

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

### Features

- Real-time energy monitoring for three (3) electrical circuits, with cellular communications (4G/3G) embedded in the device.
- 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 supported by 27 days of in-device logging capacity.
- 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 3000A using Rogowski Coils.
- 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 commercial and industrial monitoring in three-phase environments, with or without solar.
- Solar and consumption monitoring
- Home energy management
- Commercial and industrial sub-metering
- Asset-level monitoring (supporting analytics)
- Utility services



## Technical Summary

Monitoring channels	Three 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 <sup>1</sup> . 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	3-circuit monitoring, power supply, 4G/LTE with multi-network SIM. Stubby antenna, pre-wired power tails, Rogowski Coil 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	3000A Rogowski Coils (9cm, 20cm, or 29cm diameter options available).
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"> <li>• Remote device configuration for installers or remote support teams</li> <li>• Fleet health monitoring and access to data for diagnostics and analysis</li> <li>• Firmware updates and configurable reporting rate managed by Wattwatchers</li> </ul>

More information at: [wattwatchers.com.au](https://wattwatchers.com.au)

Some information may be subject to change without notice

<sup>1</sup>Non-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 <sup>2</sup> 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.
	Voltage	Three Phase Four Wire (3P4W) systems. 80-265V, 0.1V resolution.
	Current	Rogowski Coils
	Mode	Fundamental only/all harmonics
Measurement accuracy	Active energy	Class 1 based on IEC 62053-21 (factory calibration)
	Reactive energy	Class 2 based on IEC 62053-23 (factory calibration)
	Frequency	45 to 65 Hz, 0.01 Hz resolution
	Standard Current Sensor ratings	3000A (9cm, 20cm, or 29cm diameter options available)

## Communications

Cellular communications	Type	3G, 4G LTE - See regional variants table
	SIM	Factory-fitted internal micro-SIM.

# A3RM-4G Datasheet

		Please contact <a href="mailto:sales@wattwatchers.com.au">sales@wattwatchers.com.au</a> 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 <a href="mailto:sales@wattwatchers.com.au">sales@wattwatchers.com.au</a> 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 FCL part 20020007-H061B01LF
	Current	6-way 3.81mm pitch

## 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+Am1 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

