CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

Overview

Energy management

Overview
Diagram

Em² Server, multi-language and multi-site

Cloud and On-Premise

FTP API

maia cloud

Azure

powered by aws

UWP 3.0 - Web-App

INTERNET

LAN/WAN

Web-server and edge level

4G LTE

Modem

SH2-DSP   UWP 3.0

UWP 3.0   UWP 3.0   UWP 3.0

RS485 Modbus

RS485 Modbus   LAN Modbus/TCP   LAN Modbus/TCP

Meters and sensors

M-Bus

A 1234
A 1234
A 1234

123456

A 1234
A 1234
A 1234

12345678
A 1234
A 1234
A 1234
A 1234
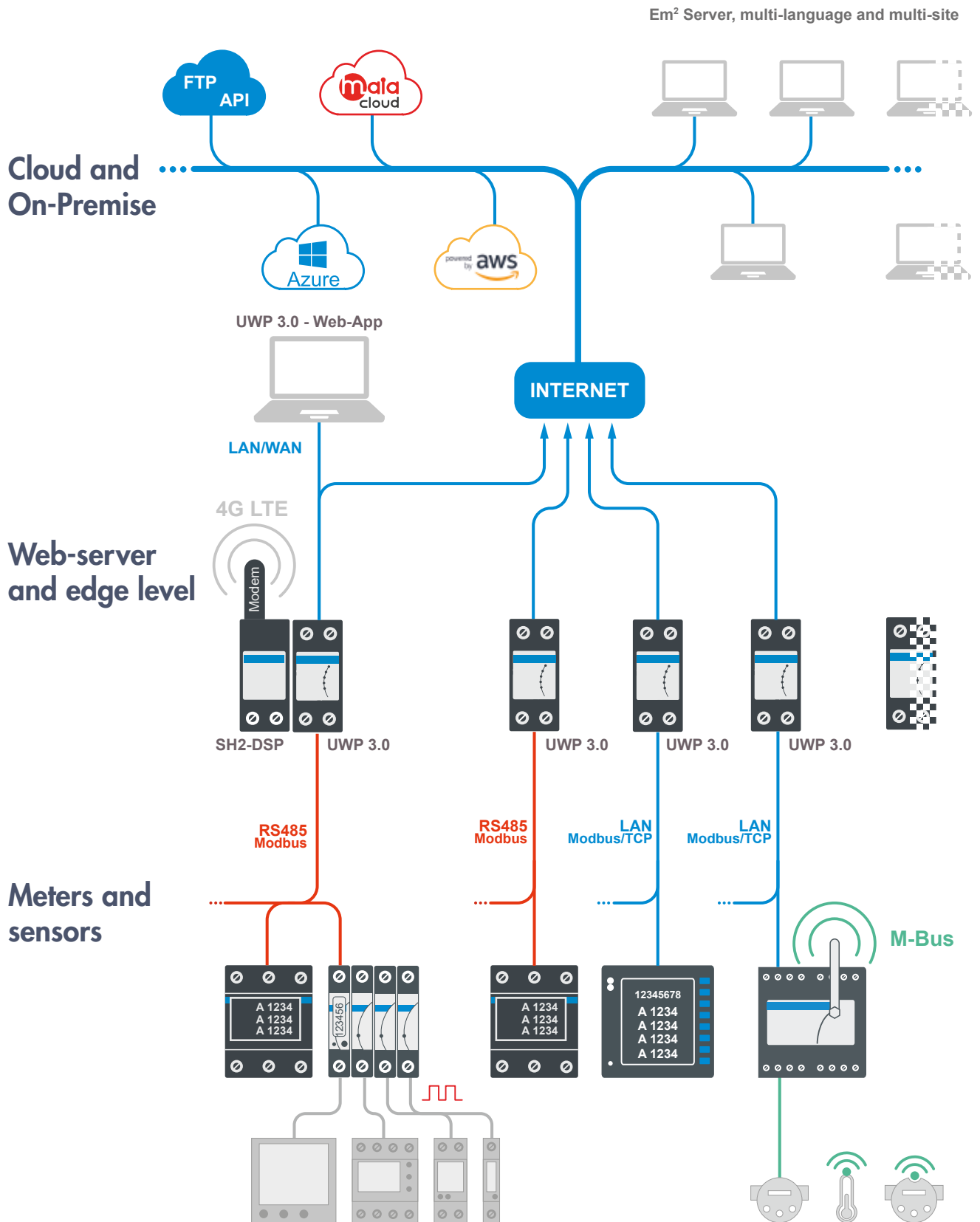
# Em² Server: Software for multi-site monitoring

Main page
- Web-based access via standard browser
- Either On-Premises or Cloud deployment
- Multiple accounts with configurable access rights
- Map for locating UWP 3.0 and VMU-C EM devices
- Navigator tool for organizing the system in cost centres according to the needs
- On-the-fly update of the whole database, during the reception of data

Monitoring tool
- Real time (according to sampling interval) and historical data displaying of each energy meter and power analyser variables
- Easy navigation of available meters and cost centres
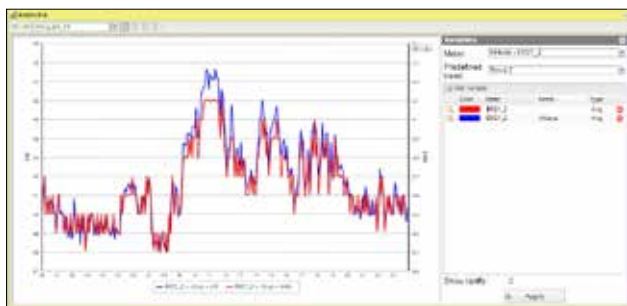
Analysis tool
- Real time (according to sampling interval) and historical data displaying of any combination of variables
- Comparison of trends in different time intervals

Synoptic tool
- Real time (according to sampling interval) displaying of energy meters and power analysers on top of one or more layouts or schematics
- Multiple panels can be managed

Load profile tool
- Statistical analysis of daily consumption data
- Calculation of the daily baseline
- Estimation of the maximum power for dealing with energy suppliers
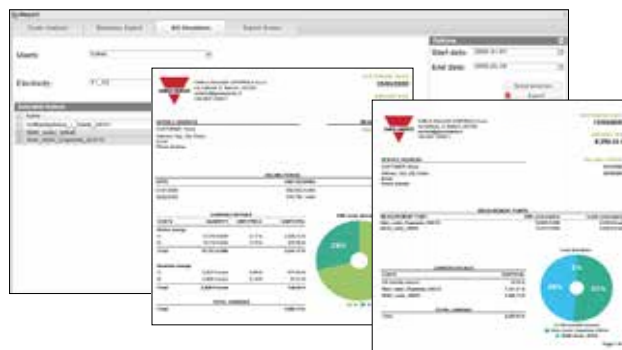
Report
- Calendar and tariff settings for cost calculation
- Multiple contracts management for cost simulation
- Excel reports with Pivot table for analysing consumptions and energy cost over a time interval
- Configurable report in PDF format for billing simulation

Overview

Energy management

CT for cable or bus-bar	CT for cable or bus-bar	CT for cable or bus-bar	CT for cable	CTA for cable

CTD 1X/2X/3X/4X

- For cable or bus-bar
- Cable: Ø23 mm to Ø51 mm
- Bar: 20x5 mm to 64x20 mm or 51x43 mm
- Sealable terminal covers
- Primaries from 50 A to 1600 A
- Secondary: 5 A (standard) 1 A (available upon request)
- EN61869-2
- CE, cURus

CTD 5S/6S

- Split-core for cable or bus-bar
- Cable: Ø26 mm to Ø50 mm
- Bar: 26x32 mm, 50x52 mm
- Sealable terminal covers
- Primaries from 100 A to 1000 A
- Secondary: 5 A (standard) 1 A (available upon request)
- EN61869-2
- CE, cURus

CTD 8/9/10/11 S, V, H, Q

- Solid or split-core for cable or bus-bar
- Bar: 31x81 mm (vertical), 81x31 mm (horizontal) to 38x127 mm
- Sealable terminal covers
- Primaries 150 A to 3200 A
- Secondary: 5 A (standard) 1 A (available upon request)
- EN61869-2
- CE, cURus

CTV 1X/2X/3X/ 4X/6X/8X

- Split-core current sensor for cable
- Cable: Ø9.5 mm to 35,5 mm
- Bar: 50x90 mm (CTV-8X)
- Primaries from 60 A to 800 A
- Secondary: 0.333 VAC
- CE, cURus

CTA 5X/6X

- Split-core current sensor for cable
- Cable: Ø24 mm to 36 mm
- Primaries from 100 A to 600 A
- Secondary: 5 AAC
- CE, cURus

3-phase power analyzers	3-phase power analyzers	3-phase power quality analyzers	3-phase branch circuit power analyzers

WM15

- Dimensions: 96 x 96 mm
- Installation: panel mounting
- Power analyzers, metering from external inputs, THD measurement.
- Measurement of voltage, current, power, power factor and frequency.
- Bi-directional energy metering on 10-digit counters, cl. B (EN50470-3)
- Voltage inputs: 230, 400, 480 or 600 V_{LL}
- Current inputs: 5 A
- Auxiliary or self-power supply
- RS485 Modbus RTU, and pulse outputs
- Sealable terminal covers
- CE, MID (PF), cULus

WM20

- Dimensions: 96 x 96 mm
- Installation: panel mounting
- Accuracy 0.2% (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- Modular housing to build the instrument according to the real application needs
- Modbus and BACnet (both RS485 or Ethernet), and Profibus DPV0 communication port available
- Configuration software (PC or Android app)
- cULus

WM30 / WM40

- Dimensions: 96 x 96 mm
- Installation: panel mounting
- Accuracy 0.2% (voltage, current)
- Universal power supply
- Front protection degree IP65, NEMA4X, NEMA12
- Modular housing to build the instrument according to the real application needs
- Modbus and BACnet (both RS485 or Ethernet), Profibus DPV0 communication port available
- 16-alarm PLC logic and digital inputs for utility metering (WM40)
- Built-in datalogger for instantaneous variables, dmd profiles and events (WM40)
- Configuration software (PC or Android app)
- cULus, Solar California listed

WM50 and TCD12

- Dimensions: 96 x 96 mm
- Installation: panel mounting
- Up to 96 channels, 32 A, 65 A max (8x TCD12)
- Accuracy 0.2% (voltage, main current), 0.5% (branch currents)
- Modbus communication port available (RS485 or Ethernet)
- Up to 6 digital outputs (static or relay) and 6 digital inputs or temperature and analogue input
- 96 channel alarms, freely settable set point for load monitoring
- Built-in datalogger for variables/events
- Configuration software (PC or Android app)
- cULus

Energy management

1-phase energy meters for 32A	1-phase energy analyzers	3-phase energy analyzers	3-phase energy analyzers

EM110

- Dimensions: 1 DIN module
- Installation: DIN-rail
- Electromechanical totalizer
- Bi-directional energy metering, 7 digits cl. B (EN50470)
- Measuring inputs: 115/230 VAC, 32 A (max 45 A)
- Self-powered
- Pulse output
- Sealable terminal covers
- CE, MID (PFB), cULus (115 V)

EM111 / EM112

- Dimensions: 1 DIN module
- Installation: DIN-rail
- 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 (EM111), 100 A (EM112)
- Self-powered
- Dual tariff management
- Pulse output or RS485 Modbus or M-Bus port
- Sealable terminal covers
- CE, MID (PFA and PFB), cULus (115 V)

EM330

- Dimensions: 3 DIN modules
- Installation: DIN-rail
- Backlit touch LCD
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering, 3x 8-digit, cl. B (EN50470)
- Measuring inputs: 400 to 480 V_{LL} AC, 5(6) A current input via current transformer
- Auxiliary power supply
- Dual tariff management
- Pulse output or RS485 Modbus or M-Bus port
- Sealable terminal covers
- CE, MID (PFA and PFB), cULus

EM340

- Dimensions: 3 DIN modules
- Installation: DIN-rail
- Backlit touch LCD
- Measurement of voltage, current, power, power factor and frequency
- Bi-directional energy metering, 3x 8-digit, cl. B (EN50470)
- Measuring inputs: 208 to 400 V_{LL} AC, 65 A
- Self-powered
- Dual tariff management
- Pulse output or RS485 Modbus or M-Bus port
- Sealable terminal covers
- CE, MID (PFA and PFB)

1 and 3-phase energy transducers	Communication interface OptoProg	3-phase power transducers	3-phase energy analyzers

ET112 / ET330 / ET340

- Dimensions: 2 DIN (ET112); 3 DIN (ET330, ET340) modules
- Installation: DIN-rail
- 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 (ET112); 208 to 400 V_{LL} AC, 5(6) A current input via current transformer (ET330); 65 A (ET340);
- Self-powered
- RS485 Modbus port (screw, 2x RJ45)
- Optical port
- Sealable terminal covers
- CE

OptoProg

- Bluetooth and USB interface for meters and analysers with optical port
- Compatible with WM15, WM20, WM30, WM40, WM50 and ET100, ET300 families
- Compatible with UCS PC software and UCS Mobile Android APP
- Battery powered
- CE, FCC, IC, Bluetooth

CPT DIN

- Dimensions: 45 x 83.5 x 98.5 mm
- Installation: DIN-rail
- Programmable one-, two- and three-phase measurement transducer
- Measurement of voltage, current, power, power factor, frequency and energy
- Energy metering, 9 digits
- Measuring inputs 3 x 230(400) VAC, 5 A
- Power supply: 18-60 or 90-260 VDC/AC
- Outputs: 3 analogue 20 mA, or 3 10 VDC, 2 relays for alarms
- RS485 Modbus RTU
- CE, cURus, CSA

EM24

- Dimensions: 4 DIN modules
- Installation: DIN-rail
- Meter for energy from CT 5 A or for direct energy 65 A. External pulse counting
- Measurement of voltage, current, power, power factor and frequency. Metering from external sources and 4-tariff management
- Bi-directional energy metering on 2 8-digit counters, cl. B (EN50470-3)
- Voltage inputs: 3x230(400)VAC
- Current inputs: 5 A, 65 A
- 115-230 VAC or self-powered
- 3 inputs for external dimension counting (IS)
- Pulse or relay output; RS485 (Modbus RTU), Ethernet (Modbus TCP), M-Bus (wired and wireless)
- Sealable terminal covers
- CE, MID (PF), cULus (5 A and Ethernet ver.)

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Illustrations are for example only.

Energy management

Quick-fit 3-phase energy analyzers	3-phase CT for EM270 for cable or bus-bar	Multiple miniature split-core current sensor for EM271	Multiple current transformer block for EM280

EM270 / EM271 / EM280

- Dimensions: 4 DIN modules or 72x72 mm
- Installation: DIN-rail or panel mounting
- Two 3-phase energy analyzers with sum function
- Current measurement by triple CT, solid core (EM270), split-core (EM271) with RJ plug, 6 transformers block (EM280)
- Quick installation through RJ connectors
- Automatic recognition of CT ratios
- Measurement of voltage, current, power, power factor and frequency
- Active energy: Equivalent to Class 1 (EN62053-21)
- Inputs: 3x230(440)VAC, current range according to the TCD accessories
- Outputs: 2 pulse (loads 1 and 2)
- RS485 Modbus RTU
- CE, cULus

TCD 1X/TCD 2X/TCD 3X

- Equivalent to class 0.5 (current) of IEC61869-2
- Dimensions (LxHxP): TCD-1X: 74.84x72x66.80 mm TCD-2X: 105x72x50 mm TCD-3X: 135x78x50 mm
- Bus-bar sizes: TCD-1X: 15.90x30.48 mm TCD-2X: 21.26x25.26 mm TCD-3X: 31.25x31.25 mm
- Centre-to-centre distance: TCD-1X: 25 mm TCD-2X: 35 mm TCD-3X: 45 mm
- Primary: TCD-1X: 160 A TCD-2X: 250 A TCD-3X: 630 A
- CE, UL (with EM270)

TCD M

- Equivalent to class 1 (currents) of IEC61869-2
- Primary: 60 A (TCDOM), 100 A (TCD1M), 200 A (TCD2M), 400 A (TCD3M)
- Hole size: 9.6 mm (TCDOM), 15.5 mm (TCD1M), 15.5 mm (TCD2M), 20.5 mm (TCD3M)
- Cable length: 1.8 m (TCDOM), 1.5 m (TCD1M and TCD2M), 2.0 m (TCD3M)
- Auto-detection of the primary current rated value by the EM271 energy meter
- TCD M head for wall and DIN-rail mounting
- Umbilical connection (80 cm) from TCD M head to EM271 energy meter through RJ11
- CE, UL (with EM271)

TCD06 BX / TCD06 BS

- Equivalent to class 0.5 (BX) and class 1 (BS) (current) of IEC61869-2
- Solid core (BX) or split core (BS)
- Primary current: 32 A
- Hole size: 7 mm (BX) or 8.5 mm (BS)
- Hole centre distance: 17.5 mm
- RJ11 cable length: 80, 150 or 200 cm
- Auto-detection of the primary current rated value by the EM280 energy meter
- CE, UL (with EM280)

3-phase energy analyzers for 5A, CTV or ROG 4K	Rogowski coil for EM210	Contactless power analyzers	Contactless power analyzers

EM210

- Dimensions: 4 DIN modules or 72x72 mm
- Installation: DIN-rail or panel mounting
- 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 0.333 V from CTV-xx sensors (MV version) or ROG4K coils (MV version)
- Self-power supply
- Pulse output 1, RS485 Modbus RTU, high speed (up to115 kbps)
- Sealable terminal covers
- CE, cULus, MID (AV and PF version)
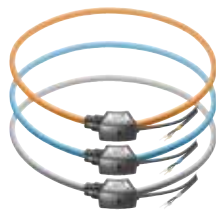
ROG 4X

- Flexible current sensor (Rogowski coil) for EM210 (MV version)
- Primary current from 20 to 4000 A
- Secondary output 100 mV/kA
- Extended accuracy range ± 1%
- External coil diameter from 90 mm to 290 mm
- Coil thickness: 8.5 mm
- User-friendly and safe coil closing system
- Direct connection to EM210 MV energy analyzer
- No power supply or external integrator required
- Coloured label on the cable for error-free connection check
- CE, cURus

CPA050

- Dimensions: 99x89x30 mm (without connectors)
- Installation: DIN-rail and panel mounting
- 1-phase AC (from 1 to 400 Hz) or DC
- Power supply from 9 to 30 VDC
- Contactless Hall effect sensing for current ø 15 mm hole,
- True RMS AC and DC monitoring
- Voltage range: 800 VAC, 1000 VDC
- Current range: 50 AAC, 50 ADC

CPA300

- Dimensions: 99x89x30 mm (without connectors)
- Installation: DIN-rail and panel mounting
- 1-phase AC (from 1 to 400 Hz) or DC
- Power supply from 9 to 30 VDC
- Contactless Hall effect sensing for current: ø 33 mm hole)
- True RMS AC and DC monitoring
- Voltage range: 800 VAC, 1000 VDC
- Current range: 300 AAC, 400 ADC

Energy management

Monitoring gateway and controller	USB Modem connection module	Long range endpoint adapter	Long range wireless gateway

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
- Huge ecosystem of compatible meters, sensors, actuators
- Flexible control functions
- Energy efficiency monitoring
- Building automation control
- Car parking guidance
- MAIA Cloud VPN for secure remote access
- Security capabilities verified by UL

SH2 DSP24

- Dimensions: 2-DIN modules
- USB port to supply dongle modems
- Compatible with a wide range of USB Modems
- Watchdog features to prevent common mobile network glitches
- 24 VDC supplied

UWP A

- 2-DIN modules
- Long range wireless, LoRaWAN®
- EU868 and US915 ISM Bands
- Power supply 24 VDC, 115-240 VAC
- CE, LoRaWAN Certified[Cm]
- Converts RS485 meters into IoT devices
- Compatible with most Carlo Gavazzi meters and analyzers
- Plug and play commissioning via UCS Software
- Up to 50 UWP A each UWP M
- Up to 10 km wireless communication distance in open air
- High performance antenna included

UWP M

- 2-DIN modules
- EU868 and US915 ISM Bands
- Power supply 24 VDC, 115-240 VAC
- Works in combination with the UWP 3.0 monitoring controller
- Up to 3 UWP-M for each UWP 3.0
- Up to 50 UWP-A endpoints for each UWP-M
- Plug and play set-up via UWP 3.0 Software Tool
- Up to 10 km wireless communication distance in open air
- High performance antenna included
- No need of any SIM cards

Cloud solution for multi-site monitoring	M-Bus and wireless M-Bus concentrators	Quick-fit 3-phase energy transducer	Pulse counter concentrator + extension

Em² Server

- Software for energy data management
- Multi-site monitoring management
- Flexible and scalable architecture
- VMware® technology compatibility
- Load profile management
- Data analysis and benchmark
- Data and event logging
- Customizable graphical synoptic
- Configurable reports in PDF or Excel formats
- Tariffs and contract management
- Alarms management
- Database replication from up to 100 VMU-C EM or UWP 3.0

SIU MBM-01 / SIU MBM-02

- Dimensions 95 x 71 x 60 mm DIN-rail housing
- SIU MBM-01: M-Bus input
  SIU MBM-02: M-Bus and wireless M-Bus input
- MODBUS TCP/IP output
- Power supply from 15 to 21 VAC, from 18 to 35 VDC
- Ethernet port
- MBUS and Wireless M-Bus scan feature
- SIU MBM-01: up to 20 M-Bus connectable devices
- SIU MBM-02: up to 20 M-Bus connectable devices and 32 wireless M-Bus devices
- SIU-MBM-01-160: up to 160 M-Bus connectable devices
- Set-up by UCS software

ET272 + VMU C EM

- Dimensions: 4 DIN modules
- Installation: DIN-rail mounting
- Two 3-phase energy transducers in one
- Current measurement by split-core with RJ plug
- Quick installation through RJ connectors
- Automatic recognition of CT ratios
- Measurement of voltage, current, power, power factor and frequency
- Energy metering, cl. 1
- Inputs: 3 x 230 (440) VAC, current range according to the TCD accessories
- Outputs: 2 pulse (loads 1 and 2)
- RS485 Modbus RTU
- Self addressing function by means of VMU C EM
- CE, cULus

VMU MC / VMU OC

- Dimensions 1 DIN modules
- VMU MC: 2 SO input (pulse counting or ON/OFF monitoring)
  VMU OC: 3 SO input (pulse counting or ON/OFF monitoring)
- VMU MC: MODBUS output
  VMU OC: local bus connection to VMU-MC
- VMU MC: 24 VDC power supply
  VMU OC: local bus power supply
- VMU MC: LCD display
- VMU MC: modular solution (from 2 to 11 SO inputs)
  VMU OC: extension module for VMU-MC
- Configuration by UCS Software
- Compatible with Utility meters with SO output

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 Juárez, EDOMEX CP 53100
Tel & Fax: +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

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Automation Components

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