

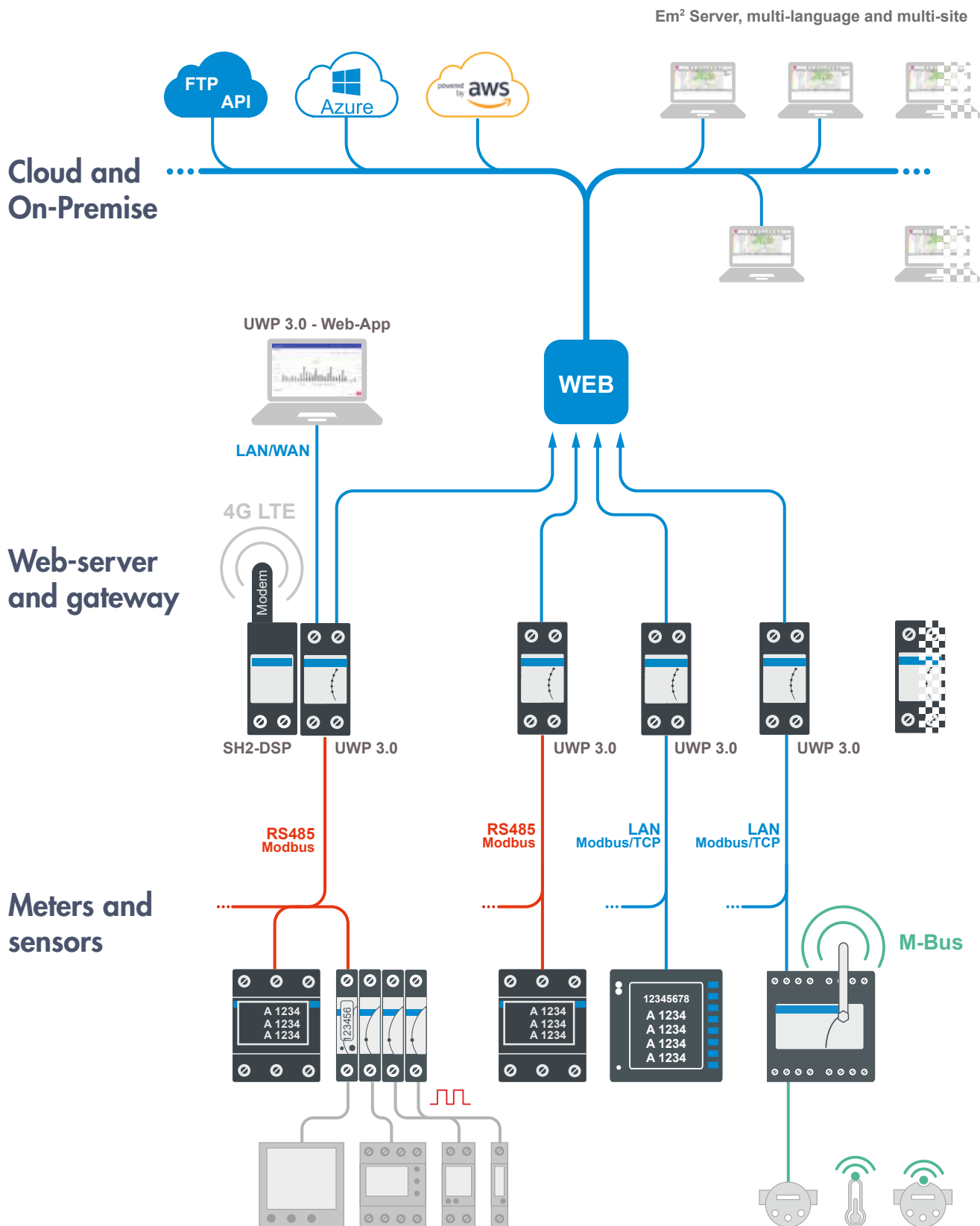


Overview

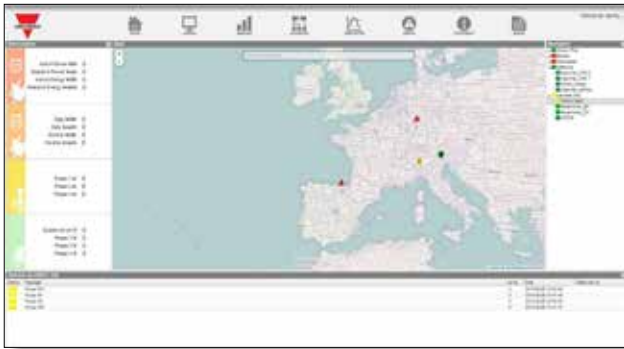
Energy management

Overview

Diagrams



Em² Server: Cloud solution for multi-site monitoring



Home page

- Integrated MAP view
- Hierarchical tree to navigate data with ease
- Movable and resizable views fitting the needs of a control room



Monitoring and analysis tool

- Historical data analysis tools
- Graphical monitoring features
- Comprehensive data exporting tools (standard XLS format)



Login page

- Multilingual web based user interface
- User rights management
- Concurrent data access from multiple locations



Synoptics tool

- User defined background
- Active iconized energy meters showing real time variables and status
- Multiple synoptic views may be created



Load profile tool

- Load profile statistical analysis based on actual data
- Profiles may be exported as Excel files or represented as charts
- Calculation of average, median, maximum and statistical confidence range

Overview

Energy management

| Wound primary CT | CT for cable or bus-bar | CT for cable or bus-bar | CT for cable or bus-bar | CT for cable |
|------------------|-------------------------|-------------------------|-------------------------|--------------|
|------------------|-------------------------|-------------------------|-------------------------|--------------|



TADK/TADK 2

- Wound primary
- Primaries: 1 A to 40 A (TADK)
1 A to 250 A (TADK 2)
- Secondary: 5 A (standard)
1 A (available upon request)
- Sealable terminal covers
- CE



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 4000 A
- Secondary: 5 A (standard)
1 A (available upon request)
- EN61869-2
- CE, cURus



CTV 1X/2X/3X/4X

- Split-core current sensor for cable
- Cable: Ø9.6 mm to 20 mm
- Primaries from 60 A to 400 A
- Secondary: 0.333 VAC
- CE, cURus

| 3-phase power analyzers | 3-phase power quality analyzers | 3-phase branch circuit power analyzers | Communication interface OptoProg |
|-------------------------|---------------------------------|--|----------------------------------|
|-------------------------|---------------------------------|--|----------------------------------|



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 DPVO 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 DPVO, and EtherNet/IP 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 and events
- Configuration software (PC or Android app)
- cULus



OptoProg

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

Energy management

1-phase energy meters for 32A



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)

1-phase energy analyzers for 32A



EM111

- 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 (max 45 A)
- 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)

1-phase energy analyzers up to 100A



EM112

- Dimensions: 2 DIN modules
- Installation: DIN-rail
- Backlit touch LCD
- Display backup by supercapacitor
- 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
- 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)

3-phase energy analyzers for current via 5A CT



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

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



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



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

3-phase energy analyzers



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 power supply or self-powered
- 3 inputs for external dimension counting (IS)
- Pulse or relay output: RS485 (Modbus RTU), Ethernet (Modbus TCP), M-Bus
- Sealable terminal covers
- CE, MID (PF), cULus (5 A and Ethernet ver.)

3-phase energy analyzers



EM26

- Dimensions: 96 x 96 mm
- Installation: panel mounting
- Energy meter, metering from external inputs, THD measurement.
- 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 or 3x100(400)V
- Current inputs: 5 A
- Power supply 90-260 VDC/AC
- 3 inputs for external dimension counting (IS)
- RS485 Modbus RTU, pulse or relay
- Sealable terminal covers
- CE, MID (PF), cULus

Energy management

Quick-fit 3-phase energy analyzers



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
- Energy metering, cl. 1.
- Inputs: 3x230(440)VAC, current range according to the TCD accessories
- Outputs: 2 pulse (loads 1 and 2)
- RS485 Modbus RTU
- CE, cULus

3-phase CT for EM270 for cable or bus-bar



TCD 1X/TCD 2X/TCD 3X

- 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)

Multiple miniature split-core current sensor for EM271



TCD M

- Equivalent to Class 1 (currents) of IEC61869-2
- Primary: 60 A (TCD0M), 100 A (TCD1M), 200 A (TCD2M), 400 A (TCD3M)
- Hole size: 9.6 mm (TCD0M), 15.5 mm (TCD1M), 15.5 mm (TCD2M), 20.5 mm (TCD3M)
- Cable length: 1.8 m (TCD0M), 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)

Multiple current transformer block for EM280



TCD06 BX / TCD06 BS

- Equivalent to Class 0.5 (BX) and 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



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 to 115 kbps)
- Sealable terminal covers
- CE, cULus

Rogowski coil for EM210



ROG 4K

- Flexible current sensor (Rogowski coil) for EM210 (MV version)
- Primary current from 20 to 4000 A
- Extended accuracy range $\pm 1\%$
- Internal diameter from 115 mm to 275 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

3-phase multi function meters



WM12 DIN / WM14 DIN WM12 96 / WM14 96

- Dimensions: 6 DIN modules or 96x96 mm
- Installation: DIN-rail or panel mounting
- 3 red LED displays
- Measurement of voltage, current, power, power factor and frequency, energy (WM14)
- Energy metering, 9 digits, cl. 2
- Measuring inputs: 230 VAC, 5 A
- Power supply: 90-260 VDC/AC
- Pulse or relay outputs
- RS485 Modbus
- CE, cULus

3-phase power transducers



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

Energy management

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
- Huge ecosystem of compatible meters, sensors, actuators
- Flexible control functions
- Energy efficiency monitoring
- Building automation control
- Car parking guidance

USB dongle connection modules



SH2 DSP24

- Dimensions: 2-DIN modules
- USB port to supply dongle modems
- Support for Wi-Fi USB key
- Watchdog features to prevent common mobile network glitches
- 24 VDC supplied

Pulse counter concentrator + extension



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

Cloud solution for multi-site monitoring



Em² Server

- Virtual machine 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
- 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

Contactless power analyzers



CPA050 / CPA300

- CPA050 63x46x25 mm (without connectors)
- CPA300 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 (CPA050: ø 15 mm hole, CPA300: ø 33 mm hole)
- True RMS AC and DC monitoring
- Voltage range: 800 VAC, 1000 VDC
- Current range: CPA050: 50 AAC, 50 ADC
- CPA300: 300 AAC, 400 ADC

Pulse counter with wireless M-Bus output



SIU MBC

- Dimensions 105 x 27 x 60 mm
- DIN-rail housing
- Pulse counter (2 pulse inputs)
- Wireless M-Bus output
- Battery power supply
- Indoor or outdoor installation (IP67)
- 12 years battery lifetime
- Compatible with SIU-MBM-02 concentrator
- Wireless M-Bus T1 mode, 868 MHz

M-Bus and wireless M-Bus concentrators



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
- Set-up by UCS software

Quick-fit 3-phase energy transducer



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

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 Hadstensevej 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-20020 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
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

DENMARK

Carlo Gavazzi Industri A/S
Hadsten

MALTA

Carlo Gavazzi Ltd
Zejtun

ITALY

Carlo Gavazzi Controls SpA
Belluno

LITHUANIA

Uab Carlo Gavazzi Industri Kaunas
Kaunas

CHINA

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

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

