Revenue grade meter: Elkor WattsOn® Mark II 5A-LD

Part of AlsoEnergy's edge-to-cloud platform, the WattsOn-Mark II 5A-LD Precision Energy Meter utilizes advanced metering technology to implement a multi-function power and energy meter into a small, cost- effective package. WattsOn monitors each phase individually and incorporates the functions of single-phase, split-phase, and three-phase meters. The meter provides per phase instantaneous and accumulated data including Volts, Amps, Real Power, Reactive Power, Apparent Power, Voltage Angle, Power Factor Frequency, Quadrant, Import/Export/Net Wh/VAh and per Quadrant VARh.

Meter features

- ANSI C12.20 Class 0.2 accuracy compliant, four-quadrant
- High-resolution power and energy measurements
- Fast update (100ms) for all power readings
- Ultra-high dynamic range simplifies CT options
- Digital communication via RS-485 (Modbus/ RTU or Ethernet (Modbus/TCP)
- Customizable modbus register map
- LCD display enabling direct meter readings without the need to connect a device
- California Solar Initiative (CSI) approved

Measured parameters

- Voltage [V] (A, B, C, AB, AC, BC, Avg)
- Current [A] (A, B, C, Avg)
- Active Power [W] (A, B, C, Total)
  — Bi-directional
- Apparent Power [VA] (A, B, C, Total)
- Reactive Power [VAR] (A, B, C, Total)
  — Bi-directional
- Power Factor (A, B, C, System)
  — Bi-directional
- Active Quadrant (A, B, C, System)

- Voltage Phase Angle [°] (AB, AC, BC)
- Frequency [Hz]
- Import/Export/Net Real Energy [Wh] (A, B, C, Total)
- Import/Export/Net Apparent Energy [VAh] (A, B, C, Total)
- Q1/Q2/Q3/Q4 Reactive Energy [VARh] (A, B, C, Total)
- Total Demand Power

CT selection

A input meters may be user configured; CT model and ratio do not need to be specified at the time of ordering. WattsOn meters may be configured for use with industry standard 5A CTs. The wide dynamic range of the current inputs ensures high accuracy and resolution even at very low measurements. Precise CT ratios and phase compensation may be field programmed for ultimate accuracy.

Technical data

AlsoEnergy Part Numbers: MT-RG-05 (Modbus RTU/RS-485) / MT-RG-06 (Modbus TCP/Ethernet)

Inputs

Power supply	12-30 VDC or 24 VAC, < 2VA		
Supported wiring types	Up to 347/600V Delta, Wye	Single-phase installations up to 347V RMS	Split-phase (two phase) installations
Frequency	40-70 Hz nominal (30-300 Hz max)		
Voltage	20Vac - 347Vac L-N (600Vac L-L), (450Vac L-N, 780V L-L absolute max)		
Current input rating	5A nominal via 5A output CTs (10A max)		
Current input impedance	0.05Ω max		
Wire size	Voltage: AWG 30-12, (AWG 16-22 recommended); Current: AWG 24-12, (AWG 12-16 recommended for 5A CTs)		
Overload	20% continuous (voltage & current) maintaining full accuracy. 100% momentary current overload.		

Outputs

Modbus/RTU	RS-485 2-wire, 9600 to 230400 baud
Expansion bus	RS-485 2-wire, for accessory expansion
Relay	2x Solid-State Relay Outputs (100 mA @ 50V max) User Programmable for alarm, status or pulse output
Indicators	LED indication of: Voltage, Current, Power, Output relay state, Status, Communication
Display	Back-lit Graphic LCD Display 128x32
Ethernet (option)	ETnet module (integrated) featuring Modbus/TCP, Webserver, HTTP POST, SSL

Environmental

(Protected installation)

Operating temperature	-40°C to +70°C
Storage temperature	-40°C to +70°C
Humidity	10 to 90% non-condensing

Technical data

AlsoEnergy Part Numbers: MT-RG-05 (Modbus RTU/RS-485) / MT-RG-06 (Modbus TCP/Ethernet)

Compliance		
Safety	UL Listed (#E250395)	
Isolation	3,500VAC (min) input-to-output	
Electromagnetic emissions	FCC part 15 Class B	

Mechanical		
Dimensions	4.2" x 4.3" x 2.4" W x L x H	
Mass	0.23 kg	

Accuracy		
Standards	ANSI C12.20 Class 0.2 Accuracy Certified Supports EN 50470-1, EN 50470-3, IEC 62053-21, IEC 62053-22, and IEC 62053-23 standards.	
Current (A)	0.05% typ	0.1% max
Voltage, L-N (V)	0.1% typ	0.2% max
Voltage, L-L (V)	0.2% typ	0.3% max
Power (W, VA, VAR)	0.1% typ	0.2% max
Energy	0.1% typ	0.2% max
Power factor	0.2% max	
Frequency	0.01% max	
Input bandwidth	2 kHz (33rd Harmonic @ 60Hz, 40th Harmonic @ 50Hz)	
Data update frequency	10Hz (every 100ms) for instantaneous W, VA, VAR 2Hz (every 500ms) for all other parameters	

Typical wiring

12-30V ac/dc
Power Supply
+ -

Output Signals to DDC / PLC
or Energy Management Systems

ELKOR

WattsOn

MARK II
PRECISION ENERGY METER

POWER

Modbus
Address

RELAY K1   RELAY K2   X.BUS   RS-485

VA   VB   VC   N

IA1 IA2 IB1 IB1 IC1 IC1

Interfacing Block
(Optional) Including
"Dead-Front" Fuse
Block and CT
Shorting Terminals

H1

H1

H1

A

B

C

N

LOAD

(4 WIRE SYSTEM)