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ZONE Sensor Guide

The user manual for ZONE sensors.

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Updated in the last 15 minutes

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Core Functionality

The ZONE sensors are designed to clip directly onto drying cannabis stems. When attached and assigned to an ongoing dry, the sensor measures three things:

1. The **average moisture** of the drying cannabis bud
2. The **temperature** next to the drying cannabis
3. The **humidity** next to to the drying cannabis

This data is transmitted via a wireless protocol to the gateways distributed throughout your drying operations, which then forward the sensor data to the Growvera Cloud

Sensor Anatomy

Overview

The ZONE sensors have 5 core components that you will be interacting with while using ZONE.

1. LED
2. Button

3. Battery
4. Probes
5. Label

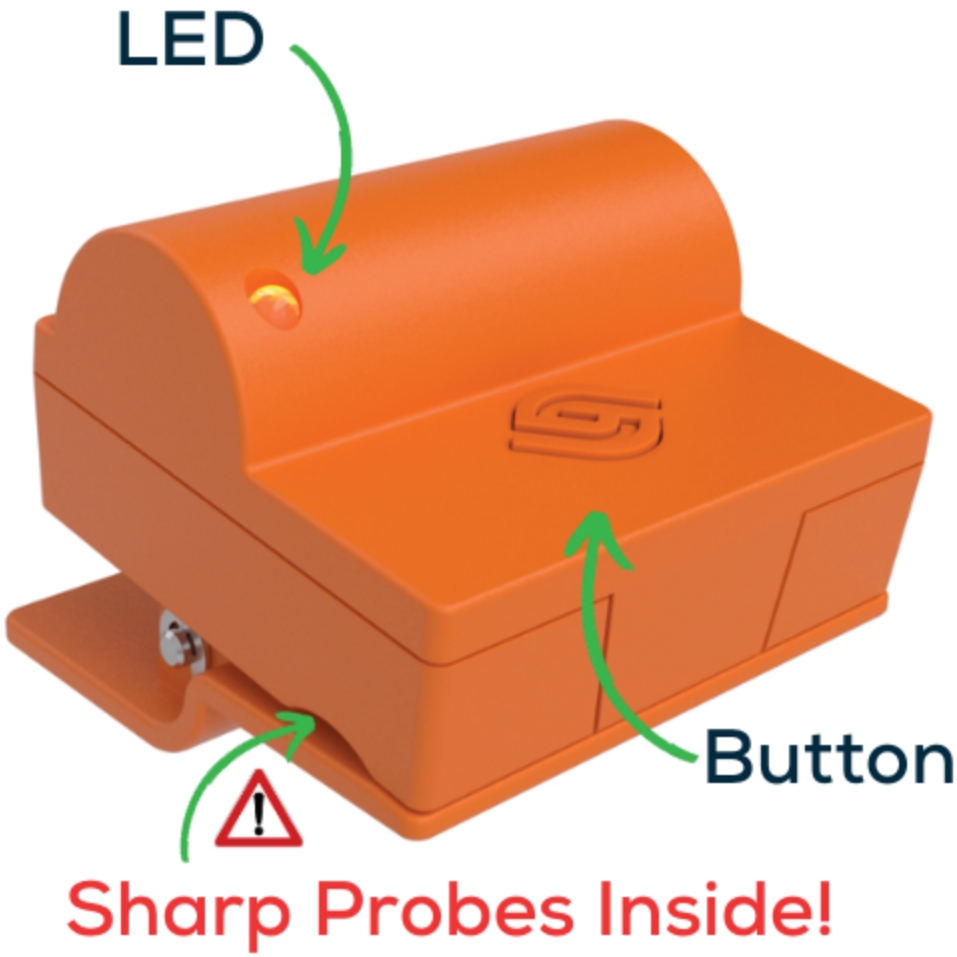

Figure 1. *Labeled Growvera ZONE Sensor Components*

LED

The LED will blink different indicator colors depending on the mode the sensor is in (see Modes of Operation). Universal indications are outlined in the table below.

Blink Code	Description	Sensor Mode of Operation
●	Connecting to Network	Universal
●	Failed To Connected to Network	Universal
●	Not Connected to Plant	Setup
●	Connected to Plant	Setup
●	Not Assigned To Dry	Sleep
●	Assigned To Dry and Measuring	Running

Button

The button has two different universal functions depending on how it is pressed.

Button Function	Description
Short press and release	Wakeup Sensor and Show Status
Press and hold sensor for ~10 seconds and release	Reset sensor

Battery

The ZONE sensors run on 3 Volt, CR2 batteries. These batteries may be purchased from any standard stores.

Lifetime

Batteries should last a minimum of ~6 months. With smart sensor usage, batteries will last over a 1 year.

Changing the Battery

The top portion of the enclosure is secured by two tabs

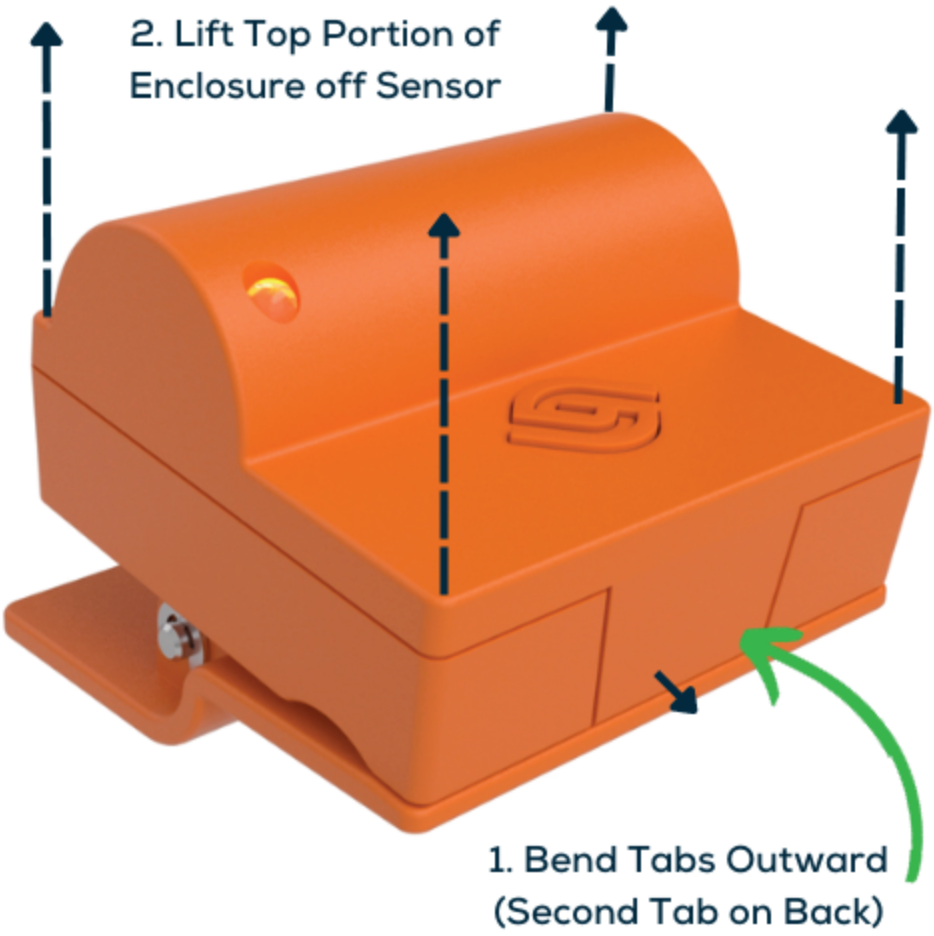

Figure 2. *Labeled image on how to remove top portion of ZONE sensor enclosure*

1. Bend the tabs from the top portion of the enclosure outward slightly. For the front portion of the sensor, you will need to open the jaws of the sensor a little bit. Be careful, as the probes are sharp!
2. Slide the Top portion of the enclosure upwards off of the sensor.
3. Remove dead battery.
4. Insert new battery using the battery silhouette that is printed on the circuit board below.
5. Align the 2 tabs from the top portion of the enclosure in the guides on the lower portion of the enclosure.
6. Slide the top portion of the enclosure back onto the lower portion using the guides until the tabs snap into place and the enclosure is sealed. Note that you may need to bend the tabs outward to get the tabs onto the guides.

Probes

The probes are the two sharp electrodes that protrude into the stem guide portion of the sensor. When clipping the sensor onto the drying cannabis, it is of the utmost importance

to **ensure the probes penetrate the stem**.

Caution !
The probes are sharp. Please handle with care.

Label

The label is located on the bottom side of the clip jaws. Each label contains the following:

1. **QR Code:** For quick, in app sensor identification.
2. **Sensor Pack ID:** Five-digit numeral identifier of the sensor pack that the sensor is contained in.
3. **Sensor Alias:** The Alphabetic Alias, or nickname, of the sensor that is unique within the sensor pack. A-L are valid alias letters.
4. **Sensor ID:** The unique, 16 digit hexadecimal ID of the sensor. This ID is unique among all other sensors.

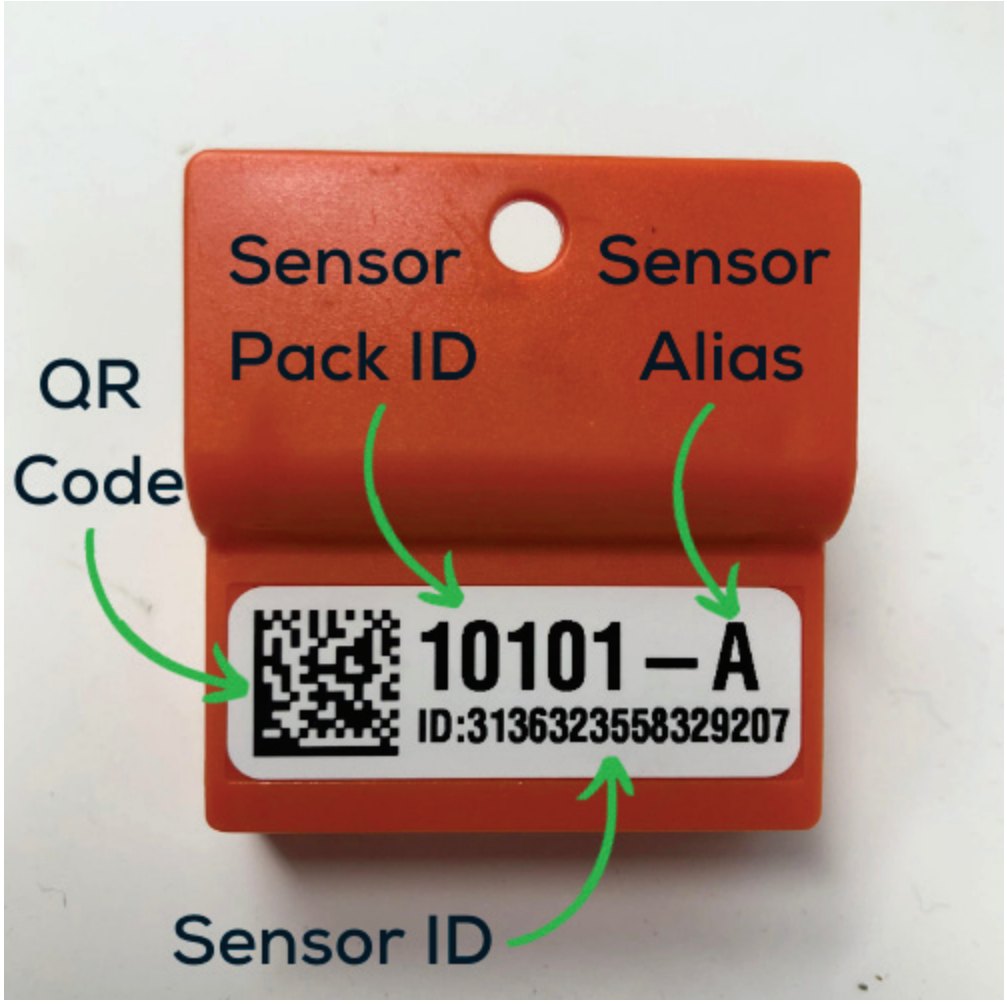

Figure 3. *A labeled image of an example sensor label.*

Sensor Packs

ZONE sensors are stored in sensor packs. Each sensor pack comes with 12 sensors. Each sensor is identified uniquely within a pack by its alias.

Sensor packs and the sensors within them are managed via the dashboard. Operations like assigning a sensor pack to a dry or ending a dry perform bulk communications with the individual sensors within a pack.

The outside of the sensor pack contains a sticker with a label with the sensor pack ID printed in the bottom right-hand corner. The inside of the sensor pack contains individual slots for the storage of sensors, along with an abbreviated zone sensor guide outlining button and LED functionality.

Figure 4. *A ZONE Sensor Pack alongside a ZONE sensor.*

Modes of Operation

Overview

Sensor modes streamline the process of setup, storage, and deployment of the sensors. Switching between sensor modes is triggered by interacting with sensor packs on your Growvera ZONE dashboard.

Sleep

Sleep mode occurs when a sensor pack is not assigned to a dry.
A sensor that is asleep will not transmit new messages and eventually appear as offline on the ZONE dashboard.

In sleep mode, pushing the button will trigger the sensor to wake up and blink its LED blue ● until the sensor connects to the network. If the sensor pack is still not assigned to a dry, the LED will blink yellow ● and the sensor will then go back to sleep.

Setup

Setup mode occurs when a sensor pack is first assigned to a dry.

Once the sensor is connected to the network (after the blue), the LED will begin to blink continuously. Until the sensor detects a good connection to a plant, the LED will blink red . Once a good connection is detected, the sensor will blink green . The sensor will continue blinking green until it receives a command to transition into Running mode from the Growvera Cloud.

A short press of the button will not trigger any action in Setup Mode. A long press and release will still reset the sensor.

Setup Tip
A sensor's green LED blinks indicate that the sensor requires no further attention from the user for setup.

Running

Running mode occurs when a sensor pack is assigned to a dry and has completed Setup Mode.

Once the sensor is in Running Mode, a short press of the button will trigger a white LED blink ●, which indicates that the sensor is making regular measurements.

> **Tip**
> A white LED blink ● indicates that the sensor does not need any further attention from the user.

If connection to the network is lost during Running Mode, the **sensor will attempt to reconnect to the network continuously, so recovery is built in.** If the sensors cannot connect to the network in running mode, a short press of the button will result in a blue ● or purple ● LED blink.

Sensor Can't Connect to Network

If a sensor loses network connection, the LED will indicate the loss of network connection by blinking purple ●

In all modes, **the sensor will attempt to reconnect to the network**.

If the sensor was in Running Mode at the time of losing connection, the sensor will continuously attempt to rejoin the network. A sensor in Running Mode may also blink blue ● in response to a short button press if network connection is temporarily lost.

If the sensor was in sleep mode at the time of losing connection, the sensor will only try to reconnect twice. If both of the reconnects fail, the sensor will go back to sleep to conserve battery.

Sensor Disabled

Sensors may be disabled via the ZONE dashboard on the sensor pack or the dry pages. Sensors should be disabled if they are misbehaving.

When a sensor has been disabled, its data will not be considered in any ongoing data collection and the sensor will permanently be in Sleep Mode until the sensor is enabled.

Cleaning The Sensors

Sensors may be cleaned easily with a cleaning solution, e.g. Isopropyl alcohol, and a wipe.

Warning ❗
Sensors are **not meant to be soaked in water or cleaning solution.** Sensors contain sensitive electronics that will be damaged following exposure to fluid.

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Schedule a Meeting with Growvera!

Happy drying 🕊️

FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and receiver.

– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio/TV technician for help.

RF exposure statement

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

Canadian Compliance Statement

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada license-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licencecontenudans le présentappareilestconformeaux CNRd'Innovation, Sciences et Développementéconomique Canada applicables aux appareils radio exempts de licence. L'exploitationestautorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareildoitaccepter toutbrouillageradioélectriquesubi, mêmesi le brouillageest susceptible d'encompromettre le fonctionnement.

RF exposure statement

This equipment meets the exemption from the routine evaluation limits in section 2.5 of RSS-102. It should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.
Cetéquipementestconforme à l'exemption des limitesd'évaluationhabituelle de la section 2.5 de la norme RSS-102. Il doitêtreinstallé et utilisé à une distance minimale de 20 cm entre le radiateur et toutepartie de votre corps.

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