3RM Datasheet

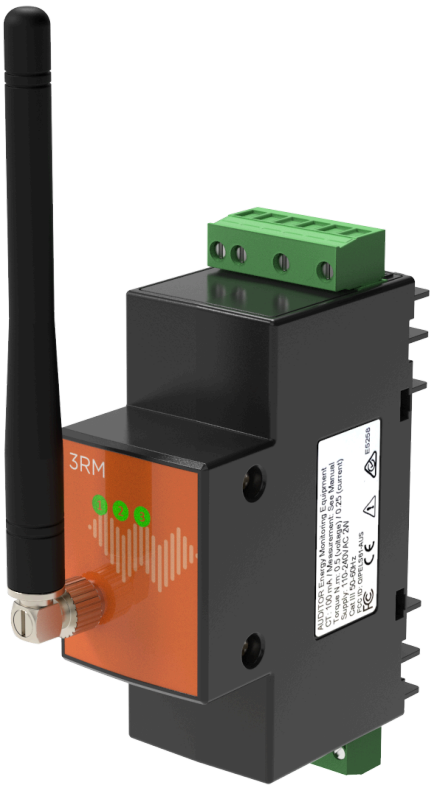
Version 2.0 - January 2024

wattwatchers DIGITAL ENERGY

Compact, flexible, real-time electricity monitoring
for large sites at the IoT edge

Features

- Real-time energy monitoring for up to three (3) electrical circuits, with cellular communications (4G/3G) embedded in the device.
- Sophisticated measurements on two time frames: Short Energy - instantaneous measurements typically transmitted every 5-30 seconds (configurable), and Long Energy every 5 minutes.
- Resilient 5-minute data delivery supported by up to 25 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 for applications up to 3000A using Rogowski Coils.
- RESTful API provides easy access to monitoring data, 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 commercial and industrial monitoring in single-phase, multi-phase and mixed-phase environments, with or without solar.
- Solar monitoring and DER integration.
- Commercial and industrial sub-metering.
- Asset-level monitoring (supporting analytics).
- Energy utility services.

AUSTRALIAN MADE

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 and reactive energy, min/max voltage, min/max current, 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. The standard setting is 30 seconds and includes: real and reactive energy, voltage, current, frequency, power factor.
Data Logging	Up to 25 days on-device logging of Long Energy 5-minute data for 3 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 80-265V AC
Standard inclusions	3-circuit monitoring, built-in power supply, 4G/LTE with multi-network SIM. 4G/3G 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	3000 Amp Rogowski Coils with 9cm (standard), 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 support a comprehensive range of services including: • 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

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 18 AWG 7/0.25mm2 tinned annealed copper bunch. Complies with UL758, UL1015 105C and CSA C22.2 Number 127.

Power supply characteristics

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 energy, 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 energy, reactive energy, min/max voltage, min/max current, power factor.
	Internal logging	Up to 25 days on-device logging for Long Energy of 3 channels; Data stored in non-volatile memory when communications are intermittent or unavailable for up to 4 hours and transmitted automatically when communications are restored. Data may not be stored when cellular communications are unavailable for 4 hours or more.
	Voltage	Single Phase Two Wire (1P2W), Two Phase Three Wire (2P3W) or Three Phase Four Wire (3P4W) systems. 80-265V, 0.1V resolution.
	Current	Rogowski Coils
Measurement accuracy	Active energy	Class 1 based on IEC 62053-21
	Reactive energy	Class 2 based on IEC 62053-23
	Frequency	45 to 65 Hz, 0.01 Hz resolution

Communications

Cellular communications	Type	4G LTE, 3G - See regional variants table
	SIM	Factory-fitted internal micro-SIM (not replaceable in field)
	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. In Australia: Telstra, Optus networks.
	Antenna	SMA connector. Supplied with direct-connect multi-band antenna. Optional external antennas can be used to improve signal strength.

Regional Variants

Australia	3G 4G	Australia, NZ., Korea, Taiwan, Philippines UMTS/HSPA+: Five band 800/850/900/1900/2100MHz LTE (AU): QuadBand 700/900/1800/2100MHz
EMEA	3G 4G	E-REL2 Triple-Band 3G: 900, 2100MHz Penta-Band FDD-LTE: 700, 800, 900, 1800, 2100 MHz
USA		Currently not supported.

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 position 4 connection screw terminal 1.0-2.5mm² (12-24 AWG)
	Current	6 position screw terminal 0.5-1.5mm² (16-26 AWG)

Environmental and Safety Conditions

Ambient operating temperature		-10 °C to +55 °C
Installation category		III
Pollution category		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

Responsible Supplier Number	E5258
Safety	AS/NZ 60950.1:2015 EN 60950-1:2006 UL 61010.1 (2003)
Immunity	CISPR 24: 2010, CISPR 32:2015
FCC ID	QIPELS61
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

Dimensions