EN

www.qeedusa.com

D.E.M.

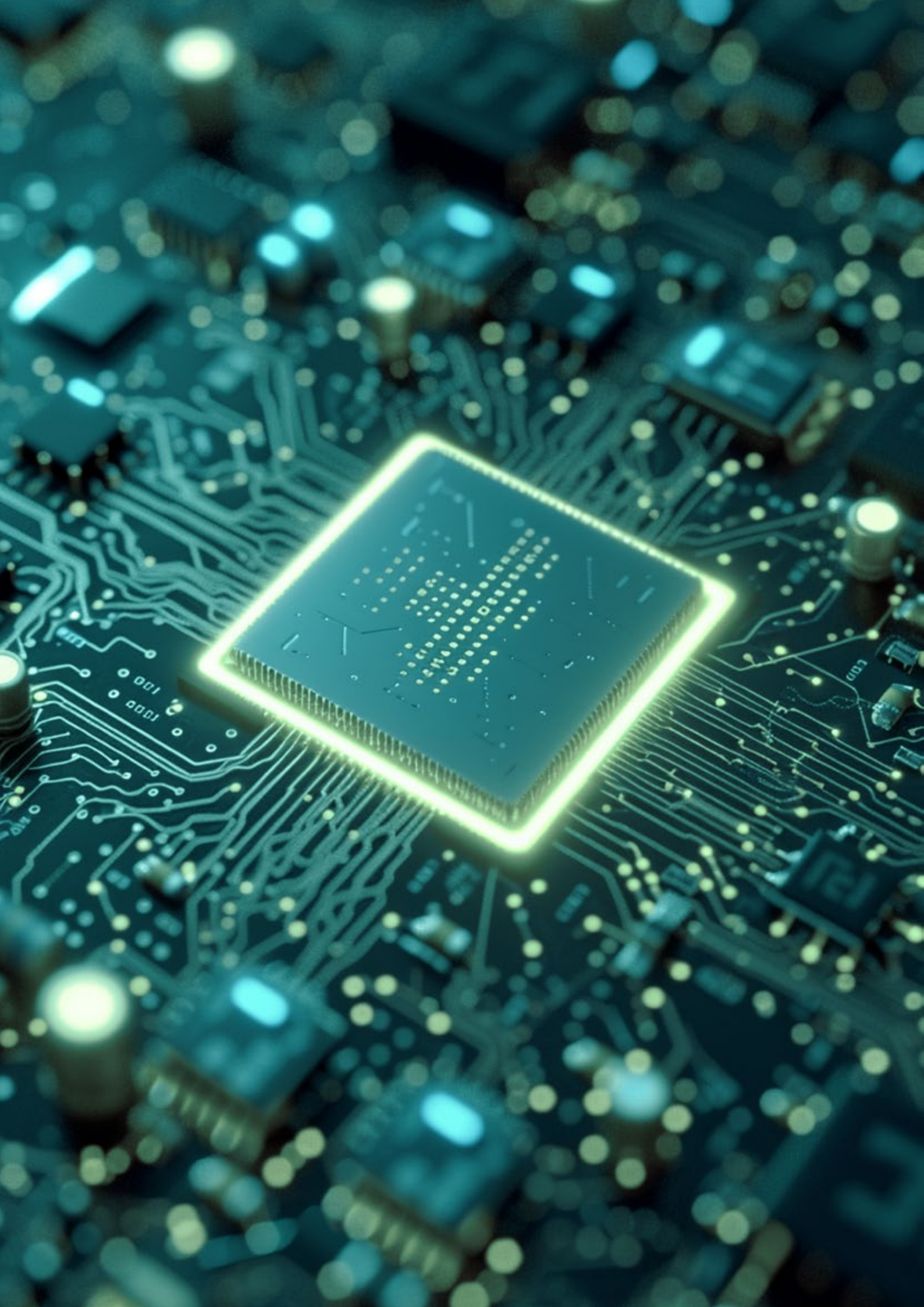
ELECTRONIC PERFORMANCE

QEED

QUALITY ELECTRONIC DESIGN

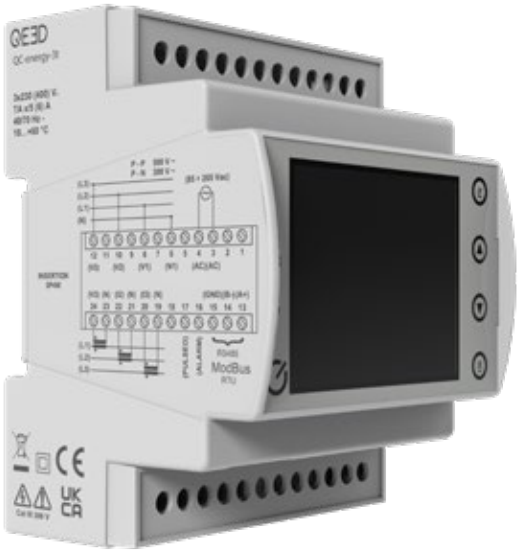
www.dem-it.com

MADE IN ITALY



THREE-PHASE

QC-ENERGY-3T



★ NEW ★

Three-phase AC/DC power meter capable
of managing universal inputs for current transformers
(1/5A, 333 mV, Rogowski).

- Web Server integrated on board
- Graphic display 320x240 65,536 colors
- Luminance (cd/m2) 260nit
- Modbus TCP (Ethernet e Wi-Fi STA-AP) e Modbus RTU RS485
- Bidirectional Energy measurement
- Compliant with 0.5S (kWh) class of EN62053-22
- Compliant with 0.5S (kVARh) class of EN62053-24
- Accuracy ±0.5% RDG
- Current inputs for transformers with secondary
  (1A / 5A, 0 - 333mV, Rogowski probes)
- Impulsive output for energy counter
- TRMS measurement of distorted waveforms (voltage / current)
- Neutral measurement
- 2 MOSFET outputs, one for pulsed output and one for alarms.
- 4 DIN module

CHARACTERISTICS	
POWER SUPPLY	85 - 265V_{AC}
INSULATION	4kV_{RMS} between power supply and communication ports 4kV_{RMS} between RS485 and measurement inputs 1,5kV_{RMS} between power supply and measurement
INPUT VOLTAGE	Direct connection up to 500V_{RMS} phase-phase and 300V phase-neutral maximum (40 - 70Hz) Transformation ratio for current and voltage trasformers configurable
INPUT CURRENT	1A / 5A Rogowski probes 0 - 333mV
OUTPUTS	Modbus TCP (Ethernet 10/100 e Wi-Fi AP-STA) RS485 Modbus RTU #2 open drain outputs: 1x digital output (with threshold alarm) 1x digital output with internal pull-up 3.3V (pulse meter)
TYPE OF MEASUREMENT	TRMS

APPLICATIONS

Control panels and distribution

Energy control

Control panels

Machine tools or production

QC-ENERGY-3T

MEASUREMENTS AVAILABLE	VERSION		
	STD	PLUS	PRO
I_{RMS} - V_{RMS} - I_{PK} - V_{PK} per phase	✓	✓	✓
Active power (W), Reactive power (VAR), Apparent power (VA) per phase	✓	✓	✓
Bidirectional energy (kWh), positive and negative per phase and total	✓	✓	✓
Active and reactive energy (kVARh), inductive / capacitive, per phase and total	✓	✓	✓
Power factor (inductive / capacitive) per phase and total	✓	✓	✓
Crest factor per phase and total	✓	✓	✓
Frequency	✓	✓	✓
Cosø per phase and average	✓	✓	✓
Tanø per phase and average		✓	✓
Minimum, average and max powers per phase and average		✓	✓
Power factor distortion (inductive / capacitive) per phase and average		✓	✓
THD (V, I), TDD		✓	✓
Minimum, average and max powers		✓	✓
Phase control		✓	✓
Peak power request, per phase and total		✓	✓
Monthly max power request achievement memorization (month, day, hour, minutes), per phase and total		✓	✓
Settable time beyond threshold, per phase and total		✓	✓
K factor (according to IEEE Standard 1100-1992)		✓	✓
Internal temperature [°C]		✓	✓
Harmonic analysis up to the 63rd			✓
Interharmonic analysis up to the 63rd			✓
SAG, SWELL, Voltage dips			✓
Automatic phase recognition			✓

THREE-PHASE

QE-POWER-T

PATENTED

Three-phase network analyzer with universal current input that accept on the same inputs current transformers can have both current or voltage output.
Case of only 1 DIN, ideal for electrical distribution panels.

- Equipped with RS485 Modbus RTU serial output for reading all parameters and digital for alarms
- Configuration via free software

GENERAL CHARACTERISTICS

		VERSION		
	CHARACTERISTICS	STD	PLUS	PRO
POWER SUPPLY	10 - 40V_{DC} o 19 - 28V_{AC} - 50/60Hz			
INPUT VOLTAGE	Direct connection up to 500V RMS phase-phase and 300V phase-neutral maximum (40 - 70Hz)			
MEASUREMENTS AVAILABLE	I_{RMS} - V_{RMS} - I_{PK} - V_{PK}	✓	✓	✓
	Active power (W), Reactive power (VAR), Apparent power (VA)	✓	✓	✓
	Bidirectional energy (kWh), positive and negative per phase and total	✓	✓	✓
	Active and reactive energy (kVARh), per phase and total	✓	✓	✓
	Power factor (inductive / capacitive) and crest factor per phase and total	✓	✓	✓
	Frequency	✓	✓	✓
	Tanφ per phase and average		✓	✓
	Average power factor, per phase and total		✓	✓
	Power factor distortion (inductive / capacitive) per phase and average		✓	✓
	THD (V, I) per phase and total		✓	✓
	Minimum, average and max powers per phase and total		✓	✓
	K factor (according to IEEE Standard 1100-1992)		✓	✓
	Harmonic analysis up to the 63rd			✓
	Interharmonic analysis up to the 63rd			✓
	SAG, SWELL, Voltage dips			✓
	Automatic phase recognition			✓

APPLICATIONS

Control panels and distribution

Energy control

Control panels

Machine tools or production

QC-POWER-P96

The QC-POWER-P96 is a bi-directional power meter and Network Analyzer running from panel 96 x 96mm.

- Manages current secondaries from 1 to 5A accuracy class 1 for energy measurements
- THD and harmonic analysis up to the 31st
- Bidirectional power and energy measurements

The instrument is equipped with RS485 Modbus RTU interface and pulsed output.

MAIN FEATURES	
POWER SUPPLY	100 - 230V_{AC} (-15%...+12%) @50/60Hz (±5%)
INPUT CURRENT	Rated 5A AC (minimum 11mA - max 6A)
INPUT VOLTAGE	11 - 300V_{AC} (LN), 19 - 519V_{AC} (LL), Category III
MEASUREMENTS AND PRECISION	
VOLTAGE	0.5% F.S.
CURRENT	0.5% F.S.
ACTIVE POWER	1%
REACTIVE POWER	1%
POWER FACTOR	±0,1%
FREQUENCY	±0,1% (45 - 65Hz)
OUTPUTS	RS485 Modbus RTU and Pulsed (24V_{DC} max)

APPLICATIONS

Control panels and distribution

Energy control

Control panels

Machine tools or production

SINGLE-PHASE

QI-POWER-485-xxx

The QI-POWER-485
(in its 3 current sizes 50, 100 and 300A)
is a single-phase network analyzer
with direct measurement of both AC (TRMS)
and DC current and energy without the need
of external CTs.

MAIN FEATURES			
	QI-POWER-485	QI-POWER-485-100	QI-POWER-485-300
CURRENT MEASUREMENT	50A AC/DC	100A AC/DC	300A AC / 400A DC
VOLTAGE MEASUREMENT	800 V_{AC} 1000 V_{DC}		
POWER SUPPLY	9 - 30 V_{DC} Protected against polarity reversals and overtemperatures		
ACCURACY @25°C up to 400Hz	Voltage, current, active power: <0.5% F.S. Frequency: ±0.1Hz on reading Energy: ±1% of the read value V_{PEAK} - I_{PEAK}: ±5% F.S.		
TYPE OF MEASUREMENT	RMS or DC		
OUTPUTS	RS485 Modbus RTU		
MEASUREMENT AVAILABLE VIA RS485	I_{RMS} - V_{RMS} - I_{PEAK} - V_{PEAK}		
	P: active power (W), Q: reactive power (VAR), S: apparent power (VA)		
	Bidirectional energy (kWh), positive and negative		
	Frequency, Cosφ, THD		

APPLICATIONS

- Control panels and distribution
- Energy control
- Inverter
- PV systems
- ARON connection
- Control panel
- Machine tools or production
- Charging columns
- UPS

QI-POWER-485-xxx-LV

The QI-POWER-485-xxx-LV is the low voltage version of the QI-POWER-485-xxx single-phase network analyzer, capable of measuring current in the various sizes provided with voltages up to 80 VAC / 100 VDC.

MAIN FEATURES		
	QI-POWER-485-LV	QI-POWER-485-300-LV
CURRENT MEASUREMENT	50A AC/DC	300A AC / 400A DC
VOLTAGE MEASUREMENT	$80V_{AC}$ $100V_{DC}$	
POWER SUPPLY	9 - 30 V_{DC} Protected against polarity reversals and overtemperatures	
ACCURACY @25°C up to 400Hz	Voltage, Current, Active power: <0.5% F.S. Frequency: ±0.1Hz on reading Energy: ±1% of the read value V_{PEAK} - I_{PEAK}: ±5% F.S.	
TYPE OF MEASUREMENT	RMS or DC	
OUTPUTS	RS485 Modbus RTU	
MEASUREMENTS AVAILABLE VIA RS485	I_{RMS} - V_{RMS} - I_{PEAK} - V_{PEAK}	
	P: active power (W), Q: reactive power (VAR), S: apparent power (VA)	
	EBidirectional energy (kWh), positive and negative	
	Frequency, Cosφ, THD	

APPLICATIONS

- Charging columns
- Battery monitoring
- UPS
- DC motors measurement

SINGLE-PHASE

QA-POWER-M(-LV)

★ UPDATED FEATURE ★

Direct insertion single-phase AC/DC power meter.

- Configurable via USB
- DIN rail mounting
- 4kV galvanically separated input from alarm contact and programmable analogue output, analogue output and RS485 Modbus RTU
- Customizable input for voltage transducers up to 60mV
- Datalogger via USB with pen-drive, data download in .csv format complete with date and time (integrated RTC Real Time Clock)

MAIN FEATURES		
	QA-POWER-M	QA-POWER-M-LV
INPUTS (fully configurable)	VOLTAGE: up to $600V_{AC}$ / $1000V_{DC}$	VOLTAGE up to $60V_{AC}$ / $100V_{DC}$
	CURRENT up to 10A AC/DC (higher currents with external CT setting the transformation ratio via software)	
POWEER SUPPLY	$10 - 40V_{DC}$ / $20 - 28V_{AC}$ - 50/60 Hz	
MEASUREMENT AVAILABLE VIA RS485	I_{RMS} - V_{RMS} - I_{PEAK} - V_{PEAK}	
	P: active power (W), Q: reactive power (VAR), S: apparent power (VA)	
	Bidirectional energy (kWh), positive and negative	
	Frequency, Cosφ, THD (on current channel)	
ACCURACY CLASS	0.5% F.S. for all measured quantities	

APPLICATIONS

Control panels and distribution

Control panel

Machine tools or production

Process control

Tram sector

SINGLE-PHASE

QE-POWER-M

The QE-POWER-M is the single-phase version of the QE-POWER-T, the smallest Power meter capable of managing any current sensor (1/5A, 333mV, Rogowski probes).

Designed to be integrated into systems monitoring and acquisition.

- RS485 Modbus RTU output and configurable digital contact (with threshold alarm window).
- Universal input for current transformers and two versions (STD and PLUS) to satisfy every measurement need

MAIN FEATURES			
VERSION		STD	PLUS
POWER SUPPLY	10 - 40V_{DC} or 19 - 28 V_{AC} - 50/60Hz		
INPUT VOLTAGE	Direct connection phase to phase up to 500 V_{RMS} maximum (40 - 70Hz)		
MEASUREMENTS AVAILABLE	I_{RMS} - V_{RMS} - I_{PEAK} - V_{PEAK}	✓	✓
	Active power (W), Reactive power (VAR), Apparent power (VA)	✓	✓
	Bidirectional energy (kWh), positive and negative	✓	✓
	Active and reactive energy (kVARh)	✓	✓
	Power factor (inductive / capacitive) - crest factor	✓	✓
	Frequency	✓	✓
	Tanφ per phase and average		✓
	Average power factor		✓
	Power factor distortion (inductive / capacitive)		✓
	THD (V,I)		✓
	Minimum, average and max powers		✓
	K factor (according to IEEE Standard 1100-1992)		✓

APPLICATIONS

Control panels and distribution

Process control

Control panels

Machine tools or production

STANDARD

QI-50-I and QI-300-I

The QI-xxx-I is a DC and AC current transformer, galvanically isolated from the measurement circuit. The device is completely similar in function and appearance to a standard active CT, but is capable of measuring the DC and AC TRMS component.

The transducer is loop powered 4...20mA and therefore does not require direct power supply. It is the first loop-powered Hall effect transformer with 0.5% accuracy on the market.

- The product is able to measure 0 - 50A bipolar in the QI-50-I version and 0 - 300A in the QI-300-I version
- 4...20mA analogue output on loop
- scale configurable via Dip-Switch, ready for mounting on DIN rail both vertically and horizontally

MAIN FEATURES		
MODEL	QI-50-I	QI-300-I
MEASUREMENT RANGE	50A AC/DC	300A AC/DC
F.S. ACCURACY	0,5%	
TYPE OF MEASUREMENT	RMS or DC	
POWER SUPPLY	From loop	
OUTPUT	4...20mA	

APPLICATIONS

- Control panels and distribution
- Energy control
- Inverter
- PV systems
- Control panel
- Machine tools or production
- Charging columns
- UPS

STANDARD

QI-400-DC-I

The QI-400-DC-I is a direct current transformer, galvanically isolated from the measurement circuit.

The translator is powered in a 4...20mA current loop and therefore does not require an auxiliary power supply. Using the dip switch it is possible to set the measurement range 200A or 400A.

MAIN FEATURES	
MEASUREMENT RANGE	400A DC or 200A DC settable by dip-switch
POWER SUPPLY	Passive current loop, 11 - 30V_{DC}
F.S. ACCURACY	0,5%
TYPE OF MEASUREMENT	DC
OUTPUT	4...20mA

APPLICATIONS

PV systems

QI-50-V-485 and QI-300-V-485

The QI-xxx-V-485 is a DC and AC current transformer, galvanically isolated from the measurement circuit.

The device is completely similar in function and appearance to a standard active CT, but is capable of measuring the DC and AC TRMS component range 0 - 50A for QI-50-V model and range 0 - 300A for QI-300-V model.

The product is equipped with an RS485 Modbus RTU serial output and an analogical output 0 - 10V.
Through the serial port it is possible to configure span and zero and assign the Modbus address.

MAIN FEATURES		
MODELLO	QI-50-V-485	QI-300-V-485
MEASUREMENT RANGE	50A AC/DC	300A AC/DC
F.S. ACCURACY	0,5%	
TYPE OF MEASUREMENT	RMS or DC	
POWER SUPPLY	12 - 30V_{DC}	
OUTPUT	0 - 10V and RS485 Modbus RTU	

APPLICATIONS

- Control panel and distribution
- Energy control
- Inverter
- PV systems
- Control panels
- Machine tools or production
- Charging columns
- UPS

STANDARD

QI-50-DO-485

The QI-50-DO-4854 is a DC and AC current transformer, galvanically isolated from the measurement circuit.

The product is equipped with an RS485 Modbus RTU serial output and a digital output (max $30V_{DC}$, max 50mA) with clean contact.

Through the serial port it is possible to configure span and zero and assign the Modbus address.

MAIN FEATURES	
MEASUREMENT RANGE	50A AC/DC
F.S. ACCURACY	0,5%
TYPE OF MEASUREMENT	RMS or DC
POWER SUPPLY	10 - $30V_{DC}$
OUTPUT	Digital (max $30V_{DC}$, max 50mA) dry contact and RS485 Modbus RTU

APPLICAZIONI

Charging columns

PV systems

UPS

QE-BR-ETH485

The QE-BR-ETH485 is a multiclient Modbus TCP to Modbus RTU (master to slave) bridge capable of managing up to 10 client connections

- Prepared for T-BUS connection (fast connection without wiring)
- 1500V insulation between RS485 serial, power supply and Ethernet port.
- User interface with 6 status LEDs
- Configuration via Web Server

MAIN FEATURES	
POWER SUPPLY	10 - 40V_{DC} / 20 - 28 V_{AC}
NETWORK INTERFACE	10/100 Base-T
RTU BAUDRATE	Up to 115200
MAXIMUM NUMBER MODBUS NODES	247
REGULATIONS	ETHERNET IEEE 802.3 and RS485 compliant
OUTPUT PORTS	RS485 Modbus RTU(on the terminals) or T-BUS connection (on the base) ETHERNET Modbus TCP-IP (RJ45)

APPLICATIONS

Interface instrumentation

Systems communication

QE-CURRENT-485

The QE-CURRENT-485 is a universal current and voltage converter and analyzer ALL IN ONE!

1 DIN wide module, suitable for distribution panels, the QE- CURRENT-485 allows you to interface with any current and voltage sensor and to read and analyze the values measured by the primary.

The device is also equipped with an input for 2 or 3 wire PT100 or NTC temperature probes.

Available a fully configurable analogue output, a digital output (configurable dry contact) and the RS485 Modbus RTU serial output.

MAIN FEATURES			
POWER SUPPLY	10 - 30V_{DC}		
INPUT	ROGOWSKI probe Current transformer with 1A / 5A secondary Current / voltage transformer with secondary ±10V_{PEAK} or ±1V_{PEAK} Current transformer with 333mV secondary Current transducer with secondary 100mA AC / DC HALL sensor, with its own power supply (±15V_{DC}) Temperature probes		
OUTPUTS	RS485 Modbus RTU 0...10V / 0...20mA (configurable) Dry contact 50mA max, 30V_{DC}		
VERSION		**QE-CURRENT-485**	**QE-CURRENT-485-H**
MEASUREMENTS AVAILABLE	I_{RMS} - I_{DC} - I_{AC} (min, avg, max)	✓	✓
	Charge quantity on I_{RMS} - I_{DC} - I_{AC}	✓	✓
	Frequency	✓	✓
	Crest factor	✓	✓
	Temperature	✓	✓
	Resistance	✓	✓
	I_{PEAK}		✓
	THD		✓
	Harmonic analysis up to the 63th		✓
	Internal temperature of the module		✓

APPLICATIONS

- Facilities of purification
- Power factor correction devices
- Steel mills
- Paper mills
- Transformer stations
- Electrical engines

QA-OMNI, QA-TEMP, QA-VI and QA-I

Universal signal converters (voltage, current, temperatures, resistors and potentiometers, digital inputs) configurable via USB, DIN rail mounting, 4-way galvanic separation, AC/DC power supply, programmable alarm contact, RS485 Modbus.
Simultaneous analog and digital input.
Data acquisition via USB with pen-drive, data download in format importable into Excel (integrated RTC Real Time Clock).

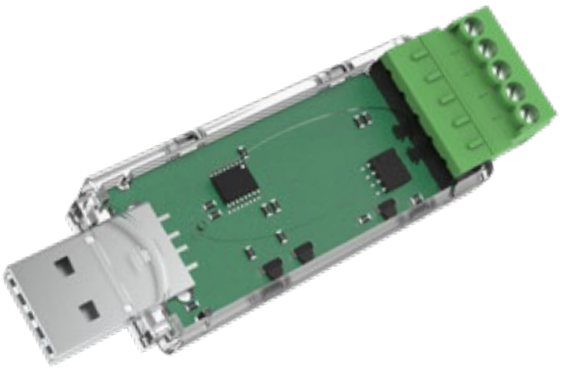



	QA-OMNI	QA-TEMP	QA-VI	QA-I
POWER SUPPLY	10 - 40V_{DC} / 20 - 28V_{AC} - 50/60Hz			
ANALOG INPUT (completely configurable)	**Voltage** (up to 10V_{DC}) with 1mV resolution, 100kΩ input impedance		**Voltage** (up to 10V_{DC}) with 1mV resolution, 100kΩ input impedance	
	Current (up to 20mA), maximum resolution 2µA, input impedance 20Ω		**Current (up to 20mA),** maximum resolution 2µA, input impedance 20Ω	**Current (up to 20mA),** maximum resolution 2µA, input impedance 20Ω
	Temperature / RTD Resistance: PT100, PT500, PT1000, Ni100 (2,3 or 4 wires) TC: J, K, R, S, T, B, E, N (-10mV...+70mV) Automatic cable break detection	**Temperature / RTD Resistance**: PT100, PT500, PT1000, Ni100 (2, 3 or 4 wires) TC: J, K, R, S, T, B, E, N (-10mV...+70 mV) Automatic detection cable interruption		
	Potentiometer: 1k...10kΩ	Potentiometer: 1k...10kΩ		
DIGITAL INPUT (simultaneous with analog input)	Frequency: 0.001Hz - 9.99kHz 2 and 3 wire NPN Mechanical contact 3-wire PNP with 24V power supply Namur Photoelectric Hall sensors Variable reluctance Pulsed at 24V TTL			
ANALOGUE OUTPUT (completely configurable)	**Current: 0...20mA** (maximum load resistance 600Ω) **Voltage: 0...10V** (minimum load resistance 2Ω) Field sensor power supply at 13V_{DC} - 30mA max on the retransmitted output			**Current: 0...20mA** (maximum resistance load 600Ω)
SERIAL OUTPUT	RS485 Modbus RTU (from terminals and from T-Bus)			

APPLICATIONS

Control panels and distribution
Process control
Control panels
Machine tools or production

Q-USB485



The Q-USB485 is a 5kV galvanically isolated USB/RS485 serial converter,
using an FTDI USB chip.

The ease of use of this converter is due to the use of Windows certified drivers that your PC will download automatically if connected to the network.

This device will allow you to safely connect to all Modbus devices on the RS485 serial port.

APPLICATIONS

Modbus interface

Q-WIFI485

★ NEW ★

Q-WIFI485 is a compact gateway with on board installed Web Server that provides WiFi to RS485 interface (Mastere to Slave) for connectivity of third-party systems.

Using MQTT protocoll, the devide is able to connect to proprietary DEM cloud, Q-LOUD.
In this way, all instruments can be converted in order to be suitable for Industry 4.0.

FW can be updated from Web Server.

MAIN FEATURES	
POWER SUPPLY	10 - 30V_{DC}
OUTPUTS	Wi-Fi STA-AP High speed serial RS485 port
PROTOCOLL	MQTT Modbus RTU
WEB SERVER	Integrated on board Maximum client number: 10
LED	Green for power Yellow for fail - FW upload

APPLICATIONS

Interface instrumentation

Wireless communication

Cloud

QE-RS485-ISOLATOR

The QE-RS485-ISOLATOR RS485 isolator with insulation up to 4kV.

- HOT SWAPPING functionality for hot mounting (no need to reboot the system)
- User interface: 3 status LEDs

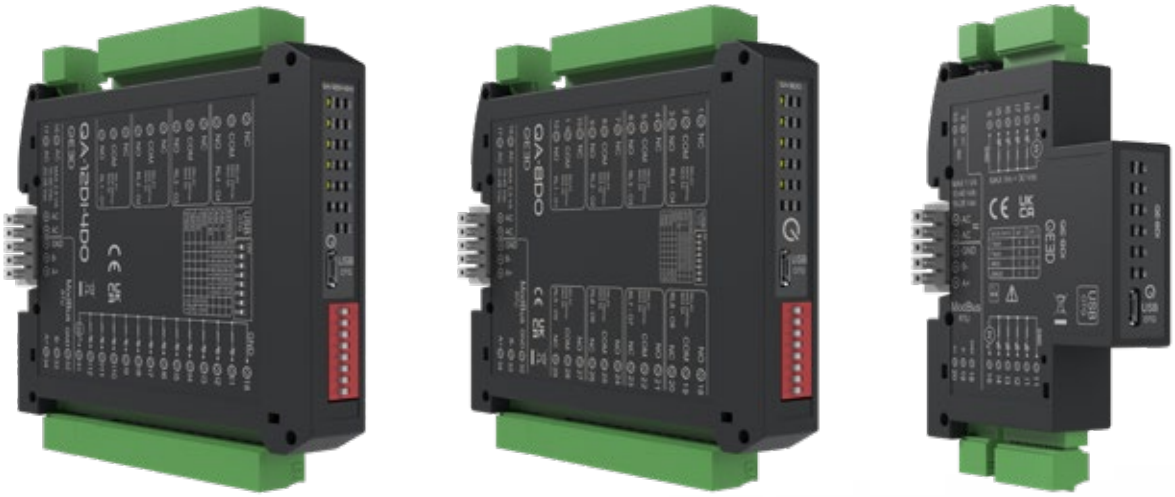
MAIN FEATURES	
POWER SUPPLY	10 - 30V_{DC}
NUMBER OF CHANNELS	n° 1 RS485 serial input port - n° 1 RS485 serial output port
CONFIGURATION	Baud rate: 1200 - 9600 settable via 2 jumpers (supplied as standard)
INSULATION	4kV_{DC}

APPLICATIONS

Communication systems

MODBUS I/O SYSTEM

QA-12DI-4DO, QA-8DO and QE-8DI



The QA-12DI-4DO, QA-8DO and QE-8DI modules are Modbus RTU slave modules suitable for use as expansion for master systems such as PLC, HMI, Panel PC where a greater number of inputs and outputs are needed.

- QA-12DI-4DO has 12 DIGITAL INPUTS and 4 RELAY OUTPUTS SPDT 5A – 250V_{AC}
- QA-8DO has 8 RELAY OUTPUTS SPDT 5A – 250V_{AC}
- QE-8DI has 8 opto-isolated digital inputs

The modules can be mounted on a T-BUS connector for serial connection and to carry power.

HOT SWAPPING functionality for hot mounting (no need to reboot the system).

MAIN FEATURES			
MODEL	QA-12DI-4DO	QA-8DO	QE-8DI
DIGITAL INPUTS (PNP with negative in common)	12		8
DIGITAL OUTPUTS (5A SPDT Relay - 250V_{AC})	4	8	
USCITA 5V_{DC} (for dry contact detection)			✓
POWER SUPPLY	10 - 40V_{DC}, 20 - 28V_{AC} @50/60 Hz		
SERIAL OUTPUT	RS485 Modbus RTU (from terminals and from T-Bus)		

APPLICATIONS

I/O expander

PLC

HMI

Panel PCs

STANDARD

QE-BOX

The QE-BOX is a resistive divider that allows the input voltage to be reduced from ±2000V_{DC} to 1000V_{DC}.

To be used exclusively with the QI-POWER-485 and QI-POWER-485-300.

Typical application is the measurement of string voltages at 1500V_{DC} in the photovoltaic sector.

APPLICATIONS

PV systems

Zona Industriale Villanova 20
32013 Longarone (BL) - ITALIA
Tel. +39 0437 573188

www.dem-it.com - www.qeed.it

Commercial reference for filters
sales@dem-it.com

QEED and custom reference
sales@qeed.it

MADE IN ITALY