analogue and digital outputs
- cULus

**MAIN FEATURES**
- Modular housing to build the instrument according to the real application needs
- Modbus and BACnet (both RS485 or Ethernet), Profibus DPV0, and EtherNet/IP communication port available

## 3-phase power quality analyzers

### WM40

- 96 x 96 mm panel mounting housing
- Accuracy 0.2 % (voltage, current)
- Class 0.5S (kWh)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- Optional analogue and digital outputs
- Optional analogue and digital inputs
- cULus

**MAIN FEATURES**
- Built-in datalogger for instantaneous variables, dmd profiles and events
- Modular housing to build the instrument according to the real application needs
- Modbus and BACnet (both RS485 or Ethernet), Profibus DPV0, and EtherNet/IP communication port available

## 3-phase power transducers

### CPT-DIN

- 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

## 1-phase energy transducers

### ET112

- 2 DIN size; DIN-rail mounting
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering, 2 tariffs, cl. 1 (EN62053-1)
- Measuring inputs: 115/230 VAC, 100 A
- CE

**MAIN FEATURES**
- Self-powered
- RS485 Modbus port (screw, 2x RJ45)
- Optical port
- Sealable terminal covers

## 3-phase energy transducers

### ET330 / ET340

- 3 DIN size; DIN-rail mounting
- Measurement of voltage, current, power, power factor, frequency
- Bi-directional energy metering, 2 tariffs, cl. 1 (EN62053-1)
- Measuring inputs: 480 $V_{LL}$ AC, 5 A (ET330) 208 to 400 $V_{LL}$ AC, 65 A (ET340)
- CE, cULus (ET330)

**MAIN FEATURES**
- Self-powered
- RS485 Modbus port (screw, 2x RJ45)
- Optical port
- Sealable terminal covers

# Our product range

## Contactless power analyzers

### CPA050

- 63 x 46 x 25 mm (without connectors); DIN rail and panel mounting
- Power analyzer
- 1-phase AC( from 1 to 400 Hz) or DC
- Power supply from 9 to 30 VDC

**MAIN FEATURES**
- Contactless Hall effect sensing for current (15 mm hole diameter)
- True RMS AC and DC monitoring
- Voltage range: 800 VAC, 1000 VDC
- Current range: 50 AAC, 50 ADC

## Contactless power analyzers

### CPA300

- 99 x 89 x 30 mm (without connectors); DIN rail and panel mounting
- Power analyzer
- 1-phase AC ( from 1 to 400 Hz) or DC
- Power supply from 9 to 30 VDC

**MAIN FEATURES**
- Contactless Hall effect sensing for current (33 mm hole diameter)
- True RMS AC and DC monitoring
- Voltage range: 800 VAC, 1000 VDC
- Current range: 300 AAC, 400 ADC

## 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 (TAD...)
- Double screw terminals (CTD)
- Sealable covers
- Case: ABS, self-extinguishing level UL 94 V-0
- Accuracy class: 0.5
- Approvals/Marks: CE, cULus

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

## Current transformers

### CTA

- Split-core current transformer
- Primary currents: 100 to 600 A
- Secondary output: 5 AAC
- Accuracy class: 1 or 3
- Approvals/Marks: CE, cURus

**MAIN FEATURES**
- Compact split-core transformers ideal for retrofit applications
- Suitable for use with all the energy meter and power analyzers with standard 5 A input

## Current sensors

### CTV

- Split-core current sensors
- Primary currents: 60 to 800 A
- Secondary output: 0.333 VAC
- Accuracy class: 1
- Approvals/Marks: CE, cURus

**MAIN FEATURES**
- Very compact split-core sensors ideal for retrofit applications
- Suitable for use with EM210 MV energy meter

## 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 and CCC

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

# Our product range

## 3-phase monitoring relays

### DPA53

- 81 x 17,5 x 67,2 mm; DIN-rail housing
- Phase sequence and phase loss, regenerated voltage detection
- Adjustable undervoltage setpoint
- Power supply 208 - 240 VAC; 380 - 480 VAC
- Approvals/Marks: CE, UL, CSA and CCC

### MAIN FEATURES

- Motors protection from reverse running and phase loss
- 1 DIN module width. Suitable for NORM panels
- Protects from failure due to overheating under low mains

## 3-phase voltage relays

### DPB52

- 81 x 17.5 x 67.2 mm; DIN-rail housing
- Phase sequence and loss; overvoltage and undervoltage detection + time delay
- 3 phase connection
- Power supply 208 - 480 VAC
- Approvals/Marks: CE, cULus and CCC

### MAIN FEATURES

- Complete mains monitoring in a space saving solution
- Small size for the control panel

## Fully programmable 3-phase monitoring relays

### 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 values reading
- Approvals/Marks: CE, cULus and CCC

### MAIN FEATURES

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

## 3-phase voltage and frequency relays

### DPC02

- 80 x 45 x 99.5 mm; DIN-rail housing
- 208 to 690 VAC, 50 Hz or 60 Hz 3-phase mains monitoring
- DPDT or 2 SPDT 8A relay outputs (configurable)
- Phase sequence, loss, voltage and frequency level monitoring
- Approvals/Marks: CE, UL and CSA

### MAIN FEATURES

- Provide generator protection to monitor voltage level and speed
- Separate relay outputs to distinguish frequency and voltage alarms

## 3-phase interface protection relays

### PI-DIN0126 / PI-DIN0021

- 90 x 71.6 x 66.3 mm; DIN-rail housing
- 1 and 3-phase interface protection relay
- Auxiliary power supply 230 VAC or 24 VDC
- 2 digital inputs, 2 relay outputs
- PI-DIN0126 approved according to: VDE-AR-N 4105:2018, ER G98 Issue 1 Am 1, ER G99 Issue 1 Am 3, Dansk Energi
- PI-DIN0021 approved according to : CEI-0-21

### MAIN FEATURES

- Energy production plants protection
- Data logger with events logging
- RS485 communication
- Dual passive and anti islanding detection [PI-DIN0126]

## Current monitoring relays

### 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 24 - 48 VAC/DC or 115/230 VAC
- Approvals/Marks: CE, UL and 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]

# Our product range

## Cosφ relays

### DWA01

- 83 x 22.5 x 99.5 mm; DIN rail housing
- Cos φ monitoring relays
- Direct current input or by CT
- Power supply 208 - 240 VAC; 380 - 480 VAC
- Approvals/Marks: CE, UL and CSA

**MAIN FEATURES**
- Detects any potentially dangerous change of the cos φ
- Overload detection (e.g.: blocked pipe)
- Easy setup

## Frequency monitoring relays

### DFB01 / DFC01

- 80 x 22.5 x 99.5 mm [DFB01];
  80 x 45 x 99.5 mm [DFC01]; DIN-rail housing
- Over or under frequency relay
- 1 phase, 50 or 60 Hz
- Measuring range 24 - 240 VAC
- Approvals/Marks: CE, UL and CSA

**MAIN FEATURES**
- Protects from incorrect frequency of the grid
- 2 Hz or 10 Hz selectable alarm window
- 2 independent delays and SPDT out [DFC01]

## Motor thermistor relays

### DTA04

- 80 x 22.5 x 99.5 mm; DIN-rail housing
- 2 SPST 8A Relay Outputs
- For motor protection with built-in PTC sensors
- Power supply 24 V - 240 VAC/DC
- Approvals/Marks: CE and cULus

**MAIN FEATURES**
- Multicolour LED with alarm discrimination
- Auto or manual, local or remote reset, test function

## Motor thermistor relays

### DTA71 / DTA72

- 81 x 35.5 x 67.2 mm; DIN-rail housing
- SPDT 8A [DTA71], 2 SPDT 5A [DTA72] Relay Outputs
- For motor protection with built-in PTC sensors
- Power supply 24 V - 240 VAC/DC
- Approvals/Marks: CE and cULus

**MAIN FEATURES**
- Multicolour LED with alarm discrimination
- Auto or manual, local or remote reset, test function [DTA72]

## Pump alternating relays

### DLA71

- 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 and 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

## Timers

### DAA51 / DMB51

- 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: CE, UL, CSA, RINA [DMB51]

**MAIN FEATURES**
- Wide range of timing functions [DMB51]
- Timing range 0.1 s to 100 h
- 5 A SPDT relay

# Our product range

## Timers

### DBA52

- 81 x 17,5 x 67,2 mm; DIN-rail housing
- Delay on release function
- Power supply 24 VDC or 24 - 240 VAC
- Repeatability: < 0.2%
- Approvals/Marks: CE, UL and CSA

### MAIN FEATURES

- Extended delay-on-release time, selectable from 0.1 s to 100 h
- 5 A SPDT relay

## Multifunction timers

### HAA08 / HAA14

- 28 x 21.5 x 70 mm; for 8 pin or 14 pin blade socket
- Multifunction timer
- DPDT or 4PDT relay output
- Power supply voltage: 24 - 240 V AC/DC
- Approvals/Marks: CE, cUR and CSA

### MAIN FEATURES

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

## Dupline® decentral analog I/O modules

### SHPINxxx / SHPOUTxxx

- Dupline® analog I/O modules
- Pt1000/Ni1000/10K3 Thermistor/10K potentiometer, 4-20 mA, 0-10 VDC inputs, 0-10 VDC outputs
- Small dimension housing for decentral installation in wall boxes
- Bus-powered or 15-30 VDC (various types)

### MAIN FEATURES

- Interface for standard temp/$CO_2$/humidity/pressure sensors and heating valves/damper actuators
- Flexible decentral installation
- Easy and fast multi-drop installation of bus-cable from module to module

## Dupline® decentral counter modules

### SHPINCNTxx4

- Pulse counter module with 4 count inputs
- Built-in counters for local pulse counting on each input
- Count values are stored in non-volatile memory
- Counts up to 99999999 with automatic roll-over
- Count frequency up to 100 Hz

### MAIN FEATURES

- Bus-powered
- Small-dimension for easy integration in existing installations
- Each input can be used for counting or as input

## Dupline® decentral I/O modules

### BDA-RE13A-U

- Dupline® relay module
- 1 x 16 A relay output
- Inrush current: Up to 130 A
- Bus-powered
- Small dimension housing for de-central installation in wall-boxes etc.

### MAIN FEATURES

- Bus-powered
- Small-dimension for easy integration in existing installations
- Each input can be used for counting or as input

## Dupline® decentral I/O modules

### BDx-INCONx-U

- Dupline® input module
- 4 or 8 x contact inputs
- Bus-powered
- Small dimension housing for de-central installation in wall-boxes etc.

### MAIN FEATURES

- De-central interface for light switches
- De-central interface for doors and windows contacts
- Easy and fast installation with Dupline® 2-wire bus
- Cost effective

# Our product range

## Dupline® environmental sensors

### SHSUxxxx

- Bus-powered Temperature / $CO_2$ / Humidity sensors for wall mounting
- Available in different combinations with optional display or traffic light LED
- Temperature measuring range: -20°C to +50°C (-4 to 122°F)
- $CO_2$ measuring range: 0 to 2000 ppm
- Humidity measuring range: 0 to 100 %RH

### MAIN FEATURES

- Bus communication and power on the same two wires
- Easy and fast installation with bus-cable multi-dropped from module to module
- High flexibility for changes and enhancements of an installation

## 360° PIR sensors

### SHQP360L7Mxx / SBQP360L24Mxx

- Passive infrared detector (PIR) and luxmeter
- Operating distance: 14 m (SHQP360L7Mxx)
- Large operating distance: 24 m (SBQP360L24Mxx)
- Detects movement and presence
- Indoor and outdoor installation
- Operating angle: 360°

### MAIN FEATURES

- Bus powered
- Programmable sensitivity
- Programmable detection area (SBQP360L24Mxx)

## Digital panel meters

### USC

- 48 x 96 mm DIN-rail Mounting (no display)
- Multi Input Modular Controller
- AC/DC current and voltage, C & F temperature, resistance, frequency measurement
- Serial Port RS485/ RS232 Modbus, JBUS protocol
- Approvals/Marks: CE, UL and CSA

### MAIN FEATURES

- Particularly indicated for process control
- Up to 4 independent alarms and set points
- Linearization of V, A inputs up to16 points.

## Digital panel meters

### UDM40

- Panel mounting 48 x 96 mm
- Multi Input Modular 4DGT LED Meter & Controller
- AC/DC current and voltage, C & F temperature, resistance, frequency measurement
- Serial Port RS485/RS232 Modbus, JBUS protocol
- Approvals/Marks: CE, UL and CSA

### MAIN FEATURES

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

## DC UPS controllers

### SPUC

- Up to 30 A UPS controller
- 12 V and 24 V versions
- Outputs for Device OK, Battery OK and Battery Low
- DIN rail battery accessory available up to 7.2 A/h
- Approvals/Marks: CE, cULus, cURus, TÜV

### MAIN FEATURES

- To be used in addition to 12 or 24 V power supply
- Front 30 A replaceable fuse
- Plug and play: no settings needed

## DC UPS battery charger

### SPUBC

- Power supply, UPS and battery charger "All in one"
- 24 VDC 5 A output
- Power boost up to 2 times rated output, permanent
- Built in battery diagnosis
- Approvals/Marks: CE, cURus

### MAIN FEATURES

- Power supply independent from charger
- Remote indication for battery operation and battery low
- "Start from battery" and "Empty battery charging" features

# Our product range

## Low profile DIN battery charger

### SPM5BC

- 12 V or 24 V output
- Universal 90 Vac to 264 Vac
- Short circuit and battery polarity protection
- From -25°C to +60°C operation w/out derating
- Approvals/Marks: CE

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

## DIN rail switch mode power supplies

### SPD

- DIN rail housing
- 1-phase (5-480 W), 2-phase (100 W), 3-phase (120-960 W)
- PFC >100 W
- Rated input voltage: 85-264 VAC (1-phase), 380-575 VAC (2-phase), 340-575 VAC / 480-820 VDC (3-phase)
- Approvals/Marks: CE, cULus, CURus, UL1310 Class 2 (up to 90W), ISA 12.12.1 Class I Div2, TÜV and CCC

**MAIN FEATURES**
- Power Factor Correction (PFC)
- Parallel connection
- DC OK output

## Compact low-profile power supplies

### SPMA

- Compact DIN rail Low Profile enclosure
- Universal input 85-264 VAC / 120-350 VDC
- Output powers from 12 W (1DIN) to 100.8 W (4DIN)
- Output options of 5 VDC, 12 VDC, 15 VDC or 24 VDC
- Approvals/Marks: CE, cULus, cURus 62368-1, UL1310 Class 2 (up to 91.2 W), ISA 12.12.1 Class I Div2

**MAIN FEATURES**
- 4 kVAC isolation voltage
- Overvoltage, Overload and Short circuit output protections
- High effciency (up to 89%)

## Switch mode power supplies

### SPDM Plastic

- Output from 24W to 72W
- Low consumption
- Compact dimension
- Universal input voltage AC and DC
- Approvals/Marks: CE, cULus, UL1310 Class 2 (up to 72 W, for 72 W only for 24 VDC models)

**MAIN FEATURES**
- Screw or spring loaded terminals
- DC OK LED indication
- Short circuit, overload and overvoltage protection

## DIN rail power supplies

### SPDC 120 W

- 12 or 24 VDC, 120 W Output
- 32 mm width, high compactness
- Very high efficiency
- Universal input 90 VAC ~ 264 VAC / 127 VDC ~ 370 VDC
- Approvals/Marks: CE, cULus and cURus

**MAIN FEATURES**
- DC OK relay output and LED indication
- PFC
- Parallel connection selection switch

## DIN rail power supplies

### SPDC 240 W

- 24 VDC, 240 W output
- 45 mm width, high compactness
- 94% maximum efficiency
- Universal input 90 VAC ~ 264 VAC / 127 VDC ~ 370 VDC
- Approvals/Marks: CE, cULus and cURus

**MAIN FEATURES**
- DC OK relay output and LED indication
- PFC > 0.95
- Parallel connection selection switch

# Notes

## OUR SALES NETWORK IN EUROPE

**AUSTRIA**
Carlo Gavazzi GmbH
Ketzergasse 374,
A-1230 Wien
Tel: +43 1 888 4112
Fax: +43 1 889 10 53
office@carlogavazzi.at

**BELGIUM**
Carlo Gavazzi NV/SA
Mechelsesteenweg 311,
B-1800 Vilvoorde
Tel: +32 2 257 4120
Fax: +32 2 257 41 25
sales@carlogavazzi.be

**DENMARK**
Carlo Gavazzi Handel A/S
Over Hadstenvej 40,
DK-8370 Hadsten
Tel: +45 89 60 6100
Fax: +45 86 98 15 30
handel@gavazzi.dk

**FINLAND**
Carlo Gavazzi OY AB
Ahventie, 4 B
FI-02170 Espoo
Tel: +358 9 756 2000
myynti@gavazzi.fi

**FRANCE**
Carlo Gavazzi Sarl
Zac de Paris Nord II, 69, rue de la Belle Etoile,
F-95956 Roissy CDG Cedex
Tel: +33 1 49 38 98 60
Fax: +33 1 48 63 27 43
french.team@carlogavazzi.fr

**GERMANY**
Carlo Gavazzi GmbH
Pfnorstr. 10-14
D-64293 Darmstadt
Tel: +49 6151 81000
Fax: +49 6151 81 00 40
info@gavazzi.de

**GREAT BRITAIN**
Carlo Gavazzi UK Ltd
4.4 Frimley Business Park,
Frimley, Camberley, Surrey GU16 7SG
Tel: +44 1 276 854 110
Fax: +44 1 276 682 140
sales@carlogavazzi.co.uk

**ITALY**
Carlo Gavazzi SpA
Via Milano 13,
I-20045 Lainate
Tel: +39 02 931 761
Fax: +39 02 931 763 01
info@gavazziacbu.it

**NETHERLANDS**
Carlo Gavazzi BV
Wijkermeerweg 23,
NL-1948 NT Beverwijk
Tel: +31 251 22 9345
Fax: +31 251 22 60 55
info@carlogavazzi.nl

**NORWAY**
Carlo Gavazzi AS
Melkeveien 13,
N-3919 Porsgrunn
Tel: +47 35 93 0800
Fax: +47 35 93 08 01
post@gavazzi.no

**PORTUGAL**
Carlo Gavazzi Lda
Rua dos Jerónimos 38-B,
P-1400-212 Lisboa
Tel: +351 21 361 7060
Fax: +351 21 362 13 73
carlogavazzi@carlogavazzi.pt

**SPAIN**
Carlo Gavazzi SA
Avda. Iparraguirre, 80-82,
E-48940 Leioa (Bizkaia)
Tel: +34 94 480 4037
Fax: +34 94 431 6081
gavazzi@gavazzi.es

**SWEDEN**
Carlo Gavazzi AB
V:a Kyrkogatan 1,
S-652 24 Karlstad
Tel: +46 54 85 1125
Fax: +46 54 85 11 77
info@carlogavazzi.se

**SWITZERLAND**
Carlo Gavazzi AG
Verkauf Schweiz/Vente Suisse
Sumpfstrasse 3,
CH-6312 Steinhausen
Tel: +41 41 747 4535
Fax: +41 41 740 45 40
info@carlogavazzi.ch

## OUR SALES NETWORK IN THE AMERICAS

**USA**
Carlo Gavazzi Inc.
750 Hastings Lane,
Buffalo Grove, IL 60089, USA
Tel: +1 847 465 6100
Fax: +1 847 465 7373
sales@carlogavazzi.com

**CANADA**
Carlo Gavazzi Inc.
2660 Meadowvale Boulevard,
Mississauga, ON L5N 6M6, Canada
Tel: +1 905 542 0979
Fax: +1 905 542 22 48
gavazzi@carlogavazzi.com

**MEXICO**
Carlo Gavazzi Mexico S.A. de C.V.
Circuito Puericultores 22, Ciudad Satelite
Naucalpan de Juarez, Edo Mex. CP 53100
Mexico
T +52 55 5373 7042
F +52 55 5373 7042
mexicosales@carlogavazzi.com

**BRAZIL**
Carlo Gavazzi Automação Ltda.
Av. Francisco Matarazzo, 1752
Conj 2108 - Barra Funda - São Paulo/SP
Tel: +55 11 3052 0832
Fax: +55 11 3057 1753
info@carlogavazzi.com.br

## OUR SALES NETWORK IN ASIA AND PACIFIC

**SINGAPORE**
Carlo Gavazzi Automation Singapore Pte. Ltd.
61 Tai Seng Avenue #05-06
Print Media Hub @ Paya Lebar iPark
Singapore 534167
Tel: +65 67 466 990
Fax: +65 67 461 980
info@carlogavazzi.com.sg

**MALAYSIA**
Carlo Gavazzi Automation (M) SDN. BHD.
D12-06-G, Block D12,
Pusat Perdagangan Dana 1,
Jalan PJU 1A/46, 47301 Petaling Jaya,
Selangor, Malaysia.
Tel: +60 3 7842 7299
Fax: +60 3 7842 7399
info@gavazzi-asia.com

**CHINA**
Carlo Gavazzi Automation
(China) Co. Ltd.
Unit 2308, 23/F.,
News Building, Block 1,1002
Middle Shennan Zhong Road,
Shenzhen, China
Tel: +86 755 83699500
Fax: +86 755 83699300
sales@carlogavazzi.cn

**HONG KONG**
Carlo Gavazzi Automation
Hong Kong Ltd.
Unit No. 16 on 25th Floor, One Midtown,
No. 11 Hoi Shing Road, Tsuen Wan,
New Territories, Hong Kong
Tel: +852 26261332
Fax: +852 26261316

## OUR COMPETENCE CENTRES AND PRODUCTION SITES

**DENMARK**
Carlo Gavazzi Industri A/S
Hadsten

**CHINA**
Carlo Gavazzi Automation (Kunshan) Co., Ltd.
Kunshan

**MALTA**
Carlo Gavazzi Ltd
Zejtun

**ITALY**
Carlo Gavazzi Controls SpA
Belluno

**LITHUANIA**
Uab Carlo Gavazzi Industri Kaunas
Kaunas

## HEADQUARTERS

Carlo Gavazzi Automation SpA
Via Milano, 13
I-20045 - Lainate (MI) - ITALY
Tel: +39 02 931 761
info@gavazziautomation.com


Printed on 100% recycled paper
produced using
post consumer de-inked waste.

CARLO GAVAZZI
Automation Components

*Energy to Components!*

www.gavazziautomation.com

CARLO GAVAZZI

BRO CONVENTIONAL ENERGY ENG REV.07 07/20