QEED
QUALITY ELECTRONIC DESIGN

WWW.QEED.IT

D.E.M. S.p.A.
WWW.DEM-IT.COM

POWER /ENERGY METER SINGLE PHASE
AC/DC TRMS - RS485 MODBUS

QI-POWER-485-300

MADE IN ITALY CE UKCA

POWER SUPPLY 9...30 Vdc, protection against polarity reversal and overtemperature.

ABSORPTION < 1,3 W

MEASUREMENT Irms, Vrms, Watt, Var, Va, Vpk, Ipk, Frequency, Cosφ, Energy bidirectional, THD, min e MAX of each measure

TYPE OF MEASURE **TRMS or DC**

RANGE
Current: up to 300 A AC/DC
Voltage: up to 800 VAC or 1000 VDC

ACCURACY @ 25°C up to 200Hz
Voltage, Current, Active Power: **< 0,5% F.S.**
Frequency: **± 0,1 Hz**
Energy: **± 1% of reading**
Vpeak, Ipeak: **± 5% F.S.**

OUTPUT **RS485 Modbus RTU**

BAUDRATE From 1.200 a 115.200 baud

CREST FACTOR 1,4 (on current measurement)

WORKING FREQUENCY DC or 1...400 Hz

SAMPLING RATE 11k samples per second

INPUT IMPEDENCE 1 Mohm ± 1%

STANDARDS UL EN IEC 61000-6-4:2019; EN IEC 61000-6-4:2019; EN IEC 61326-1:2021

OVERVOLTAGE CATEGORY Cat III up to 600V; Cat II up to 1000V

INSULATION
3 kV on bare wire for Current measure.
4 kV for Voltage measure (reinforced insulation to power supply and serial output)

PROTECTION INDEX IP20

TEMPERATURE COEFFICIENT < 200 ppm/°C

WORKING TEMPERATURE -15...+65°C

STORAGE TEMPERATURE -40°C... +85°C

HUMIDITY 10...90% not condensing

ALTITUDE Up to 2000 m s.l.m.

DIMENSIONS 89,1 x 99,25 x 28,5 mm (terminal excluded)

TERMINALS Removable terminals 3,5 mm, n°1 of 4 poles, n°2 of 2 poles

WEIGHT 370 g

FILLING Epoxy resin

BOX MATERIAL PBT, grey

LED N°1 yellow, power on fixed, data communication blinking

DIP-SWITCH 2 poles

MOUNTING
Screw predisposition for vertical/horizontal mounting, DIN rail clips (included) for vertical/horizontal mounting.

The **QI-POWER-485-300** is a Single-phase Power meter able to measure the TRMS AC/DC **current and voltage**. Internal Calibration certificate for each device available on request. Configuration software FACILE QI-POWER-485 for free. The device is fully configurable by RS485, DIN rail mounting.
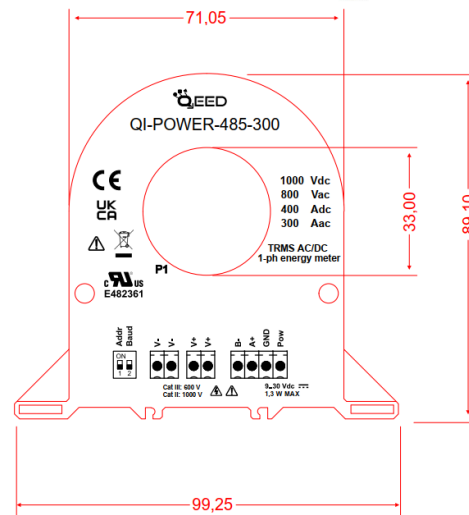
The images/schemes proposed are to be considered indicative and not binding

Suitable for measurements with **varying frequencies** (Wind, Hydro, Shipbuilding Industries, Aviation). Telecom applications, Refrigeration, Motors, OEM's application. Suitable for direct measurements **between inverter and motor.**

IEC 61010-1 COMPLIANT

ENGLISH

05 02 24

POWER /ENERGY METER SINGLE PHASE
AC/DC TRMS - RS485 MODBUS
QI-POWER-485-300

LEGEND OF SYMBOL ONTO PAD PRINTING

Symbol	Description
▣	It indicates that all the accessible parts of the object, are separated from the live parts by double or reinforced insulation
⚡	High Voltage warning
⚠	General warning
P1	Insertion of the cable

Rev. 02

INSTRUCTION MANUAL

QI-POWER-485-300

Using a serial link RS485 you can connect the QI-POWER-485-300 with the interface program FACILE QI-POWER-485. Using this software, allows you to set the Modbus address, baud rate, delay, the TV and TA ratio, modify the measuring filter type (from fastest response time to better accuracy) and the frequency measurement on current channel instead of voltage channel. You can download the FACILE QI-POWER-485 free of charge from our website https://qeed.it/en/software-drivers/.

Alternatively it is possible to program QI-POWER-485-300 via RS485 Modbus RTU accesing the **MODBUS Register Map** directly. (Available from the page of the product or from https://qeed.it/en/documents-manuals/).

MOUNTING:
the Power Meter QI-POWER-485-300 can be mounted (see photo on the right) horizontally or vertically using the screws or by means of the provided DIN rail clips.

REMARKS:
- Modbus connections: A+ and B- as per Modbus RTU standards
- Modbus Register reference: with reference to the logical address, for ex. 40010, corresponds to physical address n°9 as per Modbus RTU standard;
- Modbus functions supported: 3 (Read multiple registers, max 100), 6 (Write single), 16 (Write multiple);
- **Any changes made by dip-switch required to switch off the power supply or sending reset command.**

Energy storage data on flash memory: 4,5 years minimum, 45 years typical.
Measurement refresh: every 50 cycles or 1 second (the faster), programmable by FACILE.
Minimum value of Current / Power measured (cut off): configurable with FACILE[1] tool in range [0…10200 mA] / [0…10200 W][2] (see register map[3] - register 40013 - for more details).

1) Not allowed values entered with FACILE tool are automatically rounded to the closed lower admissible value
2) [0…2550 mA] / [0…2550 W] for products with FW prior to FW37
3) For FW prior FW37 refer to OLD_register_map, starting from FW37 refer to NEW_register_map

If you want to configure the device with FACILE set the dip-switches to 0 (down). In order to configure the device via RS485 directly, set "DIP 1" to 1 (up) then the adjust "DIP 2" for baudrate setting. Save the configuration using the COMMAND register. Restore default dip switches setting (down 0) to use the EEPROM configuration.

BAUDRATE SETTING	DIP 1	DIP 2
All setting from EEPROM	0	X
Set address 1 - 9600	1	0
Set sddress 1 - 38400	1	1

FACILE QI-POWER-485

The free interface program FACILE QI-POWER-485 is the fastest way to configure the device. There is only one configuration screen (see picture shown). The changes made to the program act on the register of the QI-POWER-485-300. To restore the default configuration, press the button FACTORY DEFAULT.

MEASURING MODE: allows selection between RMS or DC to define the sign, positive or negative, of measure.

ENERGY SAVING ON FLASH: it is possible to activate the saving of the counters directly on the device's flash memory.

FREQUENCY MEASURING CHANNEL: possibility to select current or voltage channel to calculate the frequency.
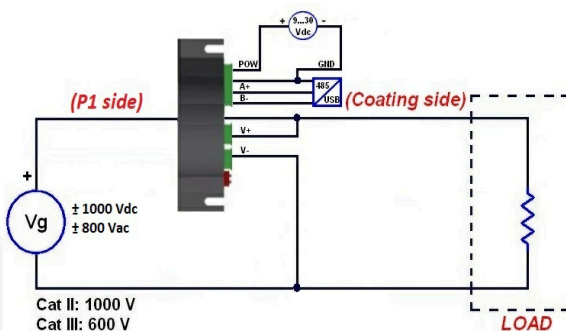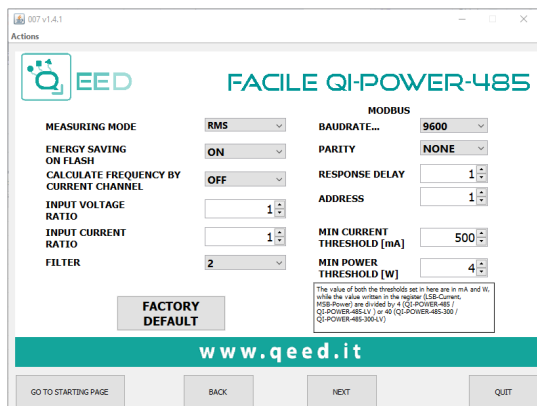
TRANSFORMATION RATIO: in case of use of CT or VT, you can define the transformation ratio for the current input and voltage input; default ratio is 1:1.

FILTER: allows to set a filter on measurement reading in order to get faster response time (value 1) or a more stable and accurate measurement (value 5). Default value is set to 2.

MIN CURRENT THRESHOLD (mA): Allow you to set the minimum current value (Cut off). Under this value the device measure zero. For more details, refer to box above.

MIN POWER THRESHOLD (W): Allow you to set the minimum power value (Cut off). Under this value the device measure zero. For more details, refer to box above.

CAUTION: magnetic fields of high intensity can vary the values measured by the transformer. Avoid installation near permanent magnets, electromagnets or iron masses that induces strong changes in the magnetic field. If case of anomalies it is recommend orienting or moving the transformer in a more suitable area.

FACILE QI-POWER-485

MEASURING MODE	RMS	BAUDRATE…	9600
ENERGY SAVING ON FLASH	ON	PARITY	NONE
CALCULATE FREQUENCY BY CURRENT CHANNEL	OFF	RESPONSE DELAY	1
INPUT VOLTAGE RATIO	1	ADDRESS	1
INPUT CURRENT RATIO	1	MIN CURRENT THRESHOLD [mA]	500
FILTER	2	MIN POWER THRESHOLD [W]	4

The value of both the thresholds set in here are in mA and W, while the value written in the register (LSB-Current, MSB-Power) are divided by 4 (QI-POWER-485 / QI-POWER-485-LV) or 40 (QI-POWER-485-300 / QI-POWER-485-300-LV)

FACTORY DEFAULT

www.qeed.it

GO TO STARTING PAGE   BACK   NEXT   QUIT

(P1 side)

+ 9…30 Vdc

POW   GND
A+   485
B-   USB
V+
V-

(Coating side)

LOAD

Vg
± 1000 Vdc
± 800 Vac

Cat II: 1000 V
Cat III: 600 V

The protection offered by the device can be compromised in case it is not used according to the instructions.