ROTRONIC MANUAL

RMS Gateway

rotronic
MEASUREMENT SOLUTIONS

Table of Contents

Scope:

This manual is valid for the RMS gateways from firmware version V1.x. The low-order digit of the firmware version stands for minor changes, e.g. correction of errors that do not influence the main functionality of the device.

1   Overview

1.1   *RMS System Overview*

The Rotronic Monitoring System (RMS) is a network comprising various devices and the RMS server software. The software is the heart of the system. It collects all measured data of the devices and saves it in the database. The individual devices work as input modules (data loggers) and as output modules (displays, analog outputs, switched outputs). The user can view the system data at any time on a PC, laptop or smart phone.
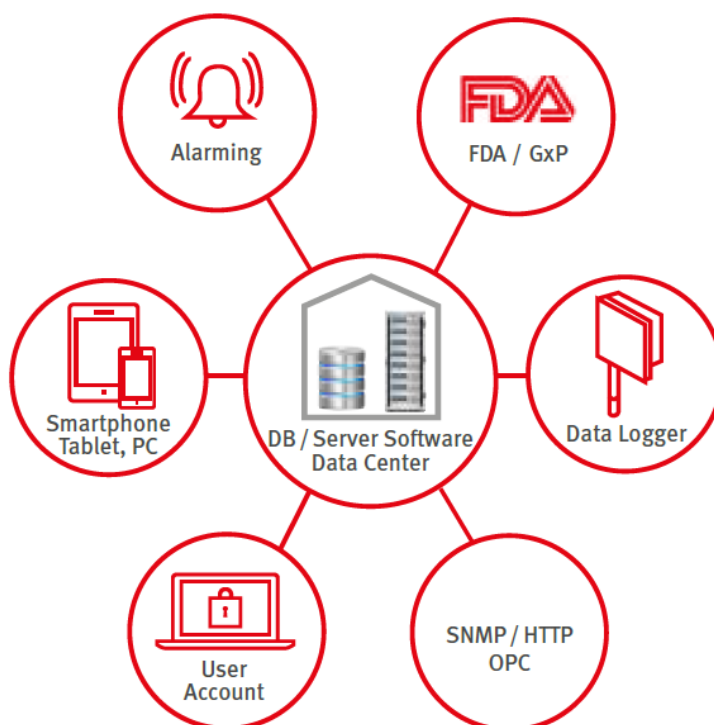

Figure 1: Schematic diagram of the RMS with the server software and database at the heart

1.2 *Device Overview*

All devices can be configured as wanted as modules of the system. The following table shows all basic types of the RMS devices. Almost all modules[1] have the following options:

- Interface: Ethernet / Wireless
- Housing: Wall housing / DIN top hat rail housing

Data Center
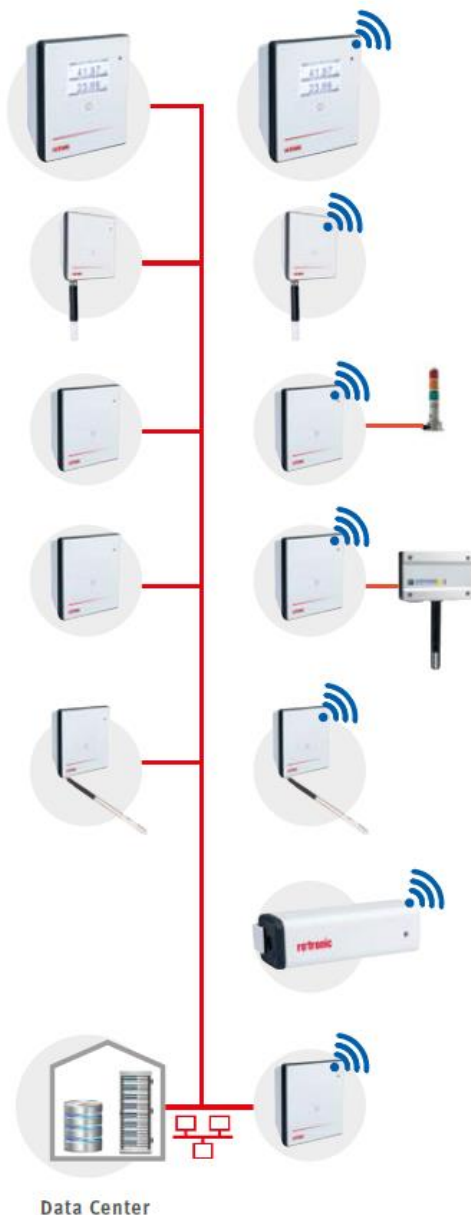
Display Module
The display module can show any values from the RMS network. Humidity, temperature and switch states can be configured per software.

Standard Logger
Records the measured data of the digital HygroClip HCD or other RMS probes. Stored in the ring memory, the data are then sent to the server software.

Output Module
Provides two analog voltage or current outputs or is also available as variant with two solid-state relays in order, for example, to switch alarm lamps.

Input Module
Records voltage or current signals from analog devices such as particle counters, flow transmitters or CO_2 probes. For example:
- HF5 transmitter (humidity & temperature)
- AF1 transmitter (air flow)
- CO2 transmitter (CO2)
- PF4 transmitter (differential pressure)

Temperature Logger
The loggers can be equipped with various temperature sensors (NTC, Pt100, Pt1000 or K-element). This offers the highest flexibility in use.

Mini Logger
A temperature logger with integrated or remote NTC sensor. Instead of a temperature sensor, it is also available with a switch input in order, for example, to monitor door contacts.

Gateway
The gateway is the connecting element between Ethernet and wireless network and forwards the data flow from the loggers to the data centre.

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[1] Except for the Mini Logger

1.3 RMS Gateway

The gateway is the interface between the wire data logger and the web software. The gateway can manage up to 60 data loggers simultaneously, collecting all wireless logger data and passing them on to the server software. When several gateways are used in the same network, they are configured redundantly. If one gateway should fail, the data are automatically sent to the server software via another gateway.

The gateway provides the following basic functions:
- o Collection of all measured data from the wireless data loggers
- o Transfer of the recorded data to the RMS software
- o Firmware update

1.4 Power Supply

The gateway has the following two power supply variants:
- 24 VDC ±10 % / <100 mA[2] via terminals (V+ / V-)
- Power over Ethernet (PoE), per standard IEEE 802.3af, Class 1

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[2] Power supply requirements: 24 VDC ±10 % / >4 W nominal / <15W limited power source

1.5 RTCC (Real Time Clock Calendar)

The device has a real time clock calendar. The time is synchronized continuously when connected to the server.

1.6 Interval

The interval for data transfer is exactly the same as that of the connected data loggers. At every interval the gateway receives the latest measured values from the data loggers and sends them to the server software.

1.7 Indicator and Button

The device has a button and multicolour LED for use and indication of the operating state. The button is used to start the device or switch it off in battery mode. The LED indicates the device status and whether it was possible in the current measurement interval to carry out a valid measurement and send the data to the monitoring system.

LED Status Indicator for LAN Devices

Status	LED Function	Meaning
Connected	Flashes green	Status OK
	Flashes red	2 times: no connection to server
Not connected	Flashes orange	Device waiting for integration into the software

1.8 Interface

The gateway is operated completely via the LAN interface and does not have an additional service connector.

1.9 Software Compatibility

The gateway is designed for use with the RMS server software (local installation or Rotronic Cloud). The gateway can alternatively also be operated with the RMS configuration software (standalone software).

2   Dimensions

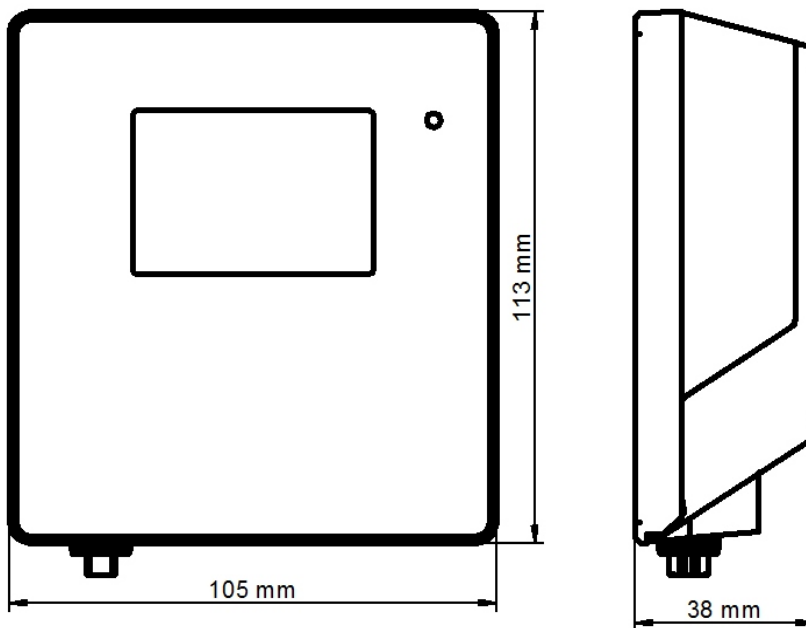The data logger and the gateway of the RMS are all integrated in the same wall housing. All dimensions are shown in Figure 2.
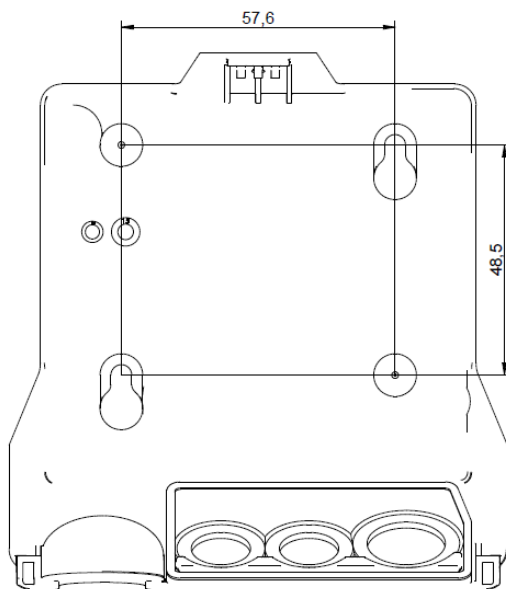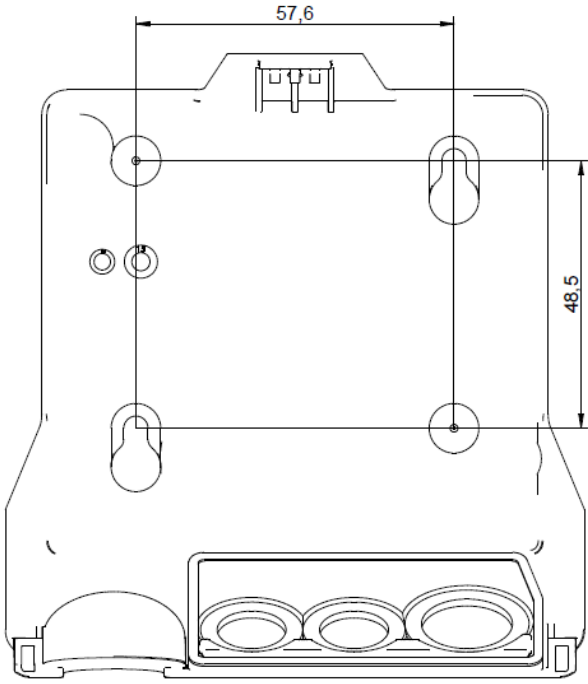

Figure 2: Dimensions of the wall housing

Figure 3: Mounting bracket with dimensions for drill holes
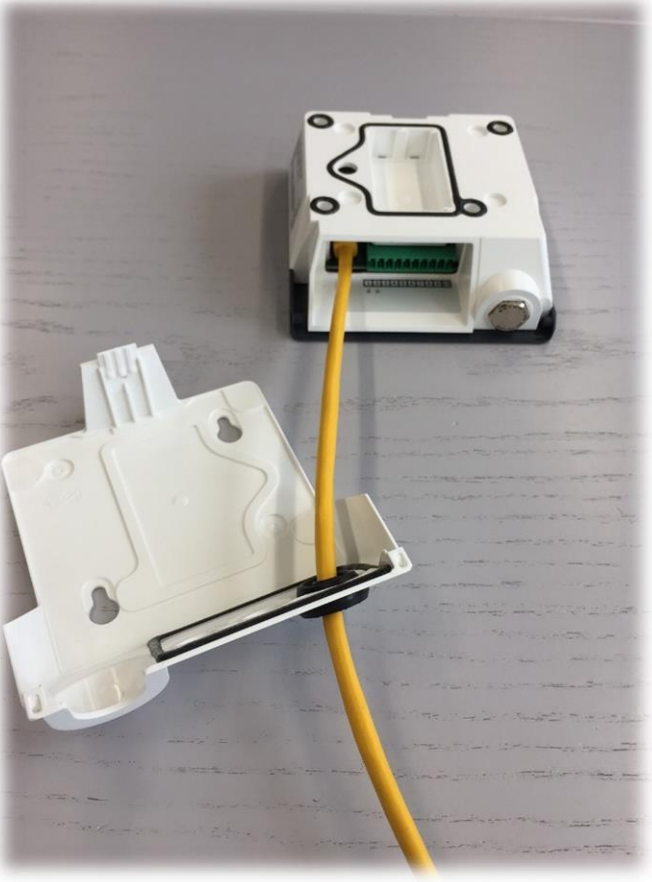
3   Installation
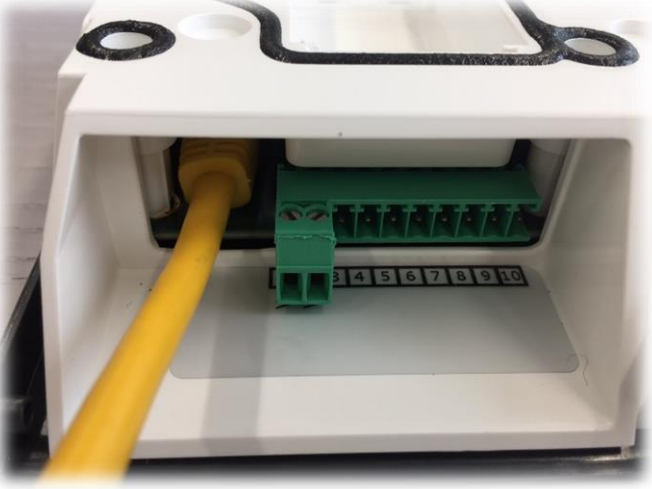
There is a difference between mechanical installation of the wall housing and the DIN top hat rail housing. This manual only describes installation of the wall housing. Installation of the DIN top hat rail housing requires no special handling. All terminal markings are identical to those of the wall housing.

The following instructions describe installation of the data logger step by step.

1	Press a blunt object (e.g. screwdriver in the AC1321 mounting kit) lightly into the hole opening on the top side of the housing. The flap springs open.	
2	Press the cover to the back and take off from the basic unit.	

3	The cover has two suspension openings and two additional prepared fastening possibilities[3].	
4	Make a round opening in the large rubber seal (use the mounting cone in AC1321), pass the cable through it and fit the rubber plug in the cover.	

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[3] Only the mounting points provided should be used for mounting.

5	Plug the cable into the device[4]. For secure fastening and to ensure a reliable data link, make sure it clicks in audibly.	
6	If necessary: Connect the device to a power supply.	

[4] The connected cable may not exceed a length of 30 m at most. Disruptions can occur in operation if a longer cable is used!

| 7 | The wall bracket is fastened to the wall with screws according to the drilling template. The screws may only protrude so far that the device can click into place properly when put on to the fastened cover.[5][6] | |

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[5] The screws must not be tightened.

[6] Only use the screws provided in the package. Screw specifications: M3.5. head strength 2.5 mm, head diameter 7 mm

8	The housing is put in the wall bracket and clicked into place.	
9	The device can then be integrated into the server software. The procedure is described in the manual **E-SM-RMS-WEB**.	

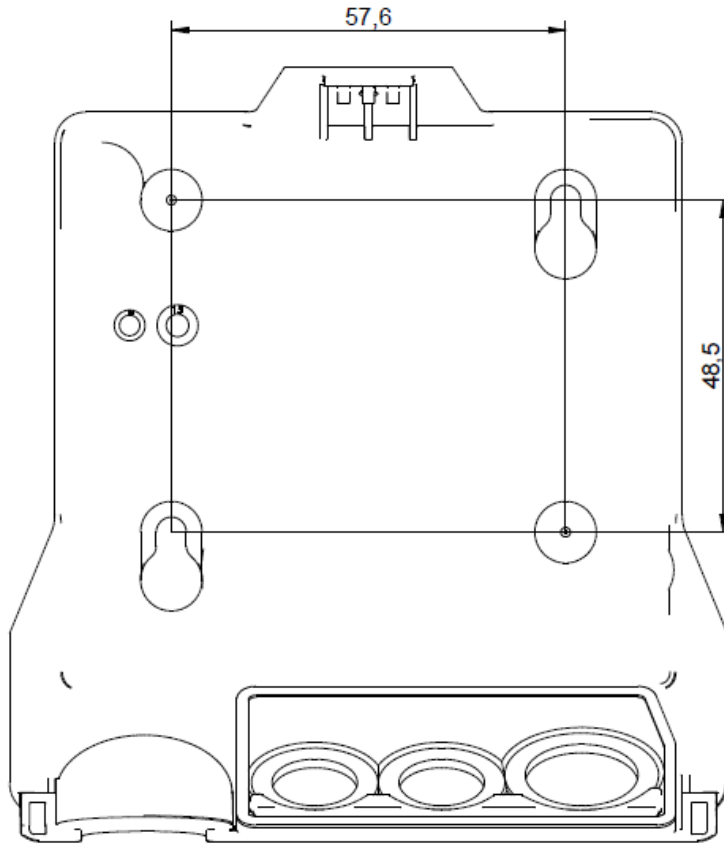## 3.1   *Drilling Template Wall Bracket*

Figure 4: Drawing of the wall bracket (not to scale)

4   Electrical Connections

Figure 5: Electrical connections of the data logger

Number	Marking	Function
1	V+	Power supply +
2	V-	Power supply -
3 – 10	-	No function

Note:

The power supply must be connected to the right terminals. Otherwise the device could be damaged.

5 Operation

This section describes all manipulations necessary for operation.

5.1 *Default Configuration*

The devices are configured ex works. All devices have a standard address for the server with the RMS server software. The standard server corresponds to the Rotronic Cloud. Devices that need to send the data to a different server need to be reconfigured.

TCPIP configuration: The DHCP server must be on, the configuration is obtained automatically.

RMS-WEB Server URL: http://rms.rotronic.com/wService/wService3.DeviceService.svc

5.2   Configuration with RMS-CONFIG

If you do not want to connect the device to the Rotronic Cloud, the server must be configured in the device.

- Connect the device to the local network as described in section 3 . Start the RMS configuration software.
- Search for the device under *Device > Search > Network Device*. The software finds all RMS devices in the local network.
- Enter the host (server address) and the URL of the software services under Settings.
- Finish configuration with *"Write"*.

Once they have been configured with the correct server address, the devices can then be integrated into the server software. Details are described in the manual **E-SM-RMS-WEB**.

5.3 General Manipulations

Remove Ethernet Cable

The cable can be released with a blunt round object (e.g. ballpoint pen) and the connector pulled out (see Figure 6).

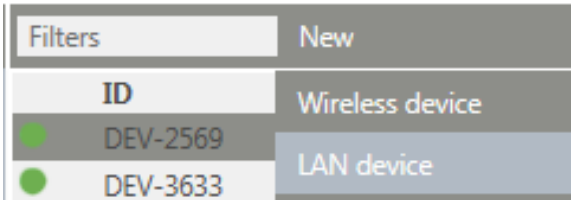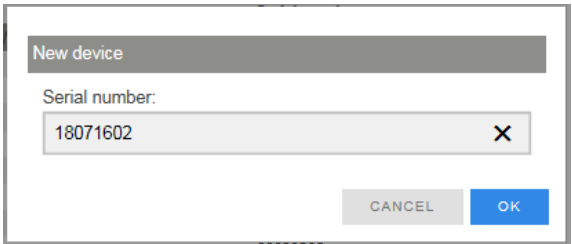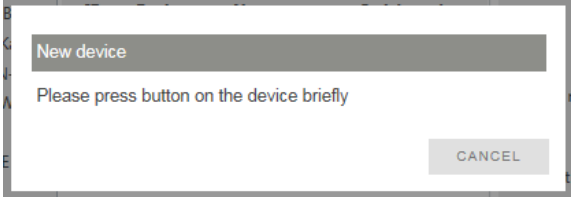*Figure 6: Removing the Ethernet cable*
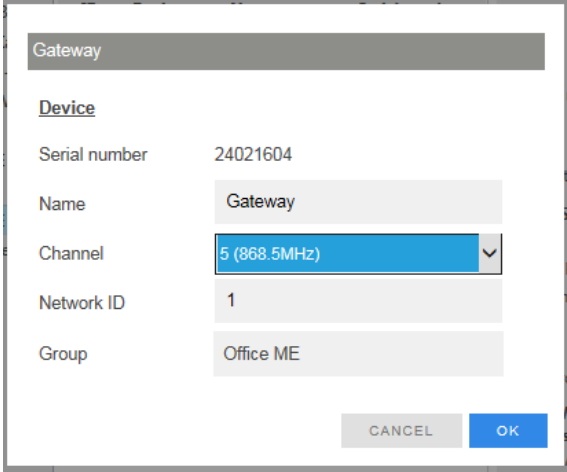
5.4 *Integration in the RMS-WEB Software*
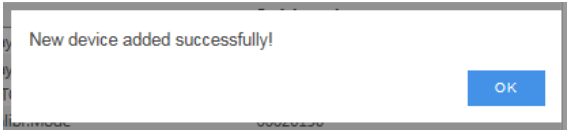
To integrate the device, port 80 must be enabled in your network and a DHCP server must assign the IP address to the device. The device must be able to reach the server with the RMS server software or the Cloud.

The devices can also be given a static IP address if there is no DHCP server available in the network.

Integration of the Gateway (Pairing) in 6 Steps

1	If you do not want to connect the device to the Rotronic Cloud, the server must be configured in the device. • Connect the device to the local network and start the RMS configuration software. • Search for the device under *Device > Search > Network Device*. The software finds all RMS devices in the local network. • Enter the host (server address) and the URL of the software services under Settings. • Finish configuration with "*Write*".
2	Log into the RMS software / Cloud. Select *Extras > Setup > Devices > New LAN Device*
3	Enter the serial number of the device. The device flashes orange.
4	Press the button on the device briefly. The device stops flashing.

5	Configure the device.
	Gateway
	Device
	Serial number 24021604
	Name Gateway
	Channel 5 (868.5MHz)
	Network ID 1
	Group Office ME
	CANCEL OK

6	Finish configuration.
	New device added successfully!
	OK

You can find details in the instruction manual for the RMS server software: **E-SM-RMS-WEB**

5.5   *Function Overview*

Overview of the main software functions of the device.

► Discovery	With Discovery it is possible to find devices in the subnet with the RMS configuration software irrespective of their IP configuration and to change their settings.
► IP configuration	The devices can have static or dynamic IP configurations. It is recommended that you use a dynamic IP configuration whenever possible. If fixed IPs are used, the network topology must be considered exactly.
► RMS Web Server settings	Every device has the server address and software path of the RMS server software stored in it in order to build up communication with the RMS server software. The two parameters can be set with the RMS configuration software: • **Host**: Address of the server with the RMS software. • **Server path**: Server path where the server software is installed.
►Firmware update	The firmware of the device can be updated directly via the RMS server software.

6   Firmware Update

The firmware can be updated with the RMS server software. Firmware updates are available for downloading on the Rotronic website.

7   Technical Specifications

General		
Bestellcode	RMS-GW-868	RMS-GW-915
Device type	RMS Gateway	
IP protection class	IP65[7]	
Range of application	-40..85 °C / 0..100 %RH	
Storage and transport conditions	-40..30 °C / 0..90 %RH	
Interfaces	Ethernet & Wireless 868 MHz	Ethernet & Wireless 915 MHz
Protocols	HTTP	
Wireless range	20..50 m, indoors	15…25 m , in the building
Transmitting power	14dBm (25mW)	2dBm (1,6mW)
Software compatibility	≥V1.1	≥V1.2.1

Power Supply	
Supply voltage	24 VDC ±10 % / <100 mA[8] PoE: 802.3af-2003, Class 1
Polarity protection	Yes
Current consumption	<100 mA

Start Time and Measurement Interval	
Start time	10 s (typical)
Measurement interval	10 s to 15 min

Housing Specifications	
Housing material	ABS
Dimensions	105 x 113 x 38 mm
Weight	200 g
Protection class	UL94-V2

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[7] IP65 protection is only fulfilled, when rubber plug is used for cabling.

[8] Power supply requirements: 24 VDC ±10 % / >4 W / limited power source

Conformity		
EMC directives	EMV-Richtlinie: 2014/53/EU	
	EN 61326-1:2013	IEC 61326-1:2012 ed2.0
	EN 55011:2016, class B	IEC CISPR 11:2015; class B
	EN 55032:2016	IEC CISPR 32:2016
	EN 301 489-1: V2.1.1	
	EN 301 489-3: V2.1.0	
	EN 300220-1: 2013-02 / V2.4.1	
	EN 300220-2: 2013-02 / V2.4.1	
	EN 62479: 2010	
	EN 62368-1: 2014 + AC:2015 + Ber 1:2016-11	IEC 62368-1: 2014 + Cor.:2015
	EN 50581:2012	IEC 50581:2013-02
	Performance criterion: www.rotronic.com	
FCC (RMS-GW-915)	FCC 47 CFR part 15 subpart B: Clause 15.107 + Clause 15.109	
	FCC 47 CFR part 15 subpart C: Clause 15.249	
	ICES-003 Issue 6: Clause 6.1 + Clause 6.2	
	RSS Issue 5: RSS-102 + RSS-210	
Soldering material	Lead free (RoHS Directive 2011/65/EU)	
FDA / GAMP directives	FDA CFR21 Part 11 / GAMP5	

8   Accessories

Order Code	Description
AC1321	Mounting kit with Allen key and mounting cone
RMS-NPK	Network planning kit: wireless dongle, RMS mini logger

9 Additional Documents

Document Name	Contents
E-IM-RMS-WEB	Instruction Manual: System Installation
E-SM-RMS-WEB	Instruction Manual: System Startup
E-OM-RMS-WEB	Instruction Manual: System Operation
E-M-RMS-LOG	Instruction Manual: Data Logger
E-M-RMS-MLOG	Instruction Manual: Mini Logger

10   Document Version

Version	Date	Notes
V1_0	October 2016	First version
V1_1	November 2016	• Update IP protection • Update power supply specifications
V1_2	April 2018	915 Mhz add to the manual, and technical specifications