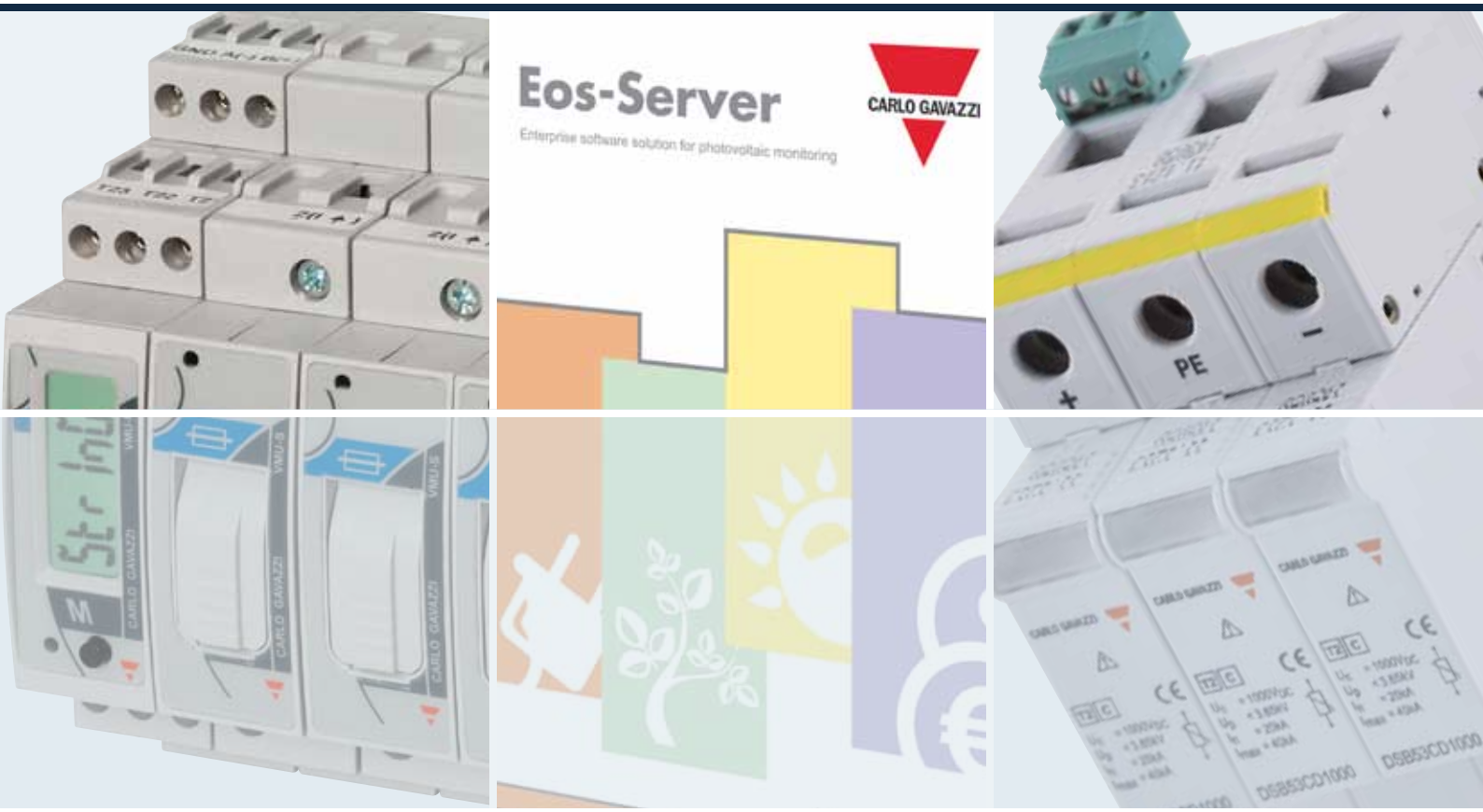
CARLO GAVAZZI
Automation Components

CARLO GAVAZZI

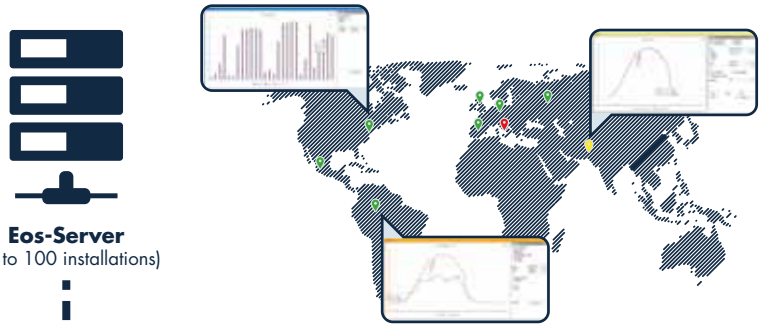


Overview

PV monitoring

PV monitoring diagram

SOFTWARE Eos-Server - PV multisites management



Eos-Server
(up to 100 installations)

Web server

Multiple users

Consumption monitoring

Alarms control

VMU-Y PV
Embedded data aggregator
(up to 10 installations)

Internet and/or Ethernet

Recording and analysis

Eos-Web

Embedded web server

SMS (3G modem) **/ e-mail**

FTP

HTTP-API

Free integration with other SCADA photovoltaics

Measurement and control

Main AC meter

String box
(DC monitoring)

Digital inputs and outputs
(contact actuator and overvoltage)

Environmental variables

Energy measurement
(V, kW and kWh)

Monitoring of Modbus devices and inverters

Environmental variables
(Temperature, irradiance and wind speed)

Overview

PV monitoring

Web server and datalogger

VMU-C PV (Eos-Web)

- Dimensions: 2 DIN modules
- Micro PC with web server and web service capability
- Data and event logging capability
- Internal 4GB memory and 16GB SDHC card back-up memory (on request)
- 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 11 Eos-Array, 11 inverters and 11 energy meters

MAIN FEATURES

- Efficiency calculation and control on different levels: string, BOS and Performance ratio and Yield indices
- Alarms control with automatic e-mailing and SMS management by means of VMU-D

Embedded aggregation server

VMU-Y PV

- 2-DIN size; DIN-rail mounting
- Multi-site PV monitoring management
- Power supply from 24 VDC (+/- 20%)
- 2 USB ports (for data backup and connection backup)
- 1 SD port (for backup)
- UL approved

MAIN FEATURES

- Photovoltaic plant/portfolio management
- Data analysis and benchmark
- Data and event logging
- Data aggregation in plants and virtual plants
- All data exported in format compatible with Excel or other spread sheets
- Alarms management
- Database replication up to 10 VMU-C PV

Cloud multi-site aggregation server

Eos-Server

- Software solution for photovoltaic plant management
- Multi-site PV monitoring management
- Flexible and scalable architecture
- Vmware® Technology compatibility - inhouse or cloud installation

MAIN FEATURES

- Photovoltaic plant/portfolio management
- Data analysis and benchmark
- Data and event logging
- Data aggregation in plants and virtual plants
- All data exported in format compatible with Excel or other spread sheets
- Alarms management
- Database replication up to 100 VMU-C PV

Solar monitoring solution

Eos-Array / Eos-Array Lite

- Modular local monitoring system for PV plant
- Up to 16 DIN module configuration
- Eos-ArraySoft, freeware configuration software
- Eos-Array can manage in addition to VMU-M unit up to: 1 VMU-P, up to 15 VMU-S and up to 7 VMU-O for a total of maximum 15 units

MAIN FEATURES

- The Eos-Array solution can be composed of: VMU-M, the master unit and data logger; VMU-S, the string controller; VMU-P, the environment variable unit and VMU-O, the I/O unit
- Eos-Array Lite is the answer to those photovoltaic applications where a less sophisticated monitoring solution is needed

USB dongle connection modules

VMU-D

- Dimensions: 2 DIN modules
- Compatible with Carlo Gavazzi approved 3G/4G USB modems
- Power supply 24 VDC (+/- 20%)
- Suitable for use with VMU-C and VMU-Y

MAIN FEATURES

- 3G or 4G Mobile Internet connectivity
- SMS alerting
- SMS commands

PV monitoring

Surge arresters

DSB / DSF

- Dimensions: 90 x 36 x 72 mm
- Class II
- Available for PV and AC installations
- Models for communication lines
- Optional remote monitoring
- For DIN rail mounting

MAIN FEATURES
- NO backup fuse required
- Appr. Acc. to IEC61643-11 and UTE C61-740-51
- Complies with prEN50539-11

Surge arresters

DSC

- Dimensions: 90 x 72 x 70 mm
- Class I and II
- Protective element: High Energy MOV
- High surge discharge rating: Iimp = 12.5 kA per pole
- Housing: compact design

MAIN FEATURES
- Specifically designed for PV installations with or without LPS (Lightning Protection System)
- Location of use: photovoltaic system - PV module side

Surge arresters

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

Switching power supply

SPM3

- DIN rail housing
- Universal input 90-264 VAC / 120- 370 VDC
- Single phase and battery charger versions available
- Approvals/Marks: UL, cUL listed and TÜV/CE approvedE

MAIN FEATURES
- Operating temperature w/o derating -25°C to +60°C
- Short circuit and Overload protection
- High efficiency (up to 89%)

DIN rail DC/DC converter

DCC 24151K-D

- DIN rail mounting
- Ultra wide input: 100 ~ 1000 VDC
- 24VDC output 15W
- High efficiency up to 80%
- Wide temperature range -40 to +70° C
- Output over voltage and short circuit protection
- Reverse input protection

MAIN FEATURES
- Widely used in Photovoltaic power generation with high voltage inverters
- It provides stable operating voltage to low voltage DC equipment

3-phase energy analysers

EM24 DIN

- Dimensions: 4 DIN modules
- 3-phase energy analyser with direct connection
- Current input for direct connection up to 65A or external CT connection
- Class 1 (kWh) acc. to EN62053-1
- Pulse open collector output
- Modbus communication port

MAIN FEATURES
- Direct or external CT measurement in a very compact housing to save space
- Suitable for measuring generated and consumed energy
- MID Annex D certification available

PV monitoring

Irradiation sensors

Pyranometers

PVS-1

- Dimensions: 57 x 48 x 15 mm (not including clamp)
- Sensor type: crystalline silicon cell
- No need for external power supply (self-powered)
- Long lasting 3% accuracy, thanks to a special antiageing treatment
- Calibration process according to IEC 60904-2 and 60904-4
- Two available versions: 4-20 mA output / 0-80 mV output

MAIN FEATURES

- Long life rugged aluminium case
- UV resistant resin encapsulation
- Fast installation, thanks to the clamping system designed to easily fit the photovoltaic module's frame

PVS-2A

- Dimensions: 162 x 215 x 40 mm (not including clamp)
- 2nd class thermopile pyranometer
- 4-20 mA output for reliable connections
- Calibration certificate according to ISO 9847

MAIN FEATURES

- Compact and rugged IP67 aluminium case
- Compliant with WMO (World Meteorological Organization) for environmental monitoring
- Compliant with ISO9060 and IEC17025 for photovoltaic monitoring

Temperature sensors

Anemometers

TEMPSOL / IKE20001K

- Temperature Pt100 or Pt1000 (TEMPSOL)
- Temperature Pt1000 (IKE20001K)
- ±0.3°C connection type
- 2 wire connection type

MAIN FEATURES

- Specifically design to measure the temperature of PV panels (TEMPSOL)
- For air temperature measurement in PV plants (IKE20001k)

DWS-V

- Opto-electronic detection
- Rotor diameter: 145 mm
- Rotor: black painted stainless steel
- PNP & NPN open collector output in one unit
- Measuring range 2 to 30 m/s
- Current source output 10 to 28 VDC supply

MAIN FEATURES

- All inputs and outputs are protected against reverse polarity and transients
- Dust sealed stainless steel ball bearing