

Compact, flexible, real-time electricity monitoring and control for the IoT edge

Features

- Real-time energy monitoring for six (6) electrical circuits, with cellular communications (4G/3G) embedded in the device. Options for switching control and Modbus Master to support data acquisition and control of third-party devices.
- Sophisticated measurements on two timeframes: Short Energy - instantaneous measurements typically transmitted every 5-30 seconds (configurable), and Long Energy every 5 minutes.
- Resilient 5-minute data delivery that is stored on our cloud server accessible via AP.
- Multi-carrier communications that auto-selects the strongest locally-available telecommunications network.
- Compact and DIN-rail mounted - 2 poles (35mm wide)
- Class 1.0 accurate (+/-1%) four-quadrant energy measurement, voltage, current up to 600A using split-core current transformers.
- RESTful API provides easy access to monitoring data and switching functionality, for use in third-party platforms.
- Over-the-air (OTA) device management includes firmware upgrades and remote correction of common installation errors.
- Comes with Wattwatchers software tools for streamlining installation and operations: fleet management, onboarding and dashboarding.

Applications

- Suitable for domestic, commercial and industrial monitoring in single-phase, multi-phase and mixed-phase environments, with or without solar.
- Solar monitoring and DER integration
- Home energy management
- Commercial and industrial sub-metering
- Asset-level monitoring (supporting analytics)
- Utility services



Technical Summary

Monitoring channels	Six channels for monitoring which are reported individually and can be configured to monitor one, two or three phases. Long Energy and Short Energy measurements are made on each channel.
Energy measurements - Long Energy	Long Energy data is logged. The following measurements are made in each 5-minute interval: real/ reactive energy, min/max voltage, min/max current, frequency, power factor
Energy measurements - Short Energy	Short Energy data is composed from instantaneous measurements that can be configured over-the-air from 5-295 secs ¹ . The standard setting is 30 seconds and includes: real/reactive energy, voltage, current, frequency, power factor.
Data Logging	27 days in-device logging of Long Energy 5-minute data for 6 channels. Nonvolatile storage with automatic recovery from communications outages.
Communications	3G/4G LTE Pentaband Three regional variants available covering Australia/Asia, Europe/Middle East and US/North America. Automatic switching between supported carriers for the best performance.
Network Carrier	Multi-network SIM operates in more than 130 countries. In Australia, Telstra, Optus and Vodafone are supported.
Power Supply	Built-in power supply for operation at 110-240V AC
Standard inclusions	6-circuit monitoring, power supply, 4G/LTE with multi-network SIM. Stub antenna, pre-wired power tails, current transformer connector, serial number labels, Quick Start Guide.
Antenna	Standard direct connect multiband antenna with SMA connector included. Optional: additional external antennas as required e.g. to extend outside metal meter box.
Current sensing	Split-core current transformers available in 60A, 120A, 200A, 400A, 600A.
Configuration	Fast installation configuration and verification with the Wattwatchers Onboarding application.
Real-time data access	All measurement data is available in real-time from the Wattwatchers RESTful API for use in the applications of your choice. Some measurements are visible in Wattwatchers applications and third-party software applications.
Device management	The Wattwatchers Fleet, Onboarding and Device Management services supports a comprehensive range of services including: <ul style="list-style-type: none"> • Remote device configuration for installers or remote support teams • Fleet health monitoring and access to data for diagnostics and analysis • Firmware updates and configurable reporting rate managed by Wattwatchers
Modbus Master option	Isolated Modbus RTU provides SELV wiring to inverters and other Modbus 'slave' devices. Contact sales@wattwatchers.com.au for the current list of Modbus device drivers.
Switching option	Up to three independent voltage-free 100mA 240VAC rated switches with zero-crossing control to minimize inductive stress on contactors. Switch control is performed through the Wattwatchers API.

More information at: wattwatchers.com.au
Some information may be subject to change without notice

¹Non-standard configuration may incur additional charges

Electrical Specifications

Power supply characteristics

Input-voltage characteristics	Measured voltage	80-265V AC
	Permissible overload	1.15 nominal voltage for up to 1 minute
Power consumption		1.2W Single Phase (Through P1/N terminals)
Power tails	Cabling	600V 18AWG 7/0.25mm ² tinned annealed copper bunch. The conductors comply with UL758, UL1015 105C and CSA C22.2 Number 127.

Energy measurement specifications

Energy measurements	Short Energy	Configurable from 5-295 seconds Push to server - best efforts delivery (QOS0); Standard setting is 30 seconds; Short Energy contents: real, reactive energy, voltage, current, frequency, power factor.
	Long Energy	5 minute interval data - QOS1 delivery under normal communications operation - logged on device; Long energy contents: real/reactive energy, min/max voltage, min/max current, frequency, power factor.
	Internal logging	27 days logging for Long Energy of 6 channels; Data stored in non-volatile memory and transmitted automatically when communications are restored.
	Voltage	Single Phase Two Wire (1P2W), Two Phase Three Wire (2P3W) or Three Phase Four Wire (3P4W) systems. 80-265V, 0.1V resolution.
	Current	Split-core Current Transformers
	Mode	Fundamental only/all harmonics
	Measurement accuracy	Active energy
Reactive energy		Class 2 based on IEC 62053-23 (factory calibration)
Frequency		45 to 65 Hz, 0.01 Hz resolution
Input-current characteristics	Standard CT ratings	60A, 120A, 200A, 400A, 600A
	Internal burden	2.7 ohms
	Full Scale	100 mA
	CT Connections	Not isolated (Neutral referenced)

Communications

Cellular communications	Type	3G, 4G LTE - See regional variants table
	SIM	Factory-fitted internal micro-SIM. Please contact sales@wattwatchers.com.au for custom SIM requirements.
	Auto-carrier selection	Automatically selects the best compatible network based on signal strength at the installation location.
	Global carrier support	Support for more than 130 countries. Please contact sales@wattwatchers.com.au for more detail. In Australia: Telstra, Optus, Vodafone.
Hardware	Antenna	SMA connector. Supplied with direct-connect multi-band antenna. External antennas can be used to boost signal strength.

Regional Variants

AUS	Australia, NZ Korea Taiwan Philippines	3G 4G	UMTS/HSPA+: Five band 800/850/900/1900/2100MHz LTE (AU): QuadBand 700/900/1800/2100MHz
US (AT&T) (not currently available)	US	3G 4G	Tri-Band UMTS: 850, 1700/2100 Quad-Band LTE: 700, 850, 1700/2100 (AWS) and 1900 MHz
E-REL2	EMEA	3G 4G	Triple-Band 3G: 900, 2100MHz Penta-Band FDD-LTE: 700, 800, 900, 1800, 2100 MHz

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Mechanical characteristics

Weight	0.3 kg	
IP degree of protection	IP50 (front display) when installed in switchboard	
Dimensions	89 x 77 x 35 mm (2 DIN poles)	
Mounting	35mm DIN rail (TS35)	
Connections	Voltage	6 positions/4 connection 5.08 mm pitch FCI part 20020007-H061B01LF
	Current	8-way 3.81mm pitch FCI part 20020004-D081B01LF

Environmental and safety conditions

Ambient operating temperature	-10 °C to +55 °C	
Installation / pollution category	III / 2	
Electromagnetic immunity	Electrostatic discharge	Level III (IEC 61000-4-2)
	Immunity to radiated fields	Level III (IEC 61000-4-3)
	Immunity to fast transients	Level IV (IEC 61000-4-4)
	Immunity to impulse waves	Level IV (IEC 61000-4-5)
Safety	Certified for Level III environment (meter and distribution boards)	

Certifications

RCM Supplier Code	E5258
Safety	AS/NZ 60950.1:2015 EN 60950-1:2006 UL 61010.1 (2003)
Emissions	AS/NZS CISPR 22 (2009+Amt1 2010) FCC Part 15B
Immunity	CISPR 24: 2010, CISPR 32:2015
FCC ID	QIPEHS6
Related spurious emissions	AS/NZS 4268:2008 +A1:2010 C 8.2 and 9.1 EN 300 328 with reports FCC sDoC 47 CFR Part15, Subpart B
ARPANSA RP3	AS/NZS 2772

Options

Switching (+3SW) - 3 switching outputs can be used to directly control contactors or trigger events in other equipment.

Switching channels	Number	3 independent switching channels controlled via API and Wattwatchers applications
	Electrical rating	240V AC nominal 100mA per switching output
	Type	Voltage-free zero-crossing control to minimise inductive stress on contactors
Power Supply	External connection	240V AC connected to switching common terminal

Modbus RTU Master (MB) - For data acquisition and control of third-party devices - drivers must be created to support equipment.

Modbus	Type	Modbus RTU RS-485 using SELV wiring to external meters, solar inverters and other Modbus slave devices.
	Master	Operates as a Modbus master for compatible devices. Capable of communicating with 1 slave device.
	Auto-detection	The Auditor automatically detects and establishes communications with supported devices upon physical connection.
	Isolation	Optically isolated.

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A6M-4G Datasheet

