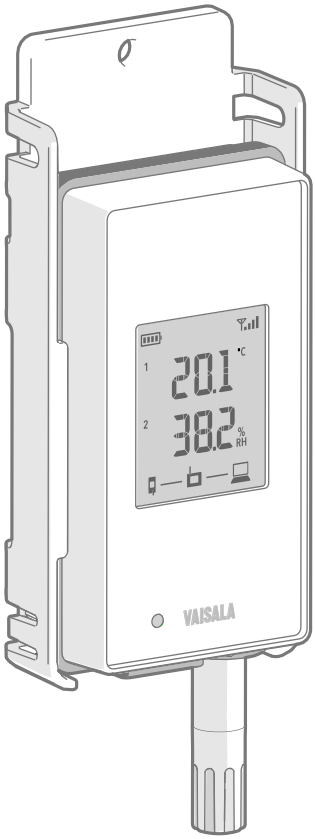
M211861EN-A

User Guide

Vaisala VaiNet Wireless Humidity and Temperature Data Logger

RFL100



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1. About This Document

1.1 Version Information

This document provides instructions for installing, using, and maintaining the RFL100 Data Logger.

Table 1 Document Versions

Document Code	Date	Description
M211861EN-A	April 2018	First version.

1.2 Related Manuals

Table 2 Related Manuals

Document Code	Name
M211822EN	*RFL100 Data Logger Quick Guide*
M211821EN	*AP10 Access Point Quick Guide*
M211860EN	*AP10 Access Point User Guide*
M211820EN	*viewLinc Monitoring System Setup Guide*
M211975EN	*viewLinc Enterprise Server User Guide*

1.3 Documentation Conventions

WARNING! Warning alerts you to a serious hazard. If you do not read and follow instructions carefully at this point, there is a risk of injury or even death.

CAUTION! Caution warns you of a potential hazard. If you do not read and follow instructions carefully at this point, the product could be damaged or important data could be lost.

Note highlights important information on using the product.

Tip gives information for using the product more efficiently.

Lists tools needed to perform the task.

Indicates that you need to take some notes during the task.

1.4 Trademarks

Vaisala® and HUMICAP® are registered trademarks of Vaisala Oyj.

The LoRa™ name and associated logo are trademarks of Semtech Corporation or its subsidiaries.

All other product or company names that may be mentioned in this publication are trade names, trademarks, or registered trademarks of their respective owners.

2. Product Overview

2.1 RFL100 Overview

Vaisala RFL100 Data Logger is a completely wireless, battery powered humidity and temperate data logger. It is intended as a data collection point in a Vaisala viewLinc Monitoring System.

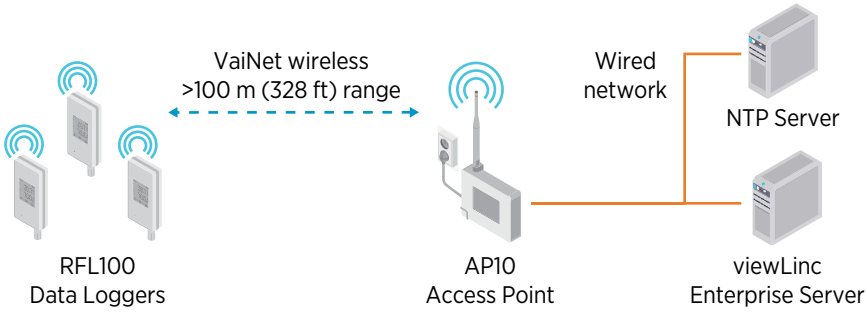


Figure 1 Connecting RFL100 to the viewLinc Monitoring System

RFL100 requires a connection to a Vaisala AP10 Access Point. AP10 can connect up to 32 loggers to the viewLinc Monitoring System. In a typical indoor space, install the AP10 within 100 meters of the RFL100. In an open space without many interfering structures, the range may be significantly higher.

RFL100 is optimized for low power operation. It reads the probe once a minute, and transmits measurement data to the access point every four minutes. Because the radio link is not continuous, remote management actions and system joining status may take some time to be updated on the display of the data logger.

Before you start installing RFL100 Data Loggers, install the viewLinc Enterprise Server and at least one AP10 Access Point within range of the RFL100. This way RFL100 can immediately discover your access point and join your system.
For more information on viewLinc Monitoring System installation, see *viewLinc Setup Guide*.

2.2 RFL100 Parts

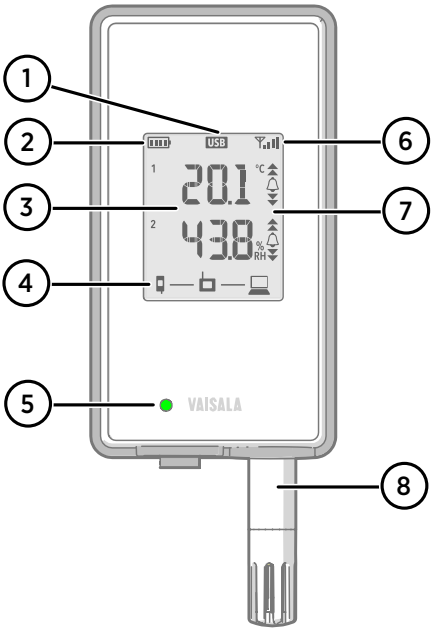


Figure 2 Front and Display

1 Service port connection indicator.
2 Battery level indicator.
3 Currently measured values.
4 Connection indicators.
5 Status LED. Blinks green for normal operation, red for error or alarm.
6 Signal strength of access point connection.
7 Alarm indicators. Alarms are configured in viewLinc Enterprise Server software.
8 Detachable probe or probe cable.

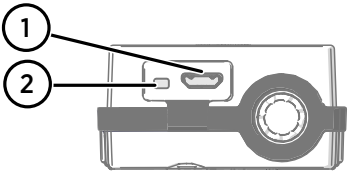


Figure 3 Under the Silicone Plug

1 Service port (Micro-USB).
2 **Refresh** button. Push to enable a faster wireless scanning interval for one hour. Also wakes up the display if it has been turned off remotely, and shows firmware version and currently connected VaiNet channel.

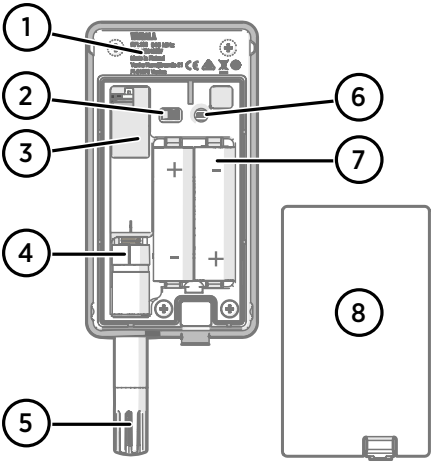


Figure 4 Rear and Inside

1 Type label.
2 On/off switch.
3 Clock battery.
4 Probe orientation mark. When connecting the probe, line up the markings on the probe and above the connector before pushing the probe to the connector.
5 Humidity and/or temperature sensors under the filter.
6 **Release** button. Push to release RFL100 from its current viewLinc system, and allow it to connect to any viewLinc system.
7 Main batteries. Use only non-rechargeable, AA size, 1.5 V alkaline (LR6) or lithium (FR6) batteries.
8 Battery cover.

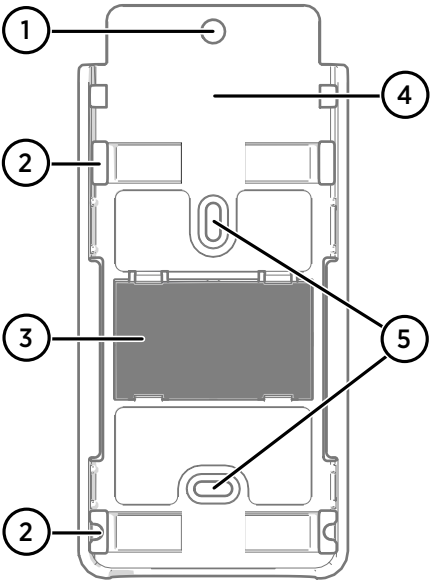


Figure 5 Mounting Bracket

1 6 mm (0.23 inch) hole for hook mounting.
2 Holes for mounting with zip ties.
3 Strong magnet (in magnetic mounting bracket only). **Handle with care.**
4 Suitable area for attaching labels.
5 3.80 mm (0.15 inch) holes for screw mounting.

2.3 RFL100 Batteries

Main Batteries

RFL100 Data Logger is powered by two AA size primary (non-chargeable) batteries with 1.5 V nominal voltage. Operation of the data logger always requires that compatible batteries with sufficient voltage are in place. When replacing batteries, always use new batteries, not partially discharged ones. Minimum battery voltage for operation is 2.15 V in series.

Compatible battery types are:

- 1.5 V alkaline batteries, designation IEC-LR6, ANSI 15A. Standard choice for most applications.
- 1.5 V lithium batteries, designation IEC-FR14505 (FR6), ANSI 15-LF. Typically higher capacity, better in cold temperatures.

CAUTION! Do not use batteries with a nominal voltage higher than 1.5 V.

Use of rechargeable batteries is not recommended. RFL100 will not charge batteries even if the service port is connected to a power supply.

Clock Battery

RFL100 also has a separate 3 V lithium battery (type CR1/3N button cell) to keep the real-time clock powered when the device is otherwise turned off. This battery is good for 10 years, and should only be replaced if the data logger gives the low clock battery error.

2.3.1 Battery Level Indicator

Table 3 Battery Level Indicator

Symbol on Display	Description
	Full batteries.
	One quarter of battery capacity used.
	Half of the battery capacity used.
	Low battery alarm is activated by viewLinc at this level. Remaining battery capacity is typically enough for 2 ... 4 weeks of normal operation. Replace the batteries.

Symbol on Display	Description
	Battery voltage is too low to support radio communication. Data logging continues locally for 2 ... 4 weeks until device shuts down completely. Replace batteries immediately.

The battery level indicator is an estimate only. It is based on the typical behavior of batteries in this application.

2.4 Alarm Indicators

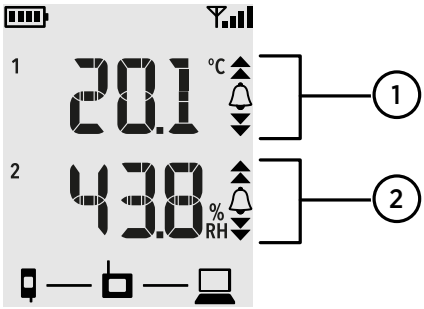


Figure 6 Alarm Indicators on RFL100 Display

1 Alarm indicators for channel 1
2 Alarm indicators for channel 2

Table 4 Alarm Symbols

Symbol on Display	Description
	High-high threshold alarm active.
	High threshold alarm active.
	Alarm bell symbol that is always shown when any threshold alarm is active on this channel.
	Low threshold alarm active.
	Low-low threshold alarm active.

RFL100 can show active threshold alarms on its local display. When a threshold alarm is active on RFL100, the appropriate alarm indicators will be shown on the display. Additionally, the LED will flash red for high-high and low-low threshold alarms.

Threshold alarms cannot be configured locally on the RFL100 itself; they are configured using viewLinc Enterprise Server software. When applying a threshold alarm template to a Location, you can choose to show the alarms on the data logger that is linked to the location. To show the alarms, enable the **Send to device** setting, and then enable **Alarm on Device** for each threshold that you want to generate an alarm on the RFL100.

On the RFL100, only one set of thresholds can be active at a time for one channel. The latest set that is pushed to the device replaces the previous one. The **Send to device** setting of any previously sent threshold alarm is automatically set to **No**.

RFL100 does not implement the **Alarm Delay** and **Alarm off margin** settings of viewLinc threshold alarms. Local alarm status on RFL100 changes as soon as the measured values cross the thresholds.

2.5 Service Port

The service port of the data logger provides a local interface for performing service actions that cannot be done over the air, such as updating the device firmware. The service actions are based on file transfer using Media Transfer Protocol (MTP), so no special software is needed. The service port connector is a standard micro-USB connector.

The service port can be used to supply operating power to the data logger. Use a power supply that fulfills the requirements listed in Table 5 (page 12).

Table 5 Specifications for a USB Power Supply

Property	Specification
Output voltage	5 VDC
Output current	min. 100 mA
Output connector	Micro-USB
Certifications and approvals	• Certified to IEC 60950-1 or IEC 62368-1 • Approved for use in your country

Batteries with a sufficient voltage (minimum 2.6 V in series) must always be in place inside the data logger, even when supplying external power through the service port.

CAUTION! When using an external power supply, the main batteries will be drained very slowly. As alkaline batteries may leak when left in place for a long time, always use compatible 1.5 V lithium batteries instead of alkaline batteries when using an external power supply.

2.6 Delays in a VaiNet Network

VaiNet protocol and VaiNet devices are designed for power-efficient operation. Some of the design choices that enable long battery life also create significant delays that the users should be aware of.

Intermittent Radio Connections

Radio connections between VaiNet access points and data loggers are not continuous. Access points take turns communicating in a two-minute cycle, and connected data loggers send their measurement data to their connected access point every four minutes. This introduces various delays:

- Data loggers that are not currently connected (new devices or ones that have fallen out of radio contact) have to scan for available access points for a complete cycle before they can decide what is the optimal access point for them. This means that connection attempts typically take at least a couple of minutes. Additionally, some joining scenarios may take multiple attempts. For example, when filling a single access point up to its full capacity of 32 data loggers, it may take an hour for the last data logger to successfully connect to the access point.
- Access points request missing data and issue management commands to data loggers within their communication window. Transferring a full month's worth of measurement data from 32 data loggers using one access point takes several hours.

Data Logger Scanning Interval

Scanning for available access points consumes power. To prevent repeated scanning from draining their batteries, RFL100 Data Loggers shut down their radio temporarily if they can find no access points to join. They will resume scanning after a waiting interval that gets progressively longer if they keep failing to find an access point. The maximum interval is 8 hours and 30 minutes.

This means that when access points become available after an outage, it may take several hours for data loggers to discover them. This is why you should always keep your access points powered up, and why you should start your network installation by installing the viewLinc Enterprise Server and access points first.

You can manually wake up the radio of an RFL100 Data Logger by pressing its **Refresh** button. The button is located next to the service port under the silicone plug.

2.7 Safety

CAUTION! Do not modify the unit or use it in ways not described in the documentation. Improper modification may lead to safety hazards, equipment damage, failure to perform according to specification, or decreased equipment lifetime.

CAUTION! The optional magnetic mounting bracket of the RFL100 has a strong magnet. Handle it with care and keep it away from devices that are sensitive to magnetic fields (for example, pacemarkers, magnetic cards, and mechanical watches.)

CAUTION! This device requires a separation distance of at least 20 cm. This distance must be maintained between the user and the device when the device is operating.

ATTENTION Cet appareil nécessite une distance de séparation d'au moins 20 cm. Cette distance doit être maintenue entre l'utilisateur et l'appareil lorsque l'appareil est en fonctionnement.

2.8 Regulatory Compliance

2.8.1 FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2.8.2 ISED Compliance Statement

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

This device has a PCB integrated inverted F-antenna with a gain of 1 dBi.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. l'appareil ne doit pas produire de brouillage, et
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Le présent appareil dispose d'une antenne F inversée intégrée à la carte avec un gain de 1 dBi.

2.8.3 EU Declaration of Conformity

BG: С настоящото Vaisala Oyj декларира, че този тип радиосъоръжение RFL100 е в съответствие с Директива 2014/53/ЕС. Цялостният текст на ЕС декларацията за съответствие може да се намери на следния интернет адрес: www.vaisala.com/declarationofconformity

CS: Tímto Vaisala Oyj prohlašuje, že typ rádiového zařízení RFL100 je v souladu se směrnicí 2014/53/EU. Úplné znění EU prohlášení o shodě je k dispozici na této internetové adrese: www.vaisala.com/declarationofconformity

DA: Hermed erklærer Vaisala Oyj , at radioudstyrstypen RFL100 er i overensstemmelse med direktiv 2014/53/EU. EU-overensstemmelseserklæringens fulde tekst kan findes på følgende internetadresse: www.vaisala.com/declarationofconformity

DE: Hiermit erklärt Vaisala Oyj , dass der Funkanlagentyp RFL100 der Richtlinie 2014/53/EU entspricht. Der vollständige Text der EU-Konformitätserklärung ist unter der folgenden Internetadresse verfügbar: www.vaisala.com/declarationofconformity

EL:Με την παρούσα ο/η Vaisala Oyj , δηλώνει ότι ο ραδιοεξοπλισμός RFL100 πληροί την οδηγία 2014/53/ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης ΕΕ διατίθεται στην ακόλουθη ιστοσελίδα στο διαδίκτυο: www.vaisala.com/declarationofconformity

EN: Hereby, Vaisala Oyj declares that the radio equipment type RFL100 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.vaisala.com/declarationofconformity

ES: Por la presente, Vaisala Oyj declara que el tipo de equipo radioeléctrico RFL100 es conforme con la Directiva 2014/53/UE. El texto completo de la declaración UE de conformidad está disponible en la dirección Internet siguiente: www.vaisala.com/declarationofconformity

ET: Käesolevaga deklareerib Vaisala Oyj , et käesolev raadioseadme tüüp RFL100 vastab direktiivi 2014/53/EL nõuetele. ELi vastavusdeklaratsiooni täielik tekst on kättesaadav järgmisel internetiaadressil: www.vaisala.com/declarationofconformity

FI: Vaisala Oyj vakuuttaa, että radiolaitetyyppi RFL100 on direktiivin 2014/53/EU mukainen. EU-vaatimustenmukaisuusvakuutuksen täysimittainen teksti on saatavilla seuraavassa internetosoitteessa: www.vaisala.com/declarationofconformity

FR: Le soussigné, Vaisala Oyj , déclare que l'équipement radioélectrique du type RFL100 est conforme à la directive 2014/53/UE. Le texte complet de la déclaration UE de conformité est disponible à l'adresse internet suivante: www.vaisala.com/declarationofconformity

HR: Vaisala Oyj ovime izjavljuje da je radijska oprema tipa RFL100 u skladu s Direktivom 2014/53/EU. Cjeloviti tekst EU izjave o sukladnosti dostupan je na sljedećoj internetskoj adresi: www.vaisala.com/declarationofconformity

HU: Vaisala Oyj igazolja, hogy a RFL100 típusú rádióberendezés megfelel a 2014/53/EU irányelvnek. Az EU-megfelelőségi nyilatkozat teljes szövege elérhető a következő internetes címen: www.vaisala.com/declarationofconformity

IT: Il fabbricante, Vaisala Oyj , dichiara che il tipo di apparecchiatura radio RFL100 è conforme alla direttiva 2014/53/UE. Il testo completo della dichiarazione di conformità UE è disponibile al seguente indirizzo Internet: www.vaisala.com/declarationofconformity

LT: Aš, Vaisala Oyj , patvirtinu, kad radijo įrenginių tipas RFL100 atitinka Direktyvą 2014/53/ES. Visas ES atitikties deklaracijos tekstas prieinamas šiuo interneto adresu: www.vaisala.com/declarationofconformity

LV: Ar šo Vaisala Oyj deklarē, ka radioiekārta RFL100 atbilst Direktīvai 2014/53/ES. Pilns ES atbilstības deklarācijas teksts ir pieejams šādā interneta vietnē: www.vaisala.com/declarationofconformity

MT: B'dan, Vaisala Oyj , niddikjara li dan it-tip ta' tagħmir tar-radju RFL100 huwa konformi mad-Direttiva 2014/53/UE. It-test kollu tad-dikjarazzjoni ta' konformità tal-UE huwa disponibbli f'dan l-indirizz tal-Internet li ġej: www.vaisala.com/declarationofconformity

NL: Hierbij verklaar ik, Vaisala Oyj , dat het type radioapparatuur RFL100 conform is met Richtlijn 2014/53/EU. De volledige tekst van de EU-conformiteitsverklaring kan worden geraadpleegd op het volgende internetadres: www.vaisala.com/declarationofconformity

PL: Vaisala Oyj niniejszym oświadcza, że typ urządzenia radiowego RFL100 jest zgodny z dyrektywą 2014/53/UE. Pełny tekst deklaracji zgodności UE jest dostępny pod następującym adresem internetowym: www.vaisala.com/declarationofconformity

PT: O(a) abaixo assinado(a) Vaisala Oyj declara que o presente tipo de equipamento de rádio RFL100 está em conformidade com a Diretiva 2014/53/UE. O texto integral da declaração de conformidade está disponível no seguinte endereço de Internet: www.vaisala.com/declarationofconformity

RO: Prin prezenta, Vaisala Oyj declară că tipul de echipamente radio RFL100 este în conformitate cu Directiva 2014/53/UE. Textul integral al declarației UE de conformitate este disponibil la următoarea adresă internet: www.vaisala.com/declarationofconformity

SK: Vaisala Oyj týmto vyhlasuje, že rádiové zariadenie typu RFL100 je v súlade so smernicou 2014/53/EÚ. Úplné EÚ vyhlásenie o zhode je k dispozícii na tejto internetovej adrese: www.vaisala.com/declarationofconformity

SL: Vaisala Oyj potrjuje, da je tip radijske opreme RFL100 skladen z Direktivo 2014/53/EU. Celotno besedilo izjave EU o skladnosti je na voljo na naslednjem spletnem naslovu: www.vaisala.com/declarationofconformity

SV: Härmed försäkrar Vaisala Oyj att denna typ av radioutrustning RFL100 överensstämmer med direktiv 2014/53/EU. Den fullständiga texten till EU-försäkran om överensstämmelse finns på följande webbadress: www.vaisala.com/declarationofconformity

2.9 Symbols in RFL100 Product Markings

Table 6 Symbols Used in RFL100 Product Markings

Symbol	Description
	Meets the essential requirements of the applicable EC directives
	Symbol of electrical and electronic equipment according to the WEEE directive
	FCC mark
	Environment Friendly Use Period of 10 years
	Read user instructions
	Read user instructions
	Battery orientation symbol
	Regulatory Compliance Mark (RCM)

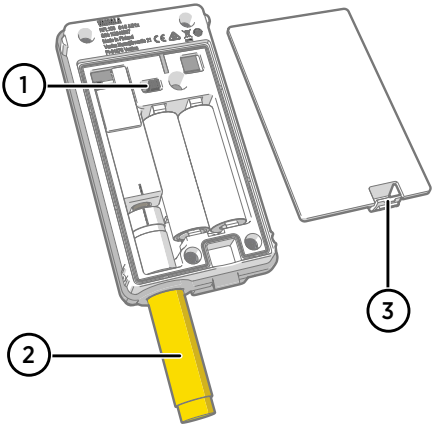
2.10 ESD Protection

Electrostatic Discharge (ESD) can cause immediate or latent damage to electronic circuits. Vaisala products are adequately protected against ESD for their intended use. However, it is possible to damage the product by delivering an electrostatic discharge when touching, removing or inserting any objects inside the equipment housing.

Avoid touching component contacts or connectors when working with the device.

3. Installation

3.1 Setting Up RFL100 Data Logger



1 Power switch.
2 Protection cap. Remove after installation is complete.
3 Latch of the battery cover.

1. Open the battery cover of the data logger.
2. Move the power switch to the **On** position.
3. Close the battery cover of the data logger. **Push the latch down until you hear a click.** If the cover does not close easily, push the probe in and try again.
4. Look at the display and verify that:
   - Battery indicator shows full batteries .
   - Display shows measurement readings instead of dashes or error codes.

   If measurement readings are not shown after a few seconds, check that the probe is properly connected. It is possible to disconnect the probe by pulling on the probe with the battery cover open. In that case the display will show error code **ERR 202**.

When you turn on the RFL100 it starts to scan for VaiNet access points that are in installation mode. RFL100 will connect to the access point with the best signal strength, and wait to be accepted by the administrator of the viewLinc Enterprise Server.

3.2 Mounting RFL100

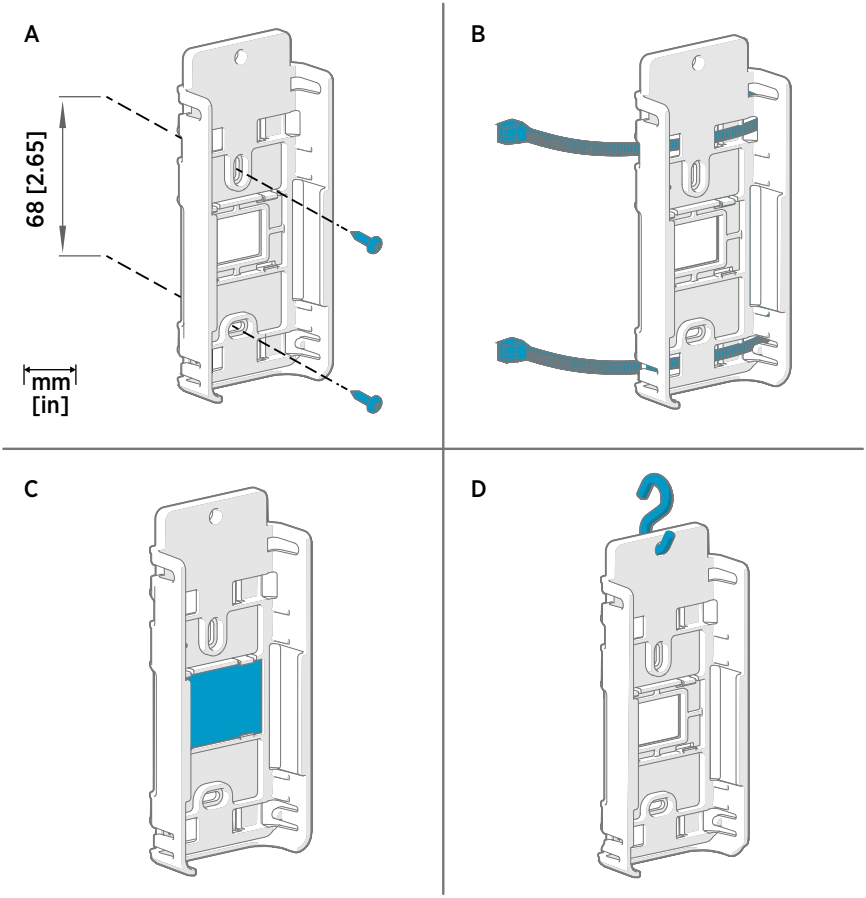


Figure 7 RFL100 Mounting Methods

A Mounting with screws. Screws and wall plugs are included with the data logger.
B Mounting with zip ties. Zip ties are included with the data logger.
C Magnetic mounting (with optional magnetic mounting bracket)
D Mounting with a hook (hook not included)

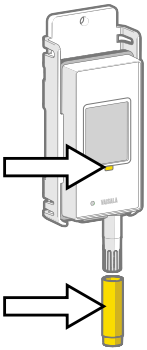
1. Select a suitable mounting location. A good location is easily accessible, protected from water and condensation, and remains within the operating temperature range of the RFL100:
   - +2 … +60 °C (+35.6 … +140 °F) with alkaline batteries
   - -20 … +60 °C (-4 … +140 °F) with lithium batteries

   Use the HMP110 probe to measure a wider range of conditions (operating temperature range -40 … +80 °C (-40 °F … +176 °F). HMP110 probe is always connected using a connection cable, so you can leave the RFL100 data logger in an environment that is suitable to its specification.

2. Attach the mounting bracket using one of the mounting methods shown in Figure 7 (page 19). Orient the bracket vertically so that the probe or probe cable points down after installation. Do not attach the RFL100 without the mounting bracket.

   CAUTION! If you are mounting the data logger higher than 2 m (6 ft) or in a location where it would pose a hazard if dropped, ensure the mounting bracket is securely fixed with screws or zip ties.

3. Slide the logger into the mounting bracket with the probe or probe cable pointing downward.
4. Peel off the protective film from the display and remove the yellow plug from the probe.



5. If the probe is attached with a cable, place the probe in the desired measurement location and secure the cable.
6. Recommended: Apply location labels to the mounting bracket and the RFL100 Data Logger according to your installation plan and company policy.

3.3 Connection Indicators

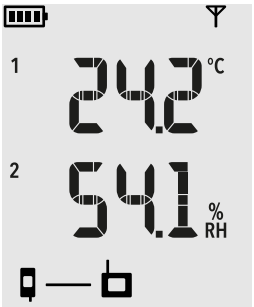
Table 7 Symbols

Symbol	Description	Symbol	Description
	Data logger		Connection OK
	Access point		Connection currently unavailable
	viewLinc Enterprise Server		

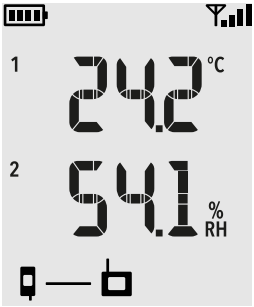
Table 8 Connection States

Symbols on Display	Description
	Data logger is searching for an access point.
	Data logger has failed to find an access point that is in installation mode. viewLinc server icon is not shown, as the data logger has not been accepted to a viewLinc system yet.
	The data logger has failed to connect to an access point that belongs to its own network.
	Data logger is successfully connected to an access point, but there is no connection between the access point and viewLinc server. Data logger has not been accepted to a viewLinc system yet.
	Data logger is successfully connected to an access point, but there is no connection between the access point and viewLinc server. Data logger has been accepted to a viewLinc system.
	Data logger is successfully connected to an access point, and connection between the access point and viewLinc server is also OK. The viewLinc symbol is flashing to indicate that the data logger is waiting to be accepted to the viewLinc system as a new device.
	Data logger is successfully connected to an access point, and connection between the access point and viewLinc server is also OK. Data logger has been accepted to the viewLinc system.

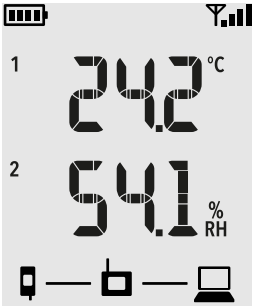
3.3.1 Connection Examples



Looking for an access point to join: Line between data logger and access point symbols is blinking, and signal strength indicator shows no bars.



Connected to an access point but viewLinc Enterprise Server not discovered yet: Signal strength indicator shows the strength of the access point connection.



Full connectivity: Data logger has discovered a viewLinc Enterprise Server and is connected to it through the access point. You can now log in to the viewLinc Enterprise Server and accept the device to the system.

4. Maintenance

4.1 Cleaning RFL100

- Lint-free cloth
- Isopropyl alcohol (70%)

Do not spray anything directly on the RFL100, since that may deposit impurities on the sensor.

1. Remove the data logger from the mounting bracket.
2. Moisten some lint-free cloth with isopropyl alcohol (70%).
3. Wipe the data logger and the mounting bracket.
4. Check the filter on the probe. If the filter becomes contaminated, it is very likely to affect the humidity measurement since residue on the filter will retain some moisture. If the filter is dirty, replace it with a new one. See Changing the Probe Filter (page 23).
5. Insert the data logger back in the mounting bracket.

4.2 Changing the Probe Filter

- New filter for the probe

Filter on the probe should be replaced when it is damaged or dirty. You can change the probe filter without disconnecting the probe from the data logger.

CAUTION! The sensors are easily damaged when the filter is not in place. Handle the probe carefully.

1. Turn the filter counter-clockwise to loosen it.
2. Remove the filter from the probe. Be careful not to touch the sensors with the filter.
3. Install a new filter on the probe, and tighten it so it is finger-tight. Make sure the filter sits straight and meets the thread properly.

More Information

- Spare Parts and Accessories (page 45)

4.3 Disconnecting the Probe

1. To disconnect a fixed probe from RFL100 Data Logger:
   a. Remove the data logger from the mounting bracket.
   b. Open the battery cover of the data logger.
   c. Grip the probe from above the filter and hold the data logger with the other hand. Pull the probe straight out of the data logger. Do not rotate the probe.
2. To disconnect a cabled probe from RFL100 Data Logger:
   a. Loosen the locking ring of the connector at the end of the probe cable.
   b. Pull the probe away from the connector.

4.4 Connecting the Probe

1. To connect a fixed probe to RFL100 Data Logger:
   a. Open the battery cover of the data logger.
   b. Align the orientation mark on the probe with the line above the probe connector. Push the probe straight in all the way, do not rotate.
   c. Close the battery cover of the data logger. **Push the latch down until you hear a click.** If the cover does not close easily, push the probe in and try again.
2. To connect a cabled probe to RFL100 Data Logger:
   a. Connect the probe to the connector at the end of the probe cable.
   b. Tighten the locking ring of the connector.

4.5 Calibration and Adjustment

If you think the device is not measuring correctly, calibration and adjustment is not the first thing to do. Check the following first:

- Make sure nothing is interfering with the measurement: heat sources, temperature differences, or condensation.
- Check that there is no moisture on the probe. If the sensor has become wet, wait for it to dry.
- Always wait for the measurement to stabilize.

Calibration means comparing the measurement output of the device to a known reference, such as a known environment in a calibration chamber or the output of a reference instrument. Correcting the reading of the device so that it measures accurately is referred to as **adjustment**.

Sensors and measurement electronics used by the data logger are fully contained in the replaceable probe. This allows the probe to be calibrated, adjusted, and replaced as needed. The calibration frequency depends on the application and your compliance requirements. Vaisala recommends having the probe calibrated and adjusted once a year by Vaisala Calibration and Repair Services. See www.vaisala.com/calibration.

Generic procedures for on-site calibration and adjustment are provided in this guide:

- To verify the measurement accuracy of the probe without disconnecting it from the data logger, compare its readings with a calibrated reference instrument. Doing this at the installation location of the data logger is referred to as a field check. See .
- To calibrate and adjust the probe using humidity and temperature references, connect the probe to a Vaisala HM40 Hand-Held Humidity and Temperature Meter. See Calibration and Adjustment Using HM40 (page 25).

4.5.1 Calibration and Adjustment Using HM40

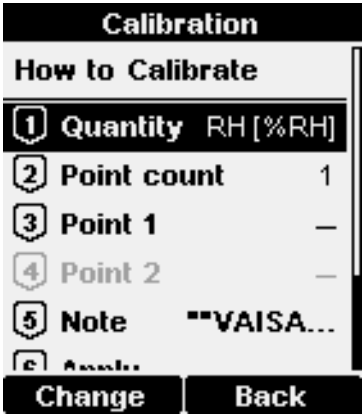
- Vaisala HM40 Hand-Held Humidity and Temperature Meter
- Connection cable for HM40 Hand-Held Meter (Vaisala item HMT120Z300)
- Reference environment for the desired calibration point
- RFL100 data logger with the probe to be calibrated

You can calibrate and adjust the probe of your RFL100 data logger in one or two points using the HM40. For a 2-point calibration, you need two reference environments. For example, LiCl and NaCl salt chambers provide 11% and 75% relative humidity references. Note that when performing a 2-point RH calibration, the first point requires a < 50% RH humidity reference, and the second point must be > 50% RH. The difference between the two humidity references must be at least 30% RH.

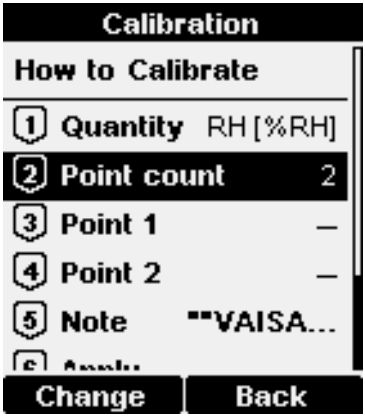
1. Disconnect the probe to be calibrated from the RFL100 Data Logger. See Disconnecting the Probe (page 24).
2. Connect the probe to the HM40 hand-held meter using the connection cable.
3. Turn on the HM40 and check that the measurements from the probe are displayed on the screen.

4. Press the **Menu** button and select the **Calibration** submenu.

5. Select the parameter to be calibrated at menu item **[1] Quantity**. You can calibrate Temperature (T) or Relative Humidity (RH) measurement. All other humidity parameters are calculated from RH and T, so they will also be adjusted.

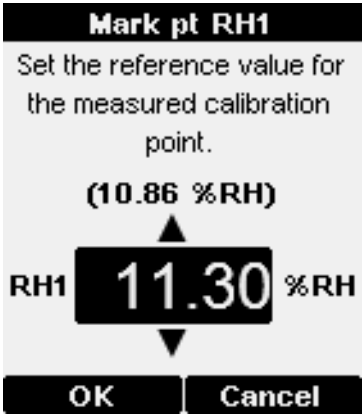


6. Select the number of calibration points at menu item **[2] Points**.

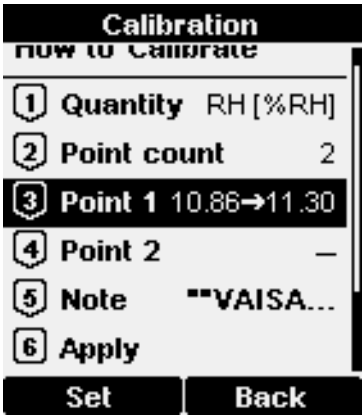


7. Place the probe in the first reference environment (first calibration point). Wait 20 – 40 minutes for the reading to stabilize.

8. Select menu item **[3] Point 1** and press the **Set** button. The meter now shows the currently measured value of the selected parameter. Set the reference value using the arrow buttons and press the **OK** button.

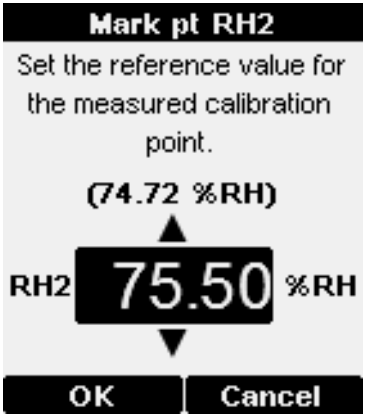


The correction to the measurement at point 1 is now shown in the text for menu item [3] Point 1. If you are only doing a 1-point calibration, skip to step 11.

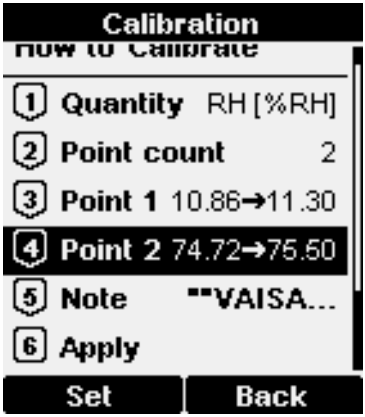


9. Place the probe in the second reference environment (second calibration point). Wait 20 – 40 minutes for the reading to stabilize.

10. Select menu item **[4] Point 2** and press the **Set** button. The meter now shows the currently measured value of the selected parameter. Set the reference value using the arrow buttons and press the **OK** button.

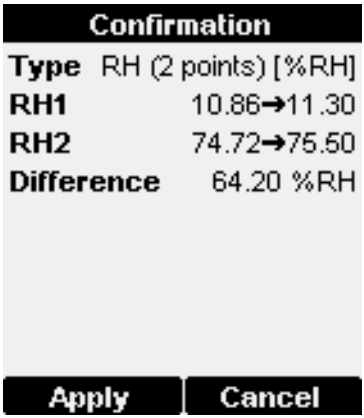


The correction to the measurement at point 2 is now shown in the text for the menu item **[4] Point 2**.



11. Select menu item **[5] Note** to edit the calibration info text that is stored in the probe. Edit the text using the select button and arrow keys. When done, select the **OK** character in the bottom right corner to save the changed text. To exit without saving, press the **Cancel** button.

12. Select menu item **[6] Apply** to view the calibration result. Verify the applied corrections in the confirmation screen and press the **Apply** button to apply the adjustment to the probe, or **Cancel** to exit without applying the adjustment.



13. Disconnect the probe from the HM40.
14. Connect the probe to the RFL100 Data Logger. See Connecting the Probe (page 24).

4.5.2 Calibration and Adjustment using MI70

- Vaisala MI70 Measurement Indicator
- Connection cable for MI70 Measurement Indicator (Vaisala item 219980SP)
- Reference environment for the desired calibration point
- RFL100 data logger with the probe to be calibrated

Optional:

- MI70-compatible reference probe and connection cable

You can calibrate and adjust the probe of your RFL100 data logger in one point using the MI70 indicator. You can calibrate the probe in a known reference environment (for example, LiCl salt chambers that provides a 11 %RH humidity reference) or by comparing to the reading of any MI70-compatible Vaisala probe.

1. Disconnect the probe from the data logger. See Disconnecting the Probe (page 24).
2. Connect the probe to be calibrated to port I of the MI70 measurement indicator using the connection cable.
3. If you want to calibrate by comparing to the reading of a reference probe, connect it to port II of the MI70 indicator.
4. Turn on the MI70 indicator.
5. Start the adjustment sequence from **Main menu > Functions > Adjustments**. If you have two probes connected, make sure to start the adjustment sequence for probe **I**.
6. MI70 notifies you that automatic power off is disabled during adjustment mode, select **OK** to acknowledge.
7. Select **RH** or **T** parameter for adjustment and select **OK**. This procedure assumes you are adjusting relative humidity, but the same principles apply for temperature adjustment.
8. Insert the probe to be calibrated in the reference environment. If you have a reference probe, insert that in the same environment. If you are comparing against the reading of a reference probe, you can also use the ambient condition as the reference environment, as long as its conditions are stable.
9. Wait for the measurement to stabilize. You can follow the stabilization from the **GRAPH** display. Select **READY** when the reading is stabilized in the reference.
10. To perform the adjustment using the reference environment, perform these steps:
    a. Select **1-point adjustment > SELECT > OK**.
    b. When the measurement is stable, select **READY**.
    c. Give the reference RH value by using the arrow buttons and select **OK**.
    d. To confirm the adjustment, select **YES**. If you select **NO**, you return to the adjustment mode display and no changes are made.
    e. Continue from step 12.

11. Perform the adjustment using a reference probe, perform these steps:
    a. Select **To same as RH[II]**.
    b. To confirm the adjustment, select **YES**. If you select **NO**, you return to the adjustment mode display and no changes are made.
12. Calibration and adjustment is now completed. Select **BACK** to exit the adjustment mode and **EXIT** to return to the basic display.
13. Disconnect the calibrated probe from the MI70 indicator.
14. Reconnect the probe to the data logger. See Connecting the Probe (page 24).

4.6 Changing RFL100 Batteries

- 2 pcs of new AA size 1.5 V batteries: alkaline (type LR6) or lithium (type FR6)

1. Remove the data logger from the mounting bracket.
2. Open the battery cover of the data logger.
3. Move the power switch to the **Off** position.
4. Remove the old AA size batteries from the data logger.
5. Check the battery orientation markings on the data logger and insert the new batteries in the correct orientation.
6. Move the power switch to the **On** position.
7. Close the battery cover of the data logger. **Push the latch down until you hear a click.** If the cover does not close easily, push the probe in and try again.
8. Insert the data logger back in the mounting bracket.

4.7 Changing RFL100 Clock Battery

- New 3 V lithium battery (type CR1/3N button cell)
- Small flat-head screwdriver

1. Open the battery cover of the data logger.
2. Use a small flat-head screwdriver to lift the top part of the small plastic cover marked **Clock battery (CR1/3N)**, and slide the cover upward until it comes loose.
3. Use the small screwdriver to lift the old clock battery from the battery socket.

4. Take the new clock battery and verify the + and - markings of the battery itself and the clock battery socket. Insert the new clock battery in the clock battery socket.
5. Replace the clock battery cover.
6. Close the battery cover of the data logger. **Push the latch down until you hear a click.** If the cover does not close easily, push the probe in and try again.

4.8 Updating RFL100 Firmware

Required:

- Computer with a free USB port and an operating system that supports the Media Transfer Protocol (MTP). For example, Windows® 7 and newer.
- USB connection cable (USB 2.0 Type A - Micro-B, Vaisala cable 244961). You also can use a generic cable that has all pins connected (not just power).
- RFL100 firmware update file from Vaisala

CAUTION! Updating RFL100 firmware erases the recorded data from the device. Before updating, verify from the viewLinc Enterprise Server that up-to-date data from this device is available.

Updating the firmware will not affect the data logger's status in the Vaisala viewlinc Monitoring System. If the device was accepted in the system before the update, it will remain accepted.

1. Turn the RFL100 on. The currently installed firmware version is shown briefly during start-up. If the firmware version you have downloaded is newer than the installed version, continue with the update.
2. Open the plug over the service port and connect the USB cable between your computer and the service port of the RFL100 Data Logger. When the computer detects the RFL100, it is available for file transfer.
3. Copy the firmware update file supplied by Vaisala into the `\Data\Update` folder on the RFL100. Select to overwrite the old file when prompted by your computer.
   If the file is valid, RFL100 begins the update automatically.Do not unplug the cable or turn off the RFL100 during the update.
4. Monitor the update progress on the display of the RFL100. When the update is done, you will see the following message on the display:

   ```
   UPD OK
   ```

5. Disconnect the USB cable and replace the plug over the service port.

5. Troubleshooting

5.1 Problem Situations

Table 9 Troubleshooting Table

Problem	Possible Cause	Solution
Display shows one or more error codes.	Various causes.	Check meaning of the error code(s) and proceed accordingly. See Error Codes (page 35).
You are adding a new RFL100 Data Logger to the system but it is not coming up as a **New Device** in viewLinc	RFL100 is not in range of an AP10 that has **installation mode** turned on, and capacity to add more data loggers (maximum 32 for each AP10).	Turn on installation mode in an AP10 that is within 100 m of the data logger, and has capacity to add more data loggers.
	RFL100 is connected to an AP10 that is not connected to viewLinc.	Verify the following: • AP10 is connected to the network and has an IP address. • AP10 is configured to connect to the correct viewLinc Enterprise Server. • viewLinc connection of the AP10 is OK.
	RFL100 has been previously accepted to a different viewLinc system.	Press the **Release** button of the RFL100 and verify that the message **NWK REL** appears on screen. The RFL100 is now ready to join any AP10 that is in installation mode.
	RFL100 has joined an AP10 but has not been accepted to the viewLinc system. The AP10 is no longer in range, but RFL100 cannot change to a different access point as it is pending to be accepted to the system.	

Problem	Possible Cause	Solution
RFL100 turns off by itself.	Display and LED of the RFL100 have been turned off remotely using viewLinc Enterprise Server. All other functions of the data logger remain active.	You can change the setting from the **Hosts and Devices** tree in viewLinc Enterprise Server. If you are connecting the RFL100 to a new viewLinc Monitoring System and you want the display and LED back on again, press the **Release** button of the RFL100 and verify that the message **NWK REL** appears on screen.
	Main batteries are empty.	Replace the main batteries. See Changing RFL100 Batteries (page 32).

5.2 Error Codes

Table 10 RFL100 Error Codes

Error Code	Cause	Recommended Action
Err 100	User parameter bank checksum failure.	Turn the data logger off and on again. If the error persists, contact Vaisala.
Err 101	Factory parameter bank checksum failure.	Turn the data logger off and on again. If the error persists, contact Vaisala.
Err 102	Real-time clock of the data logger has lost accurate time.	Restore the wireless connection to an AP10 access point. RFL100 will synchronize its clock with the time from the access point.
Err 103	Main battery voltage is critically low. Data logger has stopped radio communication to conserve energy but continues to record measurement data in the local memory.	Replace main batteries. See Changing RFL100 Batteries (page 32).
Err 104	Incorrect factory configuration parameters.	Turn the data logger off and on again. If the error persists, contact Vaisala.
Err 105	Real-time clock hardware error.	Turn the data logger off and on again. If the error persists, contact Vaisala.
Err 200	Real-time clock battery voltage is low.	Replace the clock battery. See Changing RFL100 Clock Battery (page 32).

Error Code	Cause	Recommended Action
Err 202	Probe communication failure.	Check that the probe is connected properly.
Err 203	Probe error. Can be caused by probe incompatibility, damage, or a wet humidity sensor.	Inspect the probe and replace it if necessary. If the error has been caused by a wet humidity sensor, wait for it to dry out.
Err 204	Real-time clock temperature compensation problem.	1. If error 202 is also active, replace the clock battery. See Changing RFL100 Clock Battery (page 32). 2. Turn the data logger off and on again. 3. If the error persists, contact Vaisala.

5.3 Verifying Operation of RFL100

1. Open the battery cover of the data logger.
2. Move the power switch to the **On** position.
3. Look at the display and verify that:
   - Battery indicator shows full batteries  .
   - Display shows measurement readings instead of dashes or error codes.

   If measurement readings are not shown after a few seconds, check that the probe is properly connected. It is possible to disconnect the probe by pulling on the probe with the battery cover open. In that case the display will show error code **ERR 202**.
4. Move the power switch to the **Off** position.
5. Close the battery cover of the data logger. **Push the latch down until you hear a click.** If the cover does not close easily, push the probe in and try again.

5.4 Downloading Data Using Service Port

- Computer with a free USB port and an operating system that supports the Media Transfer Protocol (MTP). For example, Windows® 7 and newer.
- USB connection cable (USB 2.0 Type A - Micro-B, Vaisala cable 244961). You also can use a generic cable that has all pins connected (not just power).

1. Connect the USB cable between your computer and the service port of the RFL100 Data Logger. When the computer detects the RFL100, it is available for file transfer.
2. Navigate to the *\Data* folder on the RFL100.
3. Navigate to the subfolder that corresponds to the timeframe you want. To download all data, navigate to folder *\Data\All*.

4. Copy the file in the folder to retrieve the data.

6. Technical Data

6.1 HMP110 Technical Specification

Table 11 Humidity Measurement

Property	Specification
Measurement range	0 ... 100 %RH
Humidity sensor	HUMICAP® 180R
Stability	±2 %RH over 2 years
Accuracy in temperature range 0 ... +40 °C[1)]	
0 ... 90 %RH	± 1.5 %RH
90 ... 100 %RH	± 2.5 %RH
Accuracy in temperature range -40 ... 0 °C, +40 ... +80 °C	
0 ... 90 %RH	± 3.0 %RH
90 ... 100 %RH	± 4.0 %RH
Factory calibration uncertainty at +20°C[2)]	
0 ... 90 %RH	± 1.1 %RH
90 ... 100 %RH	± 1.8 %RH

1) *Accuracy specification includes non-linearity, hysteresis, and repeatability*
2) *Small variations possible; see also calibration certificate.*

Table 12 Temperature Measurement

Property	Specification
Measurement range	-40 ... +80 °C
Temperature Sensor	Pt1000 RTD Class F0.1 IEC 60751
Accuracy over temperature range	
Temperature range 0 ... +40 °C	± 0.2 °C
Temperature range -40 ... 0 °C, +40 ... +80 °C	± 0.4 °C
Factory calibration uncertainty	± 0.2 °C

Table 13 Mechanical

Property	Specification
Weight	17 g
Ingress protection rating	IP65
Materials	
Body	Stainless steel (AISI 316)
Grid filter	Chrome coated ABS plastic

6.2 HMP115 Technical Specification

Table 14 Humidity Measurement

Property	Specification
Measurement range	0 ... 100 %RH
Humidity sensor	HUMICAP® 180R
Stability	±2 %RH over 2 years
Accuracy in temperature range 0 ... +40 °C[1)]	
0 ... 90 %RH	± 1.5 %RH
90 ... 100 %RH	± 2.5 %RH
Accuracy in temperature range -20 ... 0 °C, +40 ... +60 °C[1)]	
0 ... 90 %RH	± 3.0 %RH
90 ... 100 %RH	± 4.0 %RH
Factory calibration uncertainty at +20°C[2)]	
0 ... 40 %RH	± 0.6 %RH
40 ... 75 %RH	± 1.0 %RH

1) *Accuracy specification includes non-linearity, hysteresis, and repeatability*
2) *Small variations possible; see also calibration certificate.*

Table 15 Temperature Measurement

Property	Specification
Measurement range	-20 ... +60 °C
Temperature Sensor	Pt1000 RTD Class F0.1 IEC 60751

Property	Specification
Accuracy over temperature range	
Temperature range 0 ... +40 °C	± 0.2 °C
Temperature range -20 ... 0 °C, +40 ... +60 °C	± 0.4 °C
Factory calibration uncertainty	± 0.1 °C

Table 16 Mechanical

Property	Specification
Weight	10 g
Ingress protection rating	IP54
Materials	
Body	PC/ABS blend
Grid filter	PC (glass reinforced)
Sleeve	PC/ABS blend

6.3 RFL100 Technical Specification

Table 17 Wireless

Property	Specification
Networking standards	Vaisala VaiNet
Modulation	LoRa™ chirp spread spectrum modulation
Output power	14 dBm (25 mW)
Antenna	Internal
Typical range (indoors)	At least 100 m (328 ft)
Frequency bands	868 MHz (Europe) 915 MHz (North America, Australia, and New Zealand)
Safety	
Electrical safety	EN/UL/IEC 61010-1
RF exposure	KDB 447498 (United States) RSS-102 Issue 5 (Canada)
EMC and Radio Standards	

Property	Specification
EMC compliance	EN/IEC 61326-1, industrial environment
868 MHz model	ETSI EN 300 220-2 EN 301 489-1 EN 301 489-3
915 MHz model	FCC title 47 part 15.247 (FCC ID: 2AO39-RFL100A) ICE RSS-247 (IC: 10261A-RFL100A) AS/NZS 4268

Table 18 Memory

Property	Specification
Sample capacity	30 days (43200 samples per channel)
Memory type	Non-volatile EEPROM
Memory mode	Ring buffer (FIFO)
Sampling rate	One sample / channel / minute (nonchangeable)

Table 19 Operating Environment

Property	Description/Value
Operating temperature	+2 … +60 °C (+35.6 … +140 °F) with alkaline batteries [1)] -20 … +60 °C (-4 … +140 °F) with lithium batteries [1)]
Storage temperature	-40 … +60 °C (-40 … +140 °F)
Operating humidity	0 … 100 %RH, non-condensing

1) For both alkaline and lithium, battery temperature operating specifications apply.

Table 20 General

Property	Specification
Compatible probes	HMP115, HMP115T HMP110, HMP110T (cabled only)
Batteries	2 × AA sized, 1.5 V (LR6 or FR6)
Clock battery	CR 1/3N (3 V lithium button cell)

Property	Specification
Operation time at 20 °C (without external power supply)	18 months
Internal clock accuracy	±30 s/month Synchronizes with Network Time Protocol (NTP) server

Table 21 Mechanical Specifications

Property	Specification
Housing color	White
Mounting methods	Screws, tie-wrap, hook, or magnetic mounting bracket (optional accessory)
Probe interface	4-pin female M8 connector
Service port	USB 2.0 with Micro-USB connector
IP Rating	
RFL100	IP54
HMP110	IP65
HMP115	IP54
Dimensions (H × W × D)	
Without mounting bracket	158 × 62 × 31 mm (6.22 × 2.4 × 1.22 in)
With mounting bracket	186 × 68 × 36.5 mm (7.32 × 2.68 × 1.44 in)
Weight	
With batteries (2 pcs alkaline) and HMP115 probe	190 g (6.7 oz)
With batteries (2 pcs alkaline), HMP115 probe, and magnetic mounting bracket	254 g (8.96 oz)
RFL100 Materials	
Housing	PC/ABS blend
Display window	PMMA (acrylic)
Sealings	TPE
HMP110 Probe Materials	
Body	Stainless steel (AISI 316)
Grid filter	Chrome coated ABS plastic
HMP115 Probe Materials	

Property	Specification
Body	PC/ABS blend
Grid filter	PC (glass reinforced)
Sleeve	PC/ABS blend

Table 22 HMP110/T Probe Measurement Performance

Property	Description/Value
Relative Humidity	
Measurement range	0 ... 100 %RH
Accuracy in Temperature Range 0 ... +40 °C (+32 ... +104 °F) [1]	
0 ... 90 %RH 90 ... 100 %RH	±1.5 %RH ±2.5 %RH
Accuracy in Temperature Range -40 ... 0 °C, +40 ... +80 °C (-40 ... +32 °F, +104 ... +176 °F) [1]	
0 ... 90 %RH 90 ... 100 %RH	±3.0 %RH ±4.0 %RH
Factory Calibration Uncertainty at +20 °C (68 °F) [2]	
0 ... 90 %RH 90 ... 100 %RH	±1.1 %RH ±1.8 %RH
Humidity sensor	Vaisala HUMICAP® 180R
Stability	±2 %RH over 2 years
Temperature	
Measurement range	-40 ... +80 °C (-40 °F ... +176 °F)
Accuracy over Temperature Range	
at 0 ... +40 °C (+32 °F ... +104 °F) at -40 ... 0 °C, +40 ... +80 °C (-40 ... +32 °F, +104 ... +176 °F)	± 0.2 °C (0.36 °F) ± 0.4 °C (0.72 °F)
Factory calibration uncertainty [2]	± 0.2 °C (0.36 °F)
Temperature sensor	Pt1000 RTD Class F0.1 IEC 60751

1) *Includes non-linearity, hysteresis, and repeatability.*
2) *Small variations possible; see also calibration certificate.*

Table 23 HMP115/T Probe Measurement Performance

Property	Description/Value
Relative Humidity	
Measurement range	0 ... 100 %RH
Accuracy in Temperature Range 0 ... +40 °C (+32 ... +104 °F) [1)]	
0 ... 90 %RH 90 ... 100 %RH	±1.5 %RH ±2.5 %RH
Accuracy in Temperature Range -40 ... 0 °C, +40 ... +60 °C (-40 ... +32 °F, +104 ... +140 °F) [1)]	
0 ... 90 %RH 90 ... 100 %RH	±3.0 %RH ±4.0 %RH
Factory Calibration Uncertainty at +20 °C (68 °F) [2)]	
0 ... 40 %RH 40 ... 75 %RH	±0.6 %RH ±1.0 %RH
Humidity sensor	Vaisala HUMICAP® 180R
Stability	±2 %RH over 2 years
Temperature	
Measurement range	-40 ... +60 °C (-40 °F ... +140 °F)
Accuracy over Temperature Range	
at 0 ... +40 °C (+32 °F ... +104 °F) at -40 ... 0 °C, +40 ... +60 °C (-40 ... +32 °F, +104 ... +140 °F)	± 0.2 °C (0.36 °F) ± 0.4 °C (0.72 °F)
Factory calibration uncertainty [2)]	± 0.1 °C (0.18 °F)
Temperature sensor	Pt1000 RTD Class F0.1 IEC 60751

1) Includes non-linearity, hysteresis, and repeatability.
2) Small variations possible; see also calibration certificate.

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6.4 Spare Parts and Accessories

Table 24 RFL100 Spare Parts and Accessories

Description	Vaisala Item Code
Mounting bracket (5 pcs)	DRW244769SP
Magnetic mounting bracket (5 pcs)	ASM211527SP
Battery cover (5 pcs)	DRW244766SP
Mounting kit	245679SP

Table 25 HMP110/T Probe Spare Parts and Accessories

Description	Vaisala Item Code
Spare HMP110 probe	HMP110 order form, code: Z00B0C1A0
Spare HMP110T probe	HMP110 order form, code: Z0B01A0
Probe cable for RFL100, 3 m	CBL210555-3MSP
Probe cable for RFL100, 10 m	CBL210555-10MSP
Plastic grid filter	DRW010522SP
Plastic grid with membrane filter	DRW010525SP
Sintered stainless steel filter	HM46670SP
PTFE filter	DRW244938SP
Mounting nuts (2 pcs), hex M12 × 1 Pa 6.6	18350SP
Probe mounting clamps, heavy duty (10 pcs)	226067
Duct installation kit	215619

Table 26 HMP115/T Probe Spare Parts and Accessories

Description	Vaisala Item Code
Spare HMP115 probe	HMP115
Spare HMP115T probe	HMP115T
Plastic grid filter	DRW240185SP
Plastic grid with membrane filter	ASM210856SP
PTFE filter	219452SP

6.5 RFL100 Dimensions

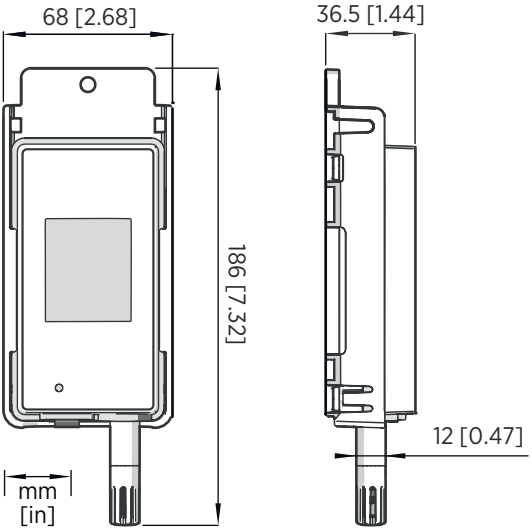

Figure 8 RFL100 Data Logger Dimensions with Mounting Bracket

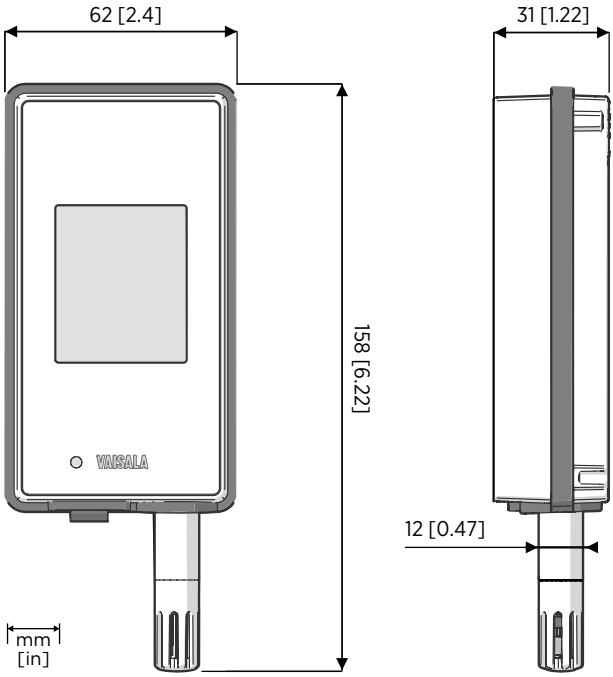

Figure 9 RFL100 Data Logger Dimensions

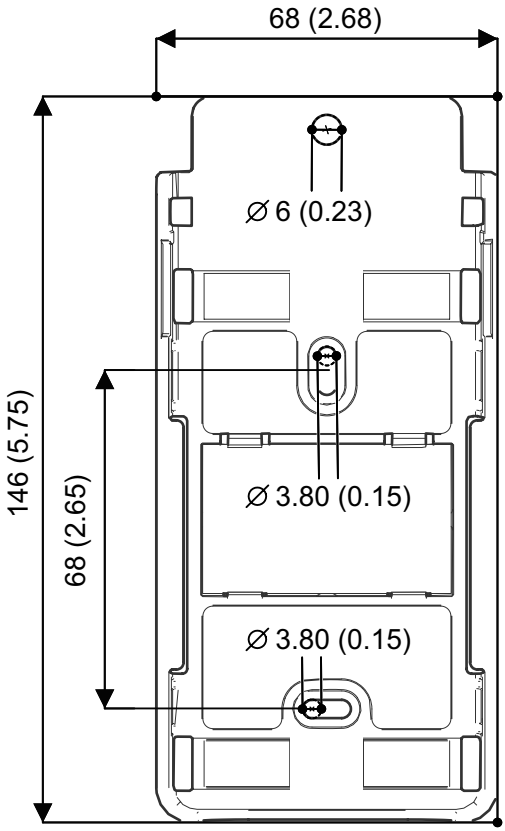

Figure 10 RFL100 Mounting Bracket Dimensions

Technical Support

Contact Vaisala technical support at helpdesk@vaisala.com. Provide at least the following supporting information:

- Product name, model, and serial number
- Name and location of the installation site
- Name and contact information of a technical person who can provide further information on the problem

For more information, see www.vaisala.com/support.

Warranty

For standard warranty terms and conditions, see www.vaisala.com/warranty.
Please observe that any such warranty may not be valid in case of damage due to normal wear and tear, exceptional operating conditions, negligent handling or installation, or unauthorized modifications. Please see the applicable supply contract or Conditions of Sale for details of the warranty for each product.

Recycling

Recycle all applicable material.

Follow the statutory regulations for disposing of the product and packaging.

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