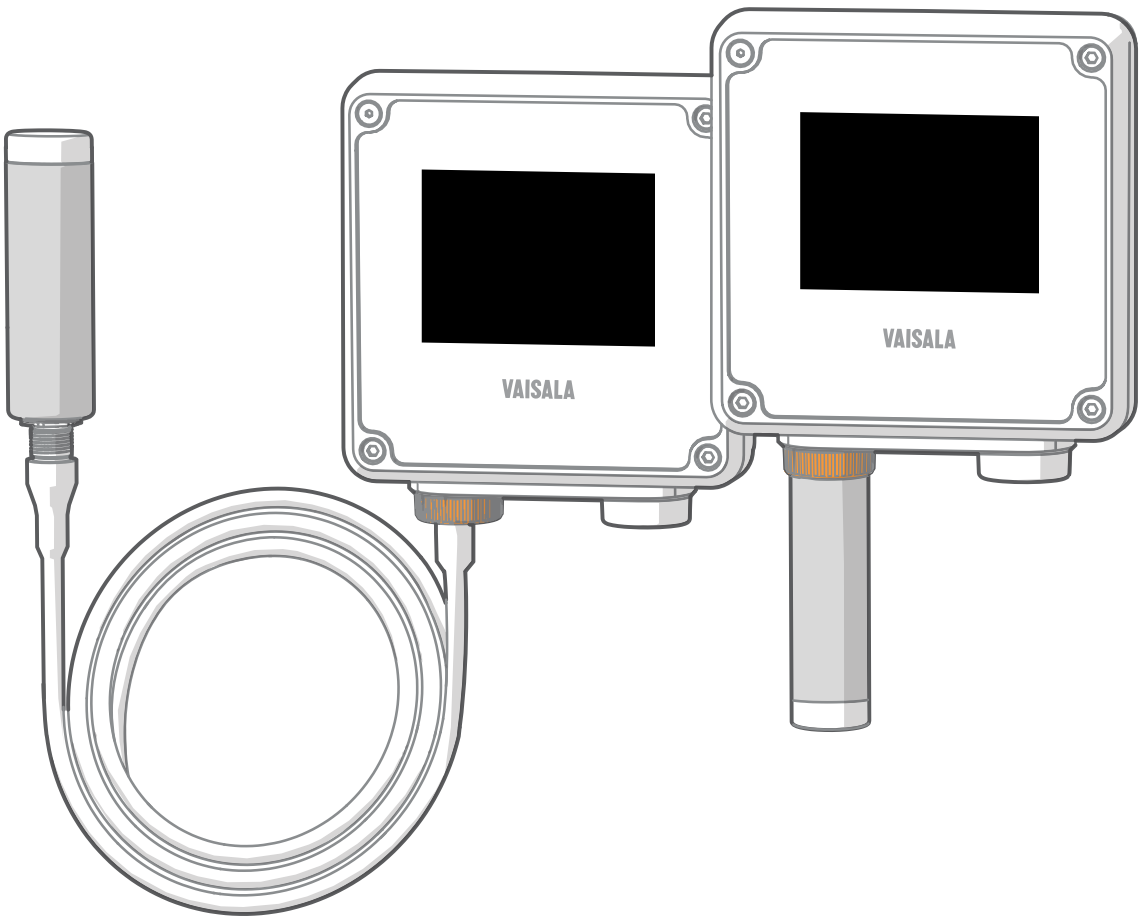
M211966EN-D

User Guide

Digital transmitter with WLAN configuration interface

Indigo 202 (WLAN interface)



VAISALA

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Vaisala Oyj
Vanha Nurmijärventie 21, FI-01670 Vantaa, Finland
P.O. Box 26, FI-00421 Helsinki, Finland
+358 9 8949 1

Visit our Internet pages at www.vaisala.com.

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1. About This Document

1.1 Version Information

This document provides detailed instructions for using and maintaining Vaisala Indigo 202 digital transmitter.

Table 1 Document Versions (English)

Document Code	Date	Description
M211966EN-D	Jun 2022	This document. Added information on the requirement to disable probe heating to enable calibration input in certain probe models. Updated operating environment requirements.
M211966EN-C	Oct 2018	Previous version. • Power supply input specification changed from 15 ... 30 VDC (20 ... 22 VAC) to 15 ... 30 VDC (24VAC ±10 % 50/60 Hz) due to component board update. • Updated the information on disabling autologin and other additional WLAN settings when connecting to Indigo wireless configuration interface. • Clarified the user level requirements (admin login required) for configuring settings. • Updated probe compatibility information. • Probe locking wheel color changed.
M211966EN-B	Dec 2017	User interface updates in place from transmitter software version 1.3.0 onwards. • **Measurements** view updated to include graph display on/off selection and numerical measurements tab. • Date and time configuration added to the **Settings > General** menu. • Updated transmitter cover opening instructions. • Updated probe compatibility information. • Added information on the display measurement reading behavior during probe processes.

1.2 Related Manuals

Document Code	Name
M211967EN	Indigo 202 Digital Transmitter Quick Guide
M211877EN	Indigo 201 Analog Output Transmitter User Guide
M211876EN	Indigo 201 Analog Output Transmitter Quick Guide
M211799EN	Vaisala CARBOCAP® Carbon Dioxide Probe GMP251 User Guide
M211897EN	Vaisala CARBOCAP® Carbon Dioxide Probe GMP252 User Guide
M211972EN	Vaisala PEROXCAP® Hydrogen Peroxide, Humidity and Temperature Probe HPP272 User Guide

Document Code	Name
M212022EN	Vaisala HUMICAP® Humidity and Temperature Probes HMP4, HMP5, HMP7, HMP8, TMP1 User Guide

1.3 Documentation conventions



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! 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.

1.4 Trademarks

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2. Product Overview

2.1 Introduction to Indigo Transmitters



Figure 1 Probe Connection Options and Wireless Interface Examples (GMP251 Example)

Vaisala Indigo transmitters are a plug-and-play host device platform for Vaisala Indigo-compatible probes. Indigo transmitters extend the feature set of connected probes with a range of additional options for outputs, measurement viewing, status monitoring, and configuration interface access.

Depending on the Indigo transmitter model, a display is available as an optional selection or as a standard feature. In the non-display model, an LED indicator is used for notifications. Probes can be connected either directly on the transmitter from the probe's connector, or by using a cable between Indigo and the probe.

The configuration interface of Indigo transmitters is a browser-based wireless UI that requires a mobile device or computer that supports wireless connectivity (IEEE 802.11 b/g/n WLAN).

The Indigo 202 transmitter is designed for digital output applications. The transmitter's output options include RS-485 Modbus RTU and 2 programmable relays.

For more information on Indigo transmitter models, see www.vaisala.com/indigo.

More information

- Indigo 202 Basic Features and Options (page 10)
- Specifications (page 65)

2.2 Indigo 202 Basic Features and Options

- All Vaisala Indigo-compatible probes can be connected to all Indigo transmitter models
- Wireless configuration interface: connect to the scalable browser-based UI of Indigo 202 to change probe and transmitter settings, view measurements, and review probe and transmitter status
- 3.5” TFT LCD color display
- Power supply input 15 ... 30 VDC (24VAC ±10 % 50/60Hz)
- Digital output: RS-485 Modbus RTU
- 2 configurable relays
- 1-m, 3-m, 5-m and 10-m probe connection cables available as accessories

More information

- Wireless Interface Menus (page 24)
- Indigo Display (page 13)
- Input and Output Specification (page 21)
- Modbus Overview (page 42)
- Relay Configuration Overview (page 44)

2.3 Indigo Transmitter Parts

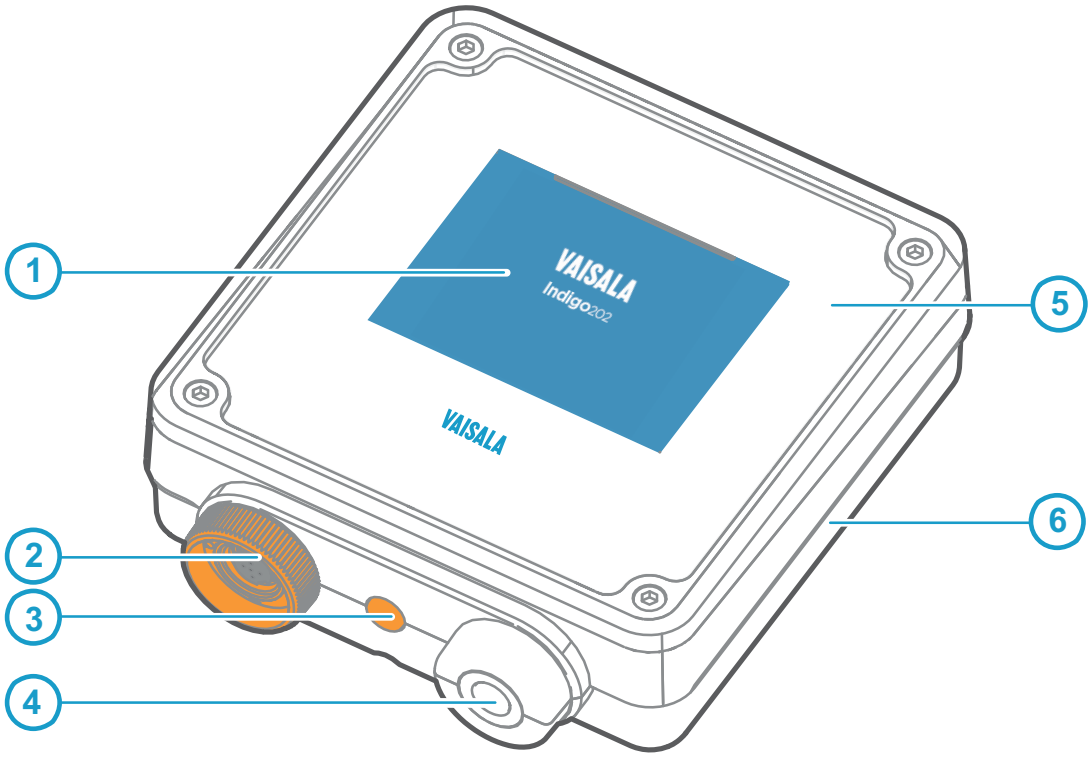


Figure 2 Indigo Transmitter Parts

1 Display
2 Probe and probe cable connector, locking wheel
3 Wireless (WLAN) configuration interface activation button
4 Rubber lead-through with strain relief for input/output cable
5 Top cover of the transmitter: display, circuit board and connector pins
6 Transmitter base: input and output wiring (screw terminals), mounting base

CAUTION! Only use Vaisala Indigo-compatible probes with the transmitter. Attempting to connect incompatible probes or probe cables can damage the equipment.

More information

- Dimensions (page 68)
- Indigo Transmitter Base (page 18)
- Spare Parts and Accessories (page 67)

2.4 Probe Compatibility

All Indigo-compatible probes can be used with all Indigo transmitter models. Note that the manufacturing date of Indigo transmitters or Indigo-compatible probes can predate support for the transmitter or probe.

If your Indigo transmitter has been manufactured before the release date of the probe series you want to connect to Indigo, it is possible that the transmitter software does not include support for the newer probe. Similarly, older probes that have been manufactured before the release of the Indigo transmitter series do not include Indigo support.

More information

- Probe and Indigo Software Compatibility (page 12)

2.4.1 Probe and Indigo Software Compatibility

The following table shows the compatibility of different Indigo 200 series transmitter software versions and the software versions of Indigo-compatible probes.

Table 2 Indigo 200 Series Transmitter and Probe Software Version Compatibility

Support for Indigo 200 Series in Probe SW	Support for Probe in Indigo 200 Series Transmitters
GMP251: SW 1.2.8 and above	Indigo SW 1.0.0 and above (all transmitters)
GMP252: SW 1.2.8 and above	Indigo SW 1.0.0 and above (all transmitters)
HPP272: probes with SW 1.2.6 or earlier	Indigo SW 1.3.2 and above [1)]
HPP272: probes with SW version above 1.2.6 [2)]	Indigo SW 1.4.0 and above [3)]
HPP271: SW 1.0.0 and above (all probes)	Indigo SW 1.4.0 and above [3)]
HMP4, HMP5, HMP7, HMP8 and TMP1: SW 1.0.0 and above (all probes)	Indigo SW 1.3.2 and above [1)]

1) *Support for probe starting from Indigo transmitter serial number N4650357 (serial numbers running in alphabetical and numerical order)*
2) *HPP272 probes starting from probe serial number P3940796*
3) *Support for probe starting from Indigo transmitter serial number P3930284 (serial numbers running in alphabetical and numerical order)*

2.5 Indigo Display

Indigo transmitters use a 3.5” TFT LCD color display for displaying notifications, status information, and measurement data.

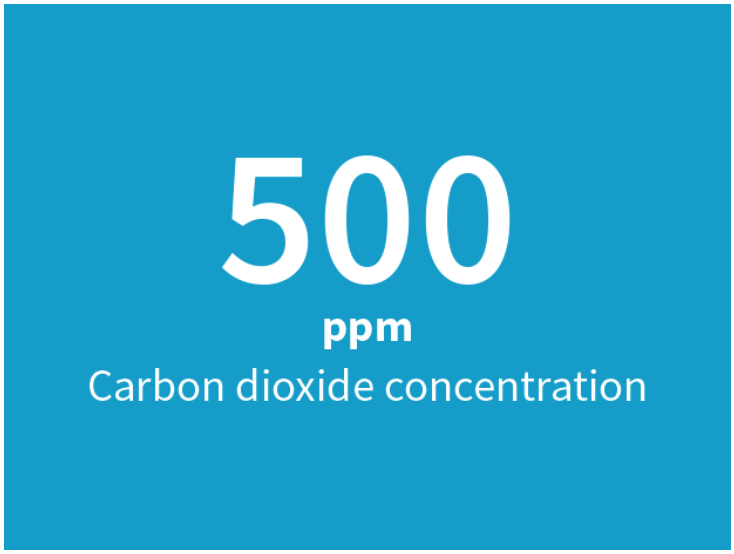


Figure 3 Indigo Display with One Parameter

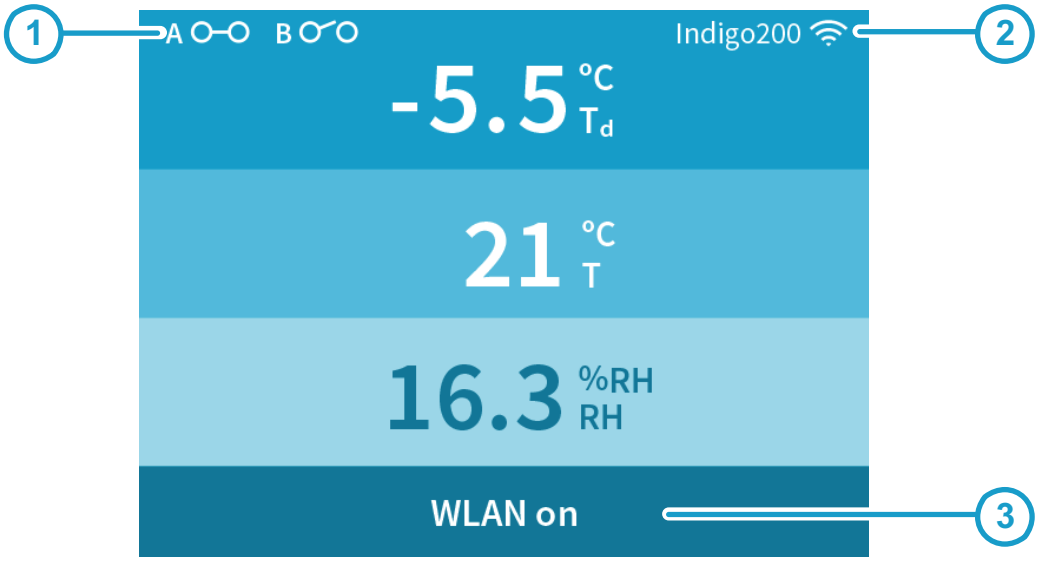


Figure 4 Indigo Display with Relays, Three Parameters and WLAN Notification

1 Relay A and relay B status
2 Wireless configuration interface indicator (SSID text and WLAN symbol)
3 Message field for notifications, warnings and errors

The Indigo display can be configured to show 1-3 measurement parameters. Information about the transmitter and connected probe (for example, notifications and warnings) is shown on a message row at the bottom of the display. Relay and wireless access point activity is also shown on the display.

The parameters shown on the display, display brightness and display mode (numeric or graph) can be configured with the wireless configuration interface in the **Settings > General** menu.

More information

- Status View (page 31)
- Display Settings (page 35)
- Display Messages (page 63)

2.5.1 Graph Display Mode

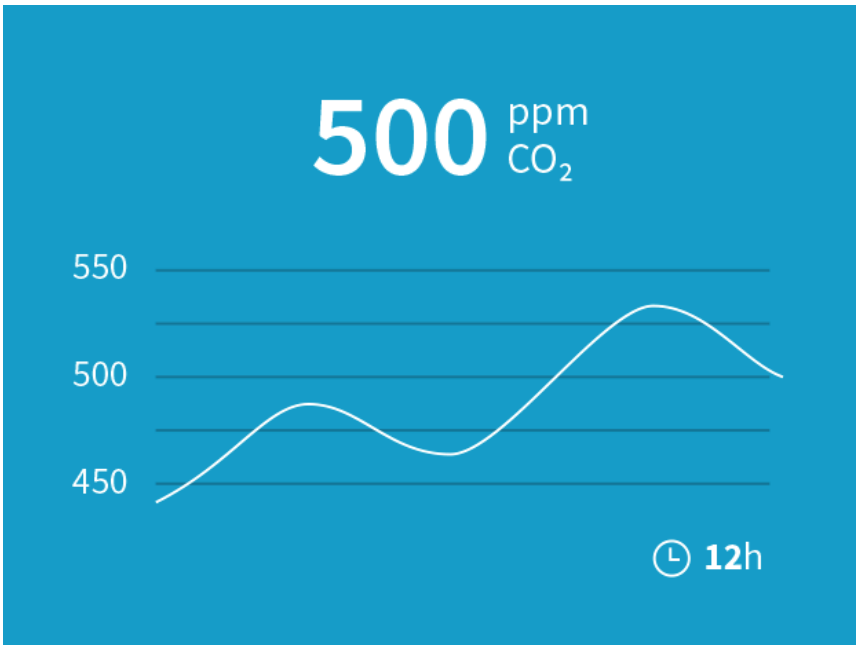


Figure 5 Indigo Display in Graph Mode

You can set the Indigo display to show the connected probe's measurement data as a graph. The display mode can be changed in the wireless configuration interface's **Settings > General** menu.

More information

- Display Settings (page 35)

2.5.2 Measurement Reading Locked

Certain probe-specific features cause the measurement reading to lock to its current value until the probe has finished its action. One such example is probe purge, which heats up the probe's sensor to remove contamination. While the purge cycle is running, measurements are not updated.

In the case of purge, the Indigo display shows either the probe message **Purge in progress** or, depending on the connected probe, the high-level transmitter message **Waiting for measurements**.

Similarly, when the probe is initializing at start-up or has been restarted, up-to-date measurement data is not available and the Indigo display shows the message **Waiting for measurements**.

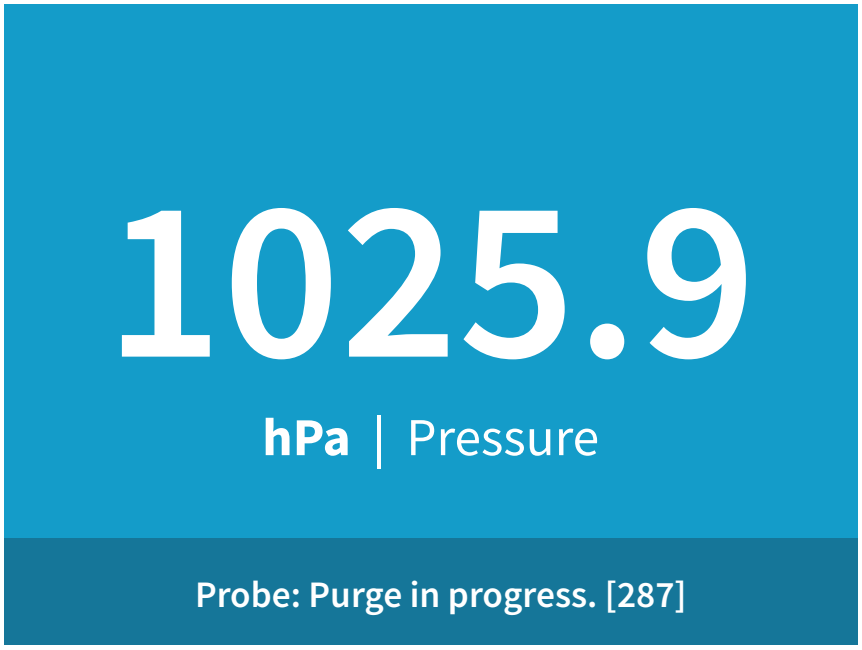


Figure 6 Purge in Progress Message from Probe on Indigo Display

More information

- Display Messages (page 63)

2.6 Wireless configuration interface overview

Indigo transmitters are configured using a wireless browser-based configuration interface (requires a mobile device or computer with IEEE 802.11 b/g/n WLAN wireless connectivity). In addition to probe and transmitter configuration and calibration, you can also use the wireless interface to view measurement data and status information.



Figure 7 Desktop and mobile example views

The wireless configuration interface has two user levels:

- All users have view-only access (no configuration rights, not password protected).
- Personnel that carry out configuration tasks can log in with an administrative password that allows changing the transmitter and probe settings.

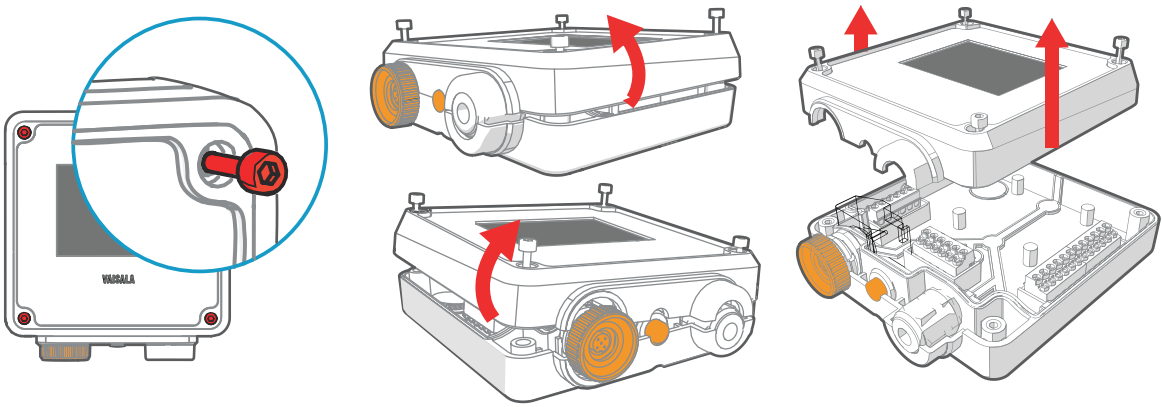
To use the wireless configuration interface to modify the settings of your Indigo transmitter and the connected probe, you must first enable the transmitter's wireless connection and then connect to Indigo with your mobile device or computer. Most major browsers (for example, Firefox, Chrome, Safari, and Internet Explorer) are supported: using the most recent version is recommended.

More information

- Connecting to wireless configuration interface (page 25)
- Logging in to wireless configuration interface (page 27)
- Wireless Interface Menus (page 24)
- Indigo Wireless Connection Troubleshooting (page 59)

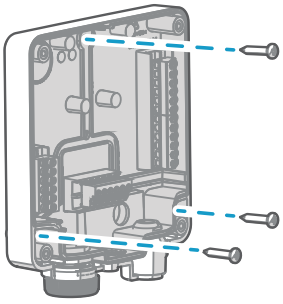
3. Installation

3.1 Opening and Mounting



CAUTION! To avoid damaging the connector pins of the transmitter, pull the transmitter cover off the base in a straight angle. Do not twist or bend.

1. Loosen the 4 screws on the transmitter cover.
2. Carefully open the transmitter cover part of the way from both sides so it is easier to pull the cover off the base.
3. Pull the transmitter cover off the base in a straight angle. Do not twist or bend.
4. Place the transmitter base on the installation surface and mount it with 3 screws. See the screw positions in Figure 8 (page 18).



5. Lead the input/output cable inside the transmitter (see Wiring Options (page 19)). If you are wiring through the lead-through on the bottom of the transmitter, test that the strain relief works with your cable.
6. Connect the input/output cable's wiring to the screw terminals (see Indigo Transmitter Base (page 18)) and reattach the cover when done.

3.2 Indigo Transmitter Base

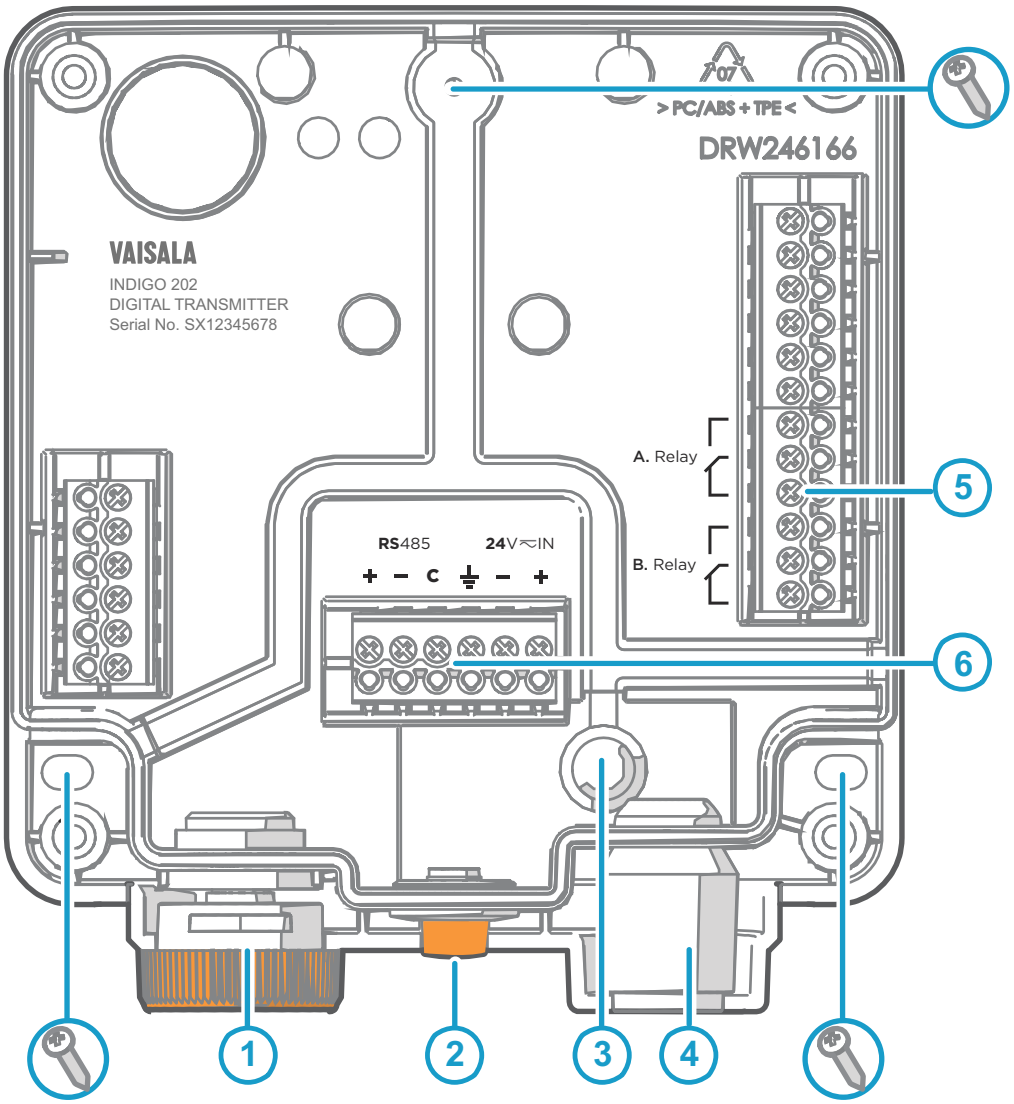


Figure 8 Indigo 202 Transmitter Base Main Parts and Screw Positions

1 Probe and probe cable connector inside the locking wheel
2 Wireless (WLAN) configuration interface activation button
3 Wiring from the back: cut open the seal
4 Rubber cable lead-through with strain relief
5 Screw terminals for relays A and B
6 Screw terminals for 24 V power supply input and RS-485 (Modbus) connection

CAUTION! Do not energize the power supply before the wiring has been connected.

3.3 Wiring Options

You can wire an input/output cable either through the opening on the back of the transmitter, or through the rubber lead-through on the bottom of the transmitter.

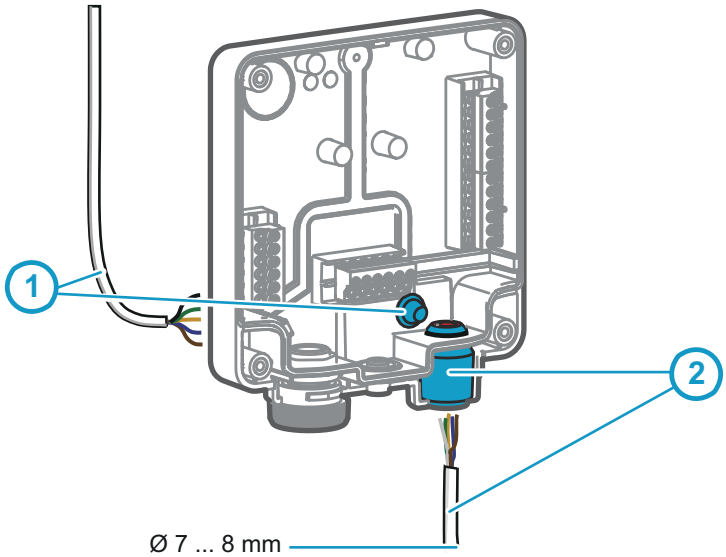


Figure 9 Indigo Wiring Options

1 Wiring from the back: cut the seal open
2 Wiring through the rubber lead-through on the bottom of the transmitter

1. To wire the input/output cable through the back of the transmitter:
   a. Cut off as much of the seal as is needed to fit your cable through the opening.
   b. Lead the cable through the opening and attach a strain relief as needed.
   c. If you wire only through the back, plug or seal the lead-through on the bottom.
2. To wire the input/output cable through the rubber lead-through on the bottom:
   a. Push the input/output cable through the lead-through.
   b. The lead-through provides strain relief and holds the cable in place. Tightening is not required.

The recommended cable diameter for wiring through the rubber lead-through is 7 ... 8 mm. If you use a different cable size, test that the strain relief works as intended.

3.4 Attaching Probes and Cables

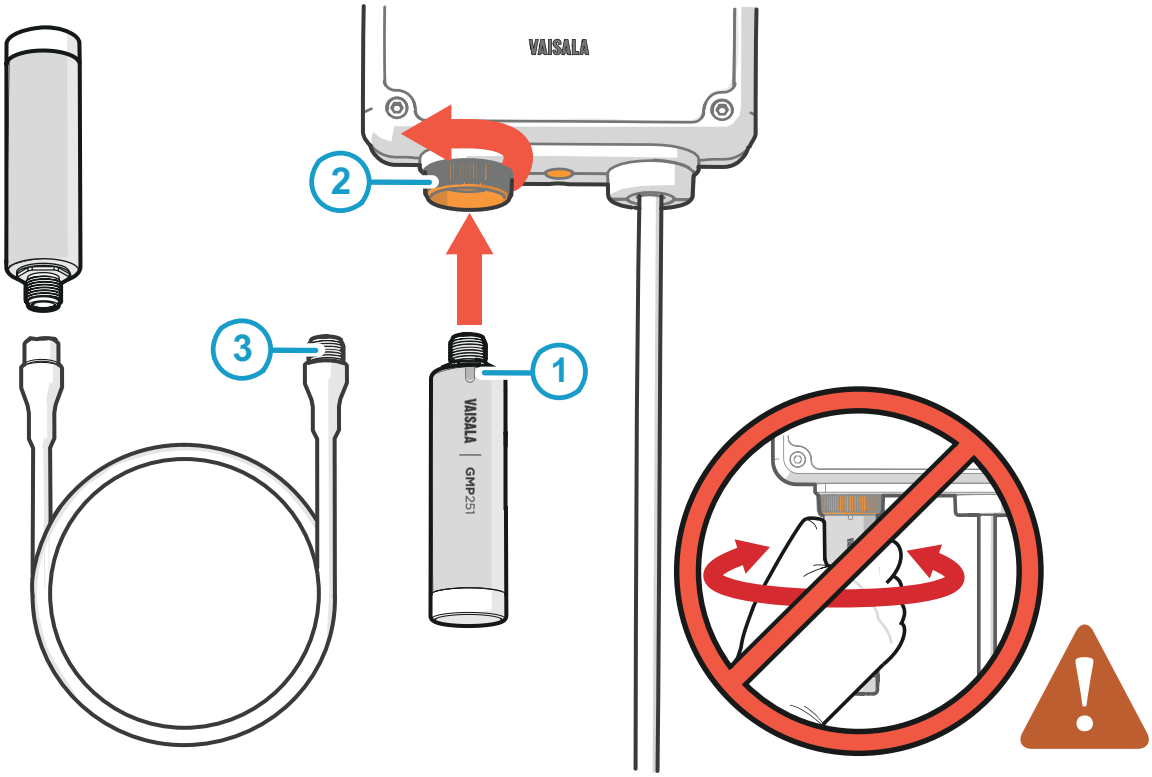


Figure 10 Attaching Probes and Cables to Indigo

1 Insert probes into the probe connector with the orientation mark facing out.
2 Probes are locked in place with the locking wheel. **Never turn from the probe body.**
3 Connect probe cables in the same way as probes: insert the cable in the connector and hold in place while turning the locking wheel.

1. Insert the probe into the probe connector with the orientation mark on the probe body facing out.
2. Hold the probe in the probe connector and lock it in place by turning the locking wheel counterclockwise. Do not turn the probe body when attaching, only the locking wheel on the transmitter.
3. When the transmitter recognizes the connected probe, it shows a notification message on the display (for example, **Probe Connected: GMP251**).

3.5 Input and Output Specification

Table 3 Inputs and Outputs

Property	Specification
Digital output	RS-485 Modbus RTU
Relays	2 configurable relays (VAC/VDC)
	Device maximum specification (resistive load): • Max. switching power 30 W / 37.5 VA

	UL-rated maximum specification (resistive load):
	• AC: max. 28 V / 0.5 A
	• DC: max. 40 V / 0.24 A
	• Up to 30 VDC:
	  • max. switching current 1 A
	  • max. switching power 30 W

Power supply input [1)]	15 ... 30 VDC (24VAC ±10 % 50/60 Hz)
Maximum current	Transmitter and connected probe max. 1 A
Power consumption	Transmitter max. 3 W (+ connected probe, varies depending on probe type)
Probe connector	M12/5 connector for probe or probe cable connection (Vaisala Indigo-compatible probes)
Cable lead-throughs	2 options: rubber lead-through on the bottom of the transmitter, and opening with a seal at the back of the transmitter
Screw terminal wire size	0.2 ... 1.5 mm^2

1) Using a power supply with overload protection is recommended for electrical safety.

Depending on the production date of your transmitter, the power supply input voltage specification can be either 15 ... 30 VDC (20 ... 22 VAC) or 15 ... 30 VDC (24VAC ±10 % 50/60 Hz). Check the type label on the back of the transmitter for information specific to your device.

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

More information

▸ Specifications (page 65)

3.6 WLAN and RS-485 Termination OFF/ON DIP Switches

If your application requires switching WLAN communication or RS-485 termination off or on, use the DIP switches on the Indigo circuit board.

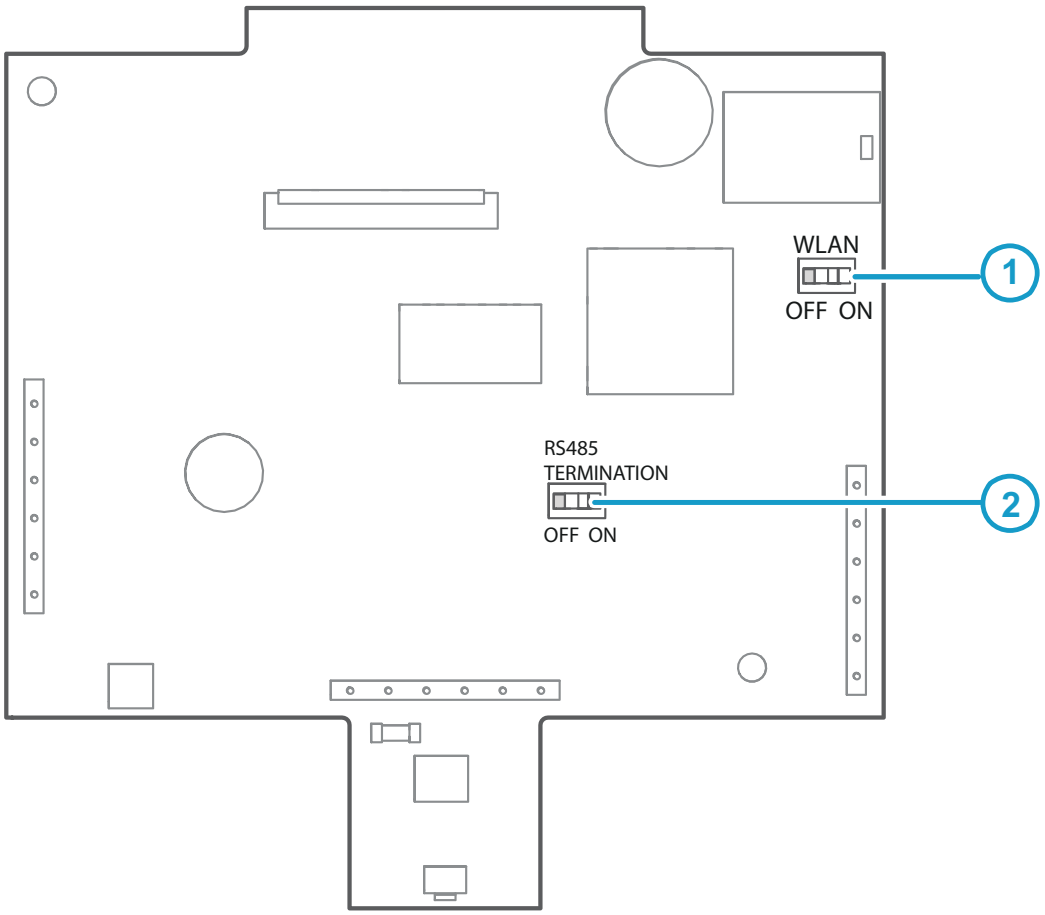


Figure 11 WLAN and RS-485 DIP Switches on Indigo 202 Circuit Board

1 WLAN functionality OFF or ON
2 RS-485 termination OFF or ON

To switch WLAN or RS-485 termination OFF or ON with DIP switches:

1. Power off the transmitter.

2. Open the transmitter cover.



CAUTION! To avoid damaging the connector pins of the transmitter, pull the transmitter cover off the base in a straight angle. Do not twist or bend.

3. Use a small screwdriver or a similar tool to change the position of the WLAN (1) or RS-485 termination ON/OFF (2) DIP switches.
4. When done, close the transmitter cover and power on Indigo.



Indigo does not display a notification about the WLAN functionality being disabled when a user attempts to enable it with the wireless connection activation button.

4. Wireless Configuration Interface

4.1 Wireless Interface Menus

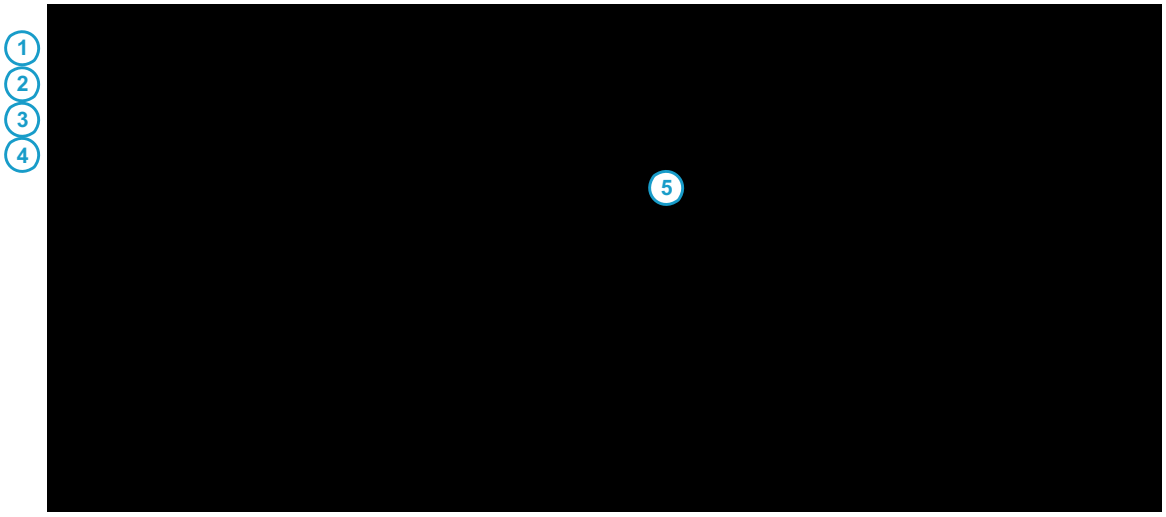


Figure 12 Wireless Configuration Interface, Desktop Browser View

1 **Measurements**: displays the measurement data of the connected probe
2 **Status**: contains information about the status of Indigo and the connected probe (for example, notifications and alarms)
3 **Calibration**: calibrate and adjust probes using references. Available options (for example, adjustment points) vary depending on the probe model.
4 **Settings**: contains options for configuring the connection and display settings, outputs, relays, probe-specific settings, and general device preferences
   - **General** submenu: device information and general settings, wireless connection and display settings
   - **Outputs** submenu: Modbus serial communication settings
   - **Relays** submenu: settings for controlling relays A and B
   - **Probe** submenu: probe-specific settings such as environmental compensations and filtering factor
5 Main display area for menus and measurement information (desktop browser example)



You must be logged in as **Admin** to change settings with the wireless configuration interface. Logging in as **User** gives view-only access.

More information

- Connecting to wireless configuration interface (page 25)

4.2 Connecting to wireless configuration interface

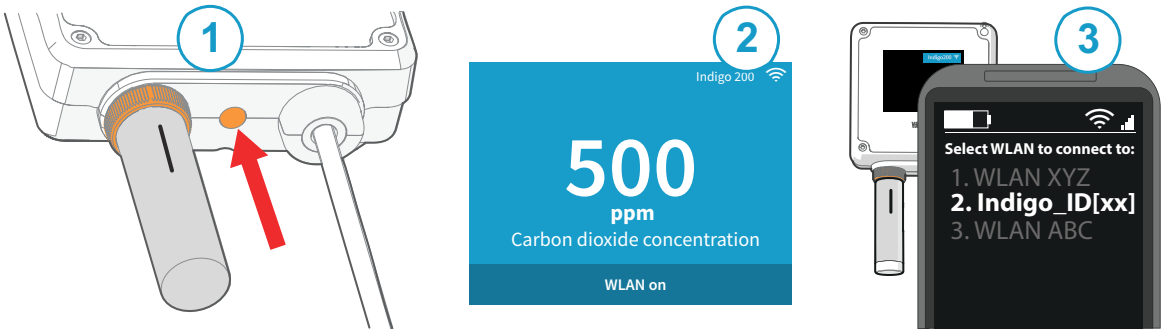


Figure 13 Enabling and accessing wireless configuration interface of Indigo 200

1 Wireless connection activation button
2 Wireless connection indicator (WLAN symbol) on the Indigo display
3 Choose Indigo (**Indigo_ID[xx]**) from your wireless device's list of available connections

More information

- Logging in to wireless configuration interface (page 27)
- Indigo Wireless Connection Troubleshooting (page 59)

4.2.1 Connecting with a Computer

To connect to the Indigo wireless configuration interface with a computer:

1. Enable wireless connectivity (WLAN) from your computer's settings.
2. Press the wireless connection activation button on the bottom of the Indigo transmitter until the transmitter notifies about a WLAN connection being active.
3. Open your computer's wireless connections menu and choose **Indigo_ID[xx]** (transmitter-specific SSID) from the list of available connections.

4. When you have established a connection, open your browser. Depending on your browser and system, you are either directed to the wireless configuration interface's login screen, or you may need to:
   a. open a new browser tab or window, or close and restart your browser, if the browser was already open when you connected to Indigo's access point.
   b. acknowledge the connection in a notification prompt before opening your browser or a new browser tab or window.



The default IP address of the Indigo transmitter is **http://192.168.1.1/**. If you have trouble opening the wireless configuration interface in your browser, try entering the IP address in the browser's address bar.

5. When the wireless configuration interface opens in your browser, you are prompted to log in. For instructions, see Logging in to wireless configuration interface (page 27).

4.2.2 Connecting with a Mobile Device

To connect to the Indigo wireless configuration interface with a mobile device (phone or tablet):

1. Enable wireless connectivity (WLAN) from your mobile device's settings.
2. Press the wireless connection activation button on the bottom of the Indigo transmitter until the transmitter notifies about a WLAN connection being active.
3. Open your device's wireless connections menu and select **Indigo_ID[xx]** (transmitter-specific SSID) from the list of available connections.
4. Depending on device settings, the Indigo wireless configuration interface either opens automatically in your browser, or you may need to:
   a. Open your browser application manually after connecting to Indigo
   b. Acknowledge the connection in a wireless network prompt (check your device's notifications) before opening your browser.
5. When the wireless configuration interface opens in your browser, you are prompted to log in. For instructions, see Logging in to wireless configuration interface (page 27).

More information

- Additional WLAN Settings when Connecting to Indigo (page 60)
- Changing Administrator Password (page 28)

4.3 Logging in to wireless configuration interface

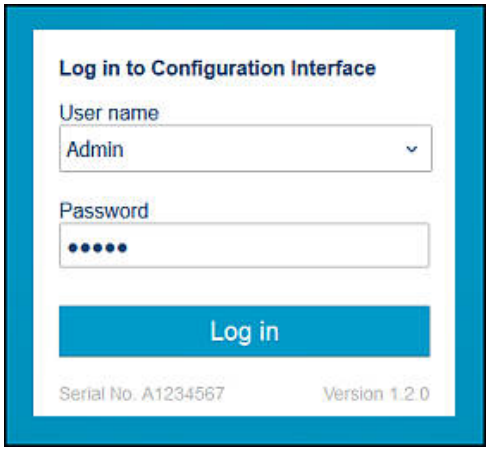


Figure 14 Indigo login view

When you open Indigo's wireless configuration interface in your browser, you are prompted to log in. There are 2 available user levels:

- **User**: view-only access available for all users. Does not require a password.
- **Admin**: password-protected access. To change settings, you must log in as admin.

To log in:

1. Enter the user name and password:
   a. To log in as user (view-only access, no configuration rights), select **User** from the **User name** dropdown. Leave the **Password** field empty.
   b. To log in as admin (required for configuration), select **Admin** in the **User name** dropdown and type the admin password (default: **12345**) in the **Password** field.
2. Select **Log in** after entering the login credentials. The wireless configuration interface opens in the **Measurements** view.

The user level (**User** or **Admin**) is shown in the upper right corner of all menu views. Select the user/admin icon in the upper right corner to change the user level.

More information

- Changing User Level (page 28)
- Changing Administrator Password (page 28)
- Resetting Administrator Password (page 29)

4.3.1 Changing User Level

A link that allows logging in with a different user level is included in the upper right corner of all menu views. The text of the link shows the current user level.

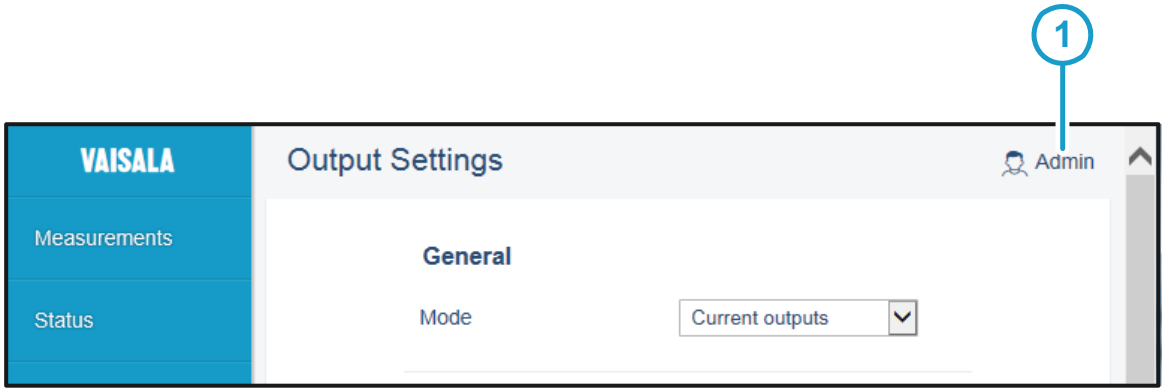


Figure 15 User Level (User/Admin) in Upper Right Corner of Menu View

1 Current user level (**User**/**Admin**): select the text or icon to log in with a different user level

To change between the **User** and **Admin** user levels:

1. Select the link that shows the current user level (**User** or **Admin**) on the upper right corner of any menu view.

   Selecting the link logs you out of the interface, and a new login is required.

2. The login screen opens. Log in as **User** or **Admin**.

   CAUTION! You must be logged in as **Admin** to start and close the calibration mode. When you have started calibration mode, you must always close the calibration mode to return to normal operating mode. Measurement performance can be affected when operating in calibration mode.

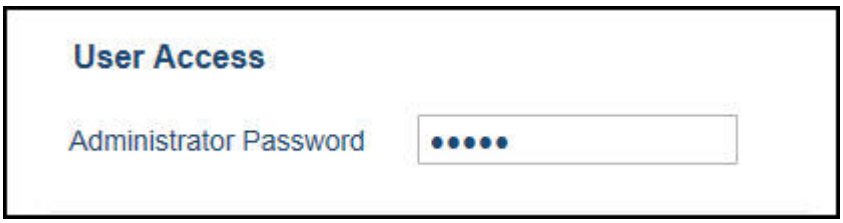
More information

- Starting and Closing Calibration Mode (page 49)

4.3.2 Changing Administrator Password

To change the administrator password:

1. Connect to the wireless configuration interface and log in as an administrator (default password: **12345**). The user level (**User** or **Admin**) can be also changed by selecting the user level icon in the upper right corner of any menu view.
2. Open the **Settings > General** menu.
3. In the **User Access** section, enter the new password (max. 25 characters) in the **Administrator Password** field.



4. The new password is saved when you tap or click outside the text field, and is in use at the next login.

4.3.3 Resetting Administrator Password

If you have lost or forgotten the administrator password and cannot log in, you can reset the password back to default (**12345**). Note that this requires powering the transmitter off and on.

To reset the password:

1. Power off the transmitter.
2. Keep the wireless connection activation button on the bottom of the transmitter pressed down.
3. While pressing the wireless connection activation button, power on the transmitter. Keep the button pressed down until the transmitter start-up is complete (a measurement is shown on the display).
4. The administrator password has now been reset to the default **12345**.

4.4 Measurements View

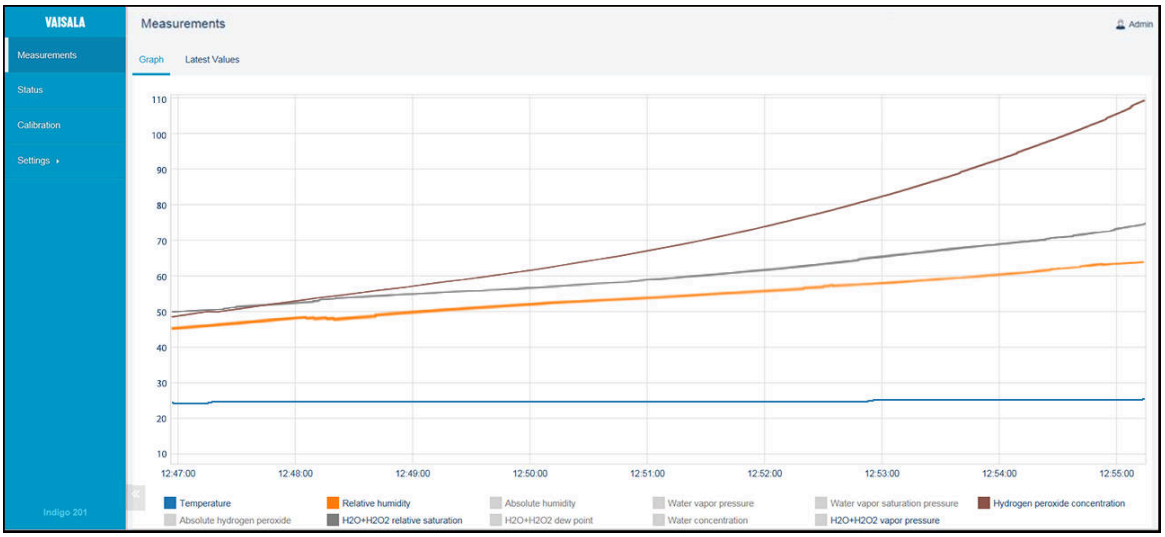


Figure 16 Measurements View (Desktop Browser)

The **Measurements** view shows the measurement data from the connected probe in numeric and graph format. When you log in to Indigo, the wireless interface opens in this view.

There are 2 tabs in the **Measurements** view: **Graph** and **Latest values**. The **Graph** tab is the initial view that shows the measurement information of the connected probe in graph format. You can hide and show the graphs of available measurements by selecting the parameter. The **Latest values** tab shows the most recent measurement of each available parameters in numeric format.

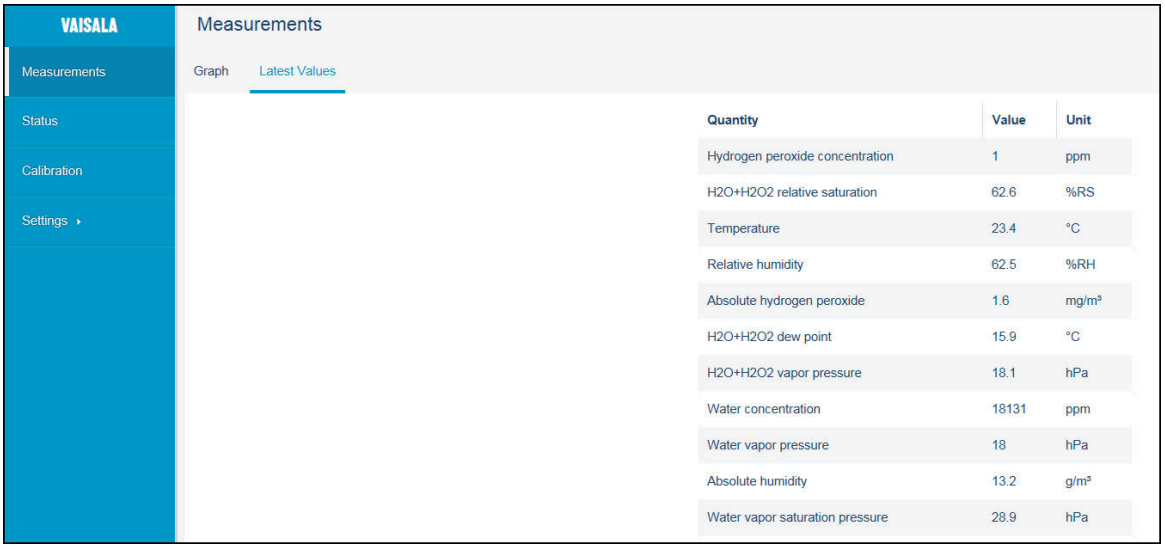


Figure 17 Latest Values Tab, H_2O_2 Probe Example (Desktop Browser)

4.5 Status View



Figure 18 Status View (CO_2 Probe Example, Desktop Browser)

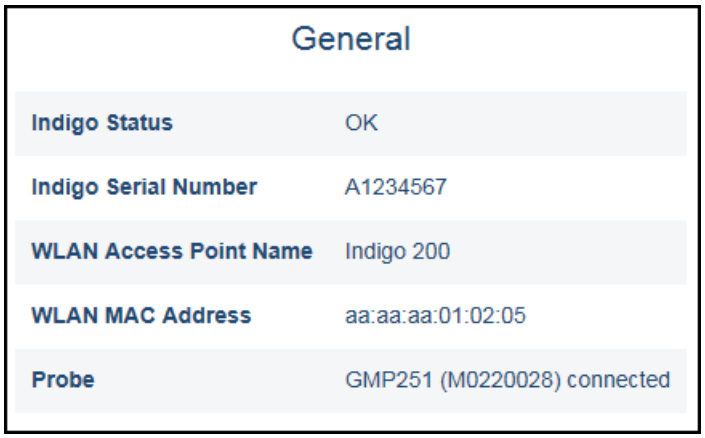
The **Status** view shows the transmitter status, general information about the Indigo transmitter, and the status of the relays A and B.

More information

- Status View: General (page 32)
- Status View: Relays (page 32)

4.5.1 Status View: General

The **General** section of the **Status** menu shows general information about the transmitter and the connected probe.

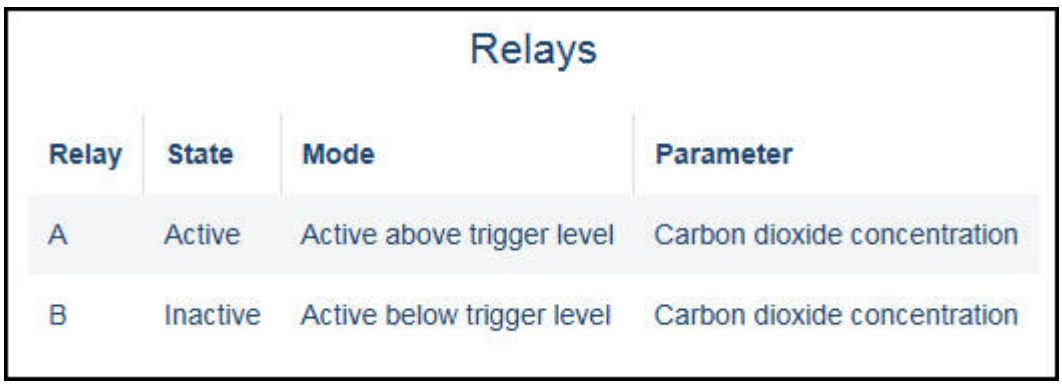


- **Indigo Status**: shows the current status of the transmitter. Errors and notifications are displayed here.
- **Indigo Serial Number**: the transmitter's serial number.
- **WLAN Access Point Name**: the network name (SSID) of the transmitter. Can be configured in the **Settings** menu.
- **WLAN MAC Address**: unique hardware address of the unit. Cannot be changed.
- **Probe**: the type and serial number of the probe that is connected to Indigo.

More information

‣ WLAN Settings (page 34)

4.5.2 Status View: Relays



- **Relay**: relay A or relay B
- **State**: Shows whether the relay is active (set) or not.

- **Mode**: Relay activation mode (above or below a trigger level, or off)
- **Parameter**: The parameter that controls the relay

More information

- Relay Configuration Overview (page 44)

4.6 Calibration Menu

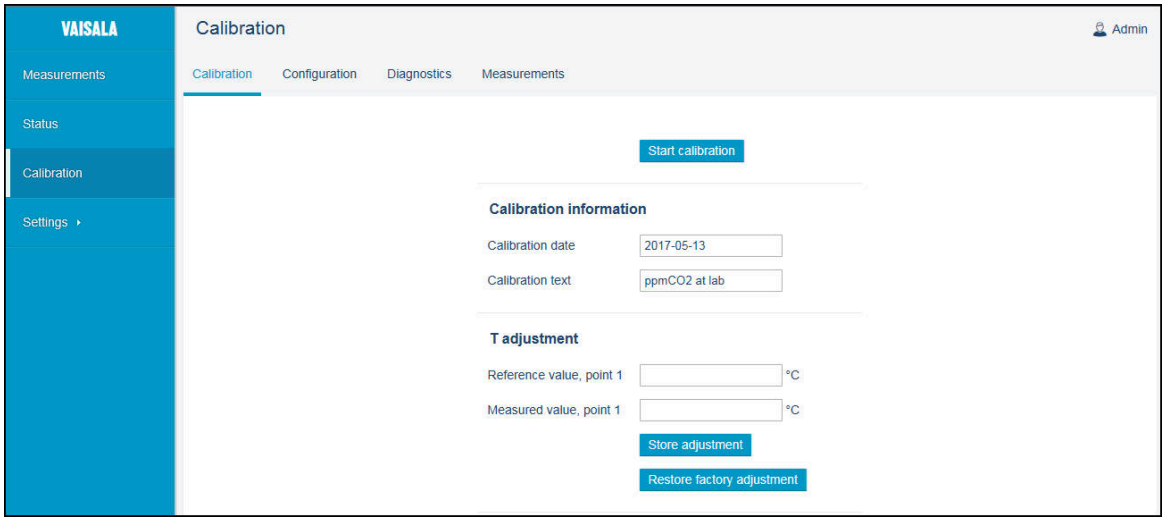


Figure 19 Calibration Menu (CO_2 Probe Example, Desktop Browser)

In the **Calibration** menu, you can calibrate and adjust the measurement of the probe connected to the transmitter with the help of references such as calibration gases that have a known concentration. You can also view the current adjustments and restore the probe's factory adjustments.

The available options vary depending on the type of the connected probe (for example, applicable environmental compensations and the number of adjustment points).

More information

- Calibration Overview (page 48)

4.7 General Settings

The **Settings > General** menu contains the following configuration options:

- Date and Time (page 34)
- WLAN Settings (page 34)
- User Access Settings (Administrator Password) (page 34)

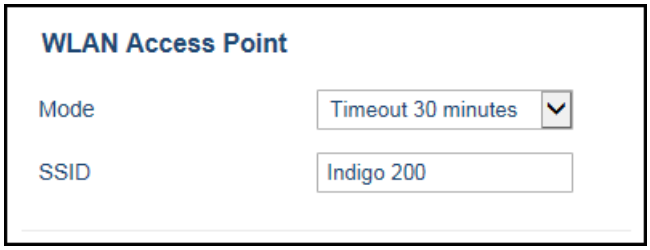
- Display Settings (page 35)
- Factory Reset (page 36)
- License Information (page 36)

4.7.1 Date and Time



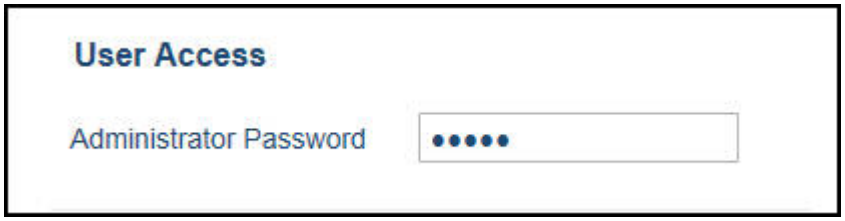
Enter the date and time in the following format: YYYY-MM-DD HH:MM:SS.

4.7.2 WLAN Settings



- **Mode**: Select the timeout period for disconnecting the wireless configuration interface, or remove the timeout from use.
- **SSID**: The network name that is used to identify the transmitter when connecting to it (default: **Indigo_ID[xx]**).

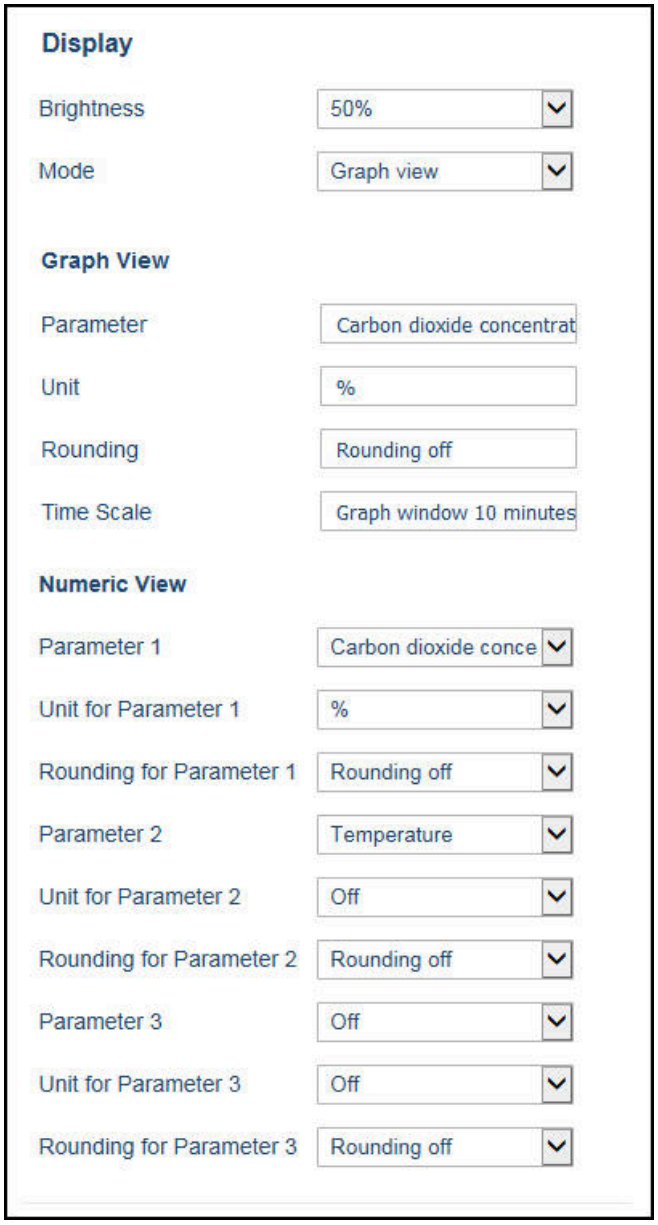
4.7.3 User Access Settings (Administrator Password)



Enter a new administrator password and exit the text entry field. The new password is in use in the next login.

If you have forgotten or lost the password, you can reset the password back to the default one (**12345**). For more information, see the login instructions.

4.7.4 Display Settings



General display settings:

- **Brightness:** set the brightness of the display (20%, 50%, 100% or off).
- **Mode:** Select whether the display shows the measurement information in graph or numeric format.

Graph view settings:

- **Parameter:** Select which parameter's measurement is shown in the graph view.
- **Unit:** Select the unit that the measurement is shown in (for example, ppmCO_2 or %CO_2).
- **Rounding:** Choose how many decimals of the measurement are shown in the numeric reading shown alongside the graph view.
- **Time Scale:** Select the time period shown in the measurement graph (1 minute ... 6 hours).

Numeric view settings:

- **Parameter (1-3):** Select the measurement parameter or parameters shown in the numeric view (up to 3 parameters can be shown simultaneously in the numeric view).
- **Unit for Parameter (1-3):** Select the unit the measurement is shown in (for example, ppmCO_2 or %CO_2).
- **Rounding for Parameter (1-3):** Choose how many decimals of the measurement are shown in the numeric view.

More information

- Indigo Display (page 13)
- Graph Display Mode (page 14)

4.7.5 Factory Reset



Select **Reset** to restore the configuration of the transmitter to factory default settings.

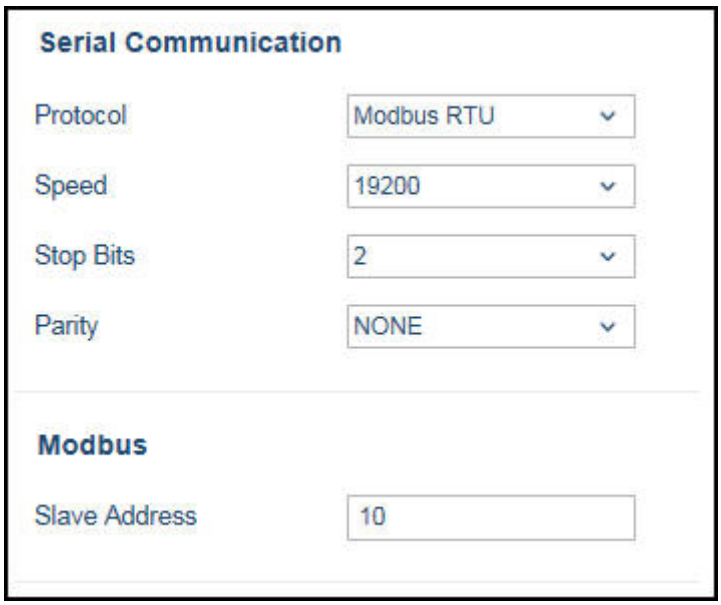
4.7.6 License Information



Select the **View software licenses** link to view information on Indigo 202 software licenses.

4.8 Modbus Serial Communication Settings

The **Settings > Outputs** menu of the wireless configuration interface contains the configuration options for Modbus serial communication.



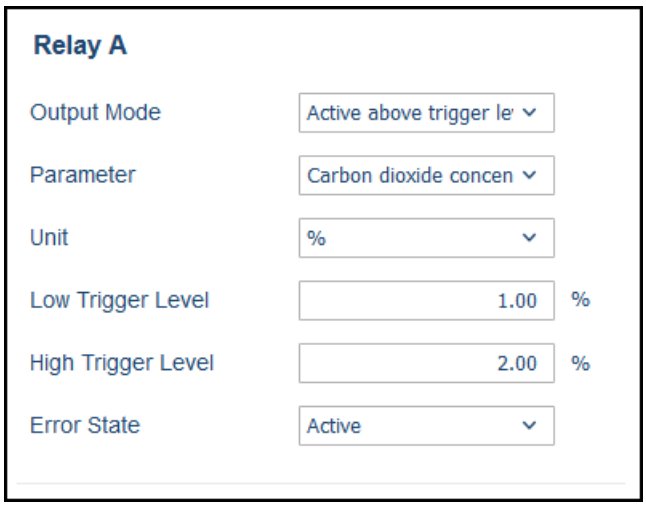
Protocol	Modbus protocol options. The **Modbus RTU** protocol is in use by default.
Speed	Select the baud rate used in Modbus communication: **4800**, **9600**, **19200**, **38400**, **57600**, or **115200**. Default: **19200**.
Stop Bits	Stop bits used in Modbus communication: **1** or **2**. Default: **2**.
Parity	Select **EVEN**, **ODD** or **NONE**. Default: **NONE**.
Slave Address	Address used when Indigo functions as a Modbus slave (range: **1** ... **247**). Default: **10**.

More information

- Modbus Overview (page 42)

4.9 Relay Settings

The **Settings > Relay** menu contains the configuration options for controlling relays A and B. Both relays have the same configuration options (relay A example shown here).



Output Mode — Select whether the relay is activated when the measurement exceeds the set trigger, or when the measurement falls below the set trigger. Set to **Off** if the relay is not in use.

Parameter — Select which measurement parameter controls the relay.

Unit — Select the unit of the measurement parameter (for example, **%** if the measurement is in $\%CO_2$).

Low Trigger Level and High Trigger Level — If you want to activate the relay above or below a single setpoint without using hysteresis, enter the same value for the low trigger and the high trigger. The **Output Mode** selection defines whether the relay activates above or below this value. If you want to set a hysteresis, define the limits of the hysteresis with the low and high triggers.

Error State — Choose the behavior of the relay when an error state occurs (switched on or off, or remains in its current state).

When you use a single setpoint without hysteresis, set the same value for **Low Trigger Level** and **High Trigger Level**. For instructions on using hysteresis, see Setting Relay Activation Limit Using Hysteresis (page 46).

More information

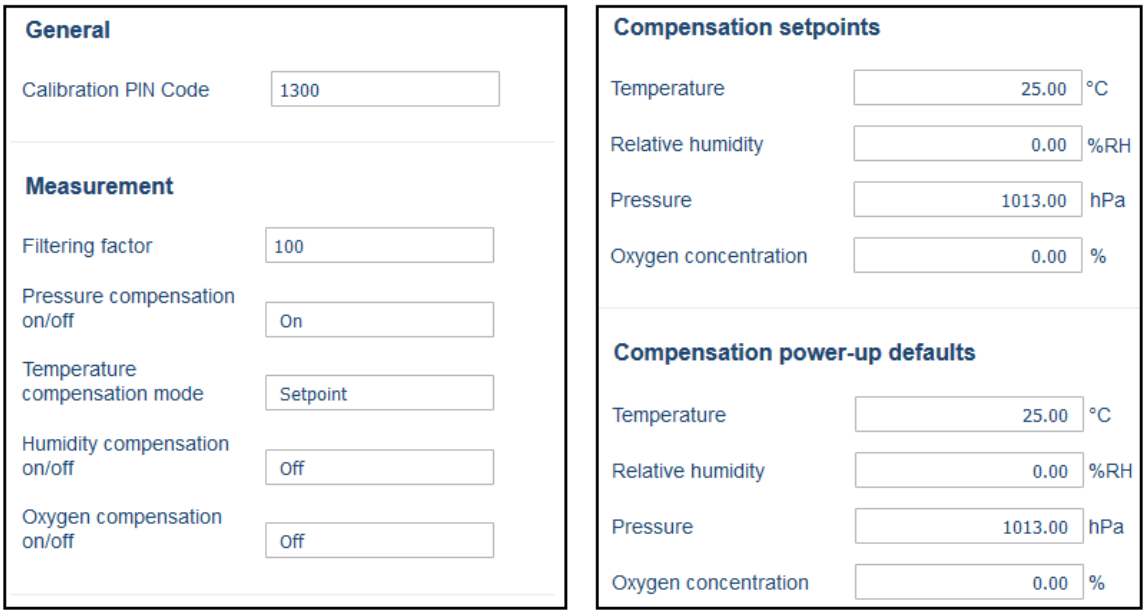
- Relay Configuration Overview (page 44)

4.10 Probe Settings

The **Settings > Probe** menu contains probe-specific configuration options (for example, filtering factor and environmental compensations).

This menu also includes the **Calibration PIN Code** entry field. The PIN code must be in place in order to calibrate probes. The PIN code is in place by default.

The available options depend on the features of the connected probe. The examples here show the probe settings for Vaisala CARBOCAP® Carbon Dioxide Probe GMP251.

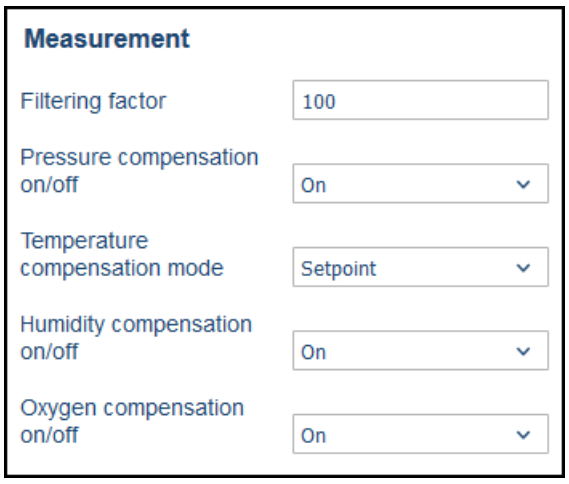


General (All Probes)

The **Calibration PIN Code** must be in place to enable probe calibration and adjustment in the **Calibration** menu. The PIN code is in place by default.

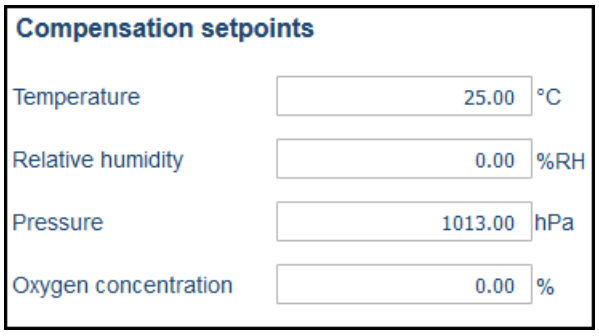
If the PIN code has been removed and you need to enter it, check the probe's documentation for information on the code used in the probe model.

Measurement (GMP251 Example)



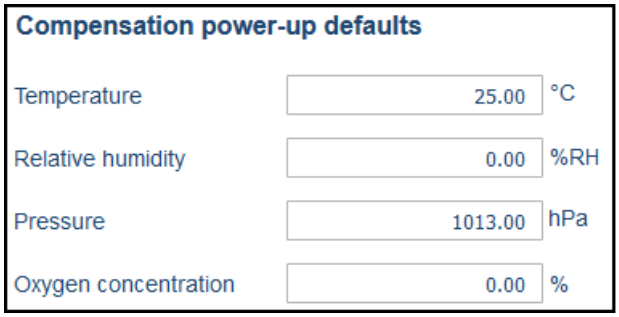
Filtering factor	Defines how much past measurements affect the output (measurement averaging over time). For details, see probe documentation.
Temperature compensation mode	Select whether the probe sensor's measurement or a manually entered setpoint is used to set the temperature compensation.
Pressure/humidity/oxygen compensation ON/OFF	Enable or disable the environmental compensations.

Compensation Setpoints (GMP251 Example)



Enter the setpoint values for the environmental compensations that are in use (enabled in the **Measurement** selections).

Compensation Power-up Defaults (GMP251 Example)



The power-up default values are stored to the probe memory and remain in use also after you disconnect or reset the probe.

Note that the environmental compensations you set in the **Settings > Probe** menu and the compensations you set in the **Calibration** menu are interconnected: the configuration set in either menu is applied to both.

More information

- Environmental Compensation (page 51)

5. Modbus

5.1 Modbus Overview

Indigo 202 supports the Modbus RTU serial communication protocol (2-wire RS-485 interface).

There are 2 groups of Modbus register addresses in use in Indigo 202: probe registers and Indigo registers. The probe registers are received from the connected probe, and are organized according to the probe's register map. Indigo registers include transmitter-specific information.

Table 4 Indigo 202 Modbus Registers

Address	Name	Data Type
Probe registers (according to the connected probe's register map) [1)]		
0000_{hex}	First measurement probe address	
$DFFF_{hex}$	Last measurement probe address	
Indigo registers		
$E000_{hex}$	Status	16-bit
$E001_{hex}$	Notification and error bits	16-bit
$E002_{hex}$	Connected probe	text [30]
$E011_{hex}$	Relay A status	enum
$E012_{hex}$	Relay B status	enum

1) See the connected probe's Modbus documentation for probe-specific register information

Received Modbus requests for register operations are handled in two different ways, depending on whether the register is a probe register or an Indigo transmitter register. Addresses above $DFFF_{hex}$ (that is, Indigo registers) are handled as normal requests. Lower addresses (that is, probe registers 0000_{hex} ... $DFFF_{hex}$) are passed to the measurement probe, and the response from the probe is again passed to the original Modbus client. Indigo can also have a cache for commonly requested registers (Measurement registers).

The maximum response delay is 2 seconds (when the data content needs to be fetched from the probe). The minimum delay between requests is 10 ms.

More information

- Modbus Serial Communication Settings (page 37)
- Function Codes (page 69)
- Indigo Status Registers (page 70)

5.1.1 Default Communication Settings

Modbus communication settings can be configured in the **Settings > Outputs** menu.

Table 5 Default Modbus Serial Communication Settings

Description	Default Value
Serial bit rate	19200
Parity	None
Number of data bits	8
Number of stop bits	2
Modbus device address	10

More information

- Modbus Serial Communication Settings (page 37)

6. Configuring Relays

6.1 Relay Configuration Overview

Indigo transmitters have 2 configurable relays (relay A and relay B). Both relays have configuration options for selecting the parameter that is used to control the relay, activation triggers, hysteresis, and error state behavior.

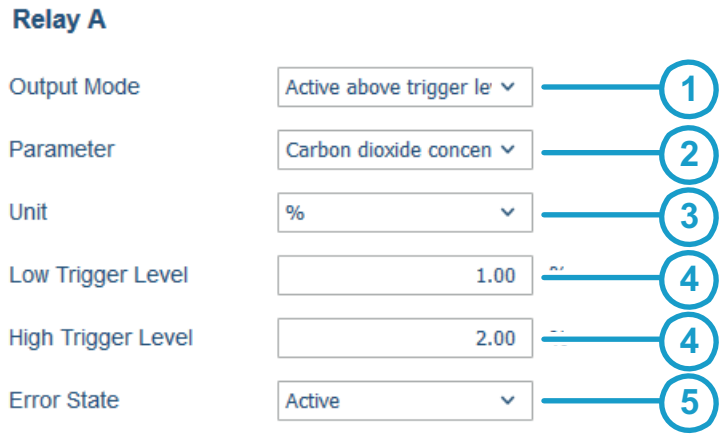


Figure 20 Relay Configuration Options (CO_2 Probe Example)

1 **Output Mode:** Select whether the relay activates above or below a set value (or set the relay **Off**).
2 **Parameter:** The measurement that is used to control the relay.
3 **Unit:** Select the unit of the measurement parameter that controls the relay (for example, % if the measurement is in %CO_2).
4 **Low Trigger Level** and **High Trigger Level:** If you want to activate the relay above or below a single setpoint without using hysteresis, enter the same value for the low trigger and the high trigger. The **Output Mode** selection defines whether the relay activates above or below this value.
If you want to set a hysteresis, define the limits of the hysteresis with the low and high triggers.
5 **Error State:** Select which state the relay is set to when an error occurs (on, off, or remains in its current state).

Relay State Information

When one or both relays are enabled, the relay state (active/not active) is shown on the optional display. You can also check the status of the relays in the **Status** view of the wireless configuration interface.

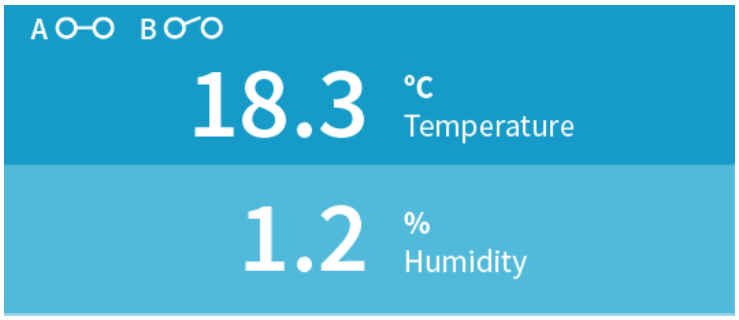


Figure 21 Relay Icons on the Optional Display (Relay A Active, Relay B Not Active)

Relay Activation Setpoint and Hysteresis

You can define whether the relay is activated when the measurement falls below a set limit (**Active below trigger level**), or when the measurement exceeds a set limit (**Active above trigger level**). To prevent the relay switching back and forth when the measured value is near to the setpoint value, you can set a hysteresis with the **Low Trigger Level** and **High Trigger Level** settings.

For example, if you want the relay to activate when the measurement exceeds (**Active above trigger level**) 2000 units, but do not want the relay to switch off if the measurement momentarily falls between 2000 and 1980 units, set the **High Trigger Level** to 2000 and **Low Trigger Level** to 1980. With this configuration, the relay activates when the measurement exceeds 2000, but does not switch off until the measurement falls below 1980.

6.2 Setting Relay Activation Limit Without Hysteresis

You can set the relay to activate when the probe measurement exceeds or falls below a set limit. When you configure a single setpoint for relay activation without hysteresis, the relay switches on or off immediately when the measurement moves over or below the setpoint (depending on the low/high activation mode selection).

When you enter a value into a field, the value is saved automatically when you exit the input field (for example, tap on an area outside of the field).

To define a single setpoint for relay activation:

1. Open the **Settings > Relays** menu in the wireless configuration interface.
2. In the **Relays** menu, select the relay activation mode from the **Output Mode** dropdown menu:
   a. Select **Active above trigger level** if you want the relay to activate when the probe measurement exceeds the set limit
   b. Select **Active below trigger level** if you want the relay to activate when the probe measurement falls below the set limit
3. Select the measurement parameter that is used to control the relay with the **Parameter** dropdown.
4. Set the unit of the measurement parameter with the **Unit** dropdown.
5. Enter the same measurement limit to both the **Low Trigger Level** and the **High Trigger Level** field.



With this configuration, there is no hysteresis. The relay activates or switches off immediately after passing this point.

6. Select the **Error State** for the relay.

6.3 Setting Relay Activation Limit Using Hysteresis

If the measurement you are using to control the relay is likely to move back and forth close to the activation setpoint, you can set a hysteresis that prevents the relay switching on and off too frequently.

When hysteresis is used, the relay activates at the defined limit, but does not switch off immediately when the measurement moves back to the other side of the activation limit. Instead, with hysteresis, the relay remains active until the measurement reaches the defined tolerated variation limit.

To set a relay activation limit with hysteresis:

1. Open the **Settings > Relays** menu in the wireless configuration interface.
2. In the **Relays** menu, select the relay activation mode from the **Output Mode** dropdown menu:
   a. Select **Active above trigger level** if you want the relay to activate when the probe measurement exceeds a set limit
   b. Select **Active below trigger level** if you want the relay to activate when the probe measurement falls below a set limit
3. Select the measurement parameter that is used to control the relay with the **Parameter** dropdown.

4. Set the unit of the measurement parameter with the **Unit** dropdown.
5. Enter the relay activation limit either to the **Low Trigger Level** or the **High Trigger Level** field:
   a. If you are using **Active above trigger level** (relay activation when the measurement exceeds a set limit), enter the limit to the **High Trigger Level** field.
   b. If you are using **Active below trigger level** (relay activation when the measurement falls below a set limit), enter the limit to the **Low Trigger Level** field.
6. To define the hysteresis value:
   a. If you are using **Active above trigger level**, enter the limit for tolerated variation below the setpoint to the **Low Trigger Level** field.



With this option, the relay activates when the measurement exceeds the limit entered in **High Trigger Level**, and switches off when the measurement falls below the limit entered in the **Low Trigger Level** field.

   b. If you are using **Active below trigger level**, enter the limit for tolerated variation above the setpoint to the **High Trigger Level** field.



With this option, the relay activates when the measurement falls below the limit entered in **Low Trigger Level**, and switches off when the measurement exceeds the limit entered in the **High Trigger Level** field.

7. Select the **Error State** for the relay.

6.4 Selecting Relay Error State

You can define whether the relay is switched off or on in an error state, or whether the relay remains in the state it is on the moment an error state occurs.

1. Open the **Settings > Relays** menu in the wireless configuration interface.
2. In the **Relays** menu, select the relay error state from the **Error State** dropdown menu:
   a. To set the relay to release when an error occurs, select **Inactive**.
   b. To set the relay to activate when an error occurs, select **Active**.
   c. To keep the relay in the same state as it was when the error occurred, select **No change**.

7. Calibration and Adjustment

7.1 Calibration Overview

The **Calibration** menu of the wireless configuration interface contains options for calibrating and adjusting the measurement of the probe you have connected to the transmitter. You can also view the current adjustment and restore the probe's factory adjustments.

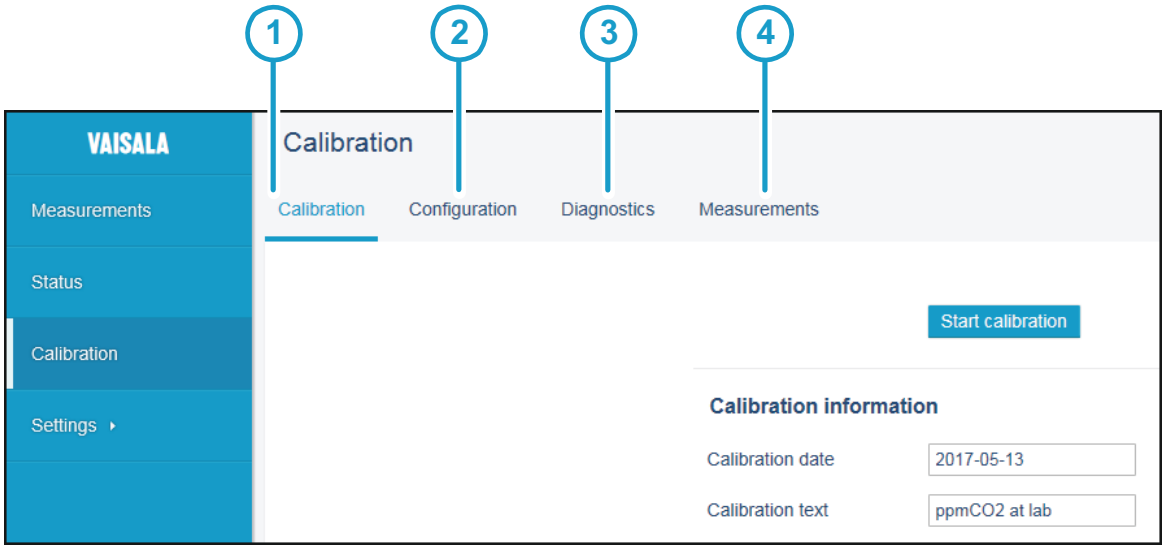


Figure 22 Calibration Menu Main View

1 **Calibration** tab
2 **Configuration** tab
3 **Diagnostics** tab
4 **Measurements** tab

There are 4 tabs in the **Calibration** menu:

- **Calibration**: the main adjustment view with options for making adjustments, viewing adjustments, and restoring factory adjustments.
- **Configuration**: options for using environmental compensations (probe-specific range of options) that allow compensating for the conditions present in the calibration environment, for example, pressure, temperature, and background gases. Also includes probe-specific configuration options that are not mandatory for use with Indigo.
- **Diagnostics**: this tab contains information about the status of the measurement and the probe, and shows the current environmental compensation configuration.
- **Measurements**: this tab shows the current probe measurement in numeric format (use this view, for example, when you need to follow measurement stabilization in a reference environment without leaving the **Calibration** menu).

CAUTION! Before adjusting a probe's measurement, make sure that you have familiarized yourself with the probe-specific calibration requirements such as possible adjustment limits and environmental compensation interdependencies. See the probe's documentation set for probe-specific information.

The range of available options for certain parameters (for example, environmental compensations and the number of adjustment points) varies depending on the features of the connected probe.
The menu examples presented here show the calibration options for Vaisala CARBOCAP® Carbon Dioxide Probe GMP252 (ppmCO_2 measurement).

7.1.1 Starting and Closing Calibration Mode

In order to be able to use the calibration options, you must switch the operation of the probe and Indigo to calibration mode with the **Start calibration** button.



Figure 23 Start Calibration Button

1 **Start calibration** button on the **Calibration** tab

When you start the calibration mode, the **Start calibration** button is replaced with the **Stop calibration** button. The calibration mode remains active until you close it by selecting **Stop calibration**.

You can use other menus while the calibration mode is active, and return to the **Calibration** menu later to complete your adjustments.

Always close the calibration mode to return the probe and Indigo to normal operating mode. The measurement performance of the probe can be affected when used in calibration mode. You must close the calibration mode with the **Stop calibration** button also when no changes are made.

More information

- Changing User Level (page 28)

7.1.1.1 Calibration Mode Blocked due to Probe Heating

Certain probes with the probe heating functionality cannot be calibrated while probe heating is enabled. To enable the calibration mode, switch off the heating functionalities of the probe in the **Configuration** tab of the **Calibration** menu. After completing the calibration, restore the heating settings.



Figure 24 Probe Heating Options in Configuration Tab

1 Probe heating settings

7.1.2 Restoring Factory Adjustment

Always restore factory adjustment before entering a new adjustment. This prevents any possible earlier adjustments having an effect on the new adjustment you make.

To restore factory adjustment:

1. Connect to the wireless configuration interface and open the **Calibration** menu.
2. Start the calibration mode with the **Start calibration** button.

3. On the **Calibration** tab, scroll down to the parameter you want to adjust (for example, **CO2 adjustment**) and select **Restore factory adjustment**.



4. Restore the factory adjustment with the **Restore factory adjustment** button for each parameter separately as needed.
5. To verify that the factory adjustment was restored, check the adjustment data information at the bottom of the **Calibration** tab view.
6. Close the calibration mode with the **Stop calibration** button.

7.1.3 Calibration PIN Code



Probe calibration can be locked and unlocked with a calibration PIN code in the **Settings > Probe** menu. By default, the calibration PIN code is in place and calibration is enabled. Do not remove the PIN code from the probe settings unless you need to block access to calibration settings.

If the PIN code has been removed and you need to re-enter it, check the probe's documentation for information on the code used in the probe model.

7.2 Environmental Compensation

When making adjustments, you can enter information about the environment in which you perform the adjustment. This allows compensating for environmental factors that have an effect on the measurement (for example, temperature, pressure, or background gases). The selection of environmental compensations available in the Indigo calibration settings depends on the features and configuration of the connected probe.

The environmental compensation selections are available on the **Configuration** tab of the **Calibration** menu. To use environmental compensations, first enable the compensation from the **Measurement** selections, and then enter the compensation in the **Compensation setpoints** fields. You can also set the power-up default compensations that remain in use also after probe reset.

Measurement

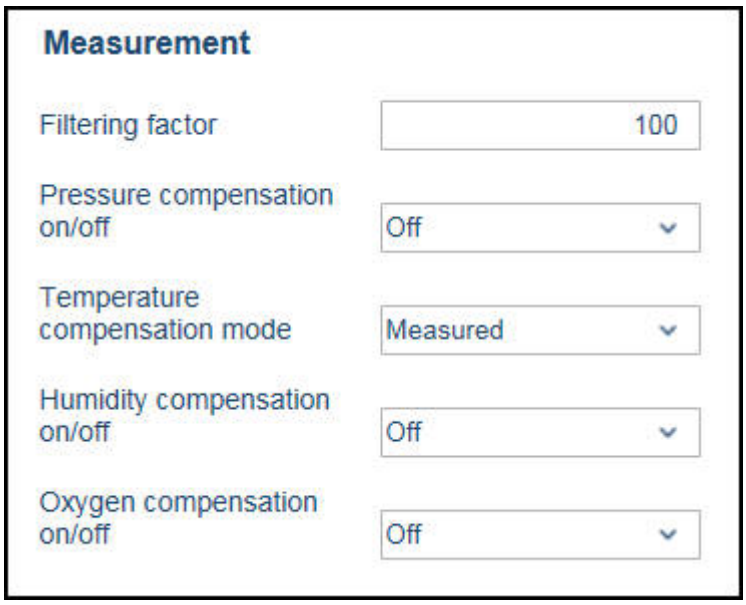


Figure 25 Measurement Selections, CO_2 Probe Example

Filtering factor	Defines how much past measurements affect the output (measurement averaging over time). For details, see probe documentation.
Temperature compensation mode	Select whether the probe sensor's measurement or a manually entered setpoint is used to set the temperature compensation.
Pressure/humidity/oxygen compensation ON/OFF	Enable or disable the environmental compensations.

Compensation Setpoints and Power-Up Defaults

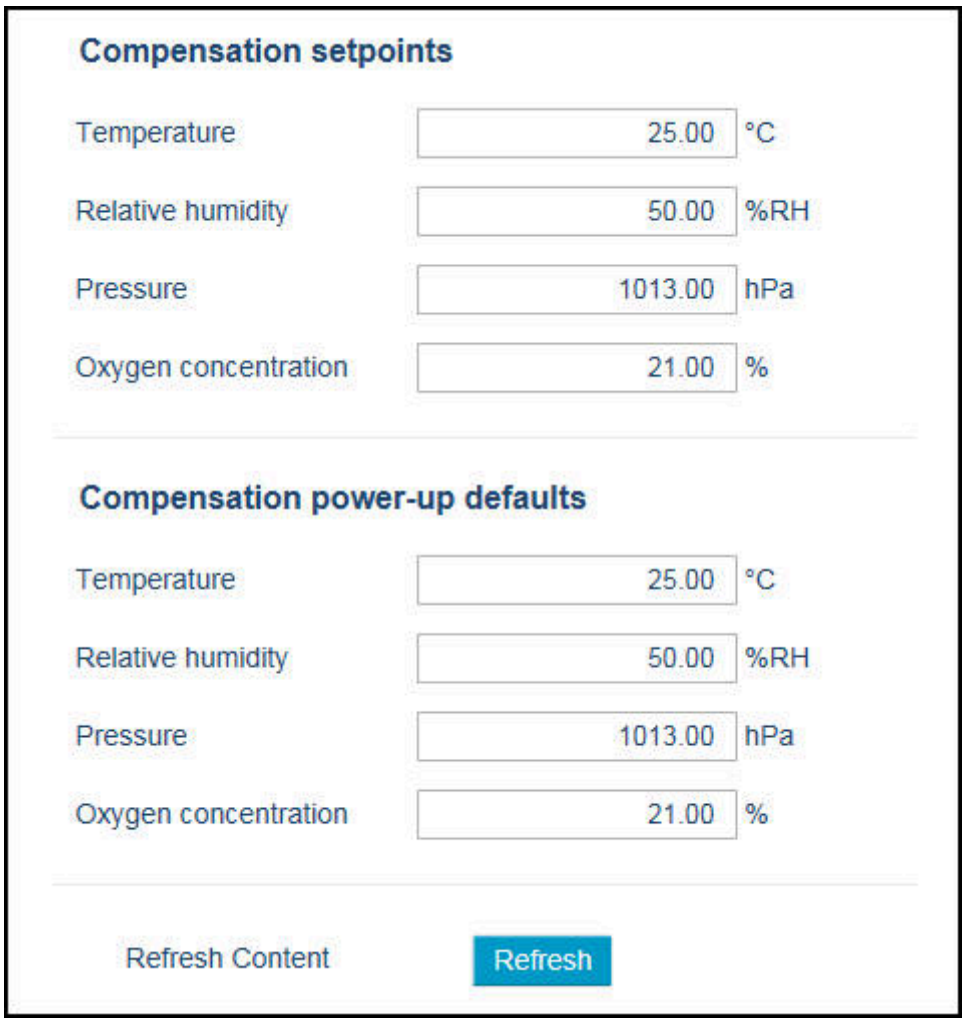


Figure 26 Compensation Setpoint and Power-Up Default Selection, CO_2 Probe Example

Environmental compensations can have interdependencies: for example, accurate RH measurement requires that also the temperature and pressure configuration match the measurement environment. For more information on the environmental compensation features of the connected probe, refer to the probe's documentation.

Note that the environmental compensations you set in the **Settings > Probe** menu and the compensations you set in the **Calibration** menu are interconnected: the configuration set in either menu is applied to both.

More information

- Probe Settings (page 39)

7.3 Measurements Tab

The **Measurements** tab of the **Calibration** menu shows the current measurement data in numeric format. The measurement data updates automatically at a 2-second interval.

The information shown in this tab is probe-specific: the example here shows the measurement information for a CO_2 probe.

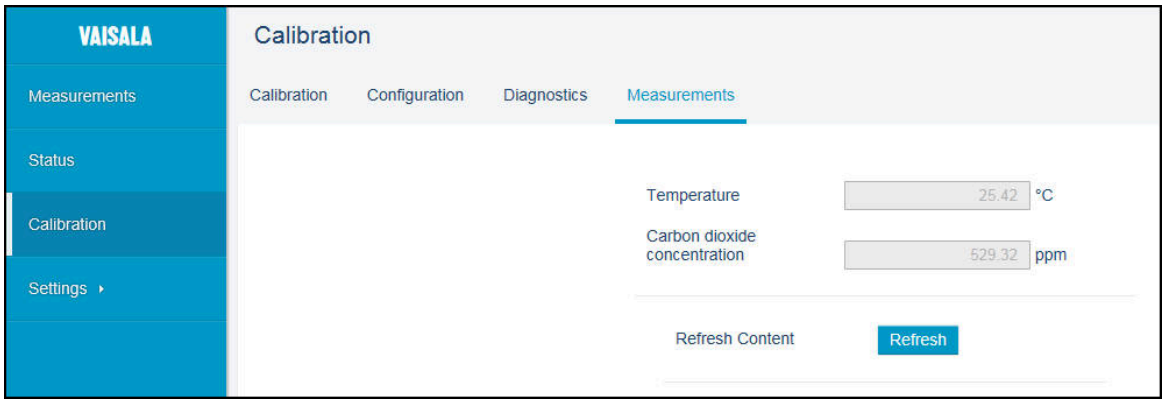


Figure 27 Measurements Tab, CO_2 Probe Example

7.4 Diagnostics Tab

The **Diagnostics** tab of the **Calibration** menu contains status and diagnostics codes. When carrying out diagnostics (for example, contacting Vaisala support), you can identify issues by referring to this information.

In addition to the diagnostics information, this view also shows the environmental compensation values that are currently in use. The status and compensation fields are both read-only.

The information shown on the diagnostics tab is probe-specific: the following figure shows an example of the diagnostics tab information when using a CO_2 probe.

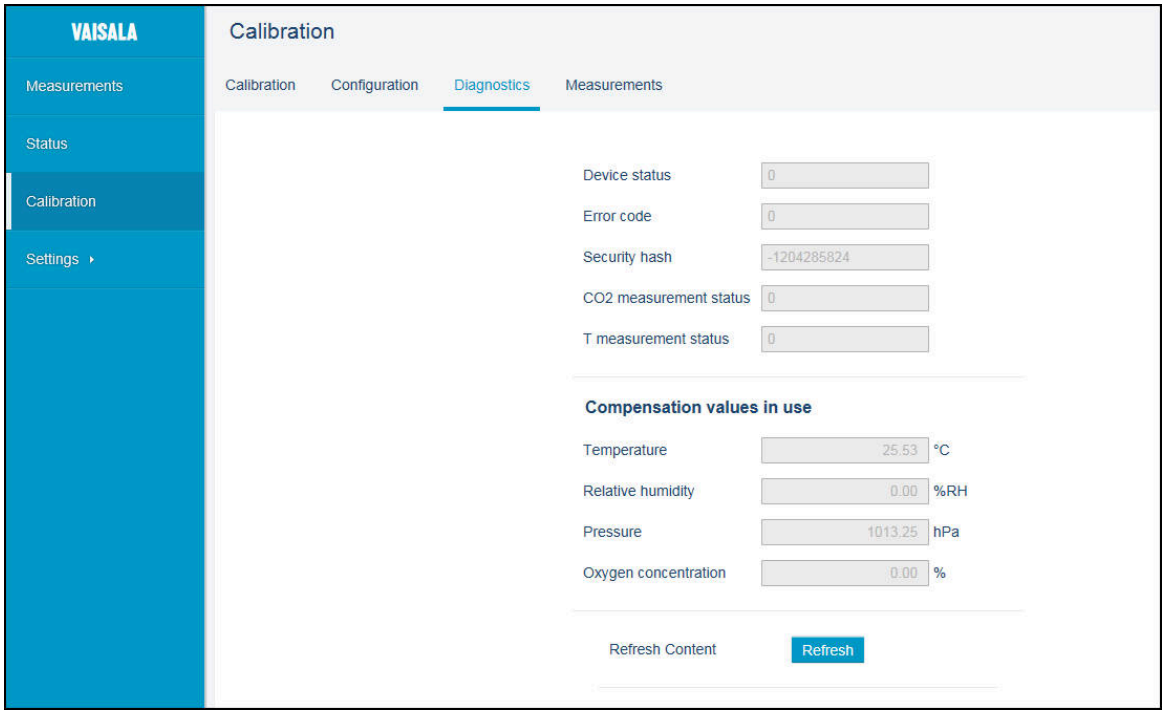


Figure 28 Diagnostics Tab, CO_2 Probe Example

7.5 Configuration Tab

The **Configuration** tab of the **Calibration** menu contains probe-specific configuration options and the environmental compensation options.

Note that the probe configuration options available in this view are not always necessary for use with Indigo. For example, the **Communication** options shown in the following CO_2 probe example apply only to the probe's own communication settings. The communication settings of the Indigo transmitter are configured in a separate menu.

Similarly, the analog output settings shown here apply only for the probe's analog output channels, which are not used when the probe is connected to an Indigo transmitter that has its own output channels and settings.

The information shown in this tab is probe-specific: the example here shows the configuration view for a CO_2 probe.

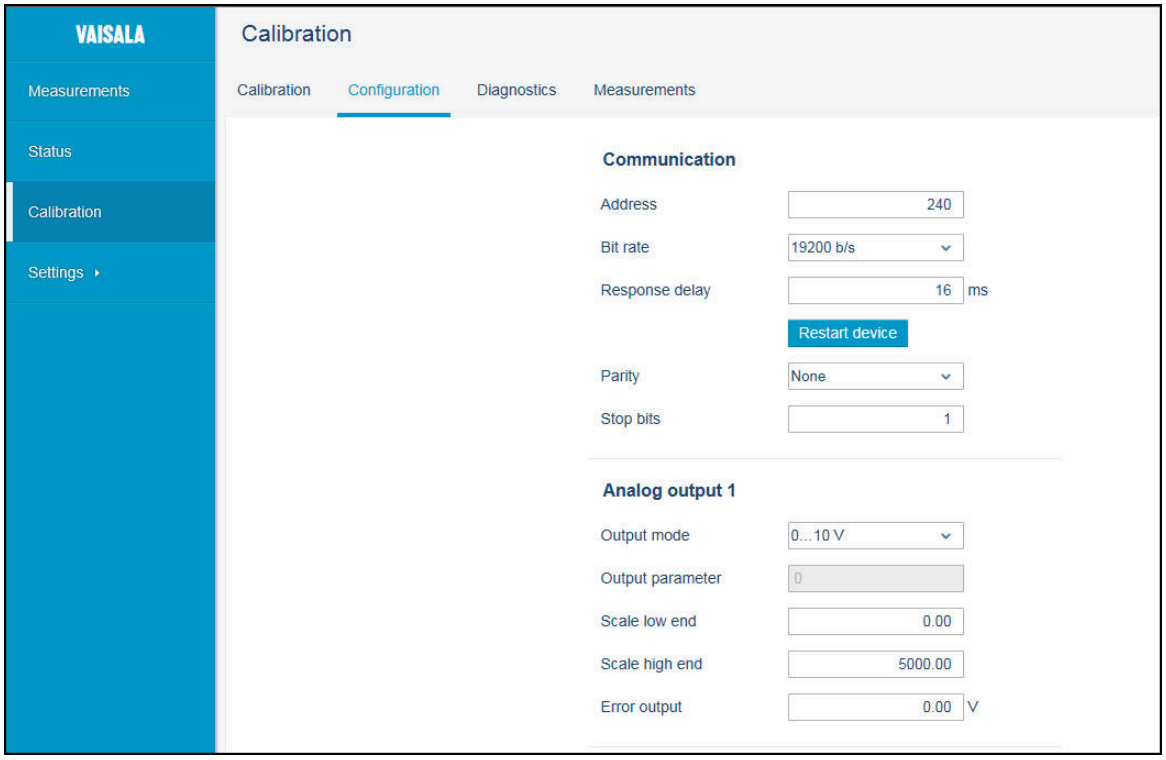


Figure 29 Configuration Tab, CO_2 Probe Example

More information

- Environmental Compensation (page 51)

7.6 GMP252 Example: 2-point CO_2 Adjustment

To make a 2-point adjustment, you need a low reference and a high reference (select references that are near the low and high ends of your measurement range). Prepare the calibration references (for example, reference gases with known concentrations) before starting the adjustment.

Check the possible probe-specifc adjustment limits and requirements for 2-point calibration (for example, the minimum difference between the low and high reference points) from the probe's documentation.

To make a 2-point adjustment (GMP252 ppmCO_2 example):

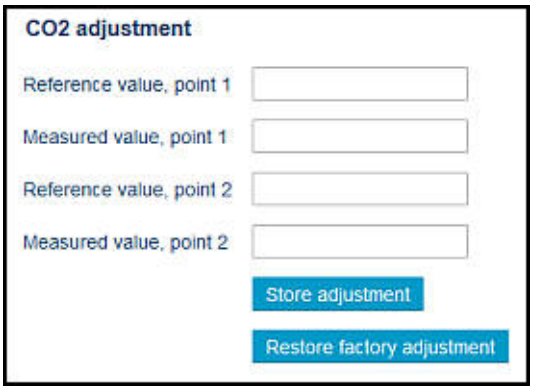
1. Connect to the wireless configuration interface and open the **Calibration** menu.
2. Start the calibration mode with the **Start calibration** button.

> If you cannot enter configurations after selecting **Start calibration**, check that the calibration PIN code is in place in the **Settings > Probe** menu.

3. If you need to set environmental compensations, enable and set the required compensations on the **Configuration** tab.

> Note that the environmental compensations you set on the **Configuration** tab and the compensations you set in the **Settings > Probe** menu are interconnected: the configuration set in either menu is applied to both.

4. Remove any possible previous adjustments by restoring the factory adjustment: select **Restore factory adjustment** for each parameter you are adjusting.



5. Enter the calibration date and calibration information into the corresponding text fields.



6. Place the probe in the first reference environment (adjustment point 1) and wait until the measurement has stabilized. You can follow the stabilization from the **Measurements** tab.
7. Enter the value of the first reference (for example, **0** if calibrating with a 0 ppmCO_2 reference gas) into the **Reference value, point 1** field.

8. After you enter the reference value, the value of the **Measured value, point 1** field updates automatically.
9. Place the probe in the second reference environment (adjustment point 2) and wait until the measurement has stabilized.
10. Enter the value of the second reference (for example, **2000** if calibrating with a 2000 ppmCO_2 reference gas) into the **Reference value, point 2** field.
11. When both reference points have been entered, select **Store adjustment** to save the adjustment.
12. Close the calibration mode with the **Stop calibration** button.
13. To check that the adjustment was carried out correctly, review the information in the **Adjustment data** fields at the bottom of the view.

8. Maintenance and Troubleshooting

8.1 Cleaning

You can clean the Indigo transmitter body by wiping it with a moist cloth. Standard cleaning agents can be used.

Refer to the probe-specific cleaning instructions when cleaning the probe connected to Indigo. Do not spray anything directly on the probe connected to Indigo, since that may deposit impurities on the sensor.

Chemical tolerance

The following chemicals can be used to clean Indigo:

- H_2O_2 (6000 ppm), non-condensing
- Alcohol-based cleaning agents such as ethanol and IPA (70 % Isopropyl Alcohol, 30 % water)
- $Ca(Clo)_2$ (calcium hypochlorite) max. 0.5 %
- QAC (quaternary ammonium cations) max. 0.5 %

Avoid exposing the transmitter to chemicals for unnecessarily long periods of time. Do not immerse it in a chemical, and wipe chemicals off the surfaces after cleaning.

8.2 Indigo Wireless Connection Troubleshooting

Problem	Possible Cause	Remedy
The wireless device has connected to the Indigo access point, but the configuration interface does not launch.	The device you are using to connect to Indigo does not launch the browser automatically after connecting to the access point.	After connecting to Indigo, open your browser application.
	The wireless connection requires an authentication or acknowledgement before the Indigo interface opens in your browser.	Check your device's notifications to see if an authentication or login prompt is present for the Indigo connection. Acknowledge the connection and open your browser application if the interface does not launch automatically.

Problem	Possible Cause	Remedy
The Indigo access point does not show up in your device's list of available WLAN connections.	Indigo access point is not enabled or an error is has occurred.	Switch off the Indigo WLAN connection, enable the connection again and retry.
	Your device is too far from the transmitter or obstacles are blocking the signal.	Move closer to the transmitter and refresh your device's access point list.
Indigo shows up in the list of available wireless connections, but connecting to it does not work.	A device is already connected to the Indigo access point.	Ensure that your device is the only one that is connecting to the wireless configuration interface.
The interface does not open in the browser.	The browser has issues with loading the landing page.	Enter the default Indigo IP address **http://192.168.1.1** in the browser's address bar.
Cannot connect to the Indigo access point with iPhone or tablet.	The tablet's or iPhone's WLAN settings (for example, auto-login) prevent establishing a connection.	See the instructions in Additional WLAN Settings when Connecting to Indigo (page 60).
Indigo does not respond when pressing the wireless connection activation button.	WLAN functionality has been disabled with the WLAN ON/OFF DIP switch on Indigo's circuit board.	Enable WLAN functionality with the WLAN ON/OFF DIP switch.

8.3 Calibration Mode Troubleshooting

Problem	Possible Cause	Remedy
Selections not available in the **Calibration** menu.	Probe not switched to calibration mode with the **Start calibration** selection.	Start the calibration mode: see Starting and Closing Calibration Mode (page 49).
	Probe heating options block calibration mode from starting.	Disable probe heating for the duration of the calibration: see Calibration Mode Blocked due to Probe Heating (page 50).
Measurement performance affected after calibration.	Probe has not been switched from calibration mode to normal operating mode.	Close the calibration mode: see Starting and Closing Calibration Mode (page 49).

8.4 Additional WLAN Settings when Connecting to Indigo

When you are connecting to Indigo's wireless configuration interface with certain tablet models or cellphones (for example, iPhone), it may be necessary to change your device's WLAN settings. The following notification is shown on your device when additional steps are required:



Figure 30 Additional Steps Needed to Connect Notification

Depending on the current settings in your mobile device, you can connect to Indigo by either disabling the **Auto-Login** feature or with the **Use Without Internet** option (iPhone example).

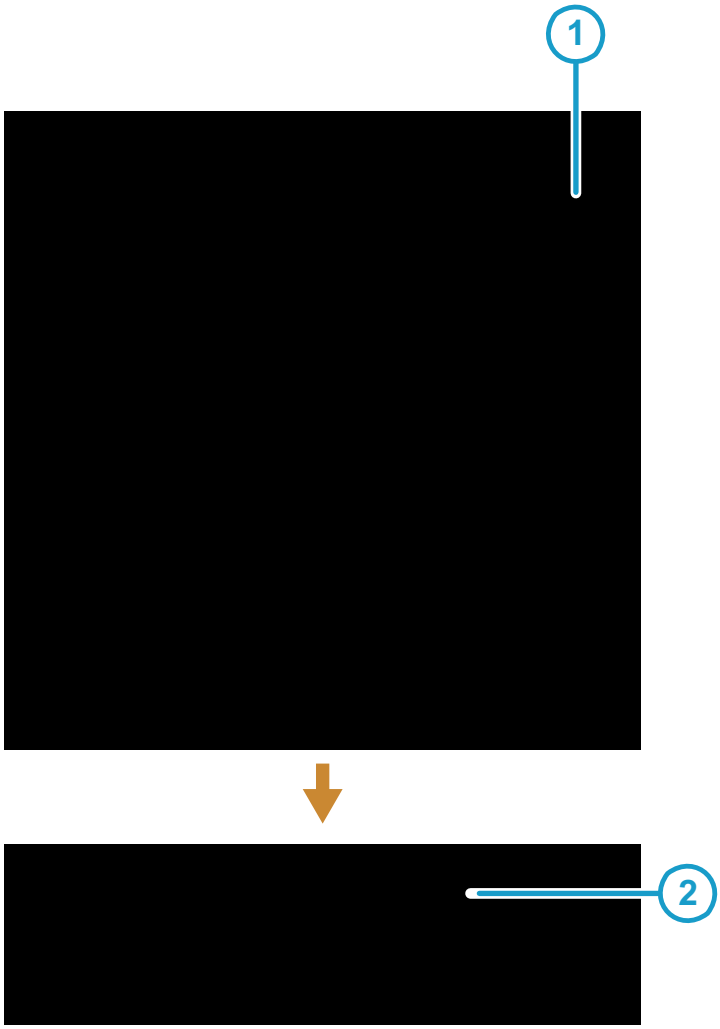
8.4.1 Connection Option 1: Use Without Internet (iPhone example)

Activate Indigo's wireless (WLAN) configuration interface with the button on the bottom of the transmitter and select Indigo from your phone's list of available WLAN connections.

To connect to Indigo's wireless configuration interface using the **Use Without Internet** option:

1. When the notification about additional steps being required is shown, select **Cancel**.

> If selecting **Cancel** returns you to the list of available WLAN connections, select Indigo from the list and then select **Cancel** again in the notification screen.

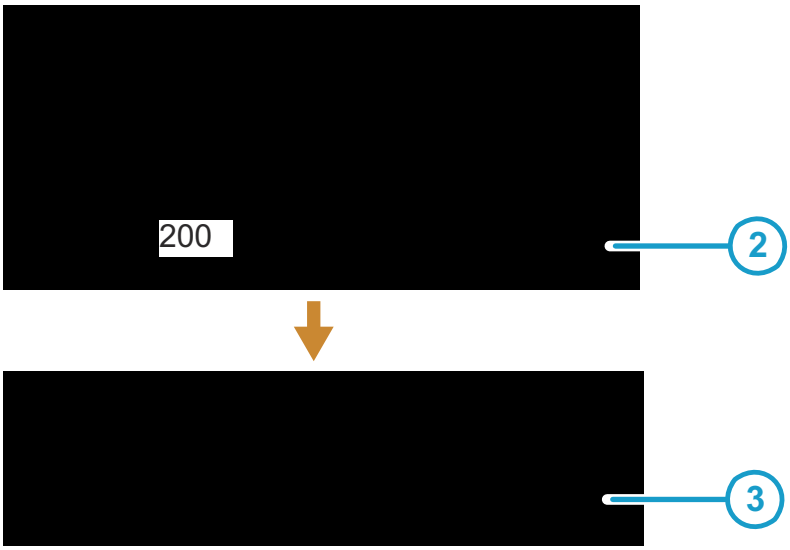


2. In the next dialog, select **Use Without Internet**.
3. Open you browser application (for example, Safari).
4. If the Indigo login screen does not launch automatically when you open your browser, enter Indigo's default IP address **192.168.1.1** in the browser's address bar.

8.4.2 Connection Option 2: Disable Auto-Login (iPhone Example)

To connect to Indigo's wireless configuration interface by disabling the auto-login feature (iPhone example):

1. Press the wireless configuration interface activation button on the bottom of the Indigo transmitter.
2. When Indigo's wireless connection has activated, find Indigo from your device's list of available WLAN connections. Select the info icon next to Indigo.



3. In the next menu view, disable the **Auto-Login** feature.
4. Return to the list of WLAN connections and select Indigo.
5. Open you browser application (for example, Safari).
6. If the Indigo login screen does not launch automatically when you open your browser, enter Indigo's default IP address **192.168.1.1** in the browser's address bar.

8.5 Display Messages

The following table lists the display messages that Indigo 202 uses to inform you about the transmitter's state.

In addition to the Indigo transmitter messages, the connected probes have probe-specific messages that are also shown on the display. Messages from the connected probe start with **Probe:**. For more information on the probe-specific messages, see the probe's documentation.

Table 6 Indigo Transmitter Messages Shown on Display

Display Message	Description	Recommended Action
Errors		
Low supply voltage	The supply voltage is below the minimum (range: 15 ... 30 VDC or 24 VAC ±10 % 50/60 Hz).	The error clears when the supply voltage returns to the specified range. Check your power supply and restart Indigo if needed.

Display Message	Description	Recommended Action
No legal measurement probe	The connected probe is not compatible with Indigo or a restriction (probe name or serial number) on allowed probes is in place.	Check your probe's Indigo compatibility and possible restrictions on allowed probes.
WLAN error	There is a problem with the wireless connection.	Go through the troubleshooting instructions in Indigo Wireless Connection Troubleshooting (page 59).
Warnings		
No measurement probe	The measurement probe is not connected, or the probe is connected poorly and cannot be recognized by Indigo.	Check that you have fastened the probe correctly with the locking wheel.
Notifications		
Probe connected:	Indigo displays the name of the connected probe.	
WLAN on	The WLAN connection is active and you can connect to the wireless configuration interface.	
Waiting for measurements	The connected probe is preparing measurements (for example, at start-up or after a probe restart).	
Unable to measure all quantities	Some of the measurements you have configured to be displayed are currently not available. This can be caused, for example, by the probe heating feature: parameters that are affected by heating cannot be shown while the heating cycle is ongoing.	

More information

- Measurement Reading Locked (page 15)

9. Technical Data

9.1 Specifications

Table 7 Inputs and Outputs

Property	Specification
Digital output	RS-485 Modbus RTU
Relays	2 configurable relays (VAC/VDC)
	Device maximum specification (resistive load): • Max. switching power 30 W / 37.5 VA

	UL-rated maximum specification (resistive load):
	• AC: max. 28 V / 0.5 A
	• DC: max. 40 V / 0.24 A
	• Up to 30 VDC:
	  • max. switching current 1 A
	  • max. switching power 30 W

Power supply input [1)]	Range 15 ... 30 VDC (24 VAC ±10 % 50/60Hz) [2)]
Maximum current	Transmitter and connected probe max. 1 A
Power consumption	Transmitter max. 3 W (+ connected probe, varies depending on probe type)
Probe connector	M12/5 connector for probe or probe cable connection (Vaisala Indigo-compatible probes)
Cable lead-throughs	2 options: rubber lead-through on the bottom of the transmitter, and opening with a seal at the back of the transmitter
Screw terminal wire size	0.2 mm^2 ... 1.5 mm^2

1) *Using a power supply with overload protection is recommended for electrical safety.*
2) *Depending on the production date of your transmitter, the power supply input voltage specification can be either 15 ... 30 VDC (20 ... 22 VAC) or 15 ... 30 VDC (24 VAC ±10 % 50/60Hz). Check the type label on the back of the transmitter for information specific to your device.*

Table 8 General

Display	3.5” TFT LCD color display
Configuration interface	Browser-based wireless configuration interface (IEEE 802.11 b/g/n WLAN)
Wireless configuration interface browser support	• Microsoft Internet Explorer: version 11.0 onward • Google Chrome: version 57 onward • Mozilla Firefox: version 50 onward • Apple Safari: version 10 onward

Table 9 Standards and Compliance

Property	Specification
Safety standard	IEC/UL/EN 61010-1
Networking standards (wireless configuration interface WLAN access point)	IEEE 802.11 b/g/n compliant
Electromagnetic compatibility	Complies with EMC standard *EN61326-1 Generic Environment*
Pollution degree	2
Overvoltage category	I
Contains	FCC ID QOQ-WGM110 IC 5123A-WGM110
当該機器には電波法に基づく、技術基準適合証明等を受けた特定無線設備を装着している。	R 209-J00197

Table 10 Wireless Access Point (Module With Internal Chip Antenna)

Property	Specification
Networking standards	IEEE 802.11 b/g/n
Data rates	802.11 b: 1, 2, 5.5,11 Mbps 802.11 g: 6, 9, 12, 18 Mbps
Frequency band	2402 ~ 2480 MHz
Modulation	802.11 b: DSSS (CCK-11, CCK-5.5, DQPSK-2, DBPSK-1) 802.11g : OFDM Wi-Fi
Security	WEP (128-bit), WPA, WPA2 (Personal)
Output power	+16 dBm
Receiver sensitivity	-85 dBm typical

Table 11 Operating and Storage Environment

Property	Specification
Indoor/outdoor use	Indoor use
IP rating	IP65
Operating temperature range	-20 ... + 60 °C (-4 ... + 140 °F)
Storage temperature range	-40 ... +70 °C (-40 ... 158 °F)
Operating humidity range	0 ... 100 %RH (non-condensing)
Maximum operating altitude	3000 m (9843 ft)

Property	Specification
Chemical tolerance	Temporary exposure during cleaning: • H_2O_2 (6000 ppm, non-condensing) • Alcohol-based cleaning agents such as ethanol and IPA (max. 70 % concentrate) • CaOCl (hypochlorite) max. 0.5 % • QAC (quaternary ammonium cations) max. 0.5 %)

Table 12 Mechanics

Property	Specification
Housing classification	IP65
Housing color	White (RAL9003)
Housing material	PC/ABS plastic
Display window material	PMMA plastic
Connection screw terminals	26 AWG ... 20 AWG
Plastic material flammability (UL rating)	UL94 HB
Weight	402 g (14.18 oz)
Dimensions (H×W×D)	149×135×43 mm (5.87×5.31×1.7 in)
Input/output cable recommended diameter (with cable gland strain relief)	7 ... 8 mm (0.25 ... 0.31 in)

9.2 Spare Parts and Accessories

Information on spare parts, accessories, and calibration products is available online at www.vaisala.com and store.vaisala.com.

Table 13 Spare Parts and Accessories

Description	Order Code
Probe connection cable, 1 m	INDIGOCABLE1M
Probe connection cable, 3 m	INDIGOCABLE3M
Probe connection cable, 5 m	INDIGOCABLE5M
Probe connection cable, 10 m	INDIGOCABLE10M

9.3 Dimensions

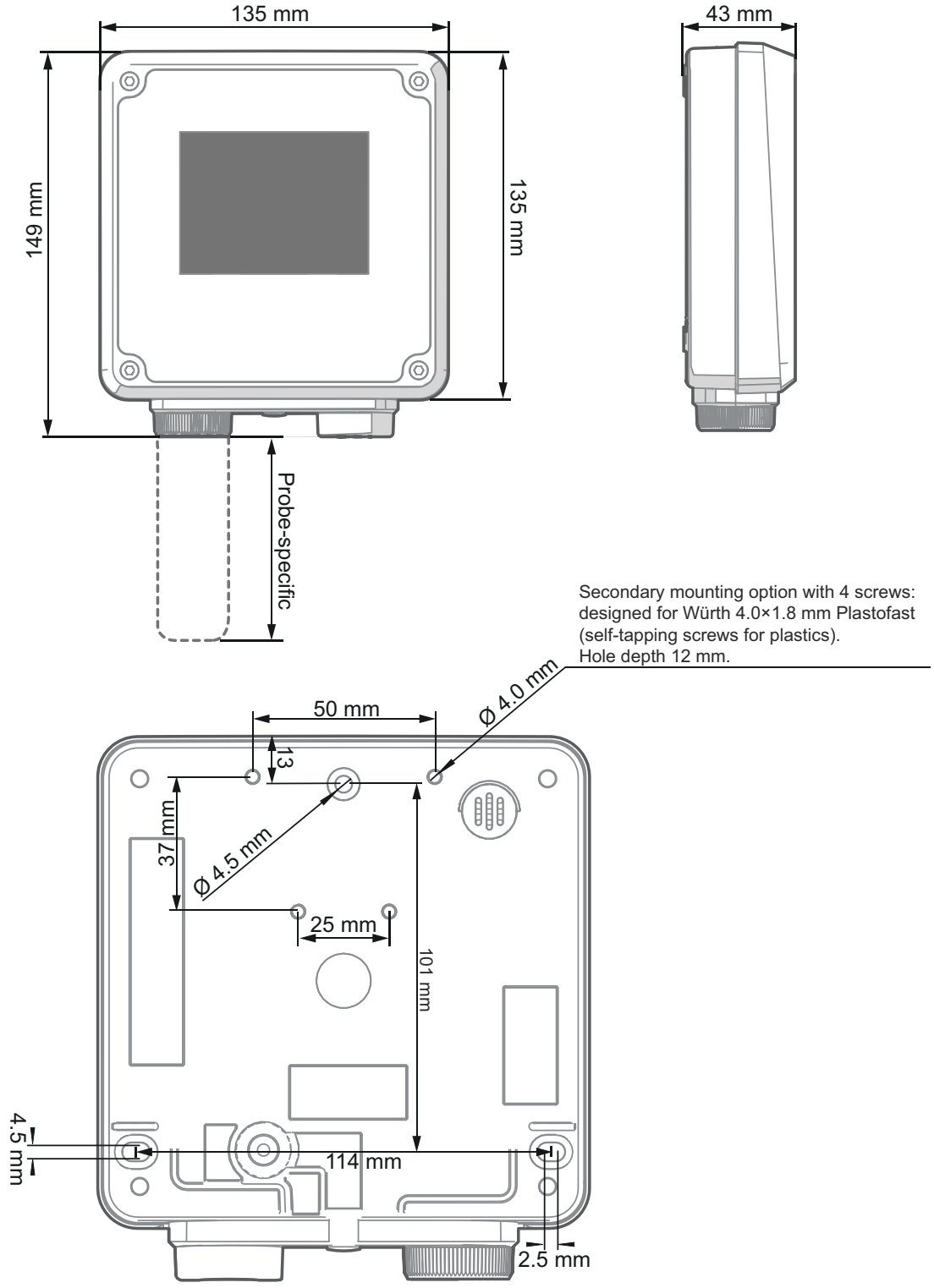


Figure 31 Indigo Transmitter Dimensions in Millimeters (mm)

Appendix A. Modbus Reference

A.1 Function Codes

Table 14 Supported Function Codes

Function Code (Decimal)	Function Code (Hexadecimal)	Name
03	03_{hex}	Read Holding Registers
16	10_{hex}	Write Multiple Registers
43 / 14	$2B_{hex}$ / $0E_{hex}$	Read Device Identification

A.1.1 Device identification objects

Table 15 Device identification objects

Object ID	Object ID (hexadecimal)	Object name	Example contents
0	00_{hex}	VendorName	"Vaisala"
1	01_{hex}	ProductCode	"Indigo 202"
2	02_{hex}	MajorMinorVersion	"1.2.3" Software version of the device.
3	03_{hex}	VendorUrl	"http://www.vaisala.com/"
4	04_{hex}	ProductName	"Indigo 202 Digital Transmitter"
128	80_{hex}	SerialNumber [1)]	"K0710040"
129	81_{hex}	CalibrationDate [1)]	"2020-01-31" Calibration date in YYYY-MM-DD format. Empty string if not set/valid.
130	82_{hex}	CalibrationText [1)]	"Vaisala/HEL" Calibration information text. Empty string if not set/valid.

1) Vaisala-specific device information.

A.2 Indigo Status Registers

The following table describes the status information provided in Indigo status registers (transmitter, probe, and relay statuses). For more details on the high-level transmitter and probe statuses reported in register $E000_{hex}$, see Notification and Error Bits (page 70).

Table 16 Modbus Status Registers (Read-Only)

Address (Hexadecimal)	Register Description	Data Format	Notes
$E000_{hex}$	Status	16-bit	0 = Status OK 1 = Info 2 = Warning 3 = Error
$E001_{hex}$	Notification and error bits	16-bit	Provides additional details on the high-level status reported in register $E000_{hex}$. See Notification and Error Bits (page 70).
$E011_{hex}$	Relay A status	enum	0 = Relay is not active 1 = Relay is activated
$E012_{hex}$	Relay B status	enum	0 = Relay is not active 1 = Relay is activated

A.2.1 Notification and Error Bits

The status register ($E000_{hex}$) can report that one of the following notification types is present:

0 No issues
1 Info
2 Warning
3 Error

Additional details about the status reported in the register $E000_{hex}$ can be provided in the 16-bit register $E001_{hex}$, as described in the following table.

Table 17 Bits in Register $E001_{hex}$

Bit in $E001_{hex}$	Meaning	Notes
0 (0000_{hex})	No errors	
1 (0001_{hex})	WLAN on	Wireless configuration interface is activated and can be connected to.
2 (0002_{hex})	Probe error	Connect to Indigo's wireless configuration interface and review the error information in the **Status** menu. Check display messages.

Bit in $E001_{hex}$	Meaning	Notes
4 (0004_{hex})	Low supply voltage	The supply voltage is not within the specified range (15 ... 30 VDC (24 VAC ±10 % 50/60 Hz)
8 (0008_{hex})	WLAN error	See the WLAN troubleshooting instructions.
16 (0010_{hex})	No measurement probe	Probe not connected or Indigo cannot detect the probe.
32 (0020_{hex})	Probe warning	Connect to Indigo's wireless configuration interface and review the error information in the **Status** menu. Check display messages.

More information

- Status View (page 31)
- Indigo Wireless Connection Troubleshooting (page 59)
- Display Messages (page 63)

EU Declaration of Conformity

BG: С настоящото Vaisala Oyj декларира, че този тип радиосъоръжение Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 vastab direktiivi 2014/53/EL nõuetele. ELi vastavusdeklaratsiooni täielik tekst on kättesaadav järgmisel internetiaadressil: www.vaisala.com/declarationofconformity

FI: Vaisala Oyj vakuuttaa, että radiolaitetyyppi Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 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 Indigo 202 överensstämmer med direktiv 2014/53/EU. Den fullständiga texten till EU-försäkran om överensstämmelse finns på följande webbadress: www.vaisala.com/declarationofconformity

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.

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.

Recycling



Recycle all applicable material.



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

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