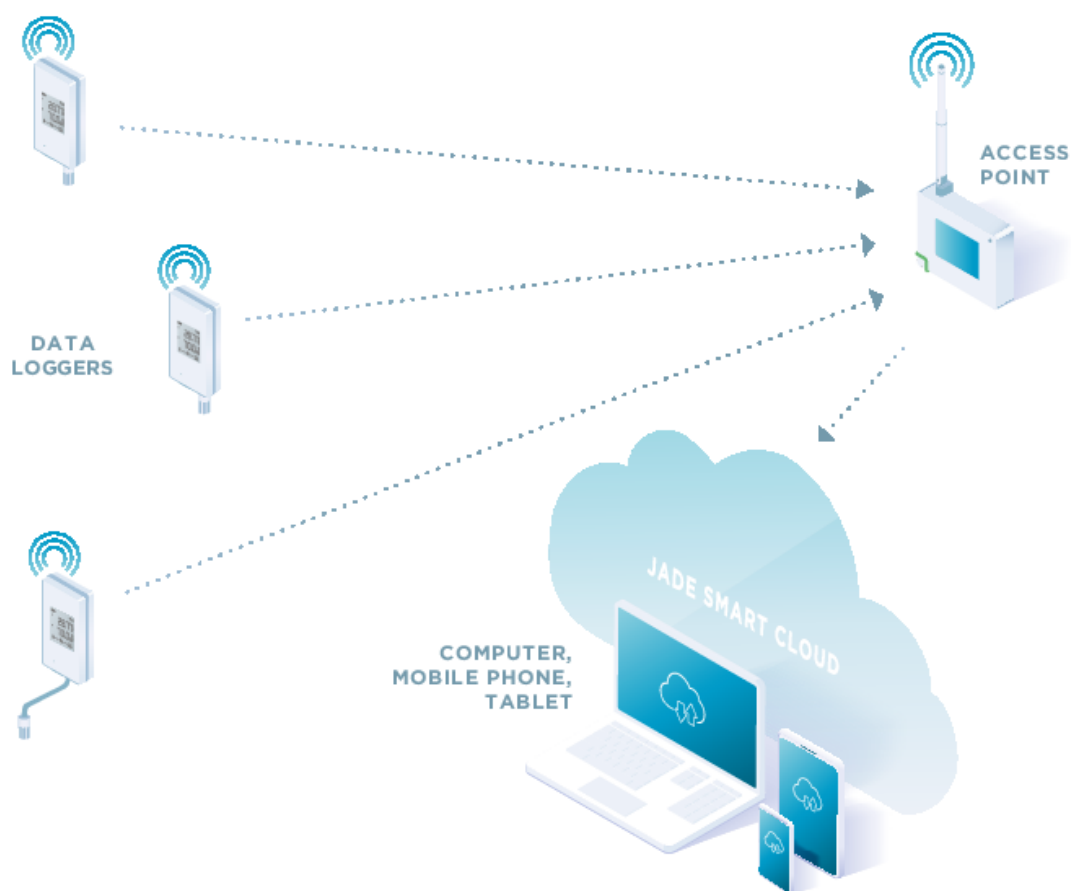## Overview of Jade Smart Cloud

What is Jade Smart Cloud?

Vaisala Jade Smart Cloud is a convenient cloud-based data service for managing measurement data. The application can be accessed through a web browser on your mobile phone, tablet, or computer, making it ideal for professionals who want access to quality measurement data anywhere and at any time.

Easy setup

The system is very easy to get started with. No device pairing is needed, as the devices are associated with a Jade Smart Cloud account when they are purchased. New devices become automatically available in the system. With the intuitive user interface, users can assign devices to measurement locations. Measurement locations can then be organized into measurement groups and sites for easy navigation.

Web application

The web application user interface is built on modern web technologies and supported by all major desktop and mobile browsers. There is no app to install and maintain. The user interface is always available online at:
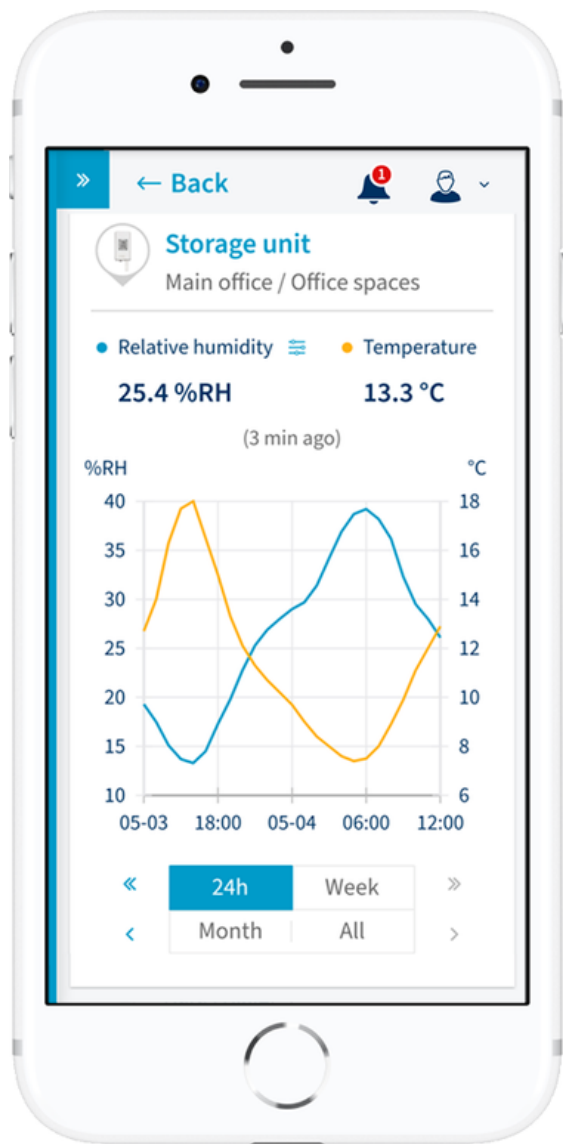
https://jade.vaisala.com

Figure 1. Graph on mobile screen

Table 1. Web application

Web address	https://jade.vaisala.com
Web interface protocol	TLS 1.2
Supported Internet browsers	All modern and up-to-date browsers, including, but not limited to:
	Google Chrome™
	Apple Safari®
	Microsoft Edge®
	Mozilla Firefox®
User interface languages	English, Finnish, French, German, Portuguese, Spanish, Swedish

Features and license tiers

Access to the user interface, as well as features that are enabled, are based on license tiers. Basic tier provides the essential management features. Additional tiers will be made available later.

The number of active devices that can send their data to the cloud is controlled using device connection subscriptions. All data is safely stored in the cloud.

Table 1. License tiers

Feature	Basic tier
Live measurement data	✔
Viewing historical measurement data using graph or table view	✔
Exporting measurement data reports in PDF and CSV format	✔
Organizing measurement locations under groups and sites	✔
Device and probe details, including calibration date	✔
Alerts for measurement locations and devices	✔
User configurable alert rules	✔
Alert notifications by email	✔
Inviting new users to access your account	✔
User rights and site access control using Administrator, Operator, and Viewer roles	✔

Supported devices

Table 1. Supported devices

Device model	Connection requirements
CWL100 Cloud Wireless Data Logger	Connects wirelessly through CA10 Cloud Access Point. The access point must be associated with the same customer account. See CWL100 Data Logger Datasheet (B211912EN).
CA10 Cloud Access Point	Ethernet network with Internet connection. See CA10 Access Point Datasheet (B211911EN).

Time and time zones

Internal time handling

Jade Smart Cloud handles time internally in Universal Coordinated Time (UTC) format. This also applies to the connected devices and the timestamps of the measured data – the system keeps everything in UTC time.

The Jade service, as well as the connected devices, automatically keep accurate time by synchronizing with Network Time Protocol (NTP) servers on the Internet.

What the user sees

The Jade service converts time values automatically according to the time zone configured in the user's profile. This means that even if the measurement devices are in a different time zone, a user will see the time stamps of measurements in their local time.

When a user connects to the Jade web application for the first time, the time zone of their device (for example, laptop or mobile phone) is detected and stored as part of their profile.

Users can view and change their personal time zone in their profile settings at any time.

Effect of daylight saving time

The following effects will be visible on graphs and reports for users who are on a time zone that is currently in daylight saving time (DST, also known as "summer time"):

- For the one-hour period when the clocks are advanced toward daylight saving time, the timestamps for the hour are skipped and no data is shown for that hour.
- For the one-hour period when clocks return to standard time, the timestamps for the hour are repeated.

Measurement data stored by the system is not altered due to these adjustments. Only the timestamps that are shown are affected.

Managing sites

Structure of a site in Jade Smart Cloud

A **site** in Jade Smart Cloud represents a physical location that contains areas to be monitored. A common scope for a site is a single building, but it can just as well consist of multiple buildings or a single space within a building. The choice is up to the administrator that defines the site.

The scope of sites is also significant for user management, as access to users that have operator or viewer role is granted on site level. Administrators can always see all sites that belong to the same Jade subscription.

Under the site level, there are measurement groups and locations:

- **Measurement groups** are used to connect measurement locations that logically belong together, typically for a single space or floor. They help to navigate the site when viewing measurements, and provide more context for the measurement locations.
- **Measurement locations** represent the exact physical points where measurements are performed. Connecting a measurement device to a measurement location is referred to as **linking**. Similarly, alerts are defined by linking an **alert rule** to a location.

Viewing measurement data

Jade Smart Cloud the following ways to view measurement data graphically in the user interface:

- You can view measurement data that has been connected to a measurement location as a **location graph**.
- You can generate a report to view data from selected location(s) using a **report**.
- Administrator users can view the measurement data sent by a specific device as a **device graph**. This can be done any time, without needing to define a measurement location. However, the available timespan is limited to the most recent measurement data.

Viewing a location graph

Location graph displays the measurement history of a location. Gaps in the graph mean there is no data available for that time.
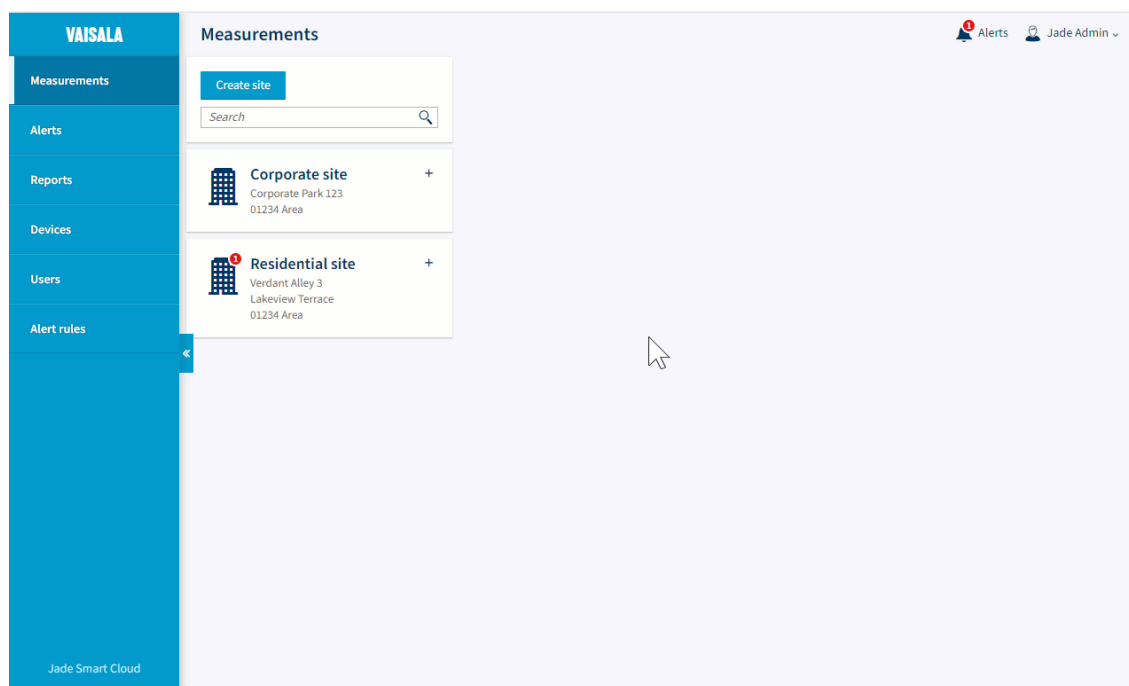
1. Select Measurements in the navigation menu.
2. In the list of measurement groups, select the measurement group that contains the location you want to view. The measurement group is expanded to reveal the number of available locations and graphs.
3. Select the location you want to view, and then select View graph.
4. Select any point in the graph to see exact numerical measurement values.
5. Use the graph controls to select the desired timeframe.
6. If humidity measurements have been stored for this location, select the ⚙ symbol to select the humidity parameter you want to view. Jade calculates the other humidity parameters based on the orinally measured

humidity parameter.
7. To change to the graph of a different measurement location in the same group, use the arrows in the top right corner.

Viewing a device graph

🔒 Administrator

The device graph is available for devices that produce measurement data. It shows up to a week of raw data measured by the device. When the data is viewed from the device graph, it is not marked as belonging to any measurement location(s).
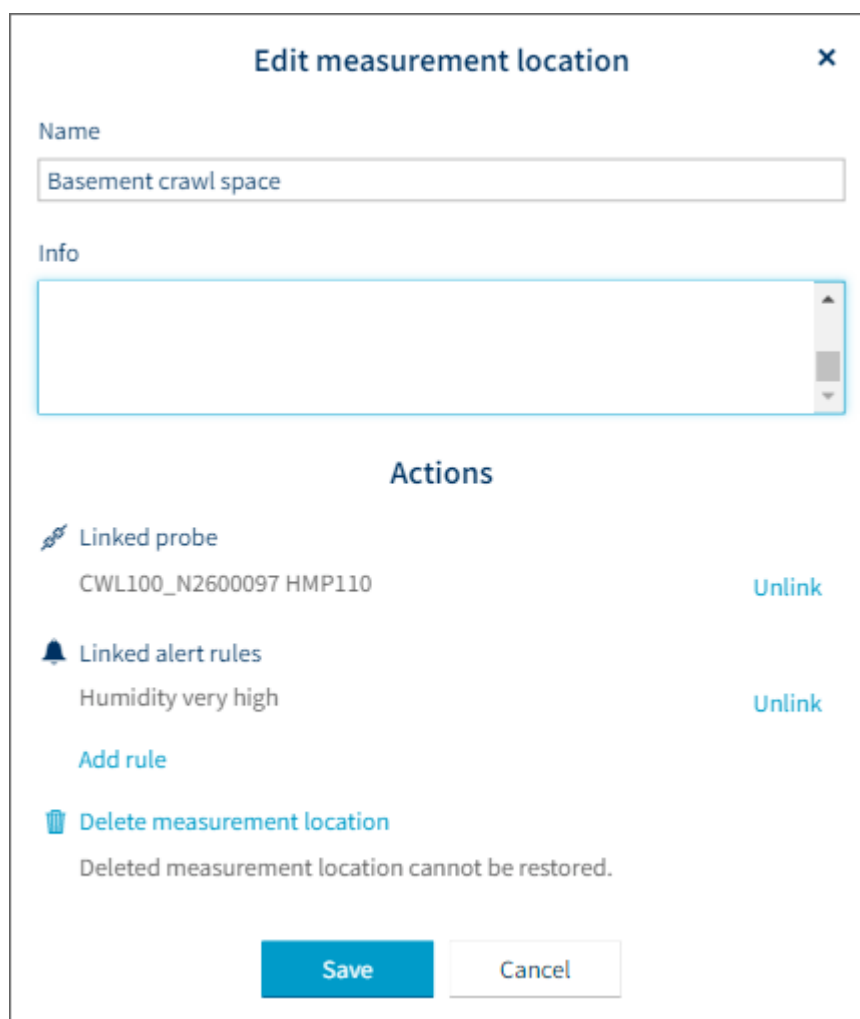

1. Select Devices in the navigation menu.
2. In the list of devices, select the device you want to view.
3. Select View graph. The graph pop-up appears.
4. Select any point in the graph to see exact numerical measurement values.

Alerts and notifications

Alerts in Jade Smart Cloud

Alerts allow users with administrator and operator roles to receive notifications from events in the system. There are two kinds of alerts in Jade Smart Cloud:

- **Measurement alerts** are based on the conditions of measurement locations. The are controlled by alert rules that are linked to locations. Measurement alerts can only be configured and linked by users with the Administrator role.
- **Device alerts** are based on device connectivity and status. They are automatically active in the system and do not need to be configured.

Figure 1. Measurement location showing a linked alert rule

Alert notifications

Alert notifications in the Jade interface are visible to users who have the Administrator or Operator role:

- Presence of active alerts is always shown on the header by a red badge on the alert bell icon. Selecting the icon opens the Alerts page where alerts can be acknowledged, and all current and historical alerts are visible.

- Additionally, the presence of active alerts is shown by a red badge where applicable in the Measurements and Devices pages.

Administrator and Operator users can also choose to receive email notifications on alert activation and deactivation. Email notifications can be selected on the level of individual sites. There is also a switch to disable all email

notifications of alerts for the current user. By default, email alerts are disabled.
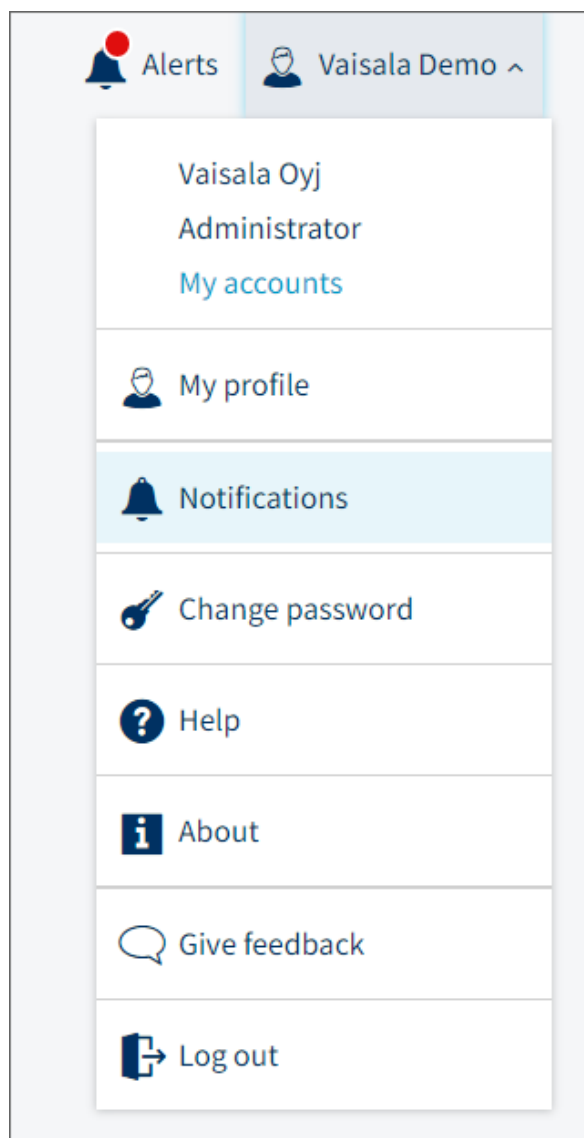

Figure 1. Location of email notification configuration

Alert acknowledgement

To make it clear that an active alert has been noticed by a user with the appropriate role, all alerts in Jade Smart Cloud have an acknowledgement status:

- All new triggered alerts automatically start by having the **unacknowledged** status.

- When any user with the appropriate access acknowledges them, alerts become **acknowledged**.

The Alerts page shows alerts separately based on their acknowledgement status. Unacknowledged alerts are given the best visibility as they are shown on the Current tab. If an alert has become deactivated but has not been acknowledged, it remains visible on the Current tab until it is acknowledged.

Acknowledgement of alerts is done on the Alerts page.

Creating alert rules

 Administrator
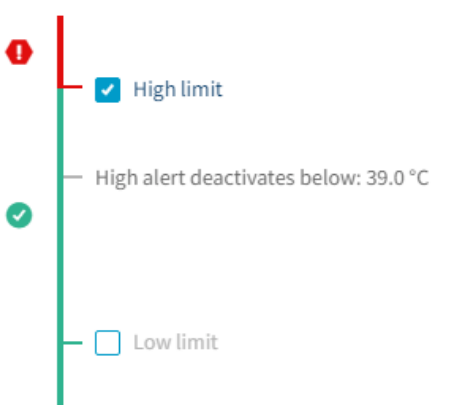
1. Select **Alert rules > Create alert rule**.
2. Enter a descriptive name for the rule.
3. Select the measurement parameter for the rule.
4. Select the activation limits and enter the limit values.

   You can select a High limit, a Low limit, or use both limits to alert when the value of the selected measurement parameter moves outside both limits.

Figure 1. Example rule for a temperature alert with a high limit

5. Jade automatically defines an Alert deactivation margin to prevent the alert from being repeatedly triggered when the value moves near the limit. You can adjust the margin or even remove it by setting it to zero.
6. You can also set an Alert activation delay to prevent the alert from being activated by very short changes. By default, there is no activation delay.

Figure 2. Example rule for an RH alert with high and low limits and an activation delay

7. Select Save when done.

Reports

Overview of reports

Reports allow you to combine and visualize measurement parameters from several locations. Reports can be viewed in the user interface, and exported as a PDF or as a CSV formatted file that can be opened by common spreadsheet programs such as Microsoft® Excel.

To avoid unnecessarily large reports, the reporting interface includes a convenient way to switch between using 1 min data and 1 h averages.

> The reporting feature is intended to be used on-demand from the user interface. The current implementation does not include saving report definitions to be run later or on a schedule. The reporting definition persists for the duration of the user's session.
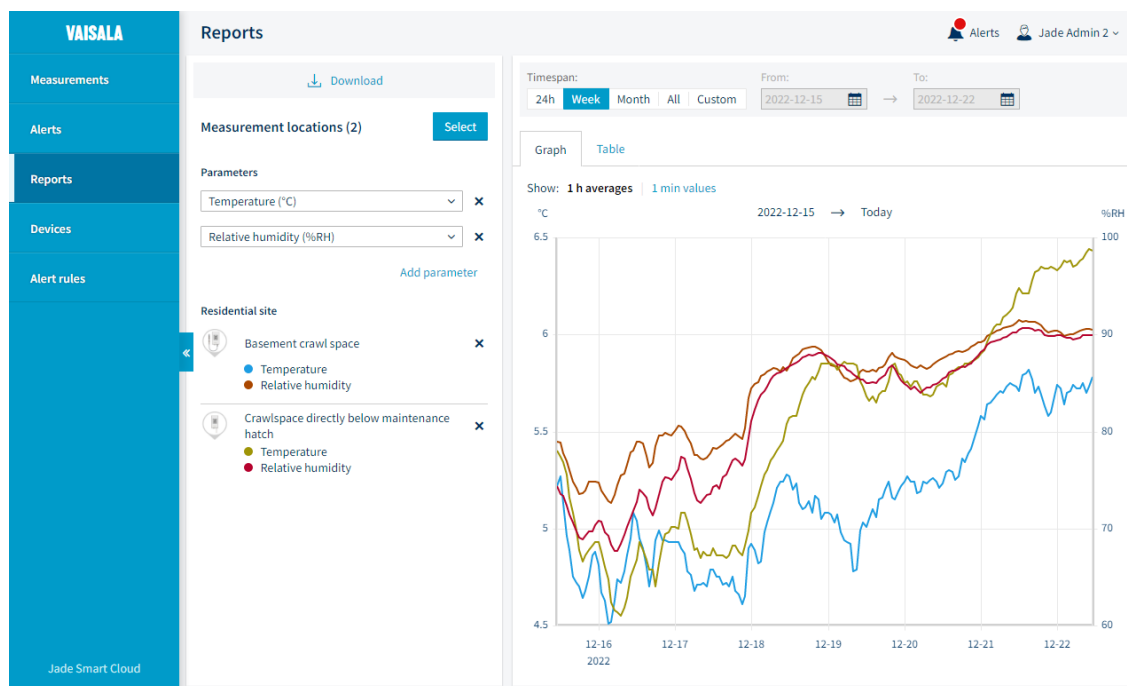
Figure 1. Report graph view

Generating reports

🔒 Administrator or Operator

1. Select Reports in the navigation menu.
2. Select Select and then select the measurement locations to be included in the report.
   When the locations are selected, the report opens in the graph view with a single measurement parameter selected.
3. Configure the report content as desired:
   a. Use the controls in the Parameters section to change what measurement parameters are included.
   b. Select the Timespan.
   c. Select to show 1 h averages or 1 min values.

   > 1 min values cannot be shown in the graph if the timespan is longer than a week. However, 1 min values are available for all timespans in downloaded reports by selecting 1 min values from Data interval section in the Download report dialog.

4. To download the report, select Download. Select the download format (PDF or CSV), and then make the additional selections according to the format.

Download report ✕

Timespan (7 days)

2022-12-15 → Today

Content

- 2 measurement locations
- Temperature (°C), Relative humidity (%RH)

Data interval

- ◉ 1 hour averages
- ◯ 1 min values (raw data)

Format

- ◯ CSV
- ◉ PDF

Title

| Measurement report 2022-12-22T1150 |

Include:

- ☑ Account name (User Name)
- ☑ Report creator

| user.name@address.com |

- ☑ Graph
- ☑ Data table

Download   Cancel

Combining 1 min values with a long reporting timespan can create a very large report. It is usually best to use 1 h average values for long timespans.

5. Wait for Jade to generate the report. When it is ready, your browser will automatically download the file.

Managing users

User roles

User role determines what a user can do in Jade Smart Cloud. There are 3 user roles:

- **Administrators** have full control of the Jade account and can perform all tasks, including the management of other users.
- **Operators** have view-only access to measurements, devices, and alerts associated with specified sites. Additionally, operators can acknowledge alerts and generate reports for their specified sites.
- **Viewers** have view-only access to the Measurements page of specified sites.

Inviting new users

🔒 Administrator

Administator users can invite new users to the Jade account, and assign them appropriate user roles and site access.

1. Select Users in the navigation menu.
2. Select Invite user.

3. Enter the email address of the new user, and select their user role.
4. Select Send invite to send the invitation to the user's email address. The email includes a link to access Jade Smart Cloud and complete their account.
5. If you assigned an Operator or Viewer role to the new users, you must select the sites they will be able to access:
   a. Select the user from the list.
   b. Select **Site access rights > Edit**.
   c. Select the sites that you want the user to be able to access.

Site access rights   ×

Choose the sites that you want this user to have access to.

    Search   🔍

    Corporate site

    Residential site   ✓

                    Save   Cancel

d. Select Save when done.

When a user has accepted the invitation, their account status will change from invited to active.

Videos

Introduction to Jade Smart Cloud user interface

Installing CA10 Cloud Access Point

Installing CWL100 Cloud Wireless Data Logger

Tips and best practises

Device installation order

Install at least one **CA10 access point** on a site before starting to switch on CWL100 data loggers. Doing this allows you to save time as you can verify the connections much faster:

- Having the first measurements appear in the Jade service from a new data logger may take up to 30 minutes, with up to one hour additional wait if the data logger was in power save mode. This time is as short as possible if the data loggers can connect immediately when they are switched on.
- If there is no access point, the data loggers will go to power save mode and wait for an access point to become available. This can be inconvenient if you are waiting to verify the wireless connection. See CWL100 radio power saving mode.

Using info mode to verify radio connectivity

CWL100 data logger has a special, temporary operating mode called **info mode** that provides more information on the display, and also updates the radio signal indicator more rapidly. You can use it during installation to more quickly verify that the data logger is in range of the access point. Very useful on the edges of the radio range, and in areas with heavy obstructions.

For more information, see CWL100 info mode.

Set radio channels when using multiple access points

Using more than one CA10 access point on a site is recommended as CWL100 data loggers will automatically switch to another access point in your system if they lose their connection. However, you must make sure that all access points on a site are operating on their own radio channel. There are 8 channels so you can have up to 8 access points in range of each other. Each access point can connect up to 32 data loggers.

For more information, see Setting CA10 radio channel.

Troubleshooting

New devices are set up but their data is not visible in the Jade service

Wait patiently. When new connections are established it may take up to 30 minutes for the first measurement data to appear in the Jade service. If the data logger has been in power save mode due to lack of an access point connection, there may also be an additional one hour delay. When CWL100 data loggers have a continuous connection, they send their data every 4 minutes.

> CWL100 data loggers have a 30 day memory, and you can download measurement data directly from the CWL100 data logger using an USB cable.
> See Downloading data using service port.

Location graph is not shown

This means there is not yet enough data available to display the graph. As location graphs display 1 hour averages, enough data points are needed to draw the graph.

Make sure the location is linked to a probe and wait for enough data to be recorded.

LED on the CA10 is red / CA10 is not connecting to network

Red LED on CA10 typically means it does not have an **Internet connection**, and therefore is not able to connect data loggers to the Jade service. First check that CA10 is connected to the network using an Ethernet cable. If the CA10 is unable to join the network even when physically connected, verify that the network fulfills the connection requirements:

- The connected network must provide the IP address automatically using DHCP (Dynamic Host Configuration Protocol).
- CA10 must be able to connect to TCP port 443 (for Jade Smart Cloud service) and UDP port 123 (for Network Time Protocol service) through the firewall.
- Many corporate networks require connecting devices to be registered before they can connect. In that case, you must provide the **MAC address** of the access point to your IT administrator. The MAC address is marked on the front of the access point (near the Ethernet connector) and on its type label in the back.

> If a suitable fixed network is not available, you can use a cellular modem with an Ethernet connection instead.

CWL100 data logger is displaying one or more error code(s)

Look up the cause and recommended action for the error code in Table 1. Typical causes of error codes include low batteries and the probe becoming disconnected or damaged.

Downloading data from a device

🔒 Administrator

You can download a complete record of the measurement data that Jade Smart Cloud has received from a device during the past 30 days. The data is provided in a CSV formatted file that can be opened by common spreadsheet programs such as Microsoft® Excel.

> When you download a CSV file from the Devices page, it does not include information about the location(s) that the data may be connected to. To download data for selected locations and parameters, use the Reports feature instead.

1. Select Devices in the navigation menu.
2. Select the device from the list of devices. Note that access points do not have the download option as they do not perform measurement.
3. Locate the Download CSV entry in the General section of device information and select the Download link.
4. Wait for the service to generate the file. Your browser will automatically start the download and may prompt you to select the local folder where the file will be saved.

Devices

Links to device documentation

Videos

Watch videos to get started with using Jade Smart Cloud and supported devices.

Device guides

See the device guides for instructions on how to set up access points and data loggers.

Datasheets

See the datasheets of the supported devices and measurement probes.

CA10 access point

CA10 product overview

Cloud Access Point CA10 is a wireless networking hardware device intended for connecting CWL100 data loggers to Vaisala Jade Smart Cloud service. CA10 and CWL100 devices are associated with a specific cloud account when they are purchased, so there is no need for the user to do any device pairing.

> **CAUTION!** CA10 requires an **Internet connection** for operation. If there is no network available at the installation location, you can provide the connection using a suitable mobile router. Note these network requirements:
>
> - The connected network must provide the IP address automatically using DHCP. Many corporate networks require connecting devices to be registered before they can connect. In that case, you must provide the **MAC address** of the access point to your IT administrator. The MAC address is marked on the front of the access point (near the Ethernet connector) and on its type label in the back.
> - CA10 must be able to connect to TCP port 443 (for Jade Smart Cloud service) and UDP port 123 (for Network Time Protocol service) through the firewall.

Table 1. CA10 installation safety specifications

Operating environment	Indoor use
Use in wet locations	No
Operating temperature	−20 ... +60 °C (−4 ... +140 °F)
Storage temperature	−20 ... +60 °C (−4 ... +140 °F)
Operating humidity	0 ... 90 %RH, non-condensing
Operating altitude	Max. 2000 m (6500 ft)
Pollution degree	2
IP rating	IP30
Operating voltage using dedicated power supply connector	10 ... 30 V DC
PoE power class	Class 0
Power consumption	Max. 13 W
Frequency band	See type label on device

Installing CA10

Required tools:
- Mounting kit 245679 (included in CA10 delivery package)
- Hand tools for mounting with screws:
  - Power drill with Ø 6 mm drill bit
  - Crosshead screwdriver

Watch a video of the installation:

1. Attach CA10 to its mounting location using the most suitable mounting option. Ensure the unit is securely fixed if you are mounting it higher than 2 m (approx. 6 ft) or in a location where it would pose a hazard if dropped.
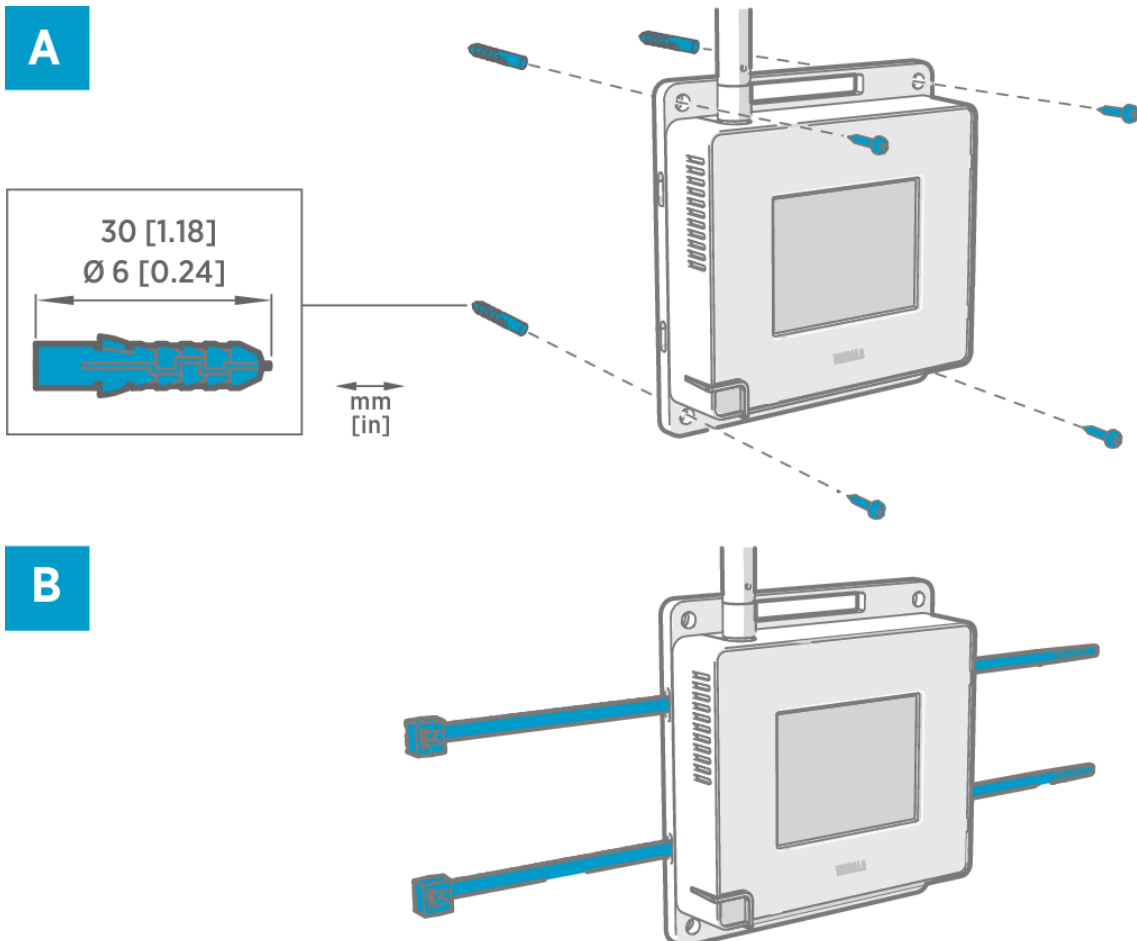
Figure 1. CA10 mounting methods
A   Mounting with wall plugs and screws (use at least 2 screws)
B   Mounting with cable ties
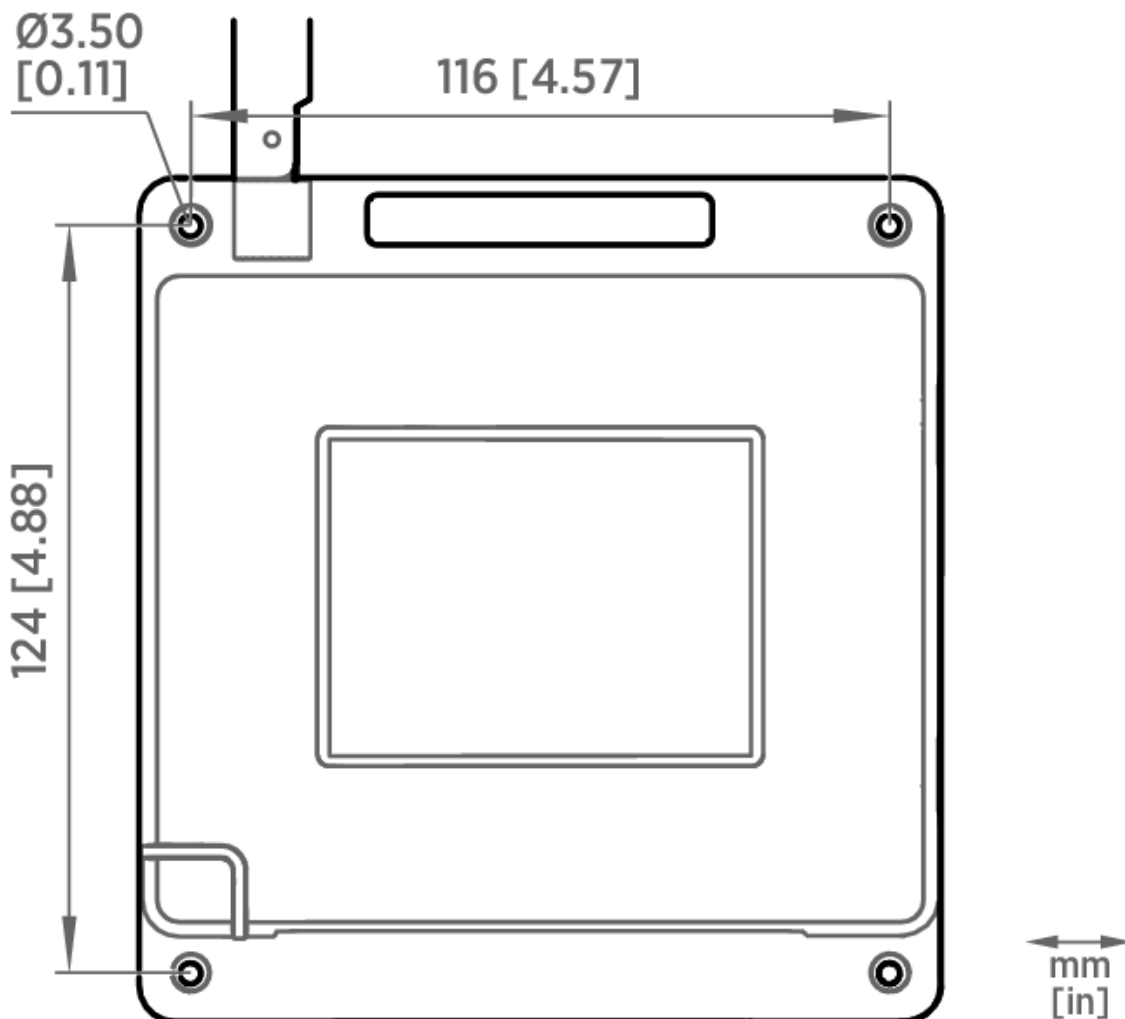
Figure 2. CA10 screw mounting dimensions

2. Point the antenna up or down for best wireless performance.
3. Connect CA10 to the network using an Ethernet cable. If CA10 starts up at this point, the Ethernet cable provides power using Power over Ethernet (PoE) and the separate DC power supply is not needed.
4. To connect the DC power supply:
    a. Connect the plug to the power supply connector of CA10. Make sure the plug is oriented correctly and goes in all the way. Rotate the plug to lock it in, otherwise it will not stay reliably connected.
    b. The power supply comes with multiple adapters for wall sockets. Connect the adapter you need, and plug in the power supply to a wall socket.
    c. If necessary, secure the power supply so it does not fall or hang on its cable.
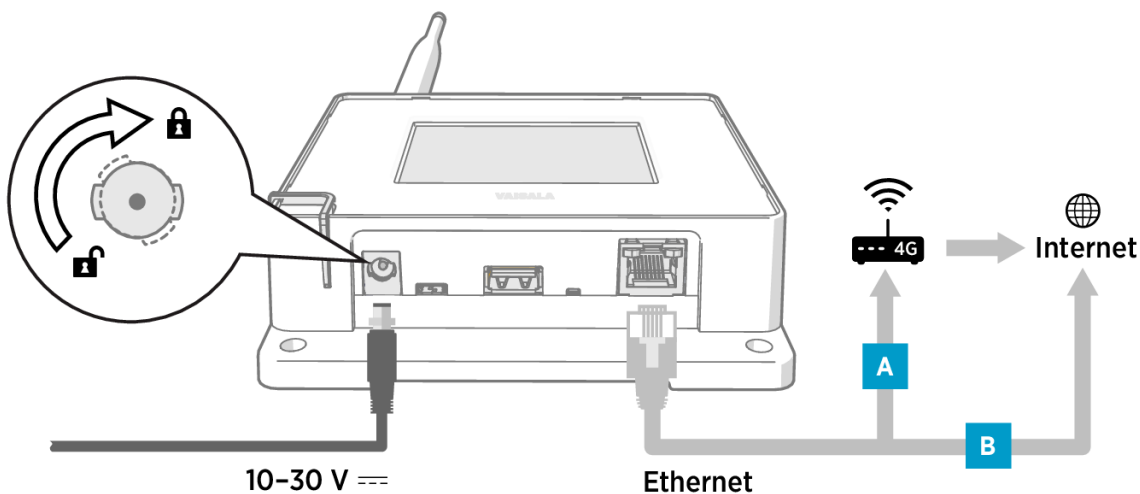
5. Wait for the access point to start up.
6. Make sure the power LED is green and the lower part of the display shows the text Connected to cloud.

   Red LED indicates that CA10 has a connectivity problem and has turned off its radio. No data loggers can be connected until CA10 establishes an Internet connection and the LED is green again.
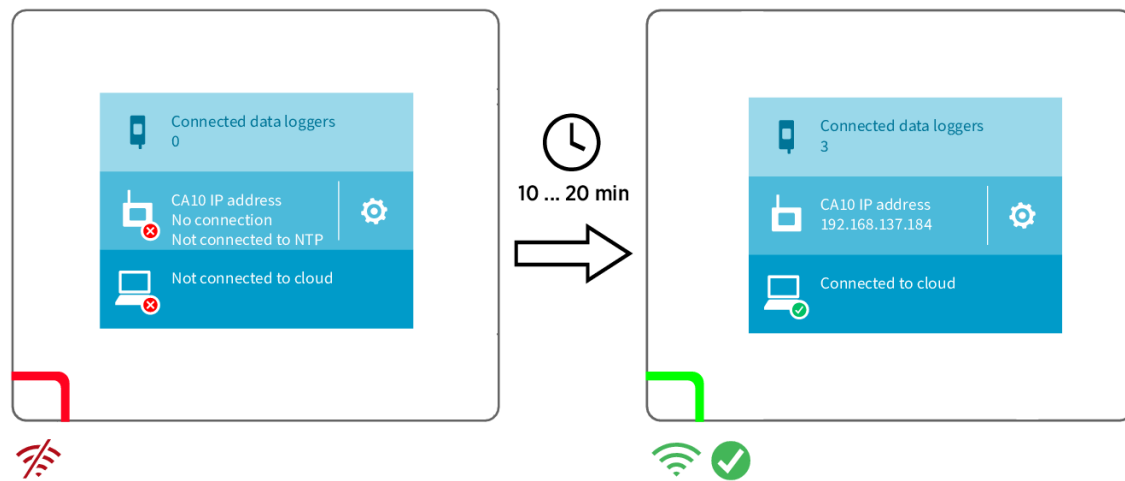
7. CA10 is now ready to connect CWL100 data loggers to Jade Smart Cloud. Data loggers that do not already have a connection will connect to this access point, up to the maximum capacity of 32 data loggers. It will take at least a few minutes for a data logger to be connected. If a data logger is in power save mode, the connection will take up to an hour.

> If you have trouble connecting CA10, see the troubleshooting instructions at jade.vaisala.com/help.

Setting CA10 radio channel

You can have up to 8 access points in the same area (in range of each other) but you must set each of them to their own radio channel.

1. Select Devices in the navigation menu.
2. Locate the access point in the list of devices. The current radio channel is shown under the connection status.
3. To change the channel:
   a. Select the access point in the list of devices.
   b. Locate Radio channel in the device information panel and select Edit.
   c. Select the new radio channel and select Save.

CA10 technical specification

Table 1. CA10 wireless

Networking standards	LoRa™
Wireless connection capacity	Up to 32 supported devices
Modulation	LoRa chirp spread spectrum modulation
Output power	13 dBm (20 mW)
Antenna	Non-removable external antenna
Typical range (indoors)	At least 100 m (approx. 330 ft)
Maximum number of access points in an area	8
Frequency bands	
Model CA10E	868 MHz
Model CA10A	915 MHz

Table 2. CA10 general

Compatible host systems	Vaisala Jade Smart Cloud
Supported devices	CWL100 data logger
Display language	English

Internal clock	Synchronizes with Network Time Protocol (NTP) servers over the Internet
Requirements for connectivity	
Cabled Ethernet network with Internet connection (can be provided using a cellular modem)	
Network provides IP address through DHCP	
CA10 must be able to access TCP port 443 and UDP port 123	

Table 3. CA10 operating environment

Operating environment	Indoor use
IP rating	IP30
Operating temperature	−20 … +60 °C (−4 … +140 °F)
Operating humidity	0 … 90 %RH, non-condensing
Storage temperature	−20 … +60 °C (−4 … +140 °F)

Table 4. CA10 inputs and outputs

Operating voltage using dedicated power supply connector	10 … 30 V DC
PoE power class	Class 0
Power consumption	Max. 13 W
Ethernet interface	
Supported standards	10BASE-T, 100BASE-TX
IPv4 address assignment	DHCP (automatic)
Connectors	
Power supply connector	2.0 mm center pin locking type DC power jack
Service port	Micro-USB (2.0)
Expansion port	USB type A (2.0)
Ethernet	8P8C (RJ-45)

Table 5. CA10 compliance

Electromagnetic compatibility (EMC)	IEC/EN 61326-1, industrial environment
Electrical safety	IEC/EN 61010-1
CA10E model	
EU directives and regulations	RoHS Directive (2011/65/EU) amended by 2015/863
	Radio Equipment Directive, RED (2014/53/EU)
Radio standards and approvals	ETSI EN 300 220-2
	ETSI EN 301 489-1
	ICASA No: TA-2022/0596
	IMDA No: DB105576
	Serbia: И005 21
Compliance marks	AAA, CE, ICASA, UKCA
CA10A model	
Radio standards and approvals	Anatel ID: 04763-19-12322
	AS/NZS 4268
	FCC ID: 2AO39-AP10A
	IC ID: 23830-AP10A
Compliance marks	ANATEL, RCM

Table 6. CA10 mechanical specifications

Housing color	White
Mounting methods	Screws, tie wrap
Weight	386 g (13.6 oz)
Dimensions (H × W × D)	311 × 133 × 37 mm (12.24 × 5.24 × 1.46 in)
Materials	
Housing	PC/ABS blend
Display window	Chemically strengthened glass
Antenna	ABS

CA10 dimension drawings
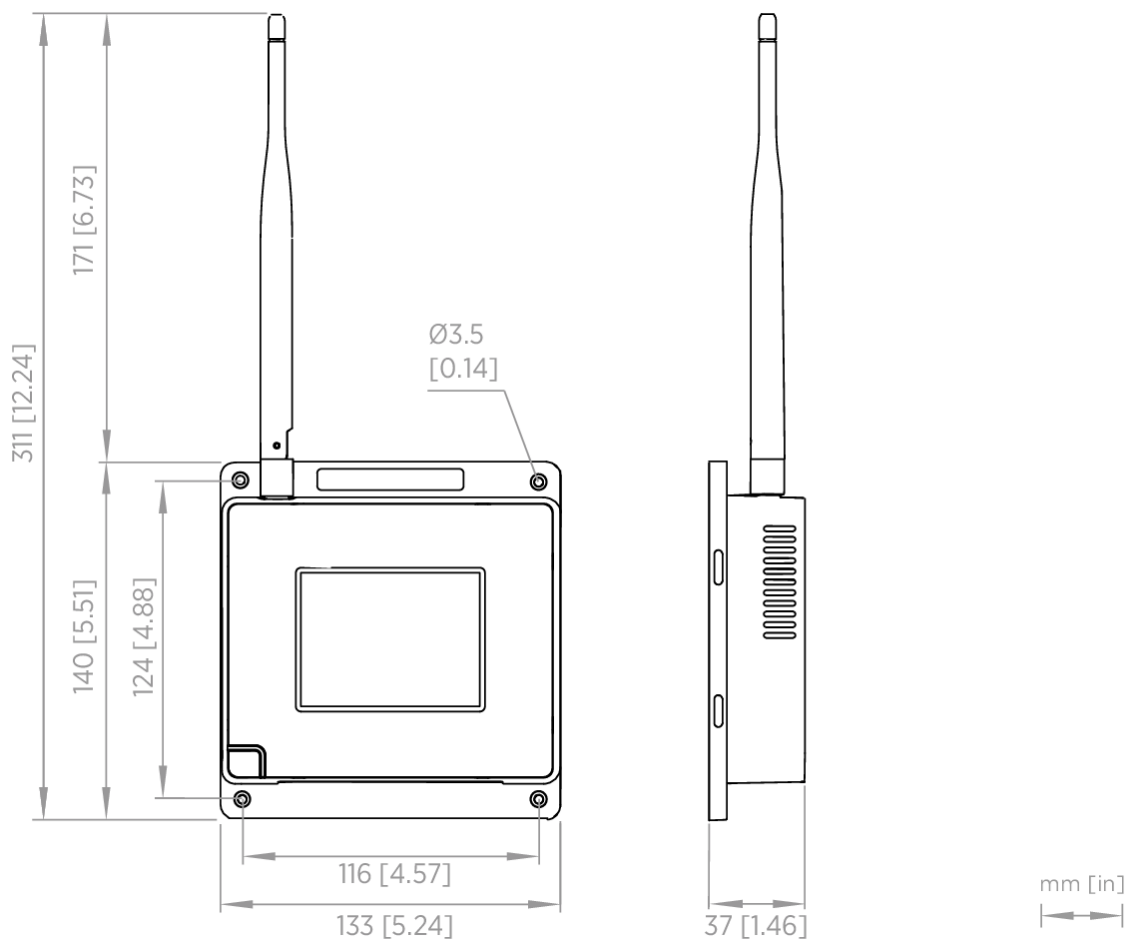
Figure 1. CA10 access point dimensions

CA10 spare parts

Table 1. Spare parts

DC power supply	245127SP
Mounting kit	245679SP

CWL100 data logger

CWL100 info mode

CWL100 data logger has a small button next to the service port. Pressing this button enables **Info mode** for 1 hour, after which the mode is automatically disabled. Pressing the button again disables the mode immediately.

In the Info mode:

- Data logger starts radio scanning immediately if it has shut down to save power.
- After showing the current measurement results and possible error codes, the data logger shows the text **INFO ON** and the following additional information:
    - If the data logger is connected to an access point:
        - Signal strength indicator 📶 is updated faster, approximately every 30 seconds.
        - The currently connected access point channel is shown, alternating with measurement results and firmware version.
    - Firmware version of the data logger.
    - Serial number of probe detected at startup, shown in 3 separate segments. Letters **SN** are shown before the number.

After all information has been shown, the same sequence is repeated until Info mode is disabled or 1 hour has

passed.

When to use Info mode

Info mode can be very useful when you can physically access the data logger. The following are the main use cases:

1. Wake up the data logger from radio power save without restarting it.
2. Determine the signal quality of the current access point connection. When the data logger is connected to an access point, you can move the data logger around and monitor the signal strength indicator ▼.ıll that updates every 30 seconds in Info mode. Note that the connection quality is shown only for the current access point connection.
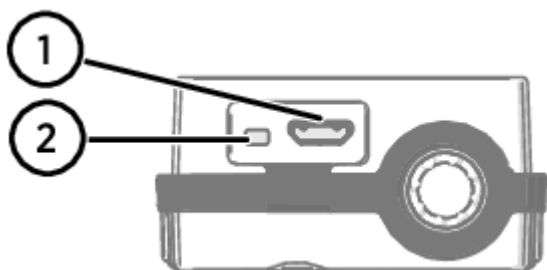3. Check the access point where the data logger is currently connected. You can determine this from the channel number if you know the channel assignments of the access points.
4. Check the firmware version of the data logger without restarting it.

Turning on info mode

- Pen or a small screwdriver

1   Service port (micro-USB)
2   Info button

1. Open the plug that covers the service port.
2. Push the small button next to the service port using a pen or a small screwdriver.
3. Verify from the display that the text **INFO ON** appears briefly.
4. Close the plug over the service port.

CWL100 radio power saving mode

Scanning for available access points consumes power. To prevent repeated scanning from draining their batteries, CWL100 data loggers shut down their radio temporarily if they can find no access point 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 approximately 1 hour.

This means that when access points become available after an outage, it may take up to an hour for data loggers to discover them. This is why you should always keep your access points powered up, and why you should install access points before data loggers.

You can manually wake up the radio of an CWL100 data logger by pressing its **Info** button. The button is located next to the service port under the silicone plug.

Changing temperature unit on local display
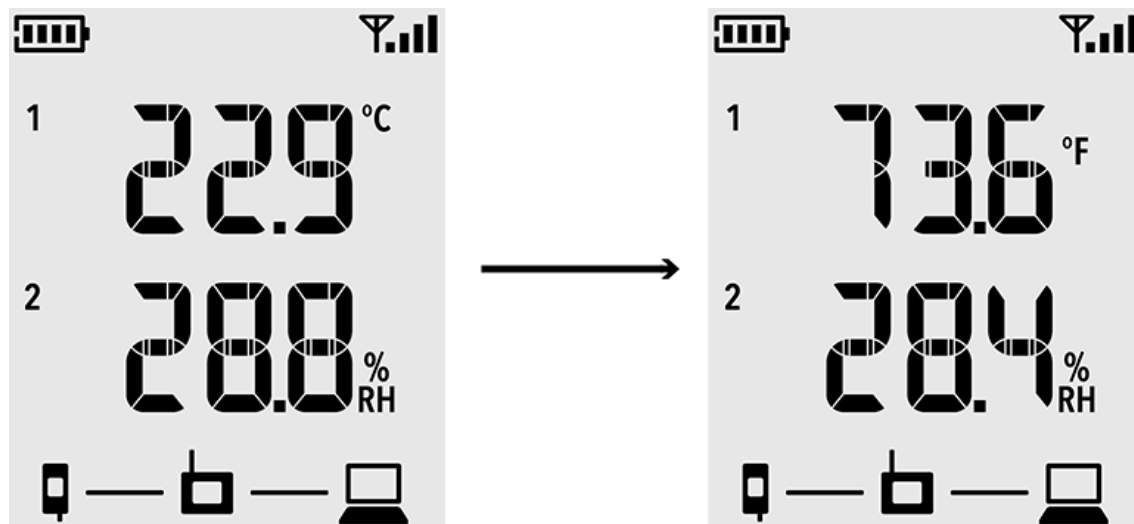
1. Log in to the Jade service at jade.vaisala.com.
2. Select Devices in the navigation menu.
3. In the list of devices, select the CWL100 data logger you want to change.
4. Locate Units on display and check the currently selected units: Metric or Non-metric. On CWL100, this setting only determines the unit used for temperature. Metric selects Celcius (°C), non-metric selects Fahrenheit (°F).
5. To change the setting, select Edit and select the new setting.
   It takes several minutes before the units are updated on the local display. If the data logger is offline, the setting change will be sent to the data logger when it is online again.

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).

You can download up to 30 days of measurement data directly from the CWL100 data logger. The format of the file is CSV (comma separated value), and you can easily import it into common spreadsheet programs.

CWL100 uses Universal Coordinated Time (UTC), so timestamps of the downloaded data are in the UTC format. If you need to match the timestamps to what you see in the Jade Smart Cloud application, note that time values shown in Jade are automatically converted according to the time zone of the device your are using.

1. Open the plug that covers the service port.
2. Connect the USB cable between your computer and the service port of the CWL100 data logger.
   When the computer detects the data logger, it is available for file transfer.
3. Navigate to the \Data\Log folder on the CWL100.
4. Copy the following files from the folder to retrieve the data:

Filename	Content
Log_1h.txt	Measurement data from the past hour.
Log_24h.txt	Measurement data from the past 24 hours.
Log_30d.txt	Measurement data from the past 30 days.

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

CWL100 error codes

Table 1. CWL100 error codes

Error code	Cause	Recommended action

Error code	Cause	Recommended action
Err 100	User parameter bank checksum failure.	Power cycle the data logger. If the error persists, contact Vaisala.
Err 101	Factory parameter bank checksum failure.	
Err 102	Real-time clock of the data logger has lost accurate time.	Restore the wireless connection to a CA10 access point. CWL100 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 the main batteries of the data logger.
Err 104	Incorrect factory configuration parameters.	Power cycle the data logger. If the error persists, contact Vaisala.
Err 105	Real-time clock hardware error.	
Err 110	No probe connected at startup.	1. Connect a compatible probe to the data logger. 2. Power cycle the data logger to re-detect the probe.
Err 110	Incompatible probe detected.	1. Verify that the connected probe is of compatible type: HMP63, HMP110, or HMP115. 2. Power cycle the data logger to re-detect the probe.
Err 200	Real-time clock battery voltage is low.	Replace the clock battery.
Err 202	Communication failure with probe that was detected at startup.	1. Check that the probe is connected properly. 2. If you reconnected any probes, wait one minute for the display to update and verify that the error is gone. 3. If the error persists, power cycle the data logger to re-detect the probe.
Err 203	Probe error. Can be caused by probe 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.	If error code **Err 200** is also active, replace the clock battery. If the error persists, contact Vaisala.

CWL100 technical specification

Table 1. CWL100 wireless

Networking standards	LoRa™
Modulation	LoRa chirp spread spectrum modulation
Output power	13 dBm (20 mW)
Antenna	Internal
Typical range (indoors)	At least 100 m (approx. 330 ft)
Range with line-of-sight	Over 500 m (1640 ft)
Frequency bands	868 MHz and 915 MHz

Table 2. CWL100 memory

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

Table 3. CWL100 operating environment

Storage temperature	−40 ... +60 °C (−40 ... +140 °F)
Operating humidity	0–100 %RH, non-condensing
IP rating	IP54
Operating temperature [1]	
with alkaline batteries	+2 ... +60 °C (+35.6 ... +140 °F)
with lithium batteries	−20 ... +60 °C (−4 ... +140 °F)

Table 4. CWL100 General

Compatible probes	HMP63, HMP63T, HMP110, HMP115, HMP115T, TMP115
Batteries	2 × AA sized, 1.5 V (LR6 or FR6)
Operation time at 20 °C (68 °F) without external power supply	18 months
Internal clock accuracy	±30 s/month Synchronizes time from CA10 access point

Table 5. CWL100 compliance

Electromagnetic compatibility (EMC)	EN 61326-1, industrial environment
Electrical safety	EN 61010-1
868 MHz model	
EU directives and regulations	RoHS Directive (2011/65/EU) amended by 2015/863 Radio Equipment Directive, RED (2014/53/EU)
Radio standards and approvals	ETSI EN 300 220-2 ETSI EN 301 489-1 ICASA No: TA-2022-0748 IMDA No: DB105576 Serbia: И005 21
Compliance marks	AAA, CE, ICASA, UKCA
915 MHz model	
Radio standards and approvals	Anatel ID: 04761-19-12322 AS/NZS 4268 FCC ID: 2AO39-RFL100A IC ID: 23830-RFL100A
Compliance marks	ANATEL, RCM

Table 6. CWL100 mechanical specifications

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
Dimensions (H × W × D) with HMP115 probe	
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), HMP115 probe, and magnetic mounting bracket	254 g (8.96 oz)
Materials	
Housing	PC/ABS blend
Display window	PMMA (acrylic)
Sealings	TPE

[1] For both alkaline and lithium, battery temperature operating specifications apply.
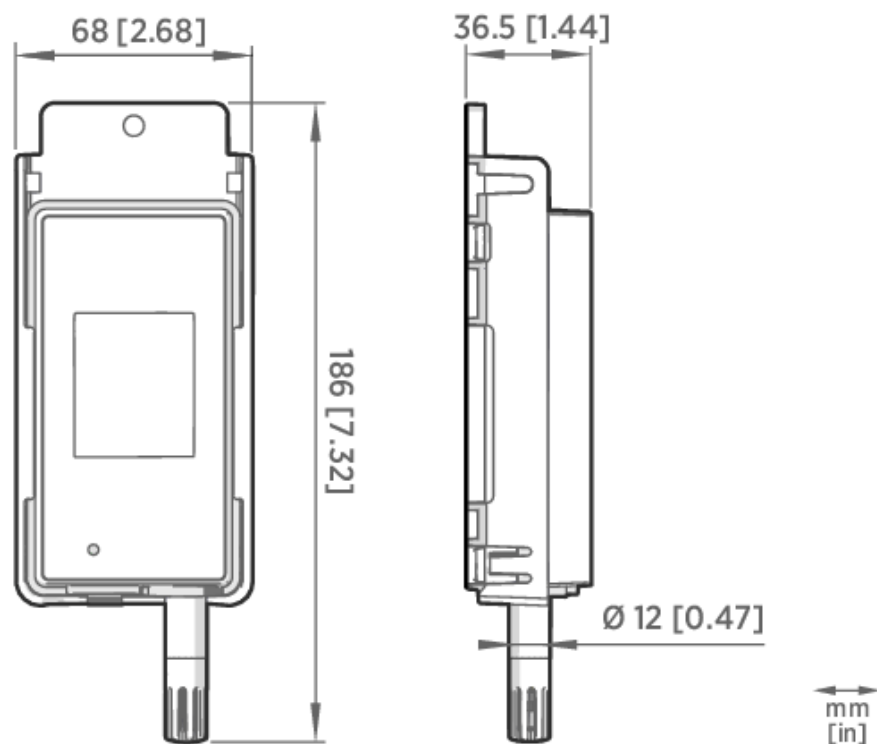
CWL100 dimension drawings

Figure 1. CWL100 dimensions with HMP115 probe

CWL100 accessories and spare parts

Table 1. Accessories

Accessory	Item code	HMP63	HMP110	HMP115/T	TMP115
Probe cable 1.5 m	CBL210555-1M5SP	✔	✔	✔	✔
Probe cable 3 m	CBL210555-3MSP	✔	✔	✔	✔
Probe cable 10 m	CBL210555-10MSP	✔	✔	✔	✔
Flat cable 3 m	CBL210647SP	✔	✔	✔	✔

Table 2. Accessories for concrete moisture measurement

Accessory	Item code	HMP63	HMP110	HMP115/T	TMP115
Plastic tube set (12 pcs)	19266HM		✔		
Long (200 mm) plastic tube set (12 pcs)	245789		✔		
Rubber plugs (12 pcs)	233976		✔		
Plastic flange set (12 pcs)	26529HM		✔		
Long rubber plug for wet concrete (12 pcs)	26530HM		✔		

Table 3. CWL100 spare parts

Description	Vaisala item code
Mounting bracket (5 pcs)	DRW244769SP
Magnetic mounting bracket (5 pcs)	ASM211527SP
Battery cover (5 pcs)	DRW244766SP
Mounting kit	245679SP
Probes	
HMP63 probe	HMP63 with configuration code R00A6A1A0
HMP63T probe	HMP63T with configuration code R0A61A0
HMP110 probe	HMP110 with configuration code M00A0C1A0
HMP115 probe	HMP115 order form

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

When preparing to recycle a CWL100 data logger, open the battery cover and remove the main batteries and the clock battery.

Recycle all applicable material.

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

Maintenance and calibration services

Vaisala offers comprehensive customer care throughout the life cycle of our measurement instruments and systems. Our factory services are provided worldwide with fast deliveries. For more information, see www.vaisala.com/calibration.

- Vaisala Online Store at store.vaisala.com is available for most countries. You can browse the offering by product model and order the right accessories, spare parts, or maintenance and calibration services.
- To contact your local maintenance and calibration expert, see www.vaisala.com/contactus.

Technical support

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

- Product name, model, and serial number
- Software/Firmware version
- 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.