

Monitoring system for Energy Management

Control

VMU-C EM

A revolution in Energy Management

The increasing lack of natural fossil resources and consequent increase in energy costs are indications that a rational and conscious use of available energy is now a "must".

We at Carlo Gavazzi have more than 15 years of experience in providing a comprehensive portfolio of devices to measure, analyse, understand and predict the energy trends of our customers' plants or buildings, thus making it easier for them to save money and safeguard the environment.

The VMU-C EM is the ideal web-server-based solution for monitoring small to medium installations. With its specific integrated web-service functionality, it is capable of automatically transferring the data via FTP to a remote server, where a SCADA, BMS or other specific database software is running.

The VMU-C EM gathers data from:

- Energy meters
- Power analysers
- VMU Series input/output modules

The VMU-C EM provides information in a quick and automatic way via the internet, so the data is available wherever you are.



Monitoring system for Energy Management

VMU-C EM

Integrated web-server-based unit able to monitor up to 32 meters and to manage the following data:

- Energy (kWh, kvarh) and instantaneous variable data (V, A, P, Q, PF, Hz) with setpoint and datalogger
- Temperature, analogue and pulse rate inputs (with scaling capability)
- Digital input status
- Alarms via email or SMS
- Dual tariff
- Reports in CSV format

All the data of the monitored plant is available via:

- HTTP web surfing
- HTTP on-demand data-polling
- FTP scheduled data-pushing
- Modbus TCP protocol (slave function)

VMU-W

If a wired Internet connection is not available, a compact modem can easily be linked to the main unit providing:

- Compatibility with quad-band GSM-GPRS-EDGE standards
- Compatibility with dual-band UMTS-HSPA standards

ENERGY METERS and POWER QUALITY ANALYSERS

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

CURRENT TRANSFORMERS

Carlo Gavazzi also provides a full range of current transformers (both solid and split-core) and miniature split-core current sensors

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

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.

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 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.

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

To ensure you optimise 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 :

- 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.)



Advantages

- No need for a dedicated PC for monitoring
- No crash problems which lead to data loss
- No compatibility problems due to different operating systems, different languages, libraries, etc.
- Polling device, datalogger, Ethernet gateway in a single, very compact, unit
- Modular concept for additional input/output whenever needed
- Optional modular modem for wireless Ethernet connection



The VMU-C EM and its optional I/O modules: just to make it easier



The VMU-C EM is modular and the VMU series modules can be added by connecting them via their internal bus: up to one environment variable unit (VMU-P) and up to three I/O units (VMU-O).

If some of the VMU modules are needed remotely, up to ten new arrays

can be connected via RS485 using a master module, VMU-M. All the web-server functionalities are ready on your browser if wired internet is available. A further module, the VMU-W (GPRS-EDGE-UMTS-HSPA modem) can be added if the internet is wireless.

VMU-C EM

A revolution in Energy Management

An integrated wired or wireless Web-Server and Web-Service solution

Micro SD memory



Since plant data is very important, the VMU-C EM also provides a specific micro SD slot to host, up to 16GB back-up memory. The following functions are also available:

- plant configuration and database and events export download;
- XML driver (energy meters), plant configuration and firmware upgrade upload.

Mini USB plug



The mini USB device can be connected to a PC to perform a firmware upgrade and other service functions.

Memory stick



The USB "host" with hot swap capability can house a memory stick providing download and upload functions.

Mobile Modem

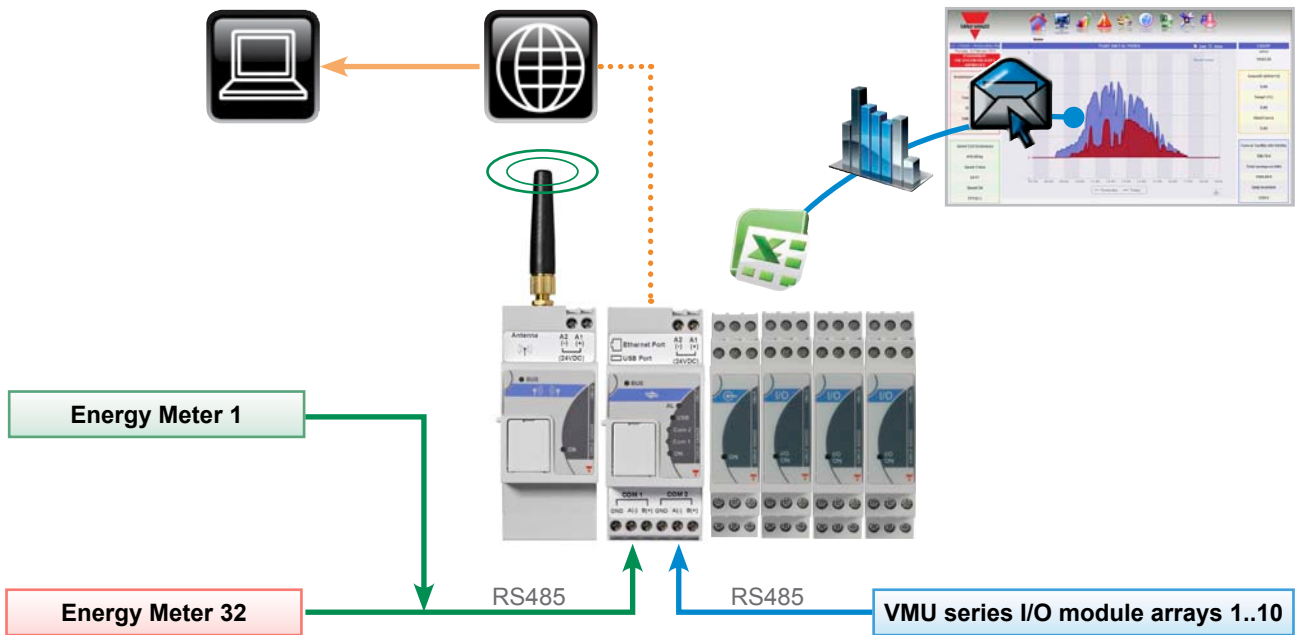


Where wired Internet access is not available, Carlo Gavazzi provides a specific mobile modem, the VMU-W, to be added to the VMU-C which transforms the system into the ideal monitoring solution for any remote application.

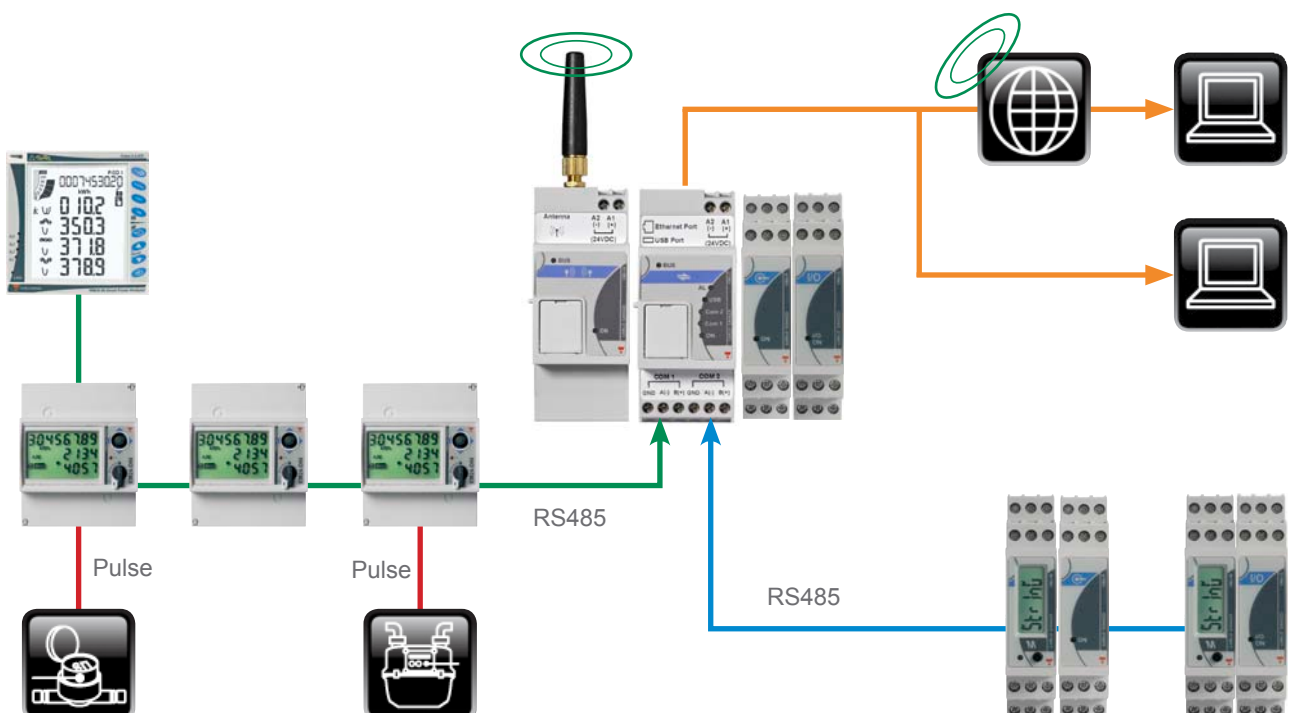
Typical application diagrams

Monitoring solution based on web-server communication capability

Example of communication architecture with wired Internet access (only with “VMU-C”) unit or, where wired Internet, is not available, with additional mobile GPRS-EDGE-UMTS-HSPA “VMU-W” plug-in unit.



Example of measurement and data management architecture



VMU-C EM

A revolution in Energy Management

Web -server communication

Examples of VMU-C EM pages



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

- electrical plant information such as total power, daily and total energy consumption;
- CO₂ equivalent emissions;
- instantaneous variables of the plant, such as voltages and currents;

The main graph shows the present day's total energy consumption of the plant vs. that of the previous day one.



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.



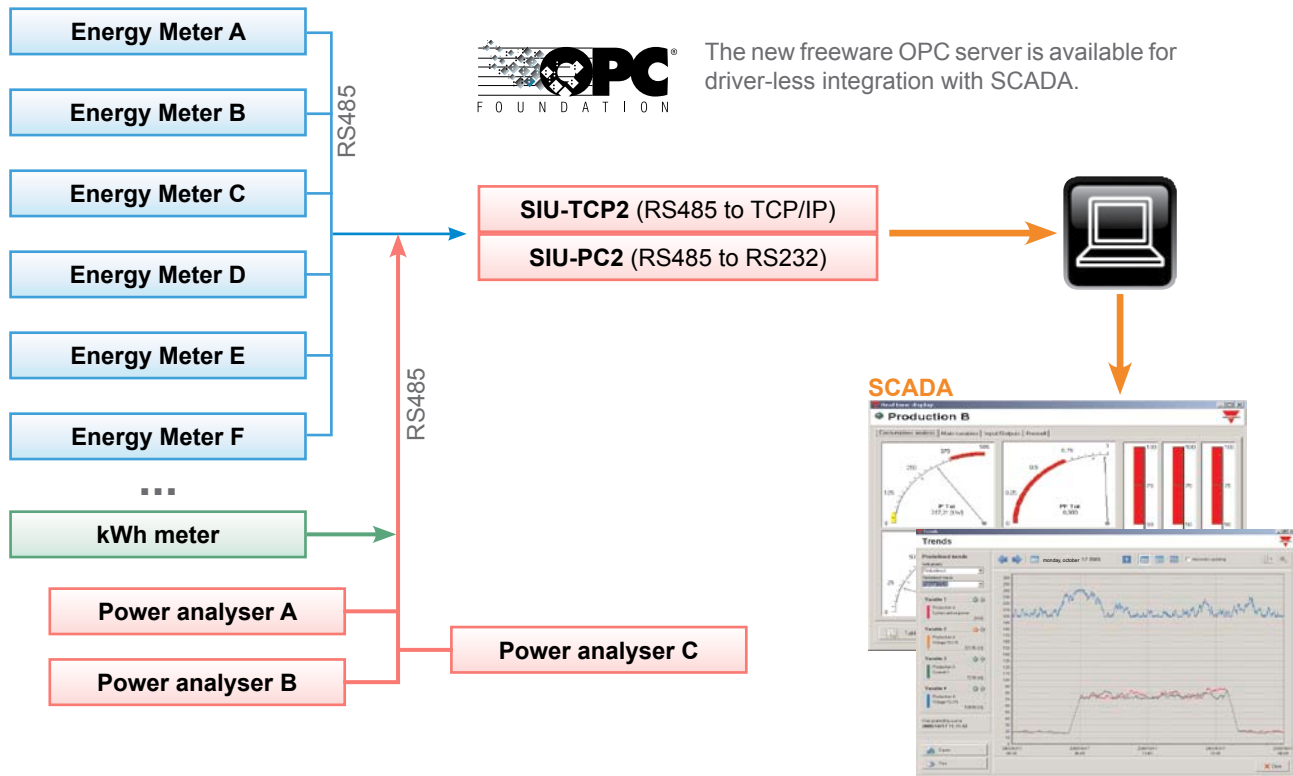
All the real-time variables of any meter can be displayed on the web-browser. This means being on-site and looking directly at any meter display: the whole plant is completely under control.



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.

The OPC server link

Monitoring solution based on the System Integrator's own SCADA software



- Architectural freedom
- Measurement features depending on the selected meter or analyser
- Free communication protocols available on request.

SIU-FO: the solution for an electrically-disturbed environment

This unit converts the standard Mod-Bus communication from the RS485 wired to the fibre-optic type, with the aim to increase the communication distance and providing extremely high communication immunity in the case of an electrically -disturbed environment.

Features

- RS485 to glass fibre optic adaptor.
- Two way communication capability (wire to fibre optics and fibre optics to wire).
- Fibre optic single loop communication (cascade connection: communication loss in the case of loop cut).
- Fibre optic dual loop communication (dual cascade connection: partial communication loss in the case of

one loop cut).

- Fibre optic dual loop communication (redundant communication: no communication loss in case of one loop cut).
- 10 to 24VDC/12 to 18VAC power supply.
- DIN-rail mounting type.

Fibre type and communication distances

- Single-mode and multimode glass fibre optic compatibility.
- Point to point distance of up to 800m with 50/125 μm multimode fibre.
- Point to point distance of up to 2000m with 62.5/125 μm multimode fibre.



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
Petaksentie 2-4, FI-00661 Helsinki
Tel: +358 9 756 2000
Fax: +358 9 756 20010
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
Pfnorsstr. 10-14
D-64293 Darmstadt
Tel: +49 6151 81000
Fax: +49 6151 81 00 40
info@gavazzi.de

GREAT BRITAIN - Carlo Gavazzi UK Ltd
7 Springlakes Industrial Estate,
Deadbrook Lane, Hants GU12 4UH,
GB-Aldershot
Tel: +44 1 252 339600
Fax: +44 1 252 326 799
sales@carlogavazzi.co.uk

ITALY - Carlo Gavazzi SpA
Via Milano 13, I-20020 Lainate
Tel: +39 02 931 761
Fax: +39 02 931 763 01
info@gavazziacbu.it

NETHERLANDS - Carlo Gavazzi BV
Wijkemeerweg 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 94 480 10 61
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.
Calle La Montaña no. 28, Fracc. Los Pastores
Naucalpan de Juárez, EDOMEX CP 53340
Tel & Fax: +52.55.5373.7042
mexicosales@carlogavazzi.com

BRAZIL - Carlo Gavazzi Automação Ltda.
Av. Brig. Luis Antônio, 3067
Jd. Paulista - São Paulo - SP
CEP 01401-000
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 UE Print Media Hub
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
sales@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 3 12/F Crown Industrial Bldg.,
106 How Ming St., Kwun Tong,
Kowloon, Hong Kong
Tel: +852 23041228
Fax: +852 23443689

OUR COMPETENCE CENTRES AND PRODUCTION SITES

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

Carlo Gavazzi Ltd
Zejtun - **MALTA**

Carlo Gavazzi Controls SpA
Belluno - **ITALY**

Uab Carlo Gavazzi Industri Kaunas
Kaunas - **LITHUANIA**

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

HEADQUARTERS

Carlo Gavazzi Automation SpA
Via Milano, 13 - I-20020
Lainate (MI) - **ITALY**
Tel: +39 02 931 761
info@gavazziautomation.com



CARLO GAVAZZI
Automation Components

Energy to Components!

www.gavazziautomation.com

