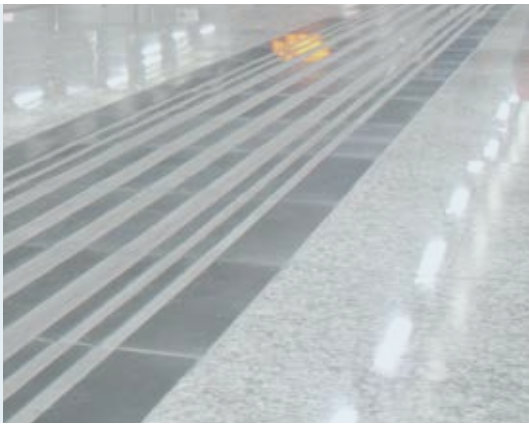
CARLO GAVAZZI
Automation Components

CARLO GAVAZZI





Building Automation

Solutions for
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 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

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 consumptions 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 instruments 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 experience and multinational expertise.

Carlo Gavazzi products for applications in the conventional energy market comprise energy meters, power quality and energy analysers, 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 analysers help the operators to identify consumption trends and take corrective action. The power quality analysis improves the 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

Multifunction meters	Energy analysers	Power transducers	Power quality analysers
WM14 WM12 WM10	EM26	PQT-H CPT-DIN	WM40 WM30 WM5

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 analyser 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 DPC02, 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 DTA01 or DTA02 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 shaft rotation speed can be monitored, displayed and serially retransmitted to a supervisor system (PLC or SCADA) by using the UDM60, the new modular digital panel meter for tachometer measurements.

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 same DPM family.

When the plant is privately owned, the production needs to be measured by a certified meter, in order to be correctly paid by the public grid authorities. EM26 with MID approval is the right solution and can be connected to the same serial bus of the

Web server	Current transformers	Monitoring relays	Timers	Digital panel meters
Em²-Server	CTD	DLA71/PTA 01/02	DAA	UDM60
VMU-Y EM	TADK	DTA/PI-DIN	DMB	UDM40
VMU-C EM		DPC02/DPC72	HAA	USC

above-mentioned control devices in order to allow complete remote-plant supervision. Medium and large power plants (hydro, thermal, nuclear), as well as substations, are controlled by sophisticated DCS's whose electrical input data (relevant to the different systems composing the whole plant) can be provided by Carlo Gavazzi power quality analysers, such as the WM30, WM40 or WM5, 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 instruments to manage the information and convert them 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 instrumentation. This results in the saving of both space and money.

Conventional Energy

Generator sets

Multifunction meters	Energy meters / analysers	Power transducers	Power quality analysers	Web server	Monitoring relays	Timers
WM14 WM12	EM2172V EM2172R EM330/EM26	CPT-DIN	WM30 WM40	VMU-C EM VMU-Y EM Em²-Server	DWA01/DFC PTA01/02/PI-DIN DPC02/DPC72	FAA/FMB DAA/DMB HAA

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 analyser WM14 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 valley values. The most critical gen-set applications need an even more sophisticated control system: the modular power quality analysers carry out this task perfectly, also with data-logging capabilities in the case of the WM40. The simplest generators can be monitored by temperature, frequency, and/or voltage relays while co-generation systems feeding the public grid need an interface protection, capable of disconnecting the generator from the grid in case of mismatching of the main electrical parameters.The interface protection relay is approved according to National standards when required, as per our monitoring relay types DPC02, DPC72 and PI-DIN0126.

Large and heavy industries

Energy analysers	Power transducers	Power quality analysers	Web server	Monitoring relays	Timers	Digital panel meters
EM26 EM24 DUPLINE® EM330	PQT-H CPT-DIN	WM5 WM30 WM40	VMU-Y EM VMU-C EM Em²-Server	DPA53 DPB51 DIA/DIB	DMB/DAA FMB/FAA	USC UDM40 UDM60

In the large and heavy industry markets, as well as in airports, or other large installations, it is important to have a powerful control of the mains, since medium voltage systems and high currents are involved. Because of the type of loads, a low content 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 analysers, which can be tailored according to the requirements, offering many I/O combinations with PLC-like AND/OR logic, serial, Ethernet, or optical ports, different protocols (such as Modbus, BACnet 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, VMU-C EM: 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 ordinary maintenance or to introduce an additional one. Nowadays all the manufacturing companies need to have a cost control system in their production sites. Cost allocation program can be achieved by using energy analysers such as the EM26-96, which provides all the data of individual departments.
Cost and consumption forecasts are also available, in a user-friendly way, even in the case of multi-site applications, by using the VMU-C EM, which transfers the data to a VMU-Y EM or Em²-Server, able to aggregate and centralise all the information in the main control area.

Carlo Gavazzi meters and analysers 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.

Conventional Energy

Commercial buildings

Multifunction meters	Energy meters	MID energy analysers	Quick-fit energy analysers	Web server	BACnet controller	Dupline® decentral I/O modules
WM12	EM340/EM110	EM24	EM270	VMU-Y EM	SB2WEB24	BDBxx
WM14	EM111/EM112	EM24 DUPLINE®	TCD/CTV	VMU-C EM		BDAxx
WM10	EM2172D/R/V	EM26	CTD/TADK	Em²-Server		SHPxx

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), involving a number of metering issues, ranging from energy to water, from taximeters to exhaust gas meters.

The scope of this directive was to guarantee to the 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 EM26 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 instruments are supplied, certified and sealed, ready for the installation.

All the data can be aggregated and therefore analysed and shared among the tenants using the new web-server solutions for energy management: VMU-C EM, VMU-Y EM and Em²-Server.

Residential buildings

Energy meters	MID energy meters	MID energy analysers	Web server	Quick-fit energy analysers	Surge arresters	Home automation controller
EM111/EM110 EM112/EM340	EM23	EM24 DUPLINE® EM26	VMU-C EM VMU-Y EM Em²-Server	EM270/EM271 TCD_X TCD_M	DSF A/P DSB A/P DSB51xxDP	SH2WEB24

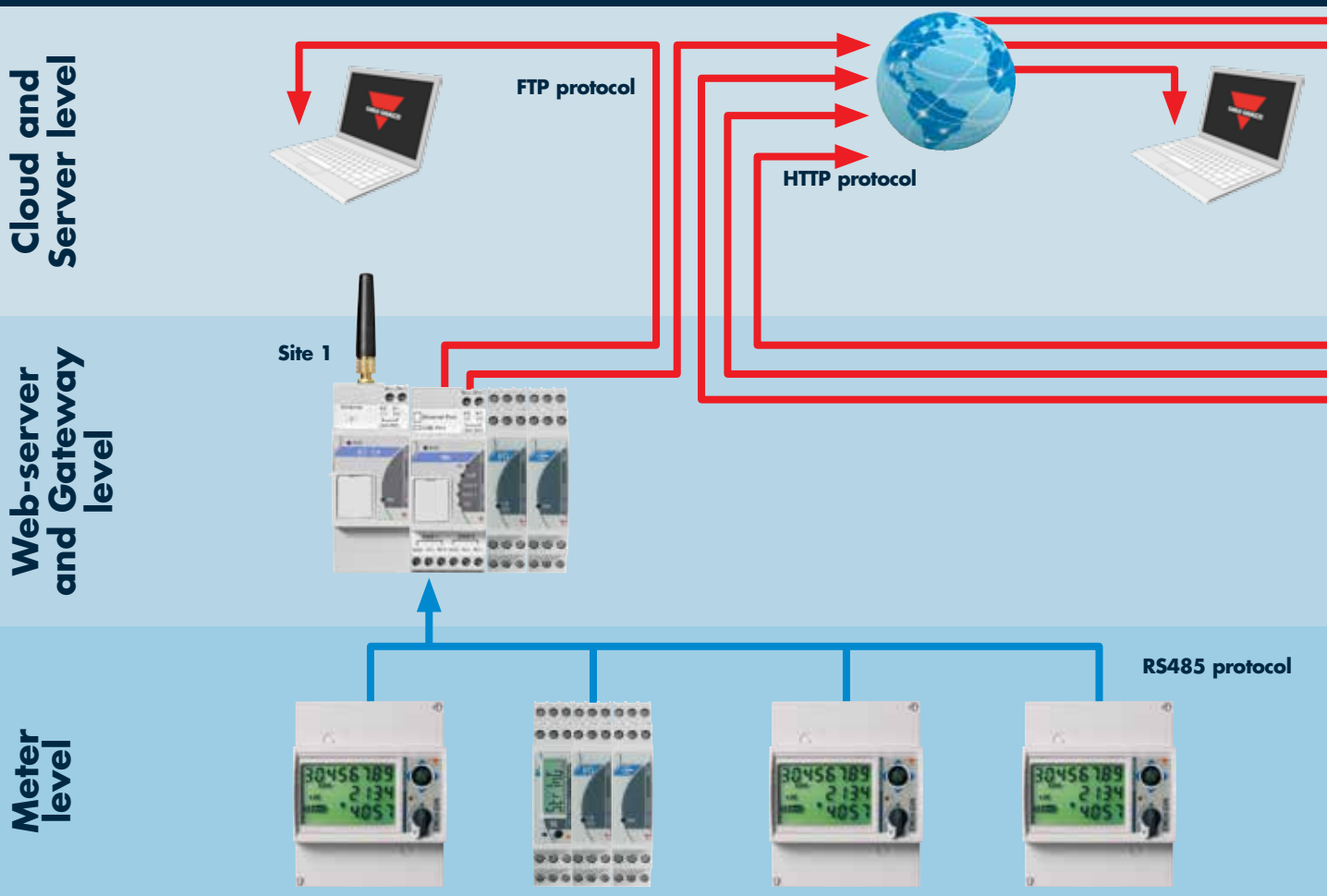
In new constructions, it is absolutely essential to achieve maximum energy efficiency and to avoid situations where a load (a fan, a light or a heating system) is supplied in an unused area. This is also the goal of building automation systems: for this reason Carlo Gavazzi offers its energy management products connected to the Dupline® field- and installation-bus, together with the home automation system as a unique control solution capable of transmitting multiple digital and analog signals over long distances via the Dupline® 2-wire bus. The home automation 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 to meters measuring consumption of energy, water, gas, heat etc.

However, it is a completely 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 an energy measuring system, specifically developed, such as the EM2172R and EM2172V "Retrofit" versions. By using these energy meters, it is possible to obtain the current measurement simply by installing the split-core current sensors (included in EM2172R) onto the wires, without disconnecting them or switching off the mains. The meter can be mounted in any type of panel frames, being extremely compact and suitable both for panel mounting (72x72 mm) and for DIN-rail mounting (only 4-DIN modules).

This is possible by means of the patented detachable display, utilising transponder technology.

When several loads are to be controlled, the new EM270 and EM271 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.

The diagrams



VMU-C EM into an Energy Monitoring architecture

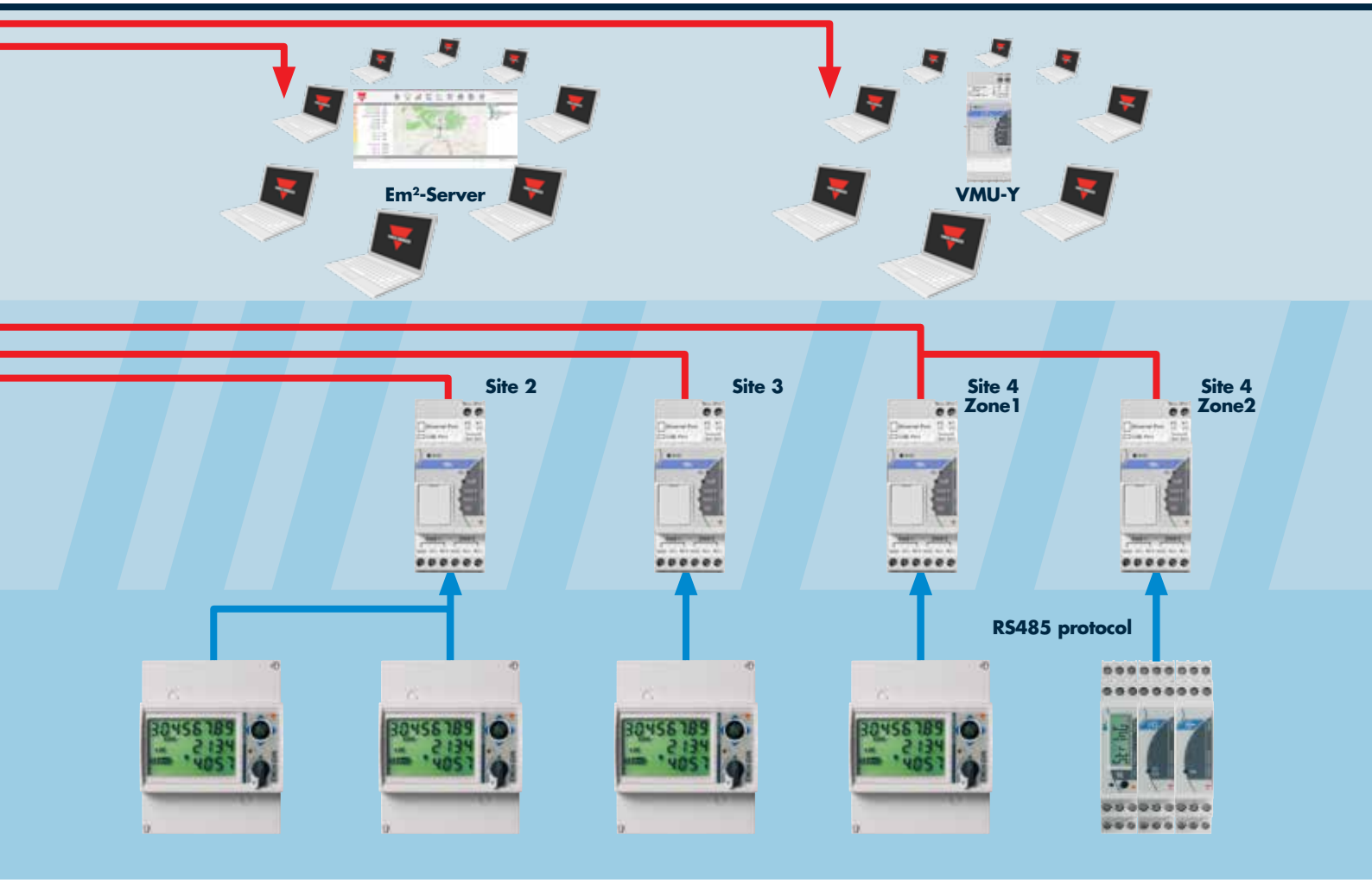
The VMU-C EM is the core solution for effective Energy Monitoring in applications of all sizes. It collects measurements from energy meters through the fieldbus; it stores information (variables and alarms) in its local database and displays it through its web-based graphical user interface.

The whole system set-up and operation is possible via the VMU-C's web interface, without any external software.

The VMU-C EM can exchange data with other systems by means of standard FTP/HTTP communication. Multi-site applications can be managed by adding either the Em²-Server or the VMU-Y EM to the VMU-C EM powered installations.

VMU-C EM at a glance

- No crash or compatibility problems due to different operative systems, different languages, libraries, etc.
- Improved IT security
- Application-focused software embedded inside industrial grade hardware: no need for a dedicated PC for monitoring
- On-site database
- Polling device, data-logger and Ethernet gateway in a single compact unit
- Modular solution for additional inputs/outputs
- Optional modular modem for wireless Ethernet connections
- Scalability to multi-site applications by means of VMU-Y + Em²-Server solutions



Em²-Server multi-site solution at a glance

- Multi-site management software based on Virtual Machine concept
- Flexible operation and set-up
- Reliable data communication with VMU-C EM
- 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

VMU-Y EM multi-site solution at a glance

- Multi-site management software embedded in compact hardware
- Plug and play operation and set-up
- Reliable data communication with VMU-C EM
- Up to 10 geographically different sites can be managed with a single unit
- A single supplier for energy meters, gateways and data management solutions

Our product range

Web server module

VMU-C EM

- Micro PC with Web-server and Web service capability
- Data and event logging capability
- Internal 4GB memory and 16GB SDHC card back-up memory
- Variables shown as graphs and numbers in formatted tables
- All data exports on HTML format compatible with Excel or other spread sheets
- Management up to 32 Energy Meters and 11 remote I/O module groups

MAIN FEATURES

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

Modular mobile modem

VMU-W

- Internet access point when regular wired network is not available
- Mobile modem: GSM, GPRS, EDGE, UMTS, HSPA
- Dimensions: 2 DIN modules

MAIN FEATURES

- Suitable for use in combination with VMU-C
- Automatic dual or quad band setting (850-900 Mhz, 1800-1900/2100 Mhz)

Web server module

VMU-Y EM

- 2-DIN size; DIN-rail mounting
- Multi-site monitoring management
- Power supply 24 VDC (± 20%)
- 2 USB ports (data /connection backup)
- 1 SD port (backup)

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 contract management
- Alarms management
- Database replication from up to 10 VMU-C EM

Web server software

Em²-Server

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

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 contract management
- Alarms management
- Database replication from up to 100 VMU-C EM

Multifunction meters

WM10

- 3-phase multifunction meter with direct connection
- Direct connection up to 65 A
- Dimensions: 4-DIN rail module housings
- Accuracy 0,5%
- Display 3 variables at a time

MAIN FEATURES

- Direct measurement in a very compact housing to save space
- Measurement of both system and single phase variables
- Easy installation: no parameters programming needed

Multifunction meters

WM12 / WM14

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

MAIN FEATURES

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

Energy meters

EM110 / EM111DIN

- Installation: DIN-rail
- Electromechanical counter (EM110) or backlit LCD (EM111)
- Measurement of voltage, current, power, power factor and frequency with touch display (EM111)
- Bi-directional energy metering, cl. B (EN50470)
- Measuring inputs: 230 VAC, 45 A

MAIN FEATURES

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

Energy meters

EM112

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

MAIN FEATURES

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

Our product range

Energy meters

EM2172D / EM210

- 3-phase energy meters with CT connection
- Solid or split-core 5A CT
- Dimensions 4-DIN rail module or 72 x 72 mm housing
- Class 1 (kWh) acc. to EN62053-1
- Pulse open collector or serial RS485 output

MAIN FEATURES
- Very compact and space saving meter
- Can be installed both on DIN-rail or on the panel
- On request, MID annex D certification available

Energy meters for retrofit

EM2172R

- 3-phase energy meters with CT connection
- Split-core current sensors included
- Dimensions: 4-DIN rail module or 72 x 72 mm housing
- Class 2 (kWh) accuracy
- Pulse open collector or serial RS485 output

MAIN FEATURES
- Very compact and space saving meter
- The same meter can be installed both on DIN-rail or on the panel
- Available as a kit including 3 split-core current sensors (90, 150 or 250 A)

Energy meters for retrofit

EM2172V

- 3-phase energy meters with CT connection
- Solid or split-core 0.333 V current sensors
- Dimensions: 4-DIN rail module or 72 x 72 mm housing
- Class 1 (kWh) equivalent to EN62053-1
- Pulse open collector or serial RS485 output

MAIN FEATURES
- Very compact and space saving meter
- The same meter can be installed both on DIN-rail or on the panel
- Suitable for any standard 0.333 V current sensor or for CTV series

Energy meters

EM23 / EM33

- 3-phase energy meter with direct connection
- Direct connection up to 32 A (EM33) or 65 A (EM23)
- Dimensions: 4-DIN rail module housings
- Class 1 (kWh) acc. to EN62053-1
- Serial RS485 or open collector (EM23) output

MAIN FEATURES
- Direct measurement in a very compact housing to save space
- Allows local energy allocation for cost allocation purposes
- On request, MID annex D certification available

Energy analysers

EM24 / EM24 DUPLINE®

- 3-phase energy meter with direct connection
- Direct connection up to 65 A
- Dimensions: 4-DIN rail module housings
- Class 1 (kWh) acc. to EN62053-1
- Optional serial port, digital input and outputs

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

Energy analysers

EM26 96

- 3-phase energy meters with CT/VT connection
- Primary current input: 5 A
- 96 x 96 mm housing dimensions, only 45 mm behind the panel
- Class 1 (kWh) acc. to EN62053-1
- Modbus communication port

MAIN FEATURES
- Energy analyser in a very compact housing to save space
- Suitable to measure generated and consumed energy
- MID Annex D certification available

Quick-fit energy analysers

EM270 / EM271 + TCD

- Triple 3-phase energy meters
- Current measurement by triple CT, solid core (EM270), split-core (EM271) with RJ plug
- Dimensions: 4-DIN rail module or 72 x 72 mm housing
- 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 installation
- Fast and error-proof CT connection with CT ratio self-recognising

Energy analysers

EM330 / EM340

- Dimensions: 2 /3 DIN modules
- Backlit touch LCD
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering on 2 8-digit counters, cl. B (EN50470)
- Measuring inputs: 3 x 230(400)VAC, 5 A (EM330) 65 A (EM340)
- Power supply: 12-60 VAC/DC or 90-260 VAC/DC (EM330), Self-powered (EM340)

MAIN FEATURES
- Pulse output or as an alternative: RS485 Modbus, M-Bus or Dupline®
- Sealable terminal covers
- CE, cULus

Our product range

Power quality analysers	Power quality analysers	Power quality analysers/transducers	Power transducers

WM30

- Dimensions: 96 x 96 mm panel mounting housing
- Accuracy 0.2 % (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- cULus approved; Solar California listed

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 and BACnet (both RS485 or Ethernet), and Ethernet/IP communication port available

WM40

- Dimensions: 96 x 96 mm panel mounting housing
- Accuracy 0.2 % (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- cULus approved; Solar California listed

MAIN FEATURES

- 16-alarm PLC logic and digital inputs for utility metering
- Modular housing to build the instrument according to the real application needs
- Modbus and BACnet (both RS485 or Ethernet), and Ethernet/IP communication port available
- Built-in datalogger for instantaneous variables, dmd profiles and events

WM5 / PQT-H

- Dimensions: 96 x 96 mm panel (WM5); 90 x 90 mm DIN-rail (PQTH)
- Accuracy 0.2 % (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- cULus approved, Measurement Canada certified (WM5)

MAIN FEATURES

- 16-alarm PLC logic, digital inputs for utility metering, 12 tariffs, event data stamping
- Modular housing to build the instrument according to the real application needs
- Modbus RS485 and Ethernet communication ports available

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

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

Current transformers	Current sensors	Monitoring relays	Monitoring relays

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

MAIN FEATURES

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

CTV

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

MAIN FEATURES

- Very compact split-core sensors ideal for retrofit applications
- Suitable for use with EM21-72V energy meter

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
- CE, UL, CSA and CCC approved

MAIN FEATURES

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

DPA53

- Dimensions: 81 x 17,5 x 67,2 mm DIN-rail housing
- Phase sequence, loss and undervoltage relay
- 3 phase AC (own power supply)
- Power supply from 208 to 480 VAC (2 models)
- UL, CSA and CCC approved

MAIN FEATURES

- Motor protection from reverse running and wrong phase voltage
- 17.5 mm width: the smallest in the market
- Plug and play: only undervoltage threshold to be set

Our product range

Monitoring relays

DPB51

- Dimensions: 81 x 17,5 x 67,2 mm DIN-rail housing
- TRMS 3-phase over/under voltage, phase sequence and loss relay
- 3 phase AC (own power supply)
- Power supply from 208 to 480 VAC
- UL and CSA approved

MAIN FEATURES

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

Monitoring relays

DPC02/DPC72

- DIN Rail Mounting 45 mm (DPC02); 4 DIN Modules (DPC72)
- 208 to 690 VAC, 50 Hz or 60 Hz mains monitoring
- Output, 1 programmable DPDT or 2 SPDT (DPC02); 1 x DPDT (DPC72)
- Serial Port RS485Modbus,JBUS protocol on DPC72
- CE, UL and CSA approved

MAIN FEATURES

- 1-phase or 3-phase voltage and frequency monitoring
- Output is active when voltage/ frequency are within the Set windows
- Programming: DPC02 by means of DIP switch, DPC72 directly on the display or via serial line

Monitoring relays

PI-DIN0126

- Dimensions: 90 x 71.6 x 66.3 mm DIN-rail housing
- Single and Three phase monitoring relay
- Auxiliary power supply 230 VAC or 24 VDC
- 2 digital inputs, 2 relay outputs
- Approved according VDE V 0126-1 Norm

MAIN FEATURES

- Energy production plants protection (VDE V 0126-1 Norm)
- Data logger with events logging
- RS485 communication
- Dual passive and anti islanding detection

Monitoring relays

DIA / DIB

- Dimensions: 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
- UL and CSA approved

MAIN FEATURES

- Detects any variation of the desired current level
- Direct connection, by CT or by external shunt
- Latch and inhibit functions, TRMS measurement (DIB)

Monitoring relays

DWA01

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

MAIN FEATURES

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

Monitoring relays

DFB / DFC

- Dimensions: 80 x 22.5 x 99.5 mm DIN-rail housing
- Over or under frequency relay
- 1 phase, 50 or 60 Hz
- Measuring range from 24 to 240 VAC
- UL and CSA approved

MAIN FEATURES

- Detects any variation of the frequency
- 2 Hz or 10 Hz selectable alarm window
- 2 independent delays and SPDT out (DFC)

Monitoring relays

DTA / PTA 01/02

- Dimensions: 22.5 mm Euronorm for DIN-rail or 36 mm plug-in version
- Motor temperature relay
- Measuring ranges: PTC according to EN 44081
- Power supply: 24 to 48 VAC/DC, 110, 230 VAC
- UL, CSA approved

MAIN FEATURES

- Protection from high temperatures of the coils of a motor with built-in PTC's.
- Alarm resettable by external contactor or reset button
- Test button allowing the simulation of the fault condition

Monitoring relays

DLA71

- Dimensions: 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 or 115/230 VAC
- 2x or 3x 5 A SPST output
- UL and CSA approved

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

Our product range

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%
- UL, CSA, RINA approved

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

Timers

DBA52

- Dimensions: 81 x 17,5 x 67,2 mm DIN-rail housing
- Delay on release function
- Power supply 24 VDC or from 24 to 240 VAC
- Repeatability: < 0.2%
- UL and CSA approved

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

Timers

HAA

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

MAIN FEATURES
- Front knob adjustable time setting
- Selectable time ranges from 0.1 s to 100 h
- Delay on operate, symmetrical recycle, ON or OFF first interval

BACnet controller

SB2WEB24

- BACnet controller for HVAC and lighting systems
- Drives up to 7 Dupline® 2-wire networks
- Each Dupline® network can manage 7 DALI Masters
- Data points from Dupline® and EM's are converted to BACnet objects
- Dimension: 2-DIN housing

MAIN FEATURES
- Simple and flexible system for a significant reduction in installation cost
- Easy interfacing to the building management system via BACnet/IP
- Easy-to-use PC-based configuration and commissioning tool

Home automation controller

SH2WEB24

- Home automation functions and energy data logging configurable by software
- Modbus RS485 port for connecting to energy meters
- Dimension: 2-DIN housing

MAIN FEATURES
- Data logging of signals and energy values
- Web-server user interface for monitoring of energy consumption

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

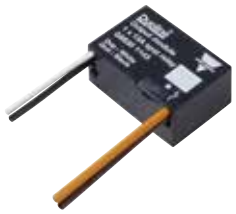
Dupline® environmental sensors

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

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
- De-central relay for installation at the position of the load
- Easy and fast installation with Dupline® 2-wire bus
- High inrush current suitable for lighting loads
- Cost effective

Our product range

Dupline® decentral I/O modules	Dupline® sensors	Digital panel meters	Digital panel meters

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

SHSQP360L

- Dupline® passive infrared detector
- Detection angle: 360°
- Operating distance: 2.5 – 4.0 m
- Ceiling mount or Euro-box

MAIN FEATURES
- Detects presence of people in rooms
- Used for energy saving by switching not needed loads of (lighting, heating etc)
- Easy and fast installation with Dupline® 2-wire bus
- Cost effective

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
- CE, UL and CSA approved

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

UDM60

- Panel mounting 48 x 96 mm
- Dual 6 DGT LCD uP Meter and Controller, digital and analog reading
- Dual rate, speed, frequency and period measurement
- 20 mA or 10 V optional analog output
- UL, CSA and CCC approved

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

Digital panel meters	Surge arresters	Surge arresters	Surge arresters

USC

- Dimensions: 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
- CE, UL and CSA approved

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

DSF A/P

- Suitable for all single phase (A) and three phase (P) utilities
- Available for MCO V 300 V, 385 V, 460 V and 550 V
- 20 kA Inom, 40 kA Imax per pole
- Dimensions depending to modules according to DIN standard
- CE, UL and CSA. Category IEC / EN Class II / Type 2

MAIN FEATURES
- Optional remote monitoring contact
- Patented topology, no backup fuse required
- Socket with replaceable cartridge

DSB A/P

- Suitable for all single phase (A) and three phase (P) utilities
- Available for 275 V, 385 V and 440 V
- 20 kA Inom, 40 kA Imax per pole
- Dimensions depending to modules according to DIN standard
- CE, Category IEC / EN Class II / Type 2

MAIN FEATURES
- Optional remote monitoring contact
- 4 MOVs or 3 MOVs + 1GDT topology
- Socket with replaceable cartridge

DSB51XXDP

- Dimensions: 90 x 12 x 71.5 mm DIN-rail housing
- 15 VDC nominal voltage
- 10 kA Inom, 20 kA Imax
- Rated spark overvoltage 184V to 276V
- C1/C2/C3 according to IEC 61643-21

MAIN FEATURES
- Designed for Dupline® communication lines
- Three stage topology with dual GDT
- Socket with replaceable cartridge

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