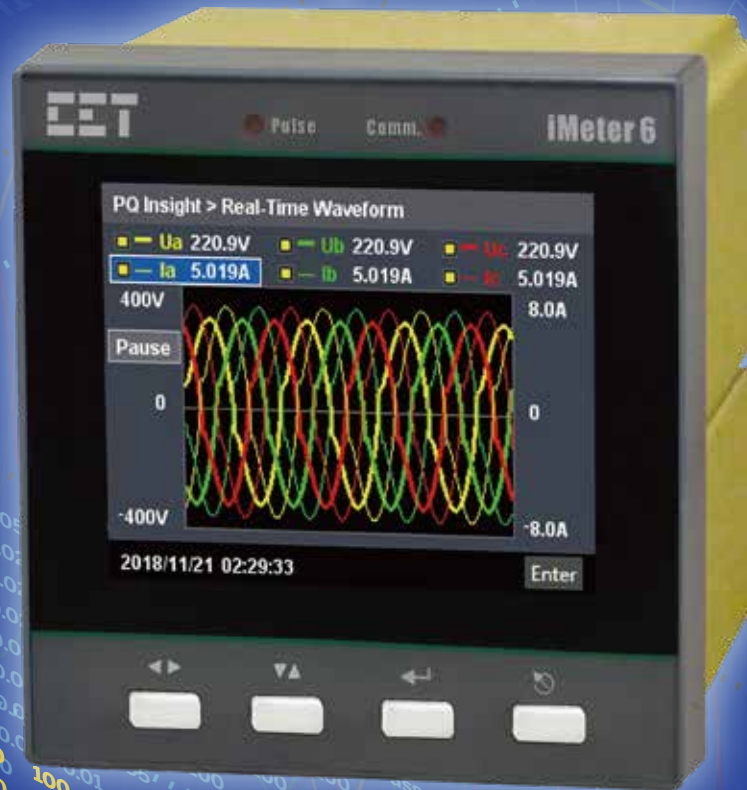




iMeter 6

Advanced Power
Quality Monitor

Advanced Power Quality Monitor



iMeter 6 is CET's latest offer for the advanced Power Quality Monitoring of Incomers and Critical Feeders for Utilities, Data Centers, High-Tech manufacturing facilities and Heavy Industries. Housed in an industry-standard DIN form factor measuring 96mmx96mmx119.5mm, the iMeter 6's compact size is perfectly suited for today's space restricting installations. The iMeter 6 features quality construction with metal enclosure, advanced Power Quality and Revenue-Accurate measurements, high-resolution Waveform Recording capabilities, comprehensive Data Logging with 1GB memory, extensive I/O and an easy-to-read Color Dot-Matrix LCD Display. In addition, it provides an I4 Input for Neutral Current measurement or a 0/4-20mA Analog Input for measuring external transducer signal such as Residual or Leakage Current. With a standard 100BaseT Ethernet Port and a RS-485 port with Modbus TCP/RTU support, the iMeter 6 becomes a vital component of an intelligent Power Quality Monitoring System.

Typical Applications

- Class 0.2S Revenue Metering
- Power Quality Monitoring of Main Incomer or Critical Feeder
- Utility, Industrial and Commercial Metering
- Substation, Building and Factory Automation
- Low, Medium and High Voltage applications
- Neutral (I4) and Residual Current (Ir) Monitoring

Ease of use

- Large, Backlit, Color Dot-Matrix LCD display with wide viewing angle
- Password protected setup via front panel, on-board Web Server or free PMC Setup software
- Easy installation with mounting slide bar, no tools required

Basic Measurements (1 second update)

- 3-Phase Voltage, Current and Power measurements
- Neutral current (I4), Calculated Residual Current (Ir) and Frequency
- kWh, kvarh Import/Export/Net/Total and kVAh Total
- kvarh Q1-Q4
- Interval Energy
- Voltage and Current Phase Angles
- Device Operating Time (Running Hours)

High-speed Measurements

- 3-Phase Voltage @ 1 cycle
- 3-Phase Current and Neutral Current (I4) @ 1 cycle
- 3-Phase Power and Power Factor @ 1 cycle

Power Quality

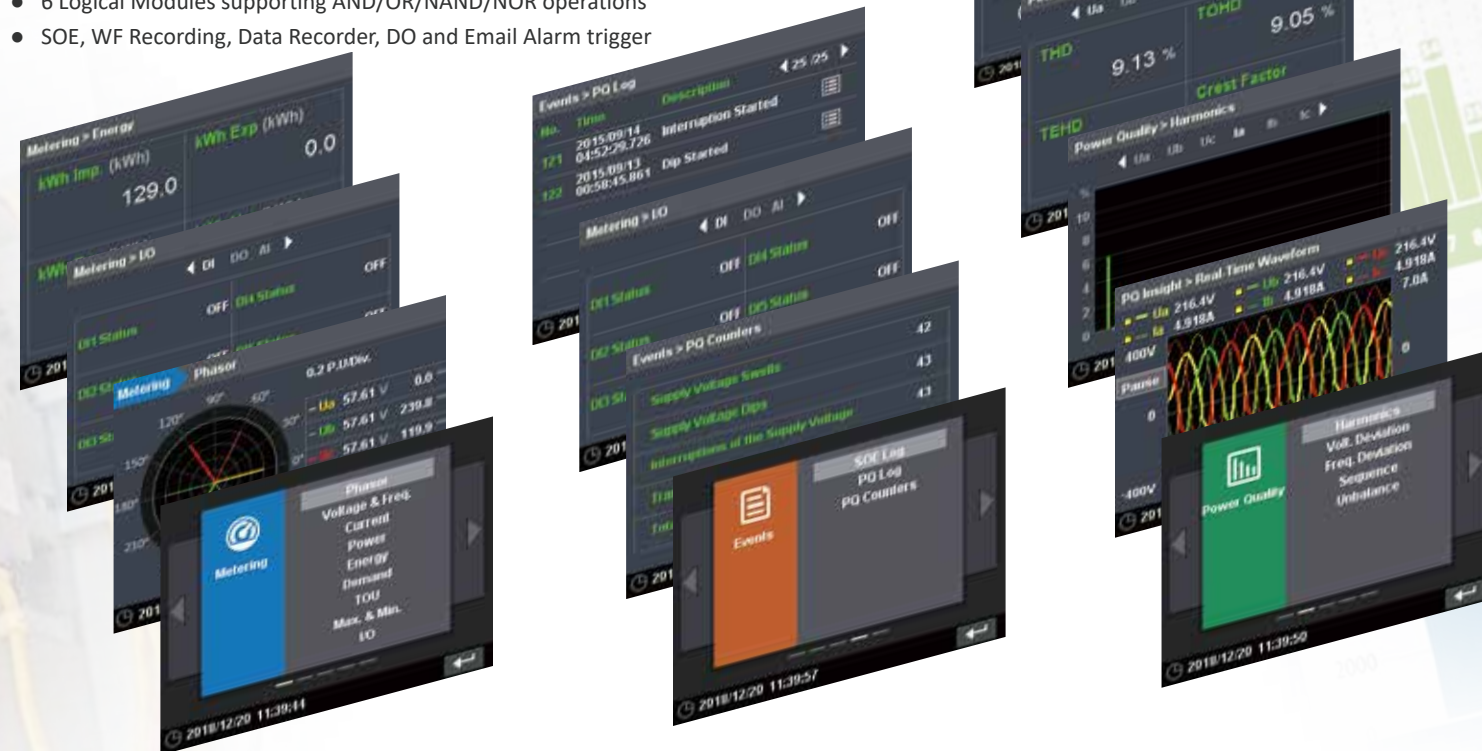
- IEC 61000-4-30 Class S Compliance
- Waveform Recording at 256 samples per cycle
- Fundamental RMS measurements for 3-Phase Voltage, Current, Power, PF and I4
- Voltage and Current Unbalance and Symmetrical Components
- Voltage and Frequency Deviation
- THD, TOHD, TEHD, Crest-Factor, K-Factor and TDD
- Individual harmonics up to 63rd
- Sag/Swell/Interruption Detection and Transient Capture

Demands

- Demands and Predicted Demands for 3-Phase Voltage, Current, Power, PF, I4, Frequency, U and I Unbalance and THD
- Peak Demands with Timestamp for Current, Power and PF of This Month and Last Month (or Since Last Reset and Before Last Reset)
- Max/Min values per demand interval
- Demand synchronization with DI

Setpoints

- 16 standard setpoints with extensive list of monitoring parameters including Voltage, Current, Power, Demands and THD, ... etc.
- 8 high-speed setpoints for Voltage, Current, Power, PF, Freq. Dev. and DI
- Configurable thresholds and time delays
- 6 Logical Modules supporting AND/OR/NAND/NOR operations
- SOE, WF Recording, Data Recorder, DO and Email Alarm trigger



Log memory

- 1GB on-board memory
- Data Recorder Logs, Waveform Recorder Logs, Energy Logs and Demand Logs

Waveform Recorder Log

- 2 independent groups of Waveform Recorders with a combined total of 256 entries
- Simultaneous capture of 3-Phase Voltage and Current signals
- Programmable formats and pre-fault cycles from 256x20 to 16x320
- Support FIFO Recording Mode

Multi-Tariff TOU Capability

- Two independent sets of TOU Schedules
 - Up to 12 Seasons
 - 90 Holidays or Alternate Days
 - 20 Daily Profiles, each with 12 Periods at min. 15min interval
 - 8 Tariffs, each providing kWh/kvarh Import/Export and kVAh
- Switch between two TOU schedules according to pre-programmed time and logged as an SOE event

Energy Log

- Selectable Accumulative or Interval recording of kWh/kvarh Import/Export and kVAh Total
- Support FIFO or Stop-When-Full Recording Mode

SOE Log

- 512 events time-stamped to ± 1 ms resolution
- Setup changes, Setpoint events and I/O operations

PQ Log

- 512 entries time-stamped to ± 1 ms resolution
- Sag/Swell/Interruption and Transient detection

Max/Min Log

- Logging of Max/Min values for measurements such as Voltage, Current, Frequency, kW, kvar, kVA, PF, Unbalance, K-factor and THD with Timestamp for This Month and Last Month (or Since Last Reset or Before Last Reset)

Digital Inputs

- 6 channels, volts free dry contact, 24VDC internally wetted
- 1000Hz sampling for status monitoring with programmable debounce
- Pulse counting with programmable weight for each channel for collecting WAGES (Water, Air, Gas, Electricity, Steam) information
- Demand Synchronization
- Tariff switching based on DI status

Digital Outputs

- Up to 3 channels Form A Mechanical Relays for alarming and control

Analog Input (Optional)

- 0/4-20mA DC input with programmable zero and full scales
- Can be used to measure external transducer signal such as Residual or Leakage Current

Real-time Clock

- Battery-backed Real-Time Clock with 6ppm accuracy (<0.5s per day)

Communications

RS-485 (P1)

- Optically isolated RS485 ports
- Baud rate from 1200 to 38,400bps
- Modbus RTU, Ethernet Gateway

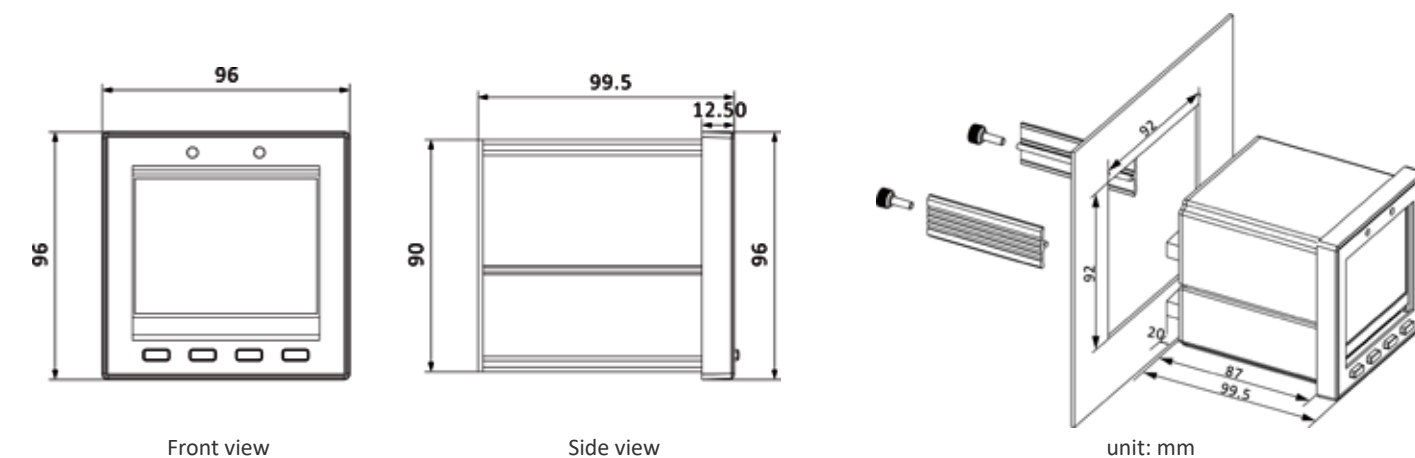
Ethernet (P2)

- 10/100BaseT Ethernet Port with RJ45 connector
- Built-in Web Server for easy data viewing and setup configuration
- Modbus RTU over TCP/IP, Modbus TCP, HTTP, SMTP, SNMP, FTP

System Integration

- Supported by CET's PecStar® iEMS and iPQMS
- Easy integration into other Automation or SCADA systems via Modbus RTU and Modbus TCP protocols
- The on-board password protected Web Server allows complete access to its data and supports the configuration for most of the Setup parameters via a standard web browser

Device View and Dimensions



Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.1%	0.01V
Current	±0.1%	0.001A
I4 Measured	±0.1%	0.001A
kW, kvar, kVA	±0.2%	0.001k
kWh, kVAh	IEC 62053-22 Class 0.2S ANSI C12.20 Class 0.2	0.1kXh
kvarh	IEC 62053-24 Class 0.5S	0.1kvarh
P.F.	±0.2%	0.001
Frequency	±0.01 Hz	0.01Hz
Harmonics	IEC 61000-4-7 Class A	0.1%
K-Factor	IEC 61000-4-7 Class A	0.01
Phase Angles	±1°	0.1°
AI	±0.5%	-

Technical Specifications

Voltage Inputs (V1, V2, V3, VN)	
Standard (Un)	240VLN/415VLL
Optional (Un)	69VLN/120VLL, 400VLN/690VLL
Range	10% to 120% Un
PT Ratio	1-10,000
Overload	1.2xUn continuous, 2xUn for 10s
Burden	<0.5VA @ 240V
Frequency	45-65Hz

Current Inputs (I11, I12, I21, I22, I31, I32, I41, I42)	
Standard (In/Imax)	5A/10A
Optional (In/Imax)	1A/2A
Range	0.1% to 200% In
CT Ratio (I1-I3)	1-6,000 (5A) or 1-30,000 (1A)
I4 Ratio	1-10,000
Overload	2xIn continuous, 20xIn for 1s
Burden	<0.25VA @ 5A

Power Supply (L+, N-)	
Standard	95-415VAC/VDC ± 10%, 47-440Hz
Burden	<10VA @ 240V

Digital Inputs (DI1, DI2, DI3, DI4, DI5, DI6, DIC)	
Type	Dry contact, 24VDC internally wetted
Sampling	1000Hz
Hysteresis	1-1,000ms programmable

Digital Outputs (DO11, DO12, DO21, DO22, DO31, DO32)	
Type	Form A Mechanical Relay
Loading	5A @ 250VAC/30VDC

LED Pulse Outputs (kWh, kvarh)	
Type	Optical
Pulse Constant	1000/3200/5000/6400/12800 imp/kxh

Analog Input (AI+, AI-)	
Type	0-20/4-20 mA
Overload	24 mA maximum

Standards of Compliance

Safety Requirements	
CE LVD Directive 2014/35/EU	EN61010-1: 2010 EN61010-2-030: 2010
Electrical safety in low voltage distribution systems up to 1000Vac and 1500 Vdc	IEC 61557-12: 2018 (PMD)
Insulation AC Voltage: 2kV @ 1 minute Insulation Resistance: >100MΩ Impulse Voltage: 6kV, 1.2/50μs	IEC 62052-11: 2003 IEC 62053-22: 2003

EMC Compatibility

CE EMC Directive 2014 / 30 / EU (EN 61326: 2013)

Immunity Tests	
Electrostatic Discharge	EN 61000-4-2: 2009
Radiated Fields	EN 61000-4-3: 2006+A1: 2008+A2: 2010
Fast Transients	EN 61000-4-4: 2012
Surges	EN 61000-4-5: 2014
Conducted Disturbances	EN 61000-4-6: 2014
Magnetic Fields	EN 61000-4-8: 2010
Voltage Dips and Interruptions	EN 61000-4-11:2004
Oscillatory Waves	EN 61000-4-12: 2017
Radio Disturbances	CISPR 22:2006, Level B

Emission Tests	
Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment	EN 55011: 2009 + A1: 2010 (CISPR 11)
Limits and methods of measurement of radio disturbance characteristics of information technology equipment	EN 55022: 2010+AC: 2011 (CISPR 22)
Limits for harmonic current emissions for equipment with rated current ≤16 A	EN 61000-3-2: 2014
Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current ≤16 A	EN 61000-3-3: 2013
Emission standard for residential, commercial and light-industrial environments	EN 61000-6-4: 2007+A1: 2011

Mechanical Tests	
Spring Hammer Test	IEC 62052-11: 2003
Vibration Test	IEC 62052-11: 2003
Shock Test	IEC 62052-11: 2003

Environmental and Mechanical Specifications

Environmental Conditions		Mechanical Characteristics	
Operating Temp.	-25°C to 70°C	Enclosure	Aluminum Alloy
Storage Temp.	-40°C to 85°C	Panel Cutout	92x92 mm
Humidity	5% to 95% non-condensing	Unit Dimensions	96x96x119.5 mm
Atmospheric Pressure	70 kPa to 106 kPa	Shipping Dimensions	TBD
Altitude	< 3000m	IP Rating	52
Pollution Degree	2	Shipping Weight	TBD
Measurement Category	CAT III		

Ordering Guide

Product Code											Description
iMeter 6 Advanced Power Quality Monitor											
Basic Function											
256 samples per cycle, Class 0.2S Compliant, 3-Phase Metering, Demands, Peak Demands, Min/Max, SOE Log, Ind. Harm. to 63rd, 1GB Log Memory, 16 Data Recorders, High-Speed Recording, WF Recording, Sag/Swell/Interruption and Transient Detections											
Display Screen											
B		Color Dot-Matrix LCD Display (320x240 Resolution)									
Input Current (I1, I2, I3, I4#)											
5		5A									
1		1A									
Input Voltage (V1, V2, V3)											
1		69V/120V									
3		240V/415V									
9*		400V/690V									
Power Supply											
2		95-415VAC/DC ± 10%, 47-440Hz									
System Frequency											
5		45Hz-65Hz									
DI/DO											
A		6DI + 3DO									
AI											
X		No									
A*		1 Analog Input (0-20mA or 4-20mA DC/AC)#									
Communications											
D		1 10/100BaseT Ethernet port + 1 RS-485 port									
Display Language											
E		English									
iMeter 6 - B 5 3 2 5 A X D E											iMeter 6-B5325AXDE (Standard Model)

* Addition al charges apply

With AI options A , I4 is not available



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