



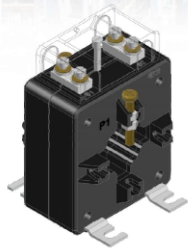
THE EVOLUTION IN ENERGY MANAGEMENT



THE SOLUTION OF INDUSTRIES



Multifunction Power Meter



Current Transformer



Web Server



Phase Failure Relay



Em²- Server

In the small and heavy industry markets, buildings, or other installations, it is essential to have effective control of the mains since low and medium voltage systems and high currents are involved. Because of the loads, a low level of harmonics is crucial to allow the installation to work correctly and reliably.

The solution proposed by GAE involves a series of digital meters, which can be tailored according to requirements, offering many analog or digital I/O combinations with PLC-like AND/OR logic and serial communication features. If you integrate the digital meters with the web server you have your data logger to monitor the electrical parameters, harmonic analysis, and multi-tariff management.

The web server can transfer data via FTP, HTTP, or MODBUS/TCP to a remote server where a SCADA, BMS, or other specific database software is running.

All this can be integrated into any SCADA or BMS system or managed by our monitoring solution, the web server; it allows all the installation parameters to be monitored and controlled by a local or remote (via e-mail or SMS) warning maintenance staff.

By utilizing its logging and analysis functions, the operator can program regular maintenance or introduce additional management

Nowadays, all manufacturing companies need to have a cost control system in their production sites. Efficient cost allocation can be achieved using multi-function power meter, which provides all the data from each department.

Cost and consumption forecasts are also available, in a user-friendly way, even in multi-site applications, by using the web server, which pushes the data to an Energy Monitoring Software, Em²-Server; it can aggregate and centralize all the information in the main control area.

WHY THE VMU-C EM IS THE IDEAL ENERGY MANAGEMENT SOLUTION

How much money will you lose if your plant stops because of electrical problems?

To ensure everything is running effectively, you need a monitoring solution.

How much money will you save if your utility contract is based on your actual needs?

To ensure you optimize your electrical contract you need a monitoring solution.

The electrical utility contract should be tailored to the exact needs of your facility. In order to avoid excessive expense, or penalties for exceeding the limits of the contract, you can negotiate a well calibrated contract if:

The electrical installation is one of the most important systems in any facility, from a production plant to a commercial building.

An unexpected fault can lead to serious damage and/or to a very expensive stop in production.

- you know the details of your consumption by production load, time, season, etc.;
- you identify in detail where the consumption takes place within your plant;
- you are able to not exceed the contractual terms (maximum power demand, etc.);
- Energy efficiency optimization targets are strong drivers in any Country. Carlo Gavazzi solution for Energy monitoring helps you to implement specific policies for matching your energy efficiency benchmarks.

You can protect your business if:

- you meet the installation limits;
- you know the system is working properly
- you identify any decrease in performance so as to plan any maintenance before a fault occurs.



MONITORING SYSTEM FOR ENERGY MANAGEMENT

VMU-C EM

Integrated web-server unit capable of monitoring up to 32 meters and managing the following data: .

- Energy (kWh,kvarh) and instantaneous variable data (V,A,W,var,VA,PF,Hz,THD) with setpoints and datalogger
- Temperature, analogue and pulse rate inputs (with scaling capability)
- Digital input status
- Alarms via Web, email or SMS• Dual tariff
- Reports in Excel compatible format

All the data of the monitored plant is available via:

- Web-Surfing
- HTTP web surfing
- HTTP on-demand polling
- FTP scheduled data-pushing
- Modbus/TCP (slave function)
- Carlo Gavazzi's DP (data push protocol) in combination with VMU-Y EM and Em2-Server data aggregation solutions.
- If wired internet is not available, the VMU-W compact and integrated 3G mobile modem is available.

Energy meters and power quality analyzers

Carlo Gavazzi provides a full range of instruments to be used in conjunction with the VMU-C EM.

- Mounting: both DIN-rail or panel mounting available
- Compact size
- Current measurement: direct up to 65 A, by 5A current transformers, by 0.333 V current sensors
- Optional digital inputs for utility (gas, water) metering, pulse outputs or relay outputs available
- MID certified versions available for fiscal metering
- Full range of solid and split-core current transformers available

VMU Series optional modules

Additional modules can be added, providing further information:

- Temperature measurements
- Scalable analogue and pulse rate inputs
- Digital inputs and digital outputs

WEB-SERVER COMMUNICATION

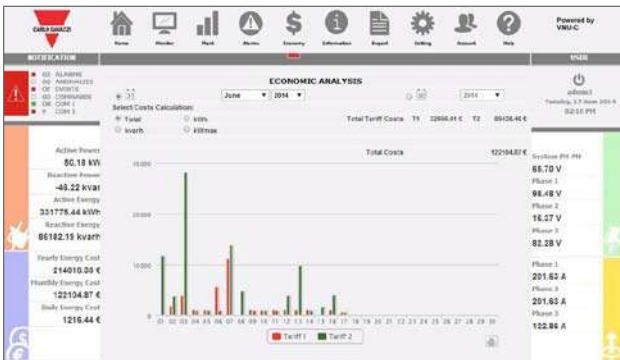
Examples of VMU-C EM pages



The home page allows the following information to be available at a glance:

- Energy consumption information (active and reactive power and energy);
- costs information (yearly, monthly and daily expenses);
- instantaneous 3-phase variables of the plant (voltages and currents).

The main chart displays the present day's total energy consumption of the plant Vs. the previous day's.



The consumption of each energy meter can be analysed on a daily, monthly or annual basis. In the same section information acquired by pulses from the gas, water or remote heating meters, and also the analogue and environmental variables acquired by the VMU modules, can be displayed and analysed.



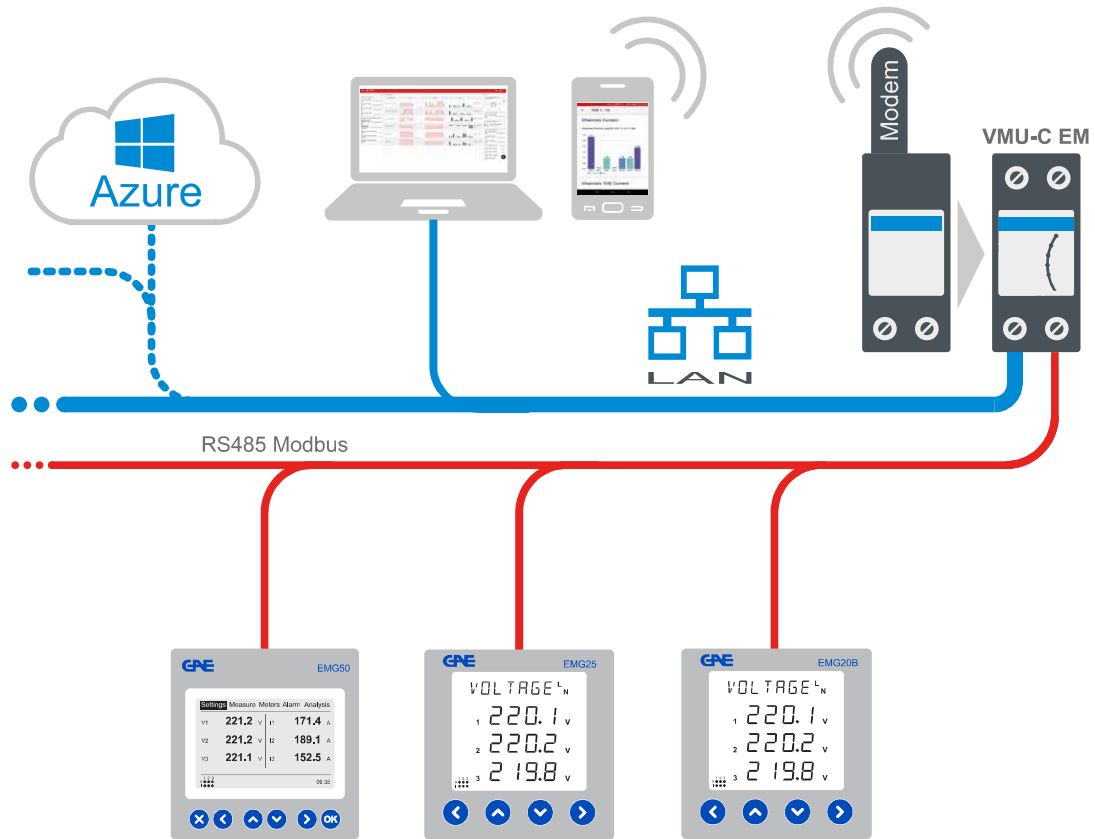
The logged instantaneous variables relevant to the main meter, and so to the whole electrical installation, can be analysed on a daily, monthly or annual basis. The variables can be monitored by specific setpoints. In the case of problems or faults, it is possible to analyse the plant's history before the event, so as to understand the relevant reasons and act accordingly.



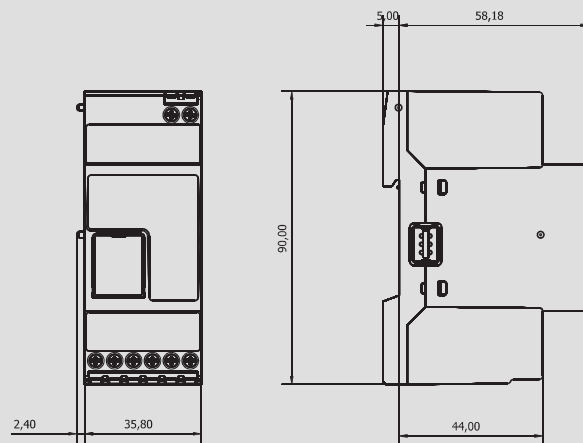
All the real-time variables of any meter can be displayed on the web browser. This means is being on-site and looking directly at any meter display: the whole plant is completely under control.

The database, including all the history of the plant, can be accessed to get a set of data in a defined time period. The data is then available in Excel compatible format for further analysis by the user.

COMMUNICATION, ANALYSIS AND REPORTING IN ONE UNIT



DIMENSION OF VMU-C EM



Weight: <0.6 kg (packaging included)

EMG SERIES



EMG20B Specifications

Data logging with timestamp	-
Phasor diagram	-
Signal waveform	-
Class V	0.2
Class I	0.5
Alarm Relay Outputs	-
Digital Inputs	-
Digital Outputs	-
Protocol	Modbus RS485

EMG25 Specifications

Data logging with timestamp	-
Phasor diagram	-
Signal waveform	-
Class V	0.2
Class I	0.5
Alarm Relay Outputs	✓
Digital Inputs	✓
Digital Outputs	✓
Protocol	Modbus RS485

EMG50 Specifications

Data logging with timestamp	✓
Phasor diagram	✓
Signal waveform	✓
Class V	0.2
Class I	0.2
Alarm Relay Outputs	✓
Digital Inputs	✓
Digital Outputs	✓
Protocol	Modbus RS485

CT 4X SERIES



CT41 Specifications

Rating Current	50/5A - 100/5A
Class Range	(cl 1 - cl 0.1)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø28 mm
Dimension HxWxL (mm)	113.3x69.2x96
Weight	780 gr

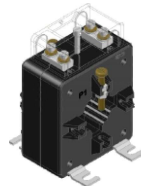
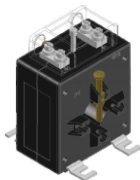
CT42 Specifications

Rating Current	30/5A - 100/5A
Class Range	(cl 1 - cl 0.1)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø28 mm
Dimension HxWxL (mm)	113.3x69.2x140.5
Weight	1350 gr

CT43 Specifications

Rating Current	15/5A - 100/5A
Class Range	(cl 1 - cl 0.1)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø28 mm
Dimension HxWxL (mm)	113.3x69.2x185
Weight	2000 gr

CT WINDOW SERIES



CT60 Specifications

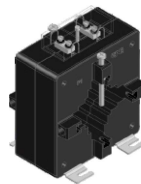
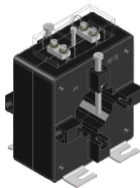
Rating Current	50/5A - 400/5A
Class Range	(cl 1 - cl 0.2)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø25.5 mm
Dimension HxWxL (mm)	105x78x84.5
Weight	600 gr

CT70 Specifications

Rating Current	100/5A - 600/5A
Class Range	(cl 1 - cl 0.5)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø28.8 mm
Dimension HxWxL (mm)	104.5x74.5x78
Weight	500 gr

CT71 Specifications

Rating Current	60/5A - 300/5A
Class Range	(cl 0.5)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø30 mm
Dimension HxWxL (mm)	124x95x84.75
Weight	850 gr



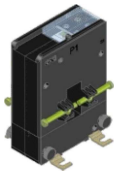
CT110 Specifications

Rating Current	200/5A - 600/5A
Class Range	(cl 1 - cl 0.2)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø50 mm
Dimension HxWxL (mm)	143x110x94
Weight	1091 gr

CT150 Specifications

Rating Current	200/5A - 2500/5A
Class Range	(cl 1 - cl 0.2)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø50 mm
Dimension HxWxL (mm)	160x132x102
Weight	1472 gr

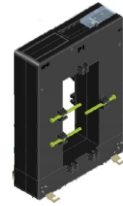
* for other class information, please see PL GED 170120.pdf

CT SPLIT CORE SERIES

CT201 Specifications

Rating Current	200/5A - 400/5A
Class Range	(cl 1 - cl 0.5)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size HxL	38x19.5 mm
Dimension HxWxL (mm)	125x90.5x59.
Weight	800 gr


CT204 Specifications

Rating Current	500/5A - 1500/5A
Class Range	(cl 1 - cl 0.5)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size HxL	121x77.5 mm
Dimension HxWxL (mm)	205.5x159x54.5
Weight	1620 gr

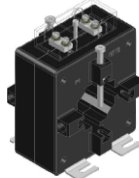

CT205 Specifications

Rating Current	750/5A - 5000/5A
Class Range	(cl 1 - cl 0.5)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size HxL	160x79 mm
Dimension HxWxL (mm)	255.5x185x73
Weight	3950 gr

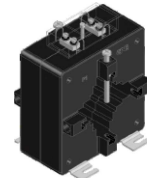
CT RECTANGULAR SERIES

CT301 Specifications

Rating Current	60/5A - 300/5A
Class Range	(cl 0.5)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø30 mm
Dimension HxWxL (mm)	124x95x84.75
Weight	850 gr


CT302 Specifications

Rating Current	200/5A - 600/5A
Class Range	(cl 1 - cl 0.2)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø50 mm
Dimension HxWxL (mm)	143x110x94
Weight	1091 gr

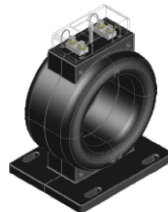

CT303 Specifications

Rating Current	200/5A - 2500/5A
Class Range	(cl 1 - cl 0.2)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø50 mm
Dimension HxWxL (mm)	160x132x102
Weight	1472 gr

CT RING SERIES

CT403 Specifications

Rating Current	200/5A - 1600/5A
Class Range	(cl 1 - cl 0.2)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø60 mm
Dimension HxWxL (mm)	161x115x71.5
Weight	900 gr


CT404 Specifications

Rating Current	200/5A - 2500/5A
Class Range	(cl 1 - cl 0.2)*
Working Temperature	0 °C ... 50 °C
Case Material	PC V0
Hole size	Ø80 mm
Dimension HxWxL (mm)	175x132x105
Weight	1500 gr

* for other class information, please see PL GED 170120.pdf



Product Ranges

GATEWAY AND SOFTWARE



ETG-485

UTG-485

VMU-C Specifications

Port:	Ethernet	RJ45
	USB	High speed USB 2.0
	Mode	Hot swap
	Comm. speed	60MB/s
	Mini USB	High speed USB 2.0
	Mode	Hot swap
	Comm. speed	60MB/s
	Micro SD slot	Available
	Capacity	SD up to 2GB
		SDHC: 4-16GB

ETG485 and UTG485 Specifications

ETG485	
Interface	USB mini port
	Ethernet port, RJ45
Network	10/100 base TX
	6 remote connect, Available
	DHCP, Available
	Ping blocking, Available
UTG485	
Interface	USB 1.0 and 2.0
	USB Type A
Serial	Modbus RTU RS485
	Isolation 1500V RMS

Em²- Server Specifications

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

PHASE FAILURE RELAY



PFR GC1100 Specifications

System	Un = 3 x 380 V 50Hz
Connection	3p 3w
Power consumption	5 VA (max)
Asymmetry adjust.	5% - 25% of Un
Operating Temp.	+10°C to +40°C
Storage Temp.	-10 °C to +70 °C
Relative humidity	90% non condensation
Output relay	Contract rating 5A
	(Cos φ = 1), 250 VAC
Weight, Mounting	400 gr, Din Rail



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