RMS Wall mount Data Logger

rotronic

MEASUREMENT SOLUTIONS

Table of Contents

Scope:

This manual is valid for the RMS data logger from firmware version V1.x. The low-order digit of the manual is updated with each new release.

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.
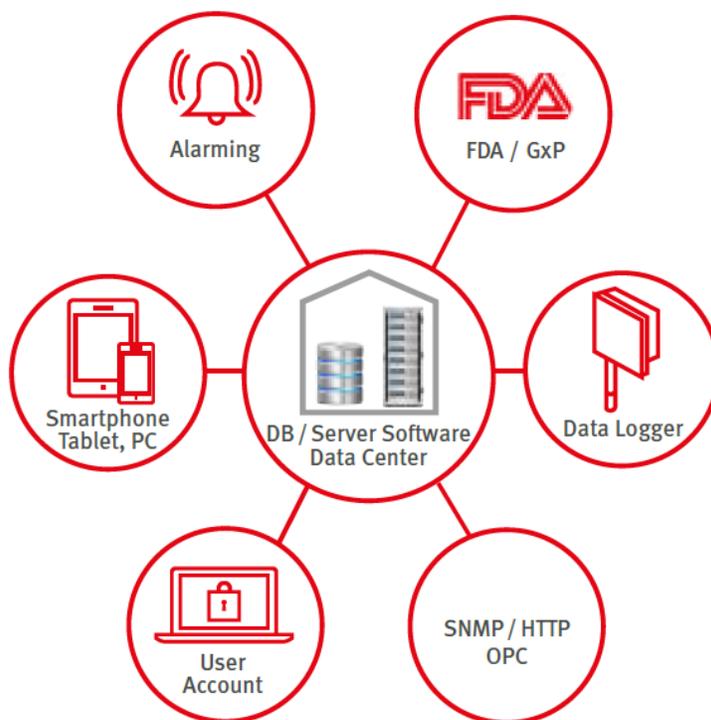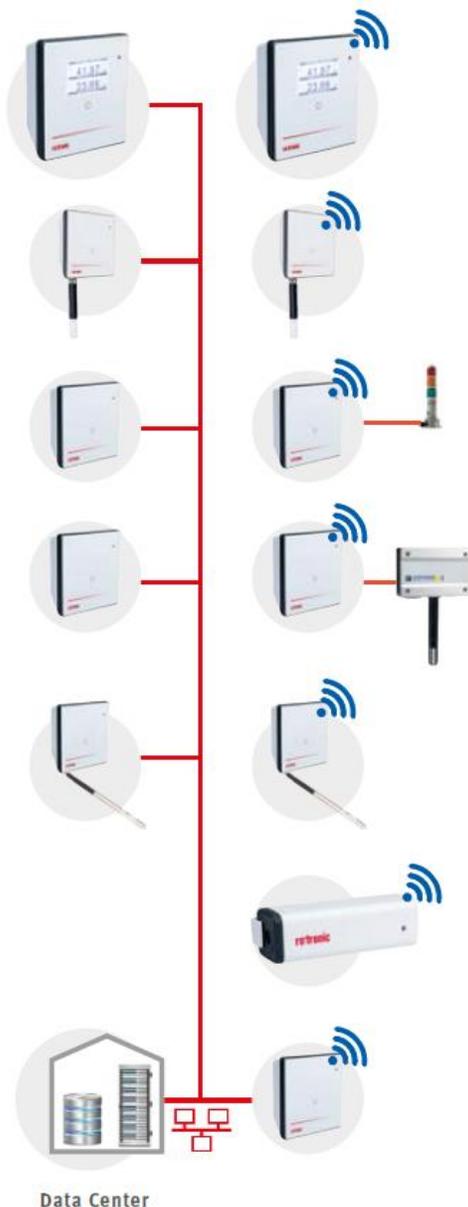

Figure 1: Schematic diagram of the RMS with the server software and database at the heart

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

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 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.

---

[1] Except for the Mini Logger

1.3   *RMS Data Logger*

Order code: RMS-LOG-L or RMS-LOG-868 or RMS-LOG-915

The data logger carries out measurements in a fixed interval, saves all measured data and sends it to the database by radio or Ethernet link. Should the connection be lost, the logger stores the data intermediately to protect data integrity and fills up the data gaps when the connection has been restored. The measurement parameters depend on the connected probe; two different parameters can be measured at the same time. The device has a battery so that logging of measured data is also ensured in the event of a failure in the external power supply.

The data logger provides the following basic functions:

- o   Logging of the measured values of the connected probe
- o   Data logging of up to 44,000 pairs of measured values
- o   Transfer of the recorded data to the RMS software
- o   Calibration and adjustment of the probe
- o   Firmware update

1.4   *RMS Display*

Order code: RMS-D-L

The RMS Display is a freely configurable device. The unit can be placed anywhere, not necessarily next to the measurement point. The display allows the visualisation of measurement values, conditions and alarms of devices within the RMS software.

The RMS Display provides the following basic functions:

- o   Display of up to 4 measuring values and their trends
- o   Actualisation every 10s
- o   Display of errors, alarms, warnings and notifications
- o   Display of the time

The RMS display will show 2 measurement values at a time. Should more than 2 measurement values be selected, then the display will automatically switch every 5 seconds between the measurement values.

Under each measurement value, the name of the measuring point will be indicated. The parameter will be shown on the right, next to the measurement value

Various notifications can also be displayed:

- o   Error: E
- o   Alarm: A
- o   Warning: W
- o   Reminder: R

When an alarm is shown, the display will also turn red and the name of the measuring point will be inverted. Additionally, the date and time are also shown on the RMS Display, all data is collected from the Web service.

1.5 Power Supply

All input modules (data loggers) have the following three power supply variants:

- Two 3.6 V lithium thionyl chloride AA batteries
  The power supply of the batteries suffices to carry out measurement and data storage and to operate the wireless interface. Devices with an Ethernet interface must also have one of the following power supplies. IMPORTANT: The RMS Display is not battery powered!
- 24 VDC ±10 % / <100 mA[2] via terminals (V+ / V-)
- Power over Ethernet (PoE), per standard IEEE 802.3af, Class 1

Note on the batteries:

The AA batteries are lithium thionyl chloride batteries available in the industrial trade. All RMS input modules are designed for this type of battery. Only batteries of the same type or with identical characteristic values may be used as replacement batteries.

1.5.1 Type of Battery

Battery Specifications	
Article	RMS-BAT(ER14505M, multiple manufacturer, please see for Details www.rotronic.com)
Type	Li-SOCl2
Capacitance	~2200 mAh
Voltage	3.6 V
Dimensions	AA (H: 50.3 mm, D: 14.55 mm)

1.6 Measured Parameters

Depending on the version, the RMS data loggers have different inputs. Devices with interchangeable probes (E2 connector) detect the measurement parameter of the probe automatically. The following table lists the main types:

---

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

Data Loggers for Interchangeable Probes	
RMS-LOG-L	Data logger, external probe, LAN
RMS-LOG-868	Data logger, external probe, 868 MHz
RMS-LOG-915	Data logger, external probe, 915 MHz
Gateway	
RMS-GW-868	Gateway, LAN to 868 MHz
RMS-GW-915	Gateway, LAN to 915 MHz
Temperature Data Loggers	
RMS-LOG-T30-L	Data logger, external probe, LAN, 2 x Pt100
RMS-LOG-T30-868	Data logger, external probe, 868 MHz, 2 x Pt100
Mini data logger Modules	
RMS-MADC-xxx-A	Data logger, 1 x analog input, 868 / 915 MHz, 0(4)…20 mA
RMS-MADC-868-V	Data logger, 1 x analog input, 868, 0…10V
RMS-MLOG-B-xxx	Mini data logger, integrated temperature & humidity probe,%rh, °C, 868 / 915 MHz
RMS-MLOG-T-xxx	Mini data logger, integrated temperature probe, °C, 868 / 915 MHz
RMS-MLOG-T10-xxx	Mini data logger, external NTC probe, °C, 868 / 915 MHz, NTC needs to be ordered separately
RMS-MLOG-LGT-868	Mini data logger, integrated light sensor, 868 MHz
RMS-MDI-868	Mini data logger, 1 x digital input, 868 MHz
Analog Input Modules	
RMS-4RTD-L-R	Input Module, 4 x PT100 input, LAN
RMS-8ADC-L-R-V	Input Module, 8 x analog input, 0…10 V, LAN
RMS-8ADC-L-R-A	Input Module, 8 x analog input, 0…20mA, LAN
Digital Input Modules	
RMS-DI-L-R	Data logger, 2 x digital input, LAN, DIN Rail
Digital Output Modules	
RMS-DO-L-R	Data logger, 2 x digital output, LAN, DIN Rail
Display Modules	
RMS-D-L	Display, 4 x Measurement points, LAN

1.7 RTCC (Real Time Clock Calendar)

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

1.8 Data Logging and Measurement Interval

The values of every measurement are saved in the memory with the time stamp. At a measurement interval of one minute, it is possible to save data of one month, which corresponds to 44,000 pairs of measured values. When the ring memory is full, the oldest values are overwritten.

1.9 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

Pairing		
Trigger	**Action**	**LED**
1s press	Confirms pairing	n x orange, the LED flashes orange when the pairing demand is open
Remove pairing		
Trigger	**Action**	**LED**
8s press	Removes pairing, stops logging and turns off device	3 x red, the pairing information stored in the logger is deleted
Device status update		
Trigger	**Action**	**LED**
1s press	Shows the current status	1 x green, the connection to the server is good 1 x red, battery low 2 x red, there is no connection to the server
Automatic (every 5 seconds)	Shows the current status	1 x green, the connection to the server is good 2 x red, there is no connection to the server

LED Status Indicator for Wireless Devices

Pairing		
Trigger	**Action**	**LED**
1s press	**Confirms pairing**	**1 x orange, the LED blinks orange for each channel searched**
	Gateway found	**n x orange, the LED flashes orange when the pairing demand is open**
	Confirmed pairing	**3 x green**
	Issue pairing (time out, no data received)	**3 x red**
Remove pairing		
Trigger	**Action**	**LED**
8s press	**Removes pairing, stops logging and turns off device**	**3 x red, the pairing information stored in the logger is deleted**
Device status update		
Trigger	**Action**	**LED**
1s press	**Shows the current status**	**Green shows the ISM connection (see below)** **1 x red, battery low** **2 x red, there is no connection to the server**
Automatic (every 5 seconds)	**Shows the current status**	**1 x green, the connection to the server is good** **2 x red, there is no connection to the server**
Wireless range		
Trigger	**Action**	**LED**
1s press	**Shows the current wireless status**	4 x green, RSSI >-30dBm 3 x green, RSSI >-60dBm 2 x green, RSSI >-80dBm 1 x green, RSSI <=-80dBm

1.10 *Interface*

The logger is operated completely via the LAN or wireless interface.

1.11 *MODBUS communication protocol*

For direct connection to other systems, the device provides a MODBUS TCP server. To following data is available via MODBUS communication:

Description	Details
Protocol	MODBUS TCP
TCP Port	502

Connection timeout:

When TCP connection is open and for more than 30 seconds no communication is performed, the device automatically closes the TCP connection. In case of a communication interruption, this prohibits that the socket is could be blocked.

1.11.1 Function 04- Read Input Register

Device Data

Register	Parameter		Data type
30001	Serial number		Unsigned 32 Bit
30002			
30003	Serial number oft he sensors		Unsigned 32 Bit
30004			

Float Values

Register	Parameter		Data type
31001	Value 1	Measurement value sensor 1	Float 32 Bit
31002			
31003	Value 2	Measurement value sensor 2	Float 32 Bit
31004			

Integer Values

The measurement values are only available in floating format.

1.11.2 Swap mode

The swap mode defines how a float32 value is represented in MODUBS data structure. The settings must be done with the RMS-CONFIG software.

Factory settings: **WORD-Swap**

Example:

Value 1 (Address 31001 / 31002):   45.0 = 0x42340000

Value 2 (Address 31001 / 31002):   1000.0 = 0x447A0000

The following website helps for conversion:

https://www.h-schmidt.net/FloatConverter/IEEE754de.html

NoChange (Big Endian)

31001	16948	0x4234
31002	0	0x0000
31003	17530	0x447A
31004	0	0x0000

Word Swap (Mixed Endian)

31001	0	0x0000
31002	16948	0x4234
31003	0	0x0000
31004	17530	0x447A

Byte Swap (Middle Endian)

31001	13378	0x3442
31002	0	0x0000
31003	31300	0x7A44
31004	0	0x0000

Byte and Word Swap (Little Endian)

31001	0	0x0000
31002	13378	0x3442
31003	0	0x0000
31004	31300	0x7A44

Software Compatibility

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

2 Dimensions

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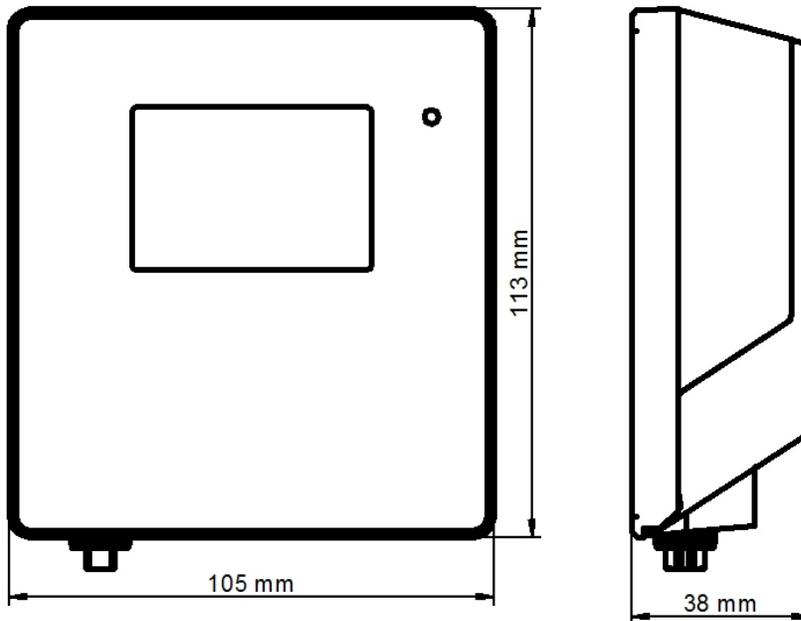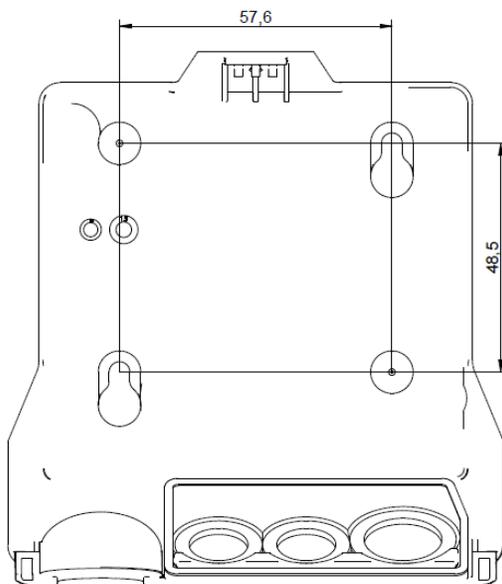

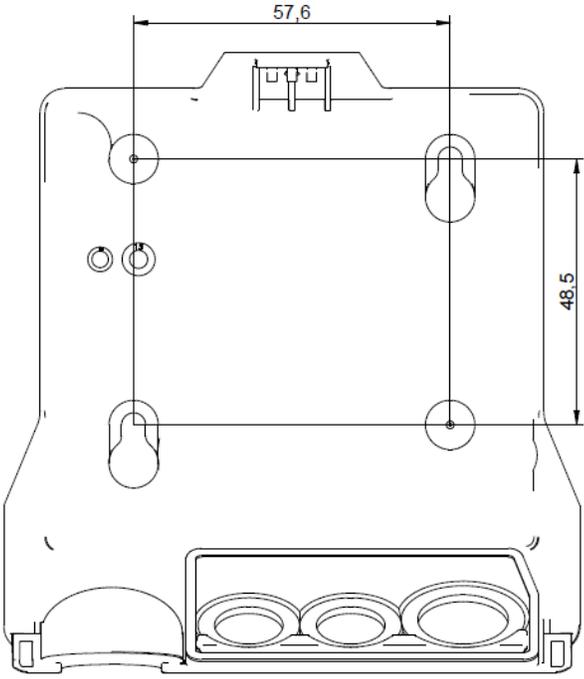*Figure 2: Dimensions of the wall housing*

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.	

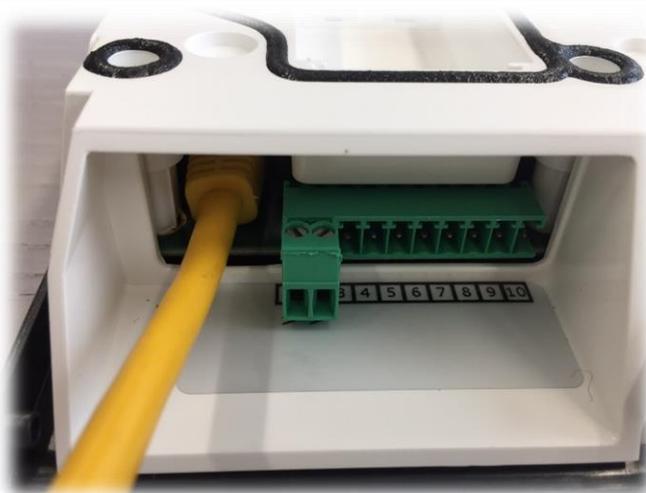|		
3	The cover has two suspension openings and two additional prepared fastening possibilities[3].	
4	Insert the batteries at the back of the device and remove the insulation strips. Make sure they are inserted correctly. The poles are marked on the battery and in the battery compartment.	

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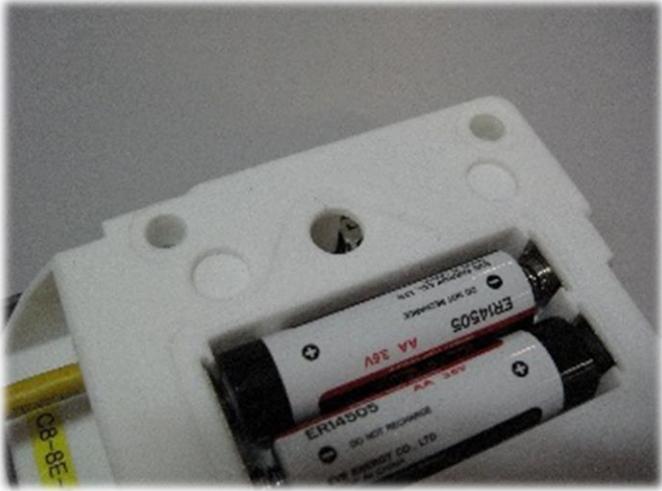
[3] Only the mounting points provided should be used for mounting.

5	**Only for LAN devices:** 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.	
6	**Only for LAN devices:** Plug the cable into the device[4]. For secure fastening and to ensure a reliable data link, make sure it clicks in audibly.	

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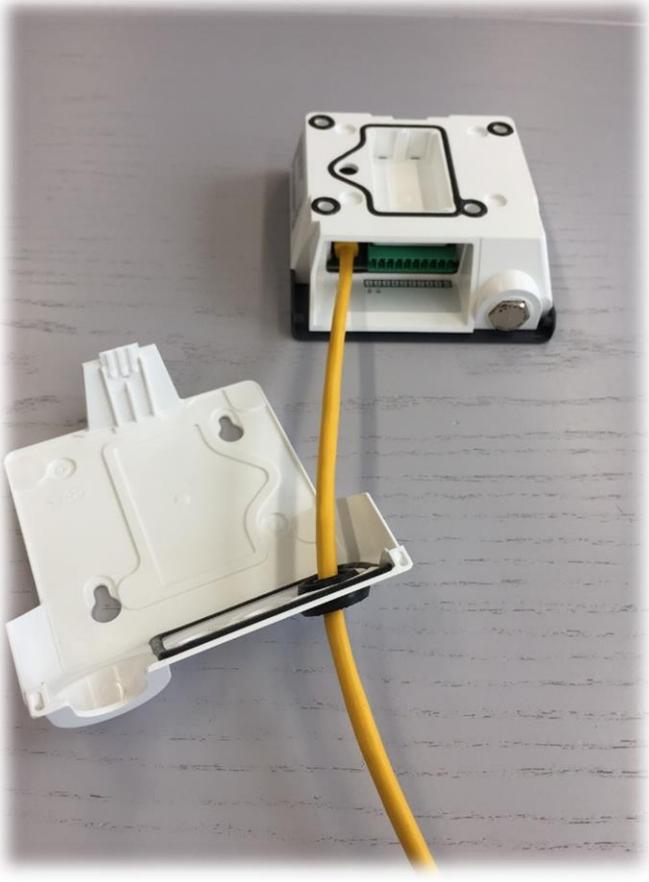
[4] The connected cable may not exceed a length of 30 m at most. Disruptions can occur in operation if a longer cable is used!

7	If necessary: Connect the device to a power supply.	
8	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.[56]	

---

[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

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

11	Insert the probe and fasten with the thumb screw.	

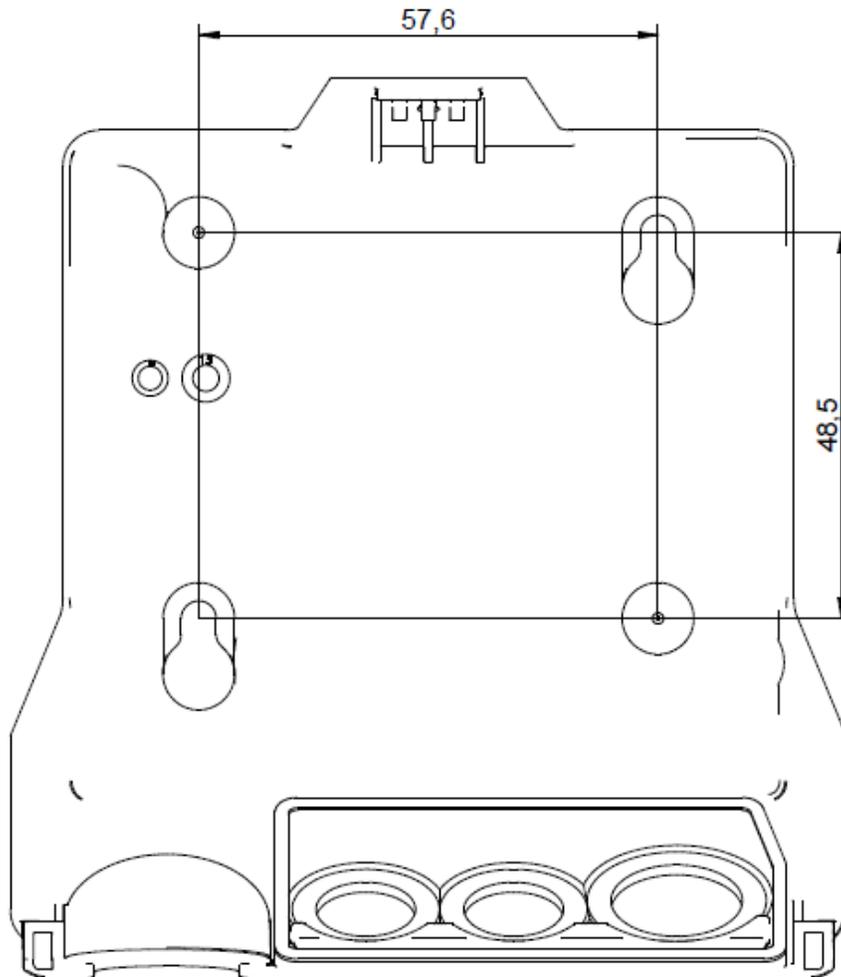## 3.1 *Drilling Template Wall Bracket*

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	RXTX+	Not used
4	RXTX-	Not used
5 – 10	-	No function

Note:

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

4.1 *Battery*

The batteries serve to supply the device with power in the event of a failure in the external power supply. The functionality of the device is restricted in battery mode. The device continues to measure and records all data in the internal memory. The device cannot communicate via the Ethernet interface, but the wireless interface works normally.

Lithium batteries of the type AA with 3.6 V are used, per section 1.5.1. Make sure they are inserted correctly. The poles are marked on the battery and in the battery compartment.

5 Operation

This section describes all manipulations necessary for operation.

5.1 *Default Configuration*

The devices are configured ex works. All devices with a LAN connection 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.

LAN Devices

TCPIP configuration: The DHCP server must be on, the configuration is obtained automatically.
 RMS-WEB URL Host: rms.rotronic.com
RMS-WEB URL Path: /wService/wService3.DEviceService.svc

Wireless Devices

The device does not have a wireless configuration on leaving the factory. It is assigned automatically when pairing the device in a system.

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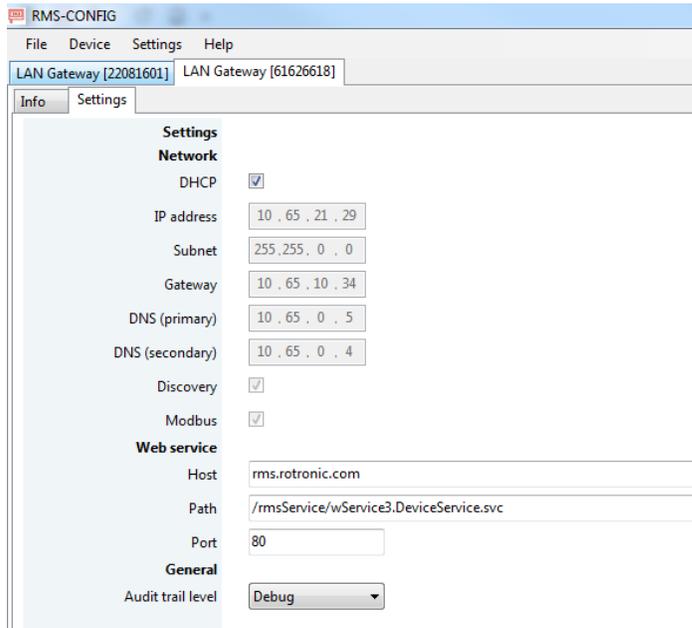
Once they have been configured with the correct server address, the devices can then be integrated into the server software. Details are described in the manual **E-SM-RMS-WEB**.

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*

5.4.1 LAN Devices

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 Data Logger (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.

New device

Please press button on the device briefly

CANCEL

5	Configure the device.

LAN-Logger

Device

Serial number 61597882

Name Office

Interval [s] 60

Group Office ME

Measuring point 1

Name Office, Humi

Type Humidity

Measuring point 2

Name Office, Humi ✕

Type Temperature

CANCEL OK

The RMS-D-L:

LAN-Display

Device

Serial number 23021701

Name

Interval [s] 60

Group New product testing

Line 1 Not used

Line 2 Not used

Line 3 Not used

Line 4 Not used

CANCEL OK

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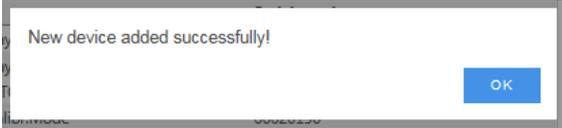
You can find details in the instruction manual for the RMS server software: **E-SM-RMS-WEB**

5.4.2 Wireless Devices

To integrate the device in a RMS-WEB system, pairing mode must be enabled via the software on a gateway within wireless range. The search for the device is started by pressing a button. If it is possible for the device to connect with the gateway, this is shown by orange flashing. Pairing is then completed as described in the RMS-WEB software.

Integration of the Wireless Data Logger (Pairing) in 5 Steps.

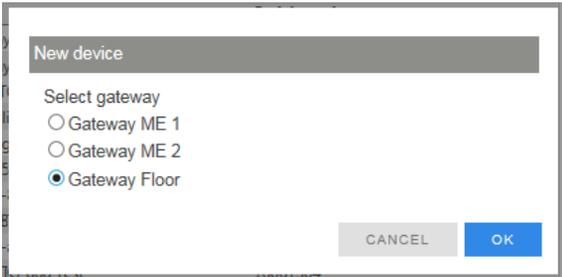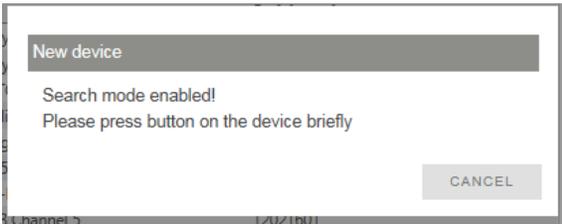| 1	Log into the RMS software / Cloud. Select *Extras > Setup > Devices > New Wireless Device*
2	Select the gateway you want your wireless data logger to be connected to. The selected gateway then changes to pairing mode and flashes orange.
3	Press the button on the device to confirm. The wireless data logger stops flashing.

	New device Search mode enabled! Please press button on the device briefly CANCEL
4	Configure the device. **LAN-Logger** **Device** Serial number 61597882 Name Office Interval [s] 60 Group Office ME **Measuring point 1** Name Office, Humi Type Humidity **Measuring point 2** Name Office, Humi ✕ Type Temperature CANCEL OK
5	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.
► Measurement by the connected probe	The device recognizes the connected probe automatically and requests the latest measured data. The measured data are sent to the RMS server software at the set interval directly after the measurement.
► Save measured data	The measured values of every measurement are saved in the internal ring memory (44,000 pairs of measured values). If the data cannot be sent to the server software directly, they are kept in the device and then sent later as soon as the connection to the server software has been restored.
► Battery mode	If the external power supply (24 VDC / PoE) fails, the device runs in battery mode. Measurements are still carried out at the set interval and the data saved in the ring memory (44,000 pairs of measured values).
►Firmware update	The firmware of the device can be updated directly via the RMS server software.

6   Maintenance

Even the best technology needs regular maintenance. This chapter describes the most important points.

6.1   *Battery Replacement*

The batteries (see chapter 1.5.1 for the type of battery) of RMS devices typically last 3 years. The device shows automatically when the battery needs to be replaced.

- LED flashes red
- System message in the RMS server software

The following steps are necessary to replace the battery:

- Take the device out of the wall bracket
- Remove the old battery and insert a new one

The time setting of the data logger is synchronized automatically after the battery replacement.

Important:

- The battery life depends on the ambient temperature. Low or high temperatures can lead to a shorter battery life.

7 Firmware Update

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

8 Technical Specifications

General		
Device type	RMS Data Logger	
Measured parameters	Humidity & temperature with HygroClip HCD-S Differential pressure with PCD-S CO2 with CCD-S	
IP protection class	IP65[7]	
Range of application	-40..70 °C / 0..100 %RH	
Storage and transport conditions	-40..30 °C / 0..90 %RH	
Data memory	44,000 pairs of measured values	
Interfaces	Ethernet (RMS-LOG-L) Wireless 868 MHz (RMS-LOG-868) Wireless 915 MHz (RMS-LOG-915)	
Protocols	HTTP & MODBUS	
Wireless range	20..50 m, indoors 868 MHz	15…25 m, indoors 915 MHz
Transmitting power	14dBm (25mW)	2dBm (1,6mW)
Software compatibility	≥V1.1	≥V1.2.1

General	
Device type	RMS Display
IP protection class	IP65[8]
Range of application	-20..30 °C / 0..100 %RH
Storage and transport conditions	-20..30 °C / 0..100 %RH
Interfaces	Ethernet (RMS-D-L)
Protocols	HTTP

Power Supply	
Supply voltage	24 VDC ±10 % / <100 mA[9] PoE: 802.3af-2003, Class 1

---

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

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

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

	Battery (No battery option with the RMS-D-L).
Polarity protection	Yes
Current consumption	<100 mA
Battery life	3 years at 23 °C and interval of 1 minute)

Start Time and Measurement Interval	
Start time	LAN logger: 10 s (typical) Wireless logger: 1 s (typical) LAN display: <20s
Measurement interval	10 s to 15 min
Refresh rate (RMS-D-L)	10 s

Housing Specifications	
Housing material	ABS
Dimensions	105 x 113 x 38 mm
Weight	200 g

Conformity		
EMC directives RMS-LOG-L	EMC Directive: 2014/30/EU LVD Directive: 2014/35/EU EN 61326-1:2013 (Industrielle Umgebung) EN 55011:2016, class B EN 55032:2016 EN 61010-1:2010 EN 50581:2012 Performance criterion: www.rotronic.com	IEC 61326-1:2012 ed2.0 (Industrial Environment) IEC CISPR 11:2015; class B IEC CISPR 32:2016 IEC 61010-1:2010 IEC 50581:2013-02

EMC directives RMS-LOG-868	RED-Directive 2014/53/EU EN 61326-1:2013 IEC 61326-1:2012 ed2.0 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
EMC directives RMS-D-L	EMC Directive: 2014/30/EU LVD Directive: 2014/35/EU EN 61326-1:2012 (Industrielle Umgebung) IEC 61326-1:2013 (Industrial Environment) EN 55011:2016, class B IEC CISPR 11:2015; class B EN 55032:2015 IEC CISPR 32:2015 EN 61010-1:2010 IEC 61010-1:2010 EN 50581:2012 Performance criterion: www.rotronic.com
FCC RMS-LOG-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

9 Accessories

All accessories for the HC2A probe such as extension cables, adapters, calibration material, etc are to be found in the manual **E-M-HC2-Accessories.**

9.1 *RMS Accessories*

Order Code	Description
HCD-S	Standard probe, black, %RH & °C
PCD-S	Standard probe, anthracite, Differential pressure
CCD-S	Standard probe, anthracite, CO2
RMS-GW-868	Gateway, LAN to 868 MHz
AC1321	Mounting kit with Allen key and mounting cone
RMS-NPK	Network planning kit: wireless dongle, RMS mini logger

10 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-GW-868	Instruction Manual: Gateway
E-M-RMS-MLOG	Instruction Manual: Mini Logger
E-M-RMS-LOG-R	Instruction Manual: Din rail logger

11   Document Version

Version	Date	Notes
V1_0	October 2016	First version
V1_1	November 2016	• Update IP protection • Update power supply specifications • MODBUS commands integrated
V1.2	May 2017	• 1.4 RMS Display: New • 1.5 Power suppler: Updated for the RMS Display • 1.6 Measured parameters: Updated table • 1.9 Indicator and button: Updated table • 5.4.1: Configuration RMS-D-L • 8 Technical specification: New RMS Display details • 10 Additional documentation: New Manual
V1.3	March 2018	• 1.5.1 Battery specification: Updated table • 1.1 Modbus: Updated Read input register 04 • 8 Technical specification: Updated table • 9.1 RMS accessories: Additional accessories
V1.4	April 2018	• 1.6 Measured parameter: Updated table • 8 Technical specification: Updated table