

This folder is an overview of the features of VMU-C Web Server for Energy Management. For detailed instructions, please download the relevant manual from the web site <http://www.productselection.net/>. All the logged information can also be automatically transmitted via e-mail or via FTP server, available as standard in the VMU-C unit. The alarms can be automatically notified via e-mail or via SMS (in case of VMU-W modem installed).

To access the user interface the first time, a direct Ethernet connection between the VMU-C and the user's PC is needed. After having configured the VMU-C's network parameters, further TCP/IP connections will be possible according to the chosen options.

Main page that allows the access to the VMU-C functions (default IP address: 192.168.1.110 User ID: admin Password: admin). 3 levels of access are available: 1) Free access (the password is not required), 2) USER access: all the function icons are available except "Setting" and "Account" icons. 3) ADMINISTRATOR access: all the function icons are available.

Note: it is possible to access the system with a PC to VMU-C connection by means of a USB/mini-USB cable by following this procedure: (a) connect a USB Pen-drive to the USB port and wait until the front blue USB LED will stop blinking; (b) disconnect the USB Pen-drive to the PC and install the driver from the folder "DriverWin\_USB\_Eth"; (c) connect a USB/mini-USB cable from PC to VMU-C; (d) access the VMU-C using the IP address: 192.168.254.254.

**1 HOME PAGE:** it allows the graphic displaying of the energy consumption of the whole installation. The data can be acquired from the main meter or show a virtual meter, which is the sum of defined sub-meters. The trend of the current day/week/month is in red colour and compared with the previous (working or non-working) day/week/month. 4 areas are always available to display the instantaneous data of the main meter: A, red frame, power and energy data; B, green frame, phase currents; C and D, orange frames, phase to phase and phase to neutral voltages. A warning box (E) also displays the presence of any anomaly or alarm in the plant. A further (blue) box allows the log out and shows current date and hour.

**2 MONITOR:** it displays the logged instantaneous variables relevant to the main meter, on daily, monthly or annual basis. It also allows the displaying of analogue and environmental variables acquired by the VMU module directly connected to VMU-C, on daily, monthly or annual basis.

**3 PLANT:** it allows to display, on daily, monthly or annual basis: 3a: the energy and power data relevant to each single energy meter; it is possible to display all the meters data in the same graph (when the meters are max 6); 3b: the utility meters (e.g. gas, water) provided by the energy meter digital inputs; 3c: the instantaneous variables of each single energy meter. To have a fast updating or to save bandwidth, it is possible to select the data refresh time among 5, 10, 30 and 60 seconds; 3d: the analogue and environmental variables acquired by the VMU module connected to VMU-C via COM1.

**4 ALARMS:** it allows the displaying of the warnings or alarms occurred in the plant. There are 3 different categories: events (any changes occurred to the monitoring system), anomalies (problems occurred to the monitoring system), alarms (problems occurred to the monitored plant).

**5 ECONOMY:** it allows to estimate the monthly cost of the energy in the monitored plant, based on a dual tariff system with fixed costs, active and reactive energy variable costs, and monthly penalties due to exceeding the contractual power. The information can be graphically displayed on monthly or annual basis.

**6 INFORMATION:** it allows the display of the tab containing the plant characteristics.

**7 EXPORT:** it allows to export all the data logged in csv format, excel-compatible. The exported file can be relevant to a selected period of 7 days, or to a selected month or year. Data relevant to alarms, to one of the energy meters (average, minimum or maximum data within the logged period), to the temperature inputs, to the analogue inputs, or to the pulse rate inputs can be selected and exported.

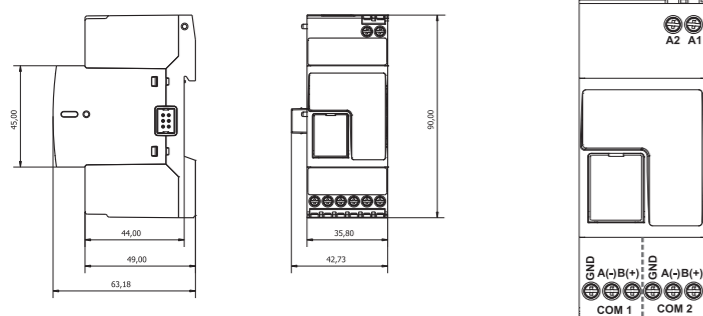
**8 CONFIGURATION:** it allows to access the system configuration menu. The configuration is divided in 3 main menus: - SYSTEM allows to set the plant information and description, the LAN setting, the alarm configuration and automatic e-mailing, mail server configuration, language, upload a new firmware, reset or restart the unit, etc.

- PLANT allows to set the plant monitoring system: the COM parameters, the VMU-C and relevant modules configuration, the energy meter drivers, labels, etc., the remote VMU modules.

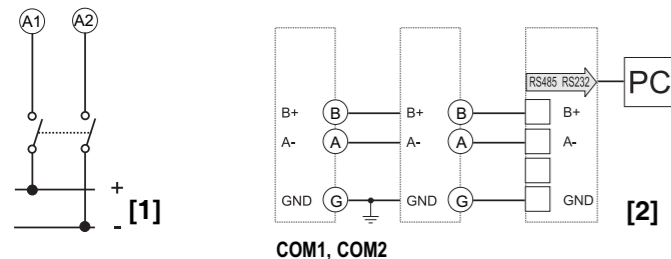
- OTHER VARIABLES allows to set and label the analogue and environmental inputs of the monitoring system: temperature, analogue and pulse rate inputs of the VMU-P and VMU-O remote modules.

**9 ACCOUNT:** it provides access to the Account Management section (available only for Administrators users).

VMU-C EM



COM1 → VMU modules (M, P, O)  
COM2 → Energy Meters and power analysers.



■ **LED:** • Power ON (Green), Steady ON: power supply is on; Blinking: writing cycle on micro SD card. • Bus (internal) (Yellow), Steady OFF: no communication; blinking: regular communication, Steady ON: communication error. • COM1 (Yellow), Steady OFF: no communication; Slow blinking: no answer to Modbus request (time-out); Blinking: regular communication. • COM2 (Yellow), Steady OFF: no communication; Slow blinking: no answer to Modbus request (time-out); Blinking: regular communication. • USB (Bleu), Steady ON: acknowledged device, no writing in progress; Steady OFF: neither acknowledged device nor connected device; Blinking: acknowledged device and writing cycle in progress. • Alarm (Red), Steady on: alarm in progress; Steady OFF: no alarms.

Note: Rapid flashing: 200ms ON, 200ms OFF, 200ms ON, 200ms OFF. Slow flashing: 200ms ON, 600ms OFF.

■ **WIRING DIAGRAMS.** [1] Power Supply. [2] COM1 (to VMU modules) and COM2 (to energy meters and power analysers) connections. NOTE: both COM ports are internally terminated with a resistance of 150Ω and polarized with two 511Ω resistors each (from + B to +5 V and A to GND). It is therefore not needed any other external connection. [3] Ethernet port and USB Host connections. [4] Micro SD memory slot and USB port "Device".

■ **SAFETY PRECAUTIONS**



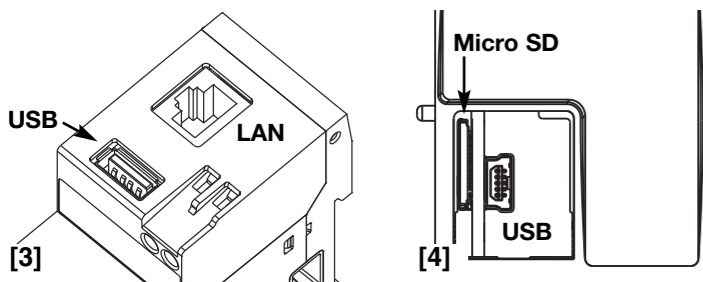
**Read carefully the instruction manual.** If the instrument is used in a manner not specified by the producer, the protection provided by the instrument may be impaired. **Maintenance:** make sure that the connections are correctly carried out in order to avoid any malfunctioning or damage to the instrument. To keep the instrument clean, use a slightly damp cloth; do not use any abrasives or solvents. We recommend to disconnect the instrument before cleaning it.

■ **TECHNICAL SPECIFICATIONS**

**Operating temperature** -25 to +55°C (-13°F to 131°F) (R.H. from 0 to < 90% non-condensing @ 40°C). **Storage temperature** -30 to +70°C (-22°F to 158°F) (R.H. < 90% non-condensing @ 40°C). **Over voltage category** Cat. III (IEC 60664, EN60664). For inputs from string: equivalent to Cat. I, reinforced insulation. **Dielectric strength** 4000 VAC RMS for 1 minute. **Noise rejection** CMRR 65 dB, 45 to 65 Hz. **EMC (Immunity)** According to EN61000-6-2. Electrostatic discharges EN61000-4-2: 8kV air discharge, 4kV contact; Immunity to irradiated. Electromagnetic fields EN61000-4-3 : 10V/m from 80 to 3000MHz; Immunity to Burst EN61000-4-4: 4kV on power lines, 2kV on single lines; Immunity to conducted disturbances EN61000-4-6: 10V from 150KHz to 80MHz; Surge EN61000-4-5: 500V on power supply; 4kV on string inputs. **EMC (Emission)** According to EN61000-6-3. Radio frequency suppression according to CISPR 22. **Standard compliance** safety IEC60664, IEC61010-1 EN60664, EN61010-1. **Approvals** CE, cULus Listed. **Housing** dimensions (WxHxD) 17.5 x 90 x 67 mm. Material noryl, self-extinguishing: UL 94 V-0. **Mounting** DIN-rail. **Protection degree** front IP40. Screw terminals IP20. Power supply: from 12 to 28VCC. Power consumption: ≤0.5W. **Connections:** Ethernet RJ-45 connector (10/100Base-T). USB: High speed USB 2.0. RS485: 3 screw terminals per port. Cable cross-section area 1.5 mm<sup>2</sup> max. Min./Max. screws tightening torque: 0.4 Nm / 0.8 Nm. Power supply: 2 screw terminals 1.5 mm<sup>2</sup> max. Min./Max. screws tightening torque: 0.4 Nm / 0.8 Nm.

**UL Note:** this product is intended to be supplied by a Listed Information Technology Equipment AC Adaptor marked NEC Class 2 or LP.

MAX ambient temperature: 40°C (104°F).



! Join or divide the modules (W-C-M-O-P) ONLY when they're NOT power supplied.