Bartlett i/o Sense



User Manual

Sensor-only greenhouse monitoring

MODEL: AGHSENSE | DOCUMENT VERSION: 1.0 | DATE: October 2026

◉ **Temperature** ○ **Humidity** **CO_2 Carbon dioxide**

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Product overview

Bartlett i/o Sense is a sensor-only product designed to monitor greenhouse temperature, relative humidity, and carbon dioxide (CO_2). The Sense communicates via a radio with a compatible Bartlett Hub device. Readings can then be viewed in the Headgrower app, where users can review conditions, track trends, and configure supported alerts.

Compatible Hub devices

Sense communicates by radio with a compatible Hub device, such as:

- ClimateBoss
- WeatherBoss
- Headgrower Hub

What is included

- Sense sensor unit
- Power Supply

What you will need

- A compatible, powered Bartlett Hub device
- Access to the Headgrower app and an account with permission to add a sensor
- Mounting hardware

Safety and handling

Before installing the Sense unit:

- Use the sensor only within the environmental and electrical limits listed in the final specifications.
- Keep the unit away from direct water spray, standing water, and locations where condensation can collect on the device.
- Do not cover the sensing openings or place the unit inside an enclosure that restricts airflow.
- Do not disassemble or modify the sensor. Use only provided power source and radio.

Installation and recommended placement

Recommended placement

- Mount the sensor near the typical crop-canopy height for the area being monitored. Adjust the height as the crop and monitoring objective change.
- Choose a location with normal air circulation, rather than a stagnant corner or a pocket of trapped air.
- Keep it out of direct sunlight and away from radiant heat sources.
- Avoid placing it directly in the path of heater discharge, fan airflow, evaporative cooling, fogging/misting, or open vents.
- Avoid locations immediately beside doors, exterior walls, or other areas with unusually strong temperature or humidity swings, unless those conditions are specifically what you want to measure.
- For CO_2 monitoring, avoid placing it immediately beside a CO_2 injection outlet or other concentrated source.
- If a greenhouse has distinct zones, benches, or airflow patterns, one sensor may not represent the entire structure. Consider monitoring each different zone with its own Sense unit.

Mounting procedure

- Select the mounting point using the recommendations above.
- Confirm the radio link to the intended Hub is likely to be reliable before finalizing the mounting location.
- Secure Sense. Orient the unit as shown in [product image or mounting diagram].
- Ensure sensing openings remain unobstructed, are not at the top of the device, and that the unit is protected from direct spray and accidental impact.
- Power on or activate the unit.
- Complete radio configuration and Headgrower claiming, then confirm that current readings are appearing.

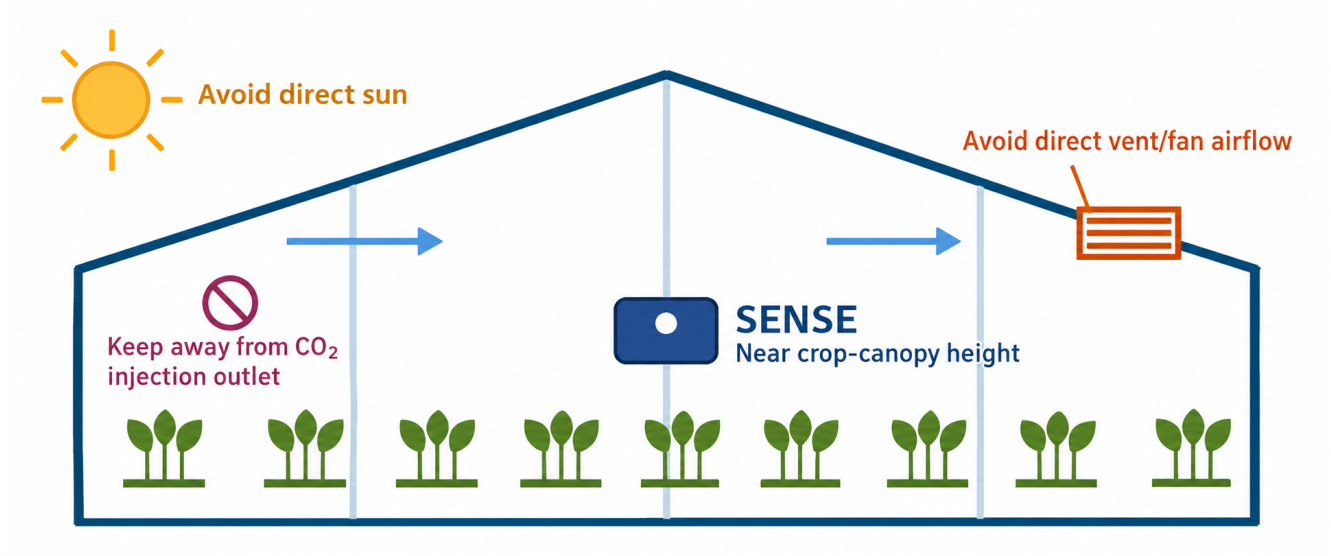


Figure 1. Recommended greenhouse placement

Placement note

There may not be one ideal mounting height for every crop or greenhouse. The recommended location should reflect the crop canopy, airflow, and the specific area the grower wants to understand.

IMPORTANT: Antenna and airflow holes must be mounted at the bottom of the Sense unit (see picture to the right) to prevent water collection on circuit board.



Measurements

Your Sense unit measure temperature, relative humidity (RH), and carbon dioxide (CO_2). See the specification table for detailed accuracy and range information. For full specification details, please refer to the Sensirion website, product code SCD41.

Temperature

Your Sense unit measures the air temperature at the sensor's location. Use this reading to observe local greenhouse conditions and review changes over time. You can select your preferred temperature scale on the Headgrower app; the default temperature is shown in Fahrenheit.

Relative humidity

Your Sense unit measures relative humidity (RH), expressed as a percentage. Relative humidity describes how much water vapor is in the air relative to the maximum amount the air can hold at that temperature. Readings can vary across a greenhouse with temperature, ventilation, watering, and crop transpiration.

CO_2 Carbon dioxide (CO_2)

Your Sense unit measures the concentration of carbon dioxide in the air. CO_2 is commonly displayed in parts per million (ppm). Readings depend on crop activity, ventilation, and any CO_2 enrichment system. Avoid locating the sensor directly beside an injection outlet unless you specifically need to measure that local concentration.

Interpreting readings

Your Sense unit reports conditions at its own location; it does not automatically represent every area of a greenhouse. Use trends and the location of the sensor when interpreting readings. Do not treat the readings as a substitute for independently verifying conditions when a critical growing or safety decision depends on them.

Radio settings and connecting through a Hub

Sense must be configured to communicate with a compatible Bartlett Hub. The exact menu labels and button sequence must be confirmed on the production unit before this section is finalized.

Before you begin

- Identify the Hub that will receive the Sense readings.
- Confirm the Hub is powered and operating normally.
- Ensure the Sense and Hub units are in the recommended radio range.

Check the Hub radio settings

1. Press the leaf (Headgrower) icon at your Hub.
2. Press Radio Channel – note the radio channel number.
3. Press Radio PIN – note the radio PIN.

Check the Sense radio settings

1. Power on your radio – note the number of green flashes.
2. If the number of green flashes matches the Hub radio channel number – the units are on the same radio channel.
3. If the number of green flashes does not match the Hub radio channel, rotate the rotary dial on the Sense unit to match the Hub radio channel.

Below are the Sense and Hub settings – if you cannot use the default channel, 1, select a Sense channel number, then set your Hub radio channel and PIN to the below settings in the same row. **WARNING: If Hub radio settings are changed, ALL clients (including other Sense and ClimateBoss units) must also be changed.**

Sense Dial Selection	Hub Radio Channel	Hub Radio PIN
1	1	1234
2	2	2222
3	3	3333
4	4	4444
5	5	5555
6	6	6666
7	7	7777

Claiming Sense in the Headgrower app

Claiming associates the Sense sensor with the correct site or greenhouse in Headgrower so its readings can be identified and viewed.

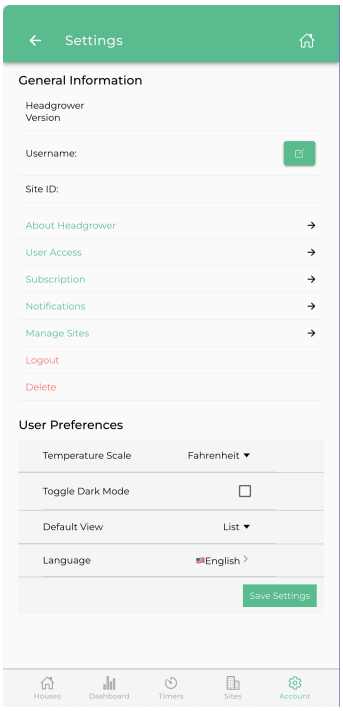
Before claiming

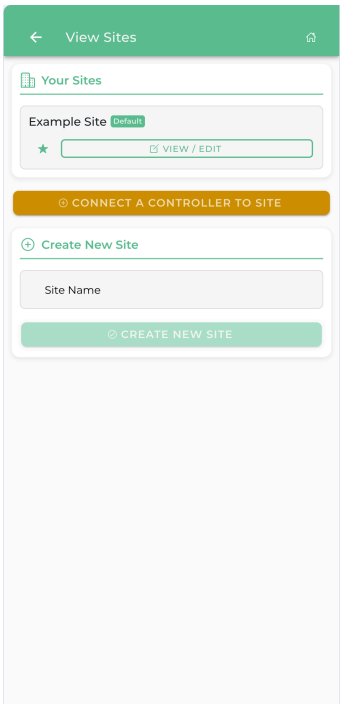
- Install or update the Headgrower app or open the supported Headgrower web interface.
- Sign in using an account with permission to manages the intended site.
- Make sure the Sense is powered and configured for communication through the correct Hub.
- Locate the sensor's serial number on near the radio antenna on your Sense unit.

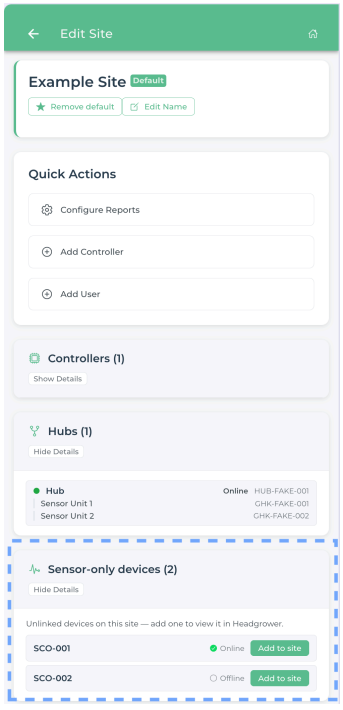
Claim the sensor

1. Open Headgrower and go to the Settings page and select your desired site.
2. From the main menu, open Settings and tap Manage Sites.
3. Under Your Sites, tap View / Edit on the site where the sensor's hub or controller is already connected.
4. Scroll past Controllers and Hubs to the Sensor-only devices section, which lists unclaimed sensors on this site. *Tap Show Details if the list is collapsed.*
5. Tap Add to site next to the sensor. While saving, the button turns gray and reads Adding…
6. A Sense unit added to your site message appears at the top. The sensor moves into the Controllers list, named by its ID, and will no longer show in the Sensor-only device section.

Please refer to the images below for guides on how to claim your Sense unit in Headgrower.





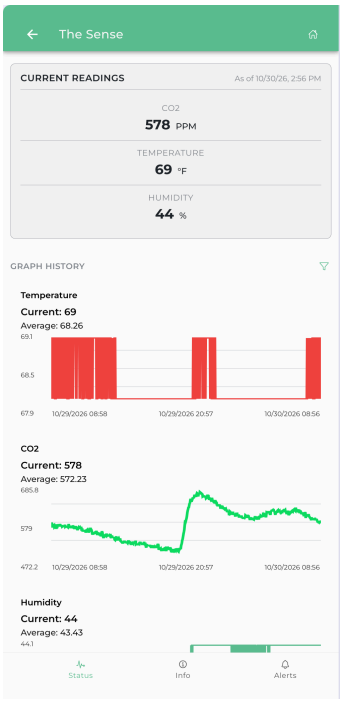


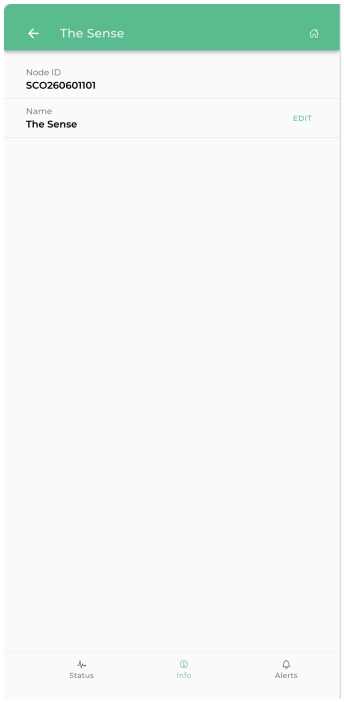
After claiming

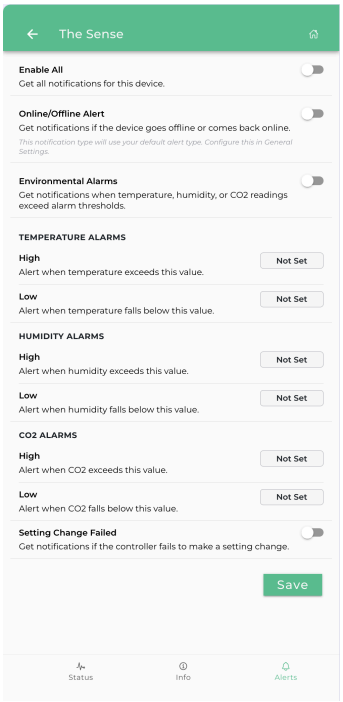
- Check the displayed readings against a reasonable local reference, allowing for normal differences between instruments and locations.
- Configure alerts or automated reports in Headgrower, if desired. Please refer to the Headgrower user manual and how to videos for how to enable your alerts and reports.

Headgrower Status Screens

Below are example Headgrower status screens. You should see similar screens on your app after claiming the Sense unit to your Headgrower site.







Troubleshooting

General troubleshooting steps

1. Unplug your Sense unit, wait 15 seconds, and then re-power the unit. This can resolve many problems that may arise.
2. Ensure the distance between your Sense unit and the Hub devices are at least 2’ and less than 1/2 of a mile.
3. Go through the steps outlined in the Radio Communication section to ensure the sensor devices radio settings match the Hub device radio settings.

LED Key

Timing	Flashing Description	Description
Startup	Green flashes – 1-7 times in a row	Count the number of green flashes – this indicates the current radio channel.
Startup	Quick red flashes	Red flashes indicate the radio pin and channel have been set. If there are no red flashes, this likely indicates a problem with the radio settings or the radio hardware.
Normal Operation	Regular green flashes	Indicates successful readings from the CO_2 sensor
Normal Operation	Regular red flashes	Indicates radio communications - Shorter length = message received from Hub - Longer length = message transmitted to Hub

General Issue Guidelines

Issue	Checks	Next step
No readings in Headgrower	Execute the general troubleshooting steps. Verify Hub controller Headgrower Network is set to Hub. It cannot be set to Client or WiFi. Verify Hub WiFi connection. WiFi symbol should not have a red X or red exclamation point.	Verify Sense unit is claimed on intended Headgrower site.
Readings appear stale	Execute the general troubleshooting steps.	If general steps do not resolve the problem, refer to the LED key below to determine the radio communication settings and if messages are communicated to/from the Hub device.
Sensor not found during claim	Check the radio communication setup and the Hub is available on the selected site.	Check on the Hub device that the Sense ID is listed as a client to verify the messages are getting to the Hub unit. Note the response code for the ID viewable on the Hub device.
Temperature or RH seems unusual	Check the placement of your sensor – ensure it is not in direct sun, a heater/vent/fan airflow path, or affected by spray.	Relocate if appropriate and allow readings to stabilize.
Intermittent radio connection	Inspect obstructions and confirm compatible Hub has a radio antenna. Check all electrical connections are securely fastened. Ensure devices are in recommended distance. Check if the radio board X/R LED is intermittently flashing while the power LED is lit. If all Hub device settings are correct and the radio board receives power, but the X/R LED is not flashing, then a radio board error likely exists.	Bartlett has extension wire that can be used for the Hub unit to ensure interference is not occurring. Please contact Bartlett if you are interested in extension wire.

Care and maintenance

- Keep the sensor's air openings clear of dust, plant debris, and other obstructions.
- Do not spray liquids directly onto the unit.
- Inspect the mounting and enclosure periodically for damage or moisture.
- Do not use solvents, abrasives, or compressed air unless specifically approved by Bartlett.

Specifications

Measurements	Temperature, relative humidity, CO_2
Temperature range / accuracy	Accuracy: 0.8˚C
Relative humidity range / accuracy	Range: 0-95% RH Accuracy: 6% RH
CO_2 range / accuracy	Range: 0 - 5000 ppm, Accuracy: ±50.0 ppm ±2.5 % m.v. from 400-1000 ppm ±50.0 ppm ±3 % m.v. from 1001-2000 ppm ±40.0 ppm ±5 % m.v. from 2001-5000 ppm
Measurement/update interval	30s – 2m, depending on Hub client quantity
Radio frequency / protocol	902-928 MHz
Power source	12VDC power supply included
Compatible Hub models and firmware	ClimateBoss, WeatherBoss, Headgrower Hub

Support and warranty

For product support, contact Bartlett Instrument Company.

Website: https://www.bartlettinstrument.com

Phone: 319-372-8366

Email: information@bartinst.com