Floracle

Your Floracle. In control

GET GROWING

Product manual

Table of Content

1. Welcome / Thank You

We want to thank you for trusting your precious plants to Floracle. That means a lot to us.
The Floracle enclosure is made from Eucalyptus wood, and we painstakingly sanded, coated, assembled and tested every single Floracle by hand. Small variations and irregularities are part of that process and contribute to the charm and authenticity of the product.

Wood is 'alive': it works, shrinks and expands, even years after being processed. That means parts of the enclosure can slightly curve over time. By keeping the enclosure away from moisture and out of direct sunlight, you can minimize this.Floracle is made to last for a very long time. In that time, the color of the wood might fade slightly. If you want to restore the color, you can use Bankirai wood oil, just like we did.

If you have any questions, remarks or issues, or just want to say hi, please contact us!

Green greetings,

Liza & Djurre

Team Floracle

2. Safety & Compliance

This manual contains important information. Read carefully before use, especially this chapter regarding Safety & Compliance.

Floracle controls mains-powered electrical devices.
Improper use may result in damage to equipment or property.

- Indoor use only
- Do not expose to water, condensation, or high humidity
- Use only in dry, well-ventilated environments
- Do not open or modify the device
- Keep out of reach of children

ELECTRICAL SAFETY

- Input: 220–240 V~ 50 Hz
- Output (per outlet): Max. 2 A
- Maximum combined load: 3.15 A

Floracle does not actively monitor or limit connected loads. It is the user's responsibility to ensure that all connected devices remain within the specified limits.

Do not connect:

- devices exceeding the stated limits
- damaged or modified electrical equipment
- appliances not intended for unattended operation
- Always connect accessories before powering on Floracle.

INTENDED USE

Floracle is intended to control the following electrical accessories

to be used in indoor plant cabinets or similar controlled environments:

- Lighting
- Humidifiers
- Heating cables or heating mats
- 12 V DC fans

Use outside the intended purpose may result in unsafe operation and void warranty or liability coverage.

DOCUMENTATION AND UPDATES

Full instructions, safety information, and

regulatory documentation are available online:

Scan the QR code or visit:

https://floracle.nl/support

This includes:

- Full user manual (this document)
- Safety instructions
- EU Declaration of Conformity

LIABILITY & WARRANTY (SUMMARY)

To the maximum extent permitted by applicable law:

- The manufacturer is not liable for indirect or consequential damages, including loss of plants, crops, or equipment.
- Any liability for property damage arising from use of this product is limited to the original purchase price.

This does not affect your statutory consumer rights.

Full warranty and liability terms are available in the online manual.

MANUFACTURER

Floracle VOF
Enschede, The Netherlands

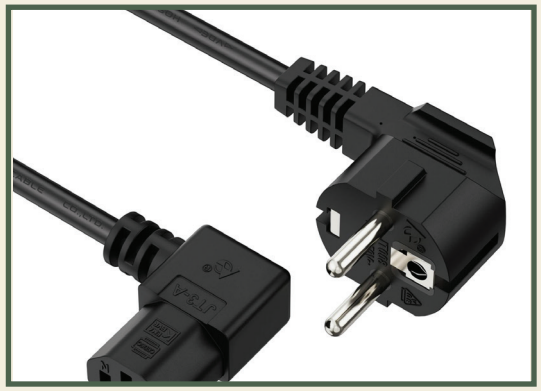
www.floracle.nl/support

3. What's in the Box

Quickstart guide

Floracle controller

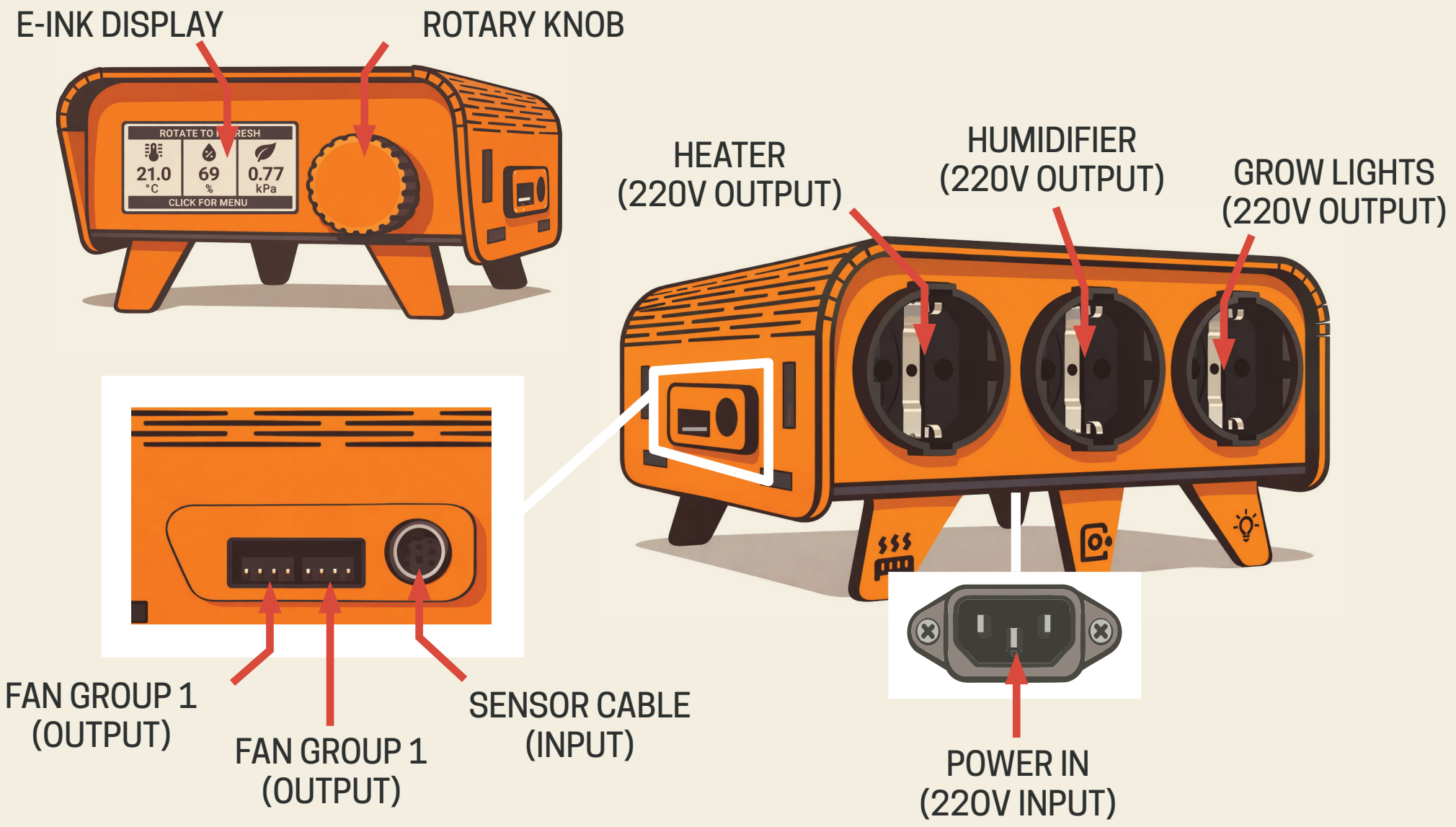
Sensor cable assembly



Power Cable Type F
to C13 90° Right (1m)

Safety warnings

4. Product Overview



5. What is so special about Floracle?

Built for greenhouse cabinets
Floracle is designed for greenhouse cabinet use: small volume, quick climate changes, tropicals and seedlings. Positioned as a specialist solution, not a general-purpose controller.

One system, not a pile of devices
One controller coordinates lights, heating, humidity, and fans. It measures, decides, and switches devices so the climate stays stable without you constantly adjusting timers and plugs.

Plant-centric control: VPD and day/night
VPD balances humidity and temperature the way plants experience them; day/night schedules handle lights and optional day/night temperatures. Manual overrides (e.g. lights off) don't break automation—schedule takes over again at the next transition.

Control your way: display, app, or Home Assistant
Full control from the e-paper display and knob (no phone or internet). Optional Wi-Fi adds the app and Home Assistant. Data stays local; no cloud or subscription.

Your cabinet, your devices
No brand lock-in: use your own lights, heater, humidifier (mains on/off), and standard 12 V PC-style fans. Floracle is the brain; you choose the cabinet and devices.

Thoughtful design and real-world testing
Over three years of development, with prototypes in real cabinets and feedback from plant enthusiasts. Automation informed by professional greenhouse cultivation (Netherlands), adapted to small cabinets.

6. About Greenhouse Cabinets

What is a Greenhouse Cabinet?

A greenhouse cabinet is a display cabinet turned into a small indoor greenhouse. By sealing the space and adding grow lights, a humidifier, fans, and sometimes heating, you control the climate inside. That gives your plants stable warmth, humidity, and light. Conditions that are hard to achieve in a normal living room.

So a greenhouse cabinet is an **enclosed, climate-controlled space** for plants: a mini version of the idea behind commercial greenhouses and controlled-environment growing, scaled to fit in your home.

Why use one?

Many houseplants (especially tropicals like aroids, orchids, and ferns) evolved in warm, humid, bright environments. Indoors, dry air, uneven heating, and lack of light often lead to brown leaf edges, slow growth, or loss of plants.
A greenhouse cabinet solves that by:

- **Raising and stabilizing humidity** so leaves don't dry out.
- **Providing consistent light** with grow lights on a schedule.
- **Keeping temperature in a suitable range** and avoiding cold or heat spikes.
- **Moving air** with fans so moisture and heat are spread evenly and stagnant, disease-friendly pockets are avoided.

The result is a **stable microclimate** tailored to your plants, instead of the changing conditions of a whole room. That's why greenhouse cabinets are so popular for rare tropicals, propagation, and seedlings. That is also why they work well as a green, eye-catching feature in your home.

What makes a good greenhouse cabinet?

A good setup has four elements:

1. **An enclosed space** - Usually a glass-fronted cabinet (e.g. a converted IKEA Milsbo, Fabrikör, or Rudsta) or a purpose-built plant cabinet. The enclosure keeps humidity and warmth in and gives you a defined area to control.

2. **Lighting** - Grow lights (often full-spectrum LEDs) replace or add to daylight so plants get enough intensity and the right day length for growth and, if relevant, flowering.

3. **Humidity and temperature control** - A humidifier adds moisture; a small heater can add warmth. Without control, humidity and temperature swing with the room and the lights, which stresses plants.

4. **Airflow** - Fans circulate air so humidity and heat don't sit in one spot. That evens out the climate and reduces the risk of mould and disease.

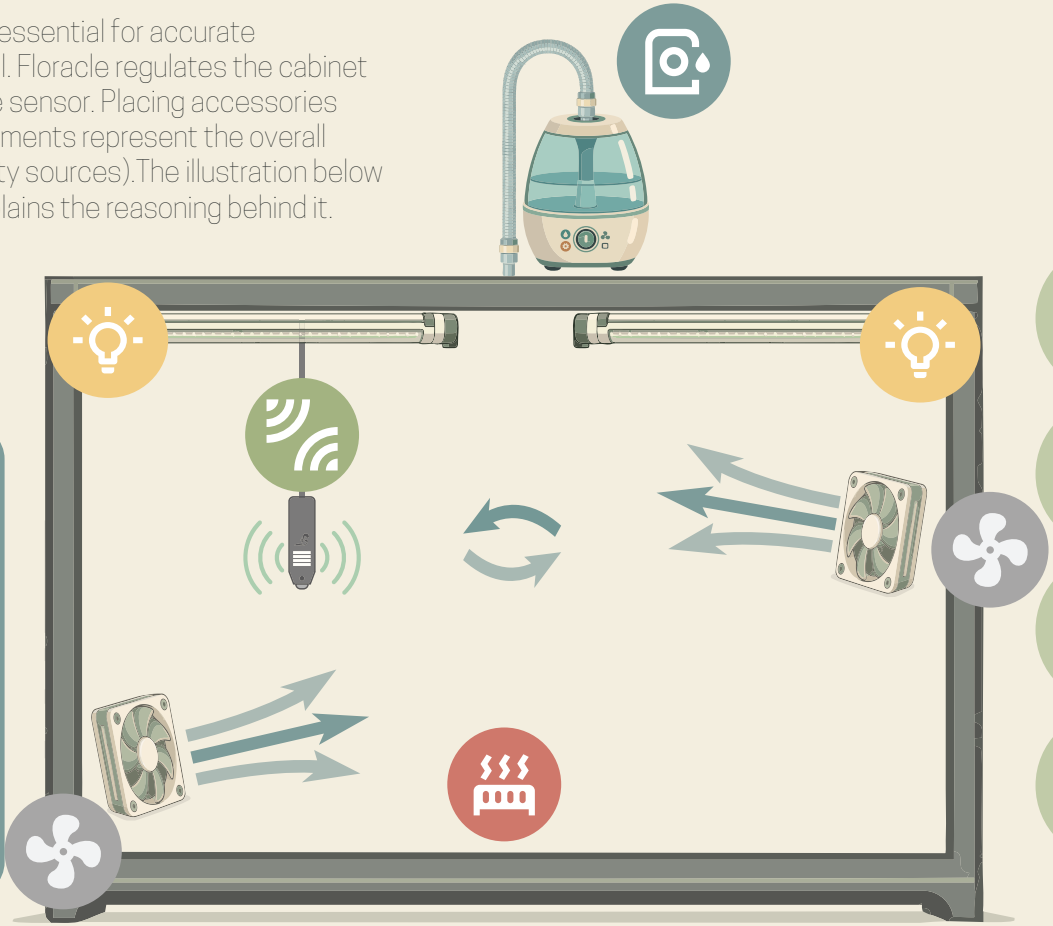
Once these are in place, the missing piece is **something that ties them together**: something that measures the cabinet and switches lights, humidifier, heater, and fans on and off in a coordinated way. That's what a climate controller like Floracle does. So you get the benefits of a greenhouse cabinet without having to adjust everything by hand every day.

In short

A greenhouse cabinet is an **indoor enclosure** where you control light, humidity, temperature, and airflow to create a **stable microclimate** for your plants. It's especially useful for 'humidity-loving' and 'light-hungry' plants that struggle in normal room conditions. A good one combines an enclosed space, lighting, humidity and temperature control, and airflow. A climate controller (read: Floracle) then automates how those elements work together so your plants can thrive with minimal daily effort.

7. Placing the ACCESSOIRIES in the cabinet

Correct placement of the accessories is essential for accurate measurements and stable climate control. Floracle regulates the cabinet based on the conditions measured by the sensor. Placing accessories thoughtfully helps ensure these measurements represent the overall environment (not the local heat or humidity sources).The illustration below shows recommended placement and explains the reasoning behind it.



THE FOUR PRINCIPLES FOR OPTIMAL PLACEMENT

1. HEAT RISES
2. MOIST AIR SINKS
3. GOOD AIRFLOW DISTRIBUTES BOTH
4. THE SENSOR SHOULD MEASURE THE AVERAGE, NOT EXTREMES

HEATER

From experience we found that a heater cable that is equally spread out through the cabinet works best.

If you choose to use a single heat source, like a heating mat, place it low in the cabinet so heat can naturally distribute upward for even temperature control.

SENSOR

Place the sensor away from direct heat, humidity, and airflow sources.

This ensures the readings reflect the general conditions inside the cabinet, rather than local influences.

FANS

Fans distribute heat and humidity evenly through the cabinet.

Position fans so airflow circulates across the entire space, without blowing directly at the sensor.

LIGHTS

Plants receive light from above, but lights also emit heat.

Position lights to illuminate plants evenly from above, while keeping heat away from the sensor.

HUMIDIFIER

Moist air tends to sink and spread.

Position the humidifier so moisture can disperse throughout the cabinet before reaching the sensor.

8. Connecting the ACCESSOIRIES

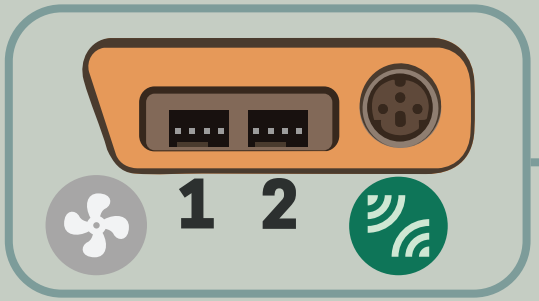
MAKE SURE FLORACLE IS NOT CONNECTED TO POWER WHILE CONNECTING ACCESSORIES

SIDE (SENSOR & FANS)

Connect the low-voltage accessories

FAN (GROUP) 1&2

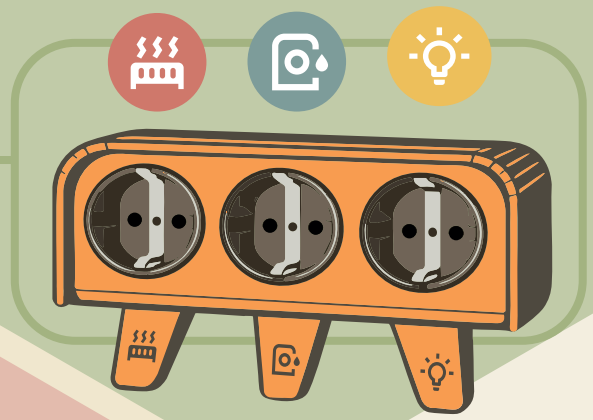
SENSOR (INCLUDED)

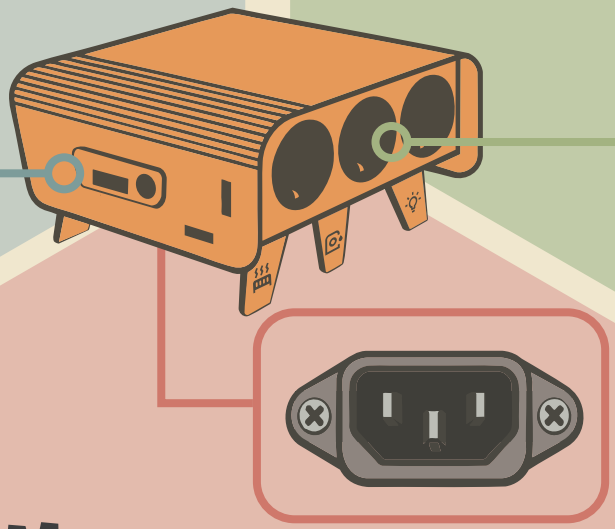


BACK (MAIN OUTLETS)

Connect the mains-powered accessories

- HEATER
- HUMIDIFIER
- GROW LIGHTS





BOTTOM (POWER)

Connect the supplied power cable to Floracle.
Only power on the device after all accessories are connected.

PAY ATTENTION TO SENSOR CONNECTOR ORIENTATION

DO NOT FORCE THE CONNECTOR, IT FITS ONLY ONE WAY!

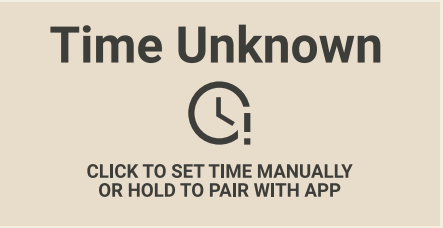
EACH OUTLET IS FUSED

DO NOT EXCEED THE SPECIFIED LOAD

9. Onboarding: APP or INTERFACE

When Floracle is powered on for the first time, the display shows “Time Unknown”. This is because several core functions (such as lighting schedules and day/night control) depend on accurate time.
Floracle includes a built-in real-time clock with battery backup, allowing it to keep time even when powered off. The time only needs to be set once. You can set the time manually on the device, or connect Floracle to the app to synchronise the time automatically.

Floracle works fully as a stand-alone device or as a connected device.
The comparison below shows the differences between both modes.



		STAND ALONE	CONNECTED (APP)
Time & Connectivity	Initial time setup	Manual on device	Automatic via time server
	Time keeping	RTC + battery	RTC + battery
	Power loss	Time preserved	Time preserved
	Internet required	No	Only for sync & updates
Control & Interaction	On-device control	Yes	Yes
	App control	No	Yes
	Smarthome integration	No	Yes, with Home Assistent
	Remote access	No	Local network
	Monitoring	E-ink display	App + E-ink + Home Assistent
Firmware & Data	Firmware updates	No	Yes
	Data storage	Local only (on device)	Local only (on device)

Floracle does not require an app to function. Connecting the app adds convenience, not dependency.

10. Onboarding: Setting time manually

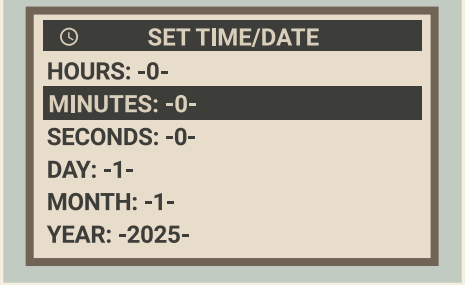
Floracle uses time for lighting schedules and day/night control. Set the time once to activate these features.
The built-in clock keeps time even when Floracle is powered off.

1 ENTER MENU

Click the knob to open
SET TIME/DATE MENU

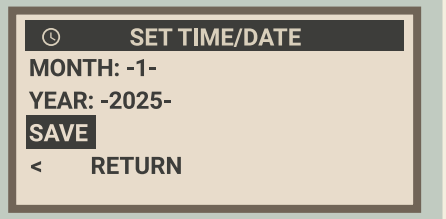
2 SET TIME/DATE

Set your current time (hours, minutes, seconds)
and the date (day, month, year)



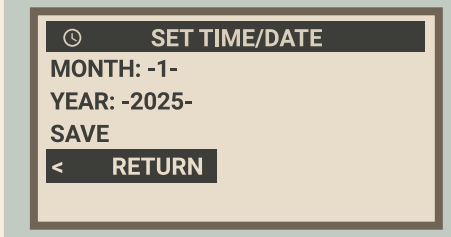
3 SAVE

Select SAVE to confirm



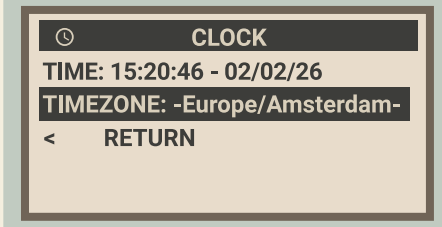
4 RETURN

Scroll to RETURN and click it.
This brings you to the CLOCK menu.



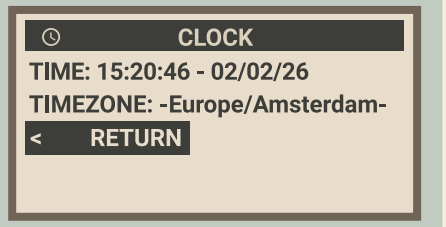
4 SELECT TIMEZONE

Scoll to TIMEZONE, click and rotate to select your timezone.
Click to confirm.



5 RETURN & EXIT

Scroll to RETURN and click
to go to the SYSTEM menu.
RETURN > EXIT MENU to finish



ROTATE

Turn the knob to browse through menu options or adjust a value

CLICK

Scroll to a menu item, then click the knob to enter, confirm or toggle

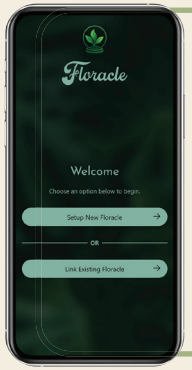
11. Onboarding: Connecting to the APP

Pairing Floracle with the app means connecting it to your WiFi network.
This allows:

- Controlling Floracle from your phone
- Optional Home Assistant integration
- Automatic time sync & firmware updates

1 INSTALL THE FLORACLE APP

Scan the QR code or browse to floracle.nl/get to install the Floracle app on your phone, or navigate to app.floracle.nl to control Floracle from your browser



2 OPEN THE APP

Open the app and click "Setup New Floracle"

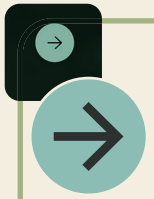
3 TYPE SSID AND PASSWORD*

Enter your WiFi SSID (network name) & password

DO NOT PRESS NEXT YET

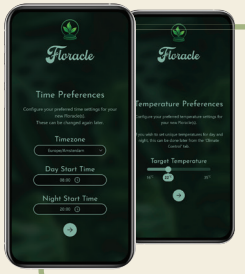
4 HOLD THE KNOB

Press and hold the knob on your Floracle for 10 seconds, until the bluetooth icon appears on the E-ink display.



5 CLICK NEXT

Now click the next icon to start the pairing process. This takes a few seconds



6 SET YOUR PREFERENCES

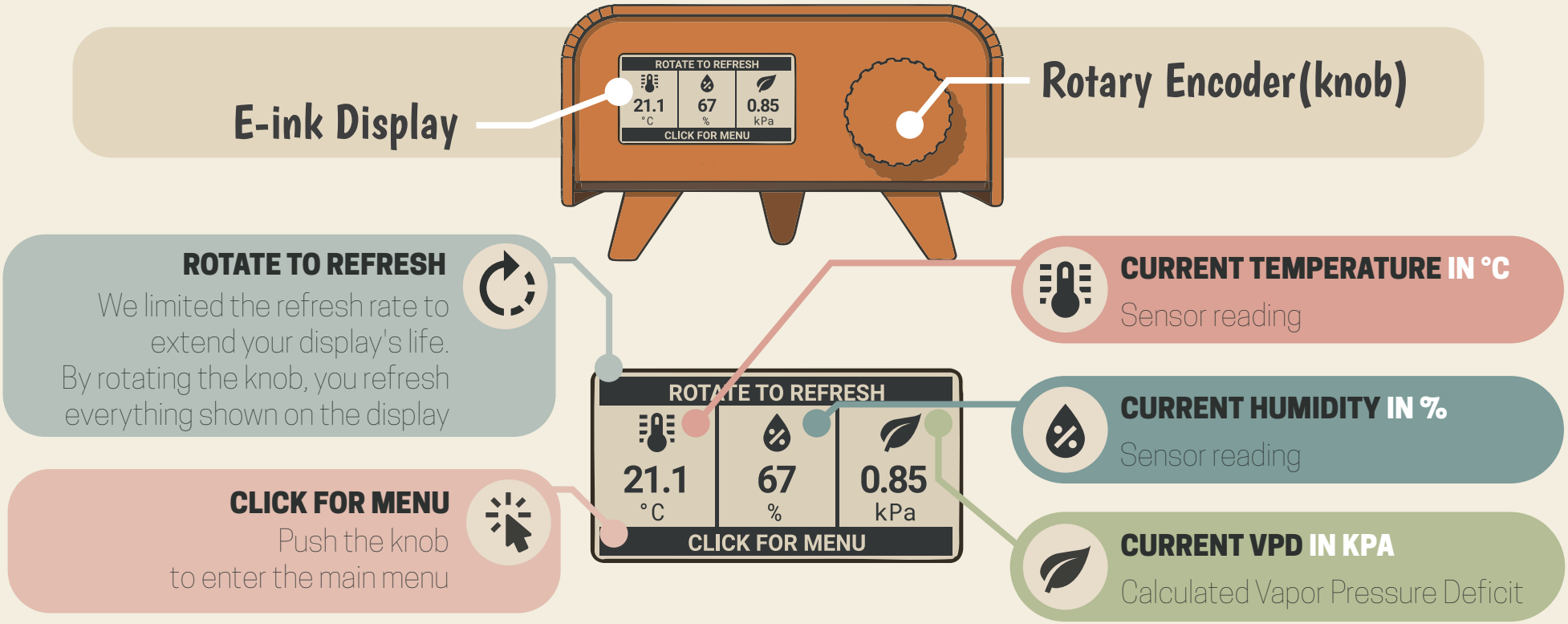
The final steps will be setting your time and temperature preferences

Floracle stores your Wi-Fi network name (SSID) and password only on the device itself. These details are used solely to connect Floracle to your local network. They are not uploaded to our server or somewhere 'in the cloud', not stored in the app, and not shared with external services. We designed Floracle to work without cloud dependency. Your data stays local by default, because we believe climate control (or any service) should not require giving up privacy.

12. Introduction to the INTERFACE

Now that Floracle is set up and ready to use, this is the screen you will see most often: the overview.

The overview displays the most important climate metrics at a glance and provides quick access to the main menu.
From here, you can check current conditions, refresh the readings,
or enter the menu to adjust settings.



13. Navigating the MENU

Floracle uses a simple and consistent menu structure for navigating and adjusting settings.

Rotate the knob to move through the menu or change a value. Depending on the menu item you click to select, edit a value, toggle a setting, or run a command.

NAVIGATING IS EASY!

1 **STEP 1: ROTATE**

Turn the knob to browse through menu options or adjust a value

2 **STEP 2: CLICK**

Scroll to a menu item, then click the knob to enter, confirm or toggle

MENU ITEM TYPES

MENU HEADER

TEMPERATURE
MAIN MENU

Shows the name of the current menu or submenu you are in.
This helps you keep track of where you are in the menu.

SUBMENU

LIGHTS
DAY/NIGHT TEMP MODE

- Opens another menu with related settings
- Click to enter

Select < RETURN to go back one level

ADJUSTABLE VALUE

TARGET TEMPERATURE: -22.0-
HOURS: -8-

A setting with a range of values that requires confirmation.

- Click to start editing (-22.0- changes into -22.0+)
- Rotate to change the value
- Click again to confirm and save

SWITCH

TOGGLE LIGHTS: -ON-
FAN MODE: -MANUAL-

A setting with two possible states (for example ON / OFF).

- Click to switch between states
- The change is applied immediately

You just need to click the switch item to toggle it

STATUS (READ ONLY)

HEATER STATUS: OFF
VERSION: 1.0.1

Displays information such as a device state or system value.
Status items are informational only and cannot be changed.

COMMAND

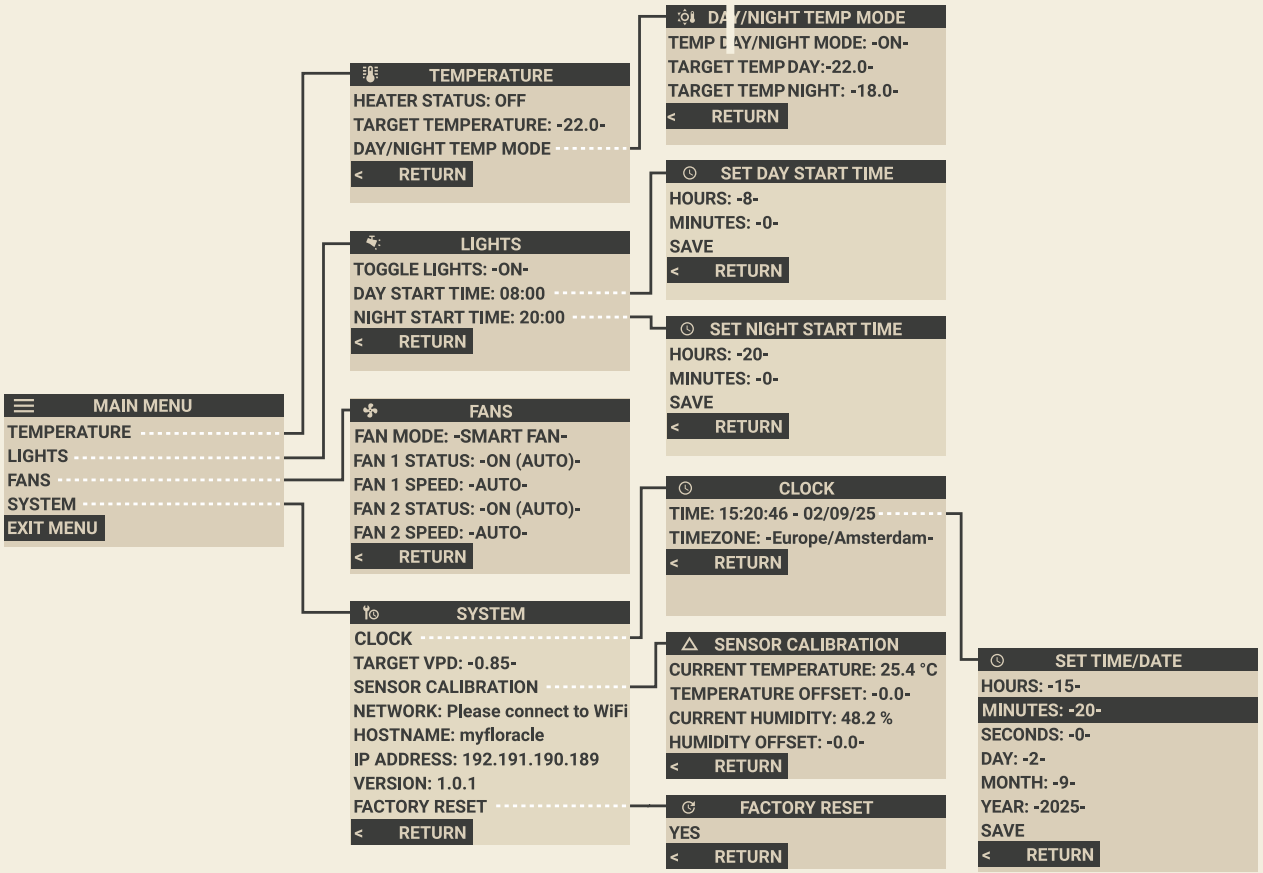
SAVE
EXIT MENU

Runs an action immediately.

- Click to execute the command

14. E-Ink Menu Structure

Floracle's menu is organised into a clear hierarchy, with all settings grouped by function. This overview shows the full menu structure and how the different sections relate to each other.



EACH SUBMENU EXPLAINED

ADJUST TEMPERATURE RELATED SETTINGS

TEMPERATURE

This menu allows you to set target temperatures and configure day and night temperature behaviour. You can also view the current heater status.

CONTROL THE LIGHTING SCHEDULE AND TOGGLE THE LIGHTS

LIGHTS

Use this menu to toggle lights on or off and set day and night start times that define the light cycle.

CONFIGURE HOW AIR CIRCULATION IS HANDLED INSIDE THE CABINET

FANS

This menu lets you switch between automatic and manual fan control and adjust individual fan behaviour when manual mode is enabled.

VIEW SYSTEM INFORMATION AND ADJUST ADVANCED SETTINGS

SYSTEM

This menu includes sensor calibration, clock and time settings, network information, firmware details, and factory reset options.

15. Floracle App: Overview

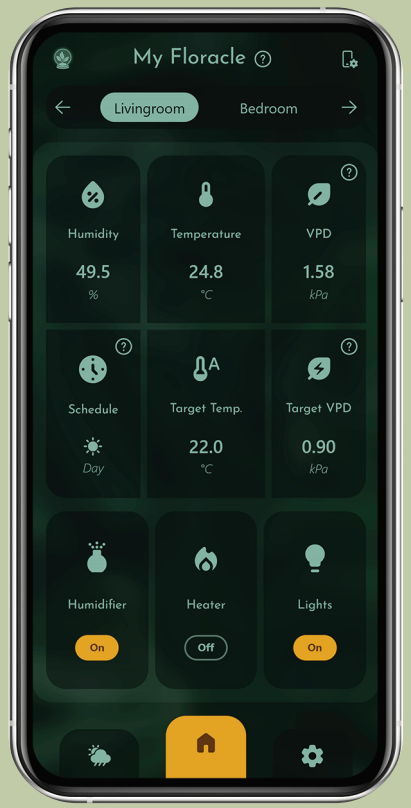
The Floracle app is organised into four clear sections. This overview shows the main screens and what each is used for. Each section is explained in more detail on the following pages.

CLIMATE CONTROL

On the Climate Control page you can adjust the lights, temperature, humidity (through VPD) and fans to your liking.

MY FLORACLE

The Status page (My Floracle) provides a live overview of how your Floracle, and therefore your cabinet, is performing.

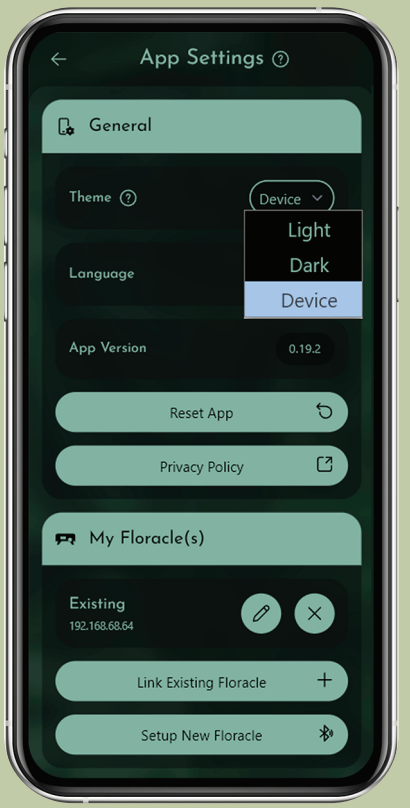


DEVICE SETTINGS

The Device Settings page gives you access to advanced configuration and technical details of your Floracle device.

APP SETTINGS

The App Settings page allows you to personalize your Floracle app experience, and add, edit or remove your Floracle(s).



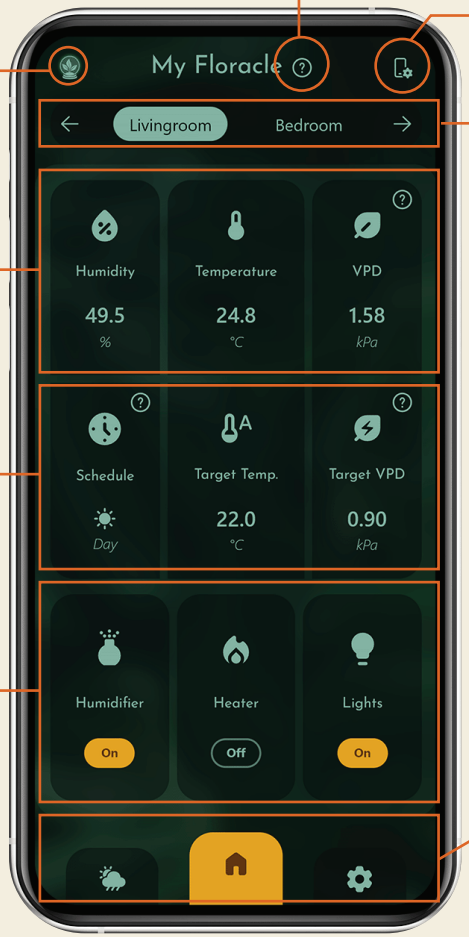
16. App page: My Floracle

> This is the status page, where you can view all the climate data and the status of you devices in real time.
> Monitor current humidity, temperature, VPD readings, and control device states like humidifier, heater, and lights.

Clicking on a questionmark icon opens a tooltip with more information on the corresponding value or area

This is the connection status. A green icon means you are connected, while a red icon indicates that the Floracle can not be reached (e.g. when your phone and the Floracle are not connected to the same network

Clicking on this icon brings you to the **App Settings** page



You can have multiple Floracle's connected to the app. You can scroll between them by clicking either of the arrows. The data shown on the **My Floracle** page is the data from the highlighted Floracle (in this example: "**Livingroom**")

The cards in the top row show you the climate inside your greenhouse cabinet, by showing the current humidity, temperature and VPD.

The cards in the second row show you the state of your schedule, and the climate targets you have set. If you want to change the targets, go to the '**Climate Control**' page.

In the footer you can switch between the **Status** page, the **Climate Control** page and the **Device Settings** page by clicking on the corresponding icons. The active page is highlighted (**My Floracle** in this image)

The cards in the bottom row show the state of your humidifier, heater, and lights so you always know which devices are active.

17. App page: Climate Control

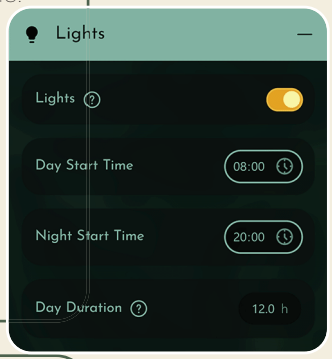
The Climate Control page is where you fine-tune your cabinet's climate. Here you adjust the lights, temperature, humidity (via VPD), and fans. Any changes you make, determine how Floracle controls your connected devices, and changes the climate for your plants.

The page is divided into four main sections: Lights, Temperature, VPD, and Fans. This overview shows which functions each section contains. Each function is explained in detail later in this manual.

LIGHTS

The Lights section controls your grow light schedule. Here you can turn lights on or off, set the start of the day and night phases, and define how long your plants receive light each day.

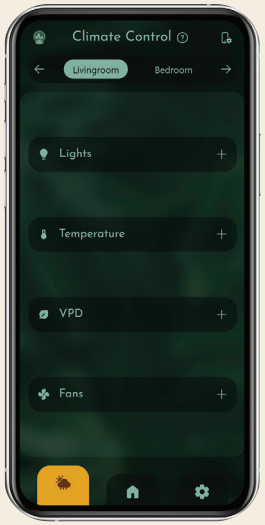
The light schedule also defines when Floracle switches between day and night behaviour, influencing temperature targets and overall climate rhythm.



VPD

The VPD section controls humidity using Vapor Pressure Deficit. Instead of setting relative humidity directly, you define how much moisture the air should be able to absorb, based on both temperature and humidity.

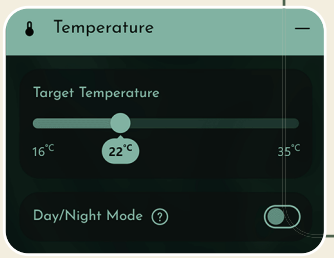
By targeting a specific VPD value, Floracle controls the humidifier to create conditions that better match how plants actually experience moisture.



TEMPERATURE

The Temperature section lets you control how warm your cabinet should be.
You can choose to use a single temperature target at all times, or separate day and night targets that follow your light schedule.

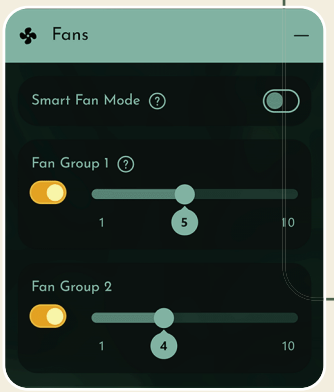
Floracle automatically controls the heater to maintain the active target temperature, ensuring stable conditions throughout the day and night.



FANS

The Fans section manages airflow inside your cabinet. You can let Floracle control the fans automatically using Smart Fan Mode, or switch to manual control to set fan speed and on/off behaviour yourself.

Proper airflow helps distribute heat and humidity evenly and prevents stagnant or humid pockets from forming.



18. App page: Device Settings

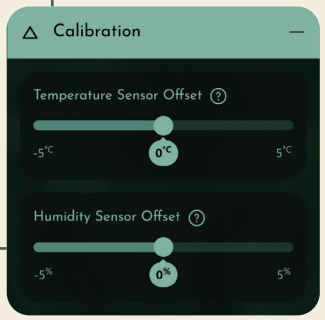
The Device Settings page gives you access to advanced configuration and system information for your Floracle.
Here you can calibrate sensors, manage time and network settings, and perform system-level actions such as updates or a factory reset.

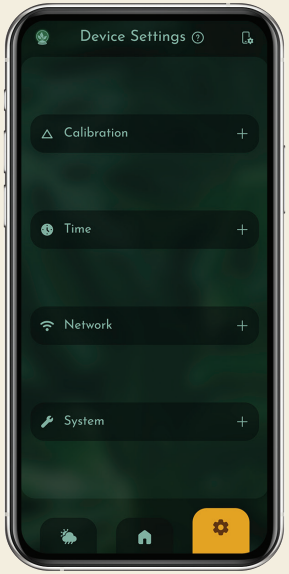
This page is intended for configuration and maintenance.
Each section is briefly introduced here and explained in detail later in this manual.

The Calibration section is used to fine-tune sensor accuracy.
If temperature or humidity readings differ from a known reference, you can apply an offset correction so Floracle works with reliable data.

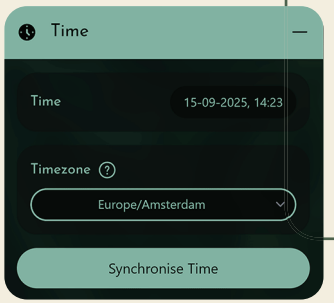
Proper calibration ensures that all climate control decisions are based on accurate measurements.

CALIBRATION





TIME



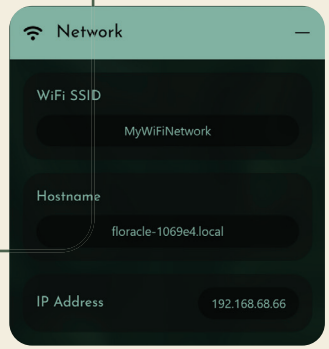
The Time section manages Floracle's internal clock and timezone. Accurate timekeeping is essential for correct day/night switching, light schedules, and temperature targets.

When connected to a network, Floracle can synchronise its time automatically to stay accurate, including daylight saving time changes.

The Network section shows information about Floracle's connection to your local network.
Here you can view the connected Wi-Fi network, hostname, and IP address.

These details are useful for monitoring connectivity and for integrations such as Home Assistant.

NETWORK



SYSTEM

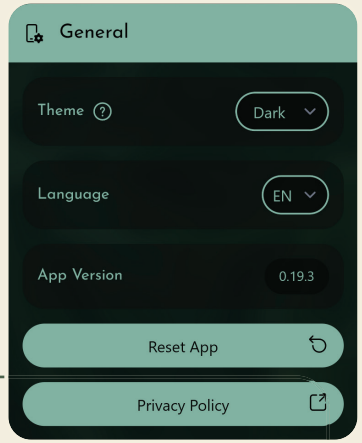
The System section contains firmware and maintenance functions.
You can view the current firmware version, check for updates, restart the device, or perform a factory reset.

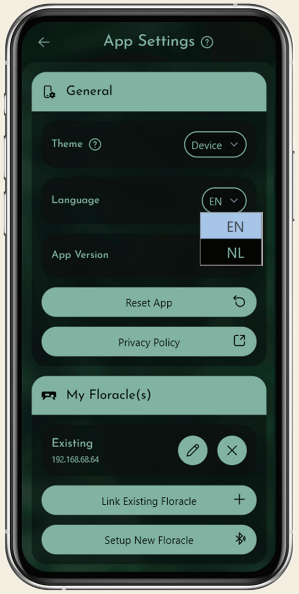
These options are intended for maintenance and troubleshooting, and do not affect daily climate control under normal use.

19. App page: App Settings

The App Settings page lets you manage preferences related to the Floracle app itself and how your Floracle devices are organised. Here you can adjust app appearance and language, manage connected Floracles, and access app-level information.

This page focuses on app behaviour and device management.
Each section is briefly introduced here and explained in more detail later in this manual.





GENERAL

The General section contains settings that affect how the Floracle app looks and behaves.
Here you can change the app theme, select the language, view the installed app version, reset the app, and access the privacy policy.

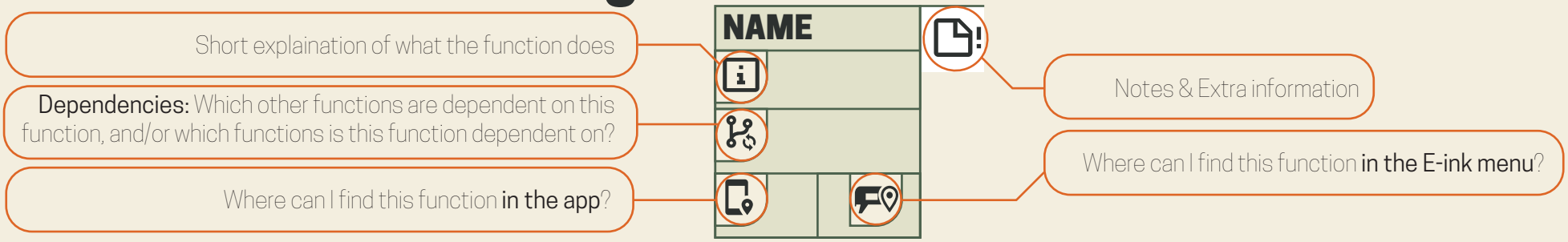
These settings apply only to the app and do not affect the configuration of your Floracle device.

MY FLORACLE(S)

The My Floracle(s) section is used to manage your connected Floracle devices.
You can view existing Floracles, link a Floracle that is already connected to your network, or set up a new one.

This section allows you to manage multiple Floracles from a single app, making it easy to switch between devices or expand your setup.

20. Functions & Settings in detail: FANS



SMART FAN MODE

Automatically controls fans based on climate changes.

- Activates fans when humidifier runs
- Adjusts runtime based on climate stability

Climate Control → Fans

Menu → Fans

Smart Fan runs the fans when the humidifier is on, so moisture is distributed through the cabinet. After the humidifier switches off, fans keep running for a short period. How long that period is, depends on how quickly humidity was changing. When temperature and humidity have stabilised (little change over recent readings), the fans switch off to save energy and noise.

When you turn Smart Fan Mode off, both fan groups are set to ON at their current speed.

FAN GROUP STATUS / TOGGLE

Enable or disable fans connected to fan connector 1 or fan connector 2

- When Smart Fan Mode is enabled, manual toggle of the fans is disabled

Climate Control → Fans

Menu → Fans

Speed is set in 10 steps (e.g. 10%, 20%, … 100%).
Each fan group can be set separately. The same speed is used when Smart Fan Mode is on. Floracle only decides when the fans are on or off, not the speed. You can connect both 4 pin fans (PWM) and 3 pin fans. PWM control is intended for 4-pin fans; 3-pin fans will run at full speed only.

FAN SPEED

Set fan rotation speed for fan1 and fan2

- You can set the speed for both fan (groups) independently (in 10% increments)
- Only available when using 4 pin PWM fans
- The set fan speed is also used as fan speed in when Smart Fan is enabled

Climate Control → Fans

Menu → Fans

Use the toggle to turn each fan group on or off. When Smart Fan Mode is on, Floracle controls the fans automatically and the manual toggle is disabled (the display shows “AUTO”). Switch Smart Fan Mode off if you want full manual control.

21. Functions & Settings in detail: LIGHTS

LIGHTS TOGGLE

Manually turns the grow lights ON or OFF.

- Overrides the automatic schedule
- Automatic control resumes at the next day/night transition

Climate Control → Lights

Menu → Lights

When you turn the lights on or off manually, Floracle remembers this until the next day/night change. At that moment it switches back to the schedule: lights follow the day start and night start times again.
If the display shows “Time Unknown”, that means you did not set the time. The lights stay off until time has been set; the schedule needs a valid time to run.
On page 13 and 14 we explain how to set the time.

DAY START TIME

Defines when the Day phase begins.

- Turns lights ON
- Activates Target Day Temperature (if enabled)

Climate Control → Lights

Menu → Lights → Day Start Time

Day start and night start are times of day (e.g. 08:00 and 20:00).
The day phase is the period between day start and night start.
If you set night start earlier than day start (e.g. night 02:00, day 08:00), night is treated as starting on the next calendar day.

NIGHT START TIME

Defines when the Night phase begins.

- Turns lights OFF
- Activates Target Night Temperature (if enabled)

Climate Control → Lights

Menu → Lights → Night Start Time

Night start is the time when the day phase ends: lights go off and, if day/night temperature mode is on, the target night temperature is used.
Together with day start time it also defines the value shown for “Day duration”.

DAY DURATION

Displays the total length of the Day phase.

- Calculated automatically from start times
- Informational only

Climate Control → Lights

n/a

By changing day and night start times, you effectively alter day length.
Many plants use day length (photoperiod) to sense the time of year.
Shorter “days” can mimic autumn and encourage flowering or dormancy while longer “days” can mimic summer and keep plants in a vegetative phase.
Adjusting the schedule lets you gently steer your plants into the growth or flowering phase you want.

22. Functions & Settings in detail: TEMPERATURE

DAY/NIGHT MODE

Enables separate temperature targets for day and night.

- Enables Target Day and Target Night Temperature
- Uses light schedule for switching

Climate Control → Temperature

Menu → Temperature → Day/Night Temp Mode

With Day/Night Mode on, Floracle switches between the day and night temperature targets at the same moments the lights switch (day start and night start). So the same schedule that controls the lights also controls which temperature target is active. If time is not set or not synced, Floracle uses the single Target Temperature for both phases until time is available.
On page 13 and 14 we explain how to set the time.

TARGET TEMPERATURE (SINGLE)

Sets a single temperature target used at all times (during day and night).

- Used when Day/Night Mode is disabled
- Controls heater continuously

Climate Control → Temperature

Menu → Temperature

This value is only used when Day/Night Mode is on and the cabinet is in the day phase (lights on). Floracle keeps the heater on until the measured temperature reaches the target, then switches it off. A small band (about 1°C) around the target avoids the heater constantly switching on and off near the setpoint.

TARGET DAY TEMPERATURE

Sets the desired temperature during the Day phase.

- Controls heater behaviour during Day
- Only active when Day/Night Mode is enabled

Climate Control → Temperature

Menu → Temperature → Day/Night Temp Mode

In single mode, one target is used around the clock, regardless of the light schedule. This is the default. It is also used as a fallback when Day/Night Mode is on but the time has not yet been set or synced.

TARGET NIGHT TEMPERATURE

Sets the desired temperature during the Night phase.

- Controls heater behaviour during Night
- Only active when Day/Night Mode is enabled

Climate Control → Temperature

Menu → Temperature → Day/Night Temp Mode

This value is only used when Day/Night Mode is on and the cabinet is in the night phase (lights off). Many growers set a lower night target to save energy and to mimic the natural drop in temperature after sunset, which can benefit plant health and growth cycles.

23. Functions & Settings in detail: DEVICE SETTINGS

TEMPERATURE SENSOR OFFSET

Applies a correction to temperature readings

- Affects all temperature-based logic
- Should be calibrated against a reliable reference

Device Settings → Calibration

Menu → System → Sensor Calibration

The offset is added to the raw sensor value. Every use of temperature (heater setpoint, VPD, display) uses this corrected value. Calibrate with a reliable reference thermometer in the same conditions as the sensor.

HUMIDITY SENSOR OFFSET

Applies a correction to humidity readings

- Affects VPD calculation and humidifier control
- You can use the salt method to calibrate the humidity sensor, explained in detail later in this manual

Device Settings → Calibration

Menu → System → Sensor Calibration

The offset is added to the raw humidity reading. VPD and humidifier control use this corrected value. For calibration, the salt test (e.g. saturated salt in a sealed container) gives a known relative humidity at a given temperature. We explain in detail how to calibrate the humidity sensor with the 'salt method' on page 30 in this manual.

TIME & TIMEZONE

Defines Floracle's internal clock and location.

- Required for schedules and day/night switching
- Supports daylight saving time (based on your selected timezone)

Device Settings → Time

Menu → System → Clock

Floracle uses a DS3231 Real Time Clock chip in combination with a backup battery. That means that your Floracle keeps maintianing the time of the day even the power is removed. The DS3231 has a maximum drift (how much it deviates from the actual time) of 0,67 seconds a day. That means that when you keep your Floracle powered on without a reboot for a year, the maximum deviation is about 4 minutes.

SYNCHRONISE TIME

Synchronises Floracle's clock with an online time server (NTP server)

- When (re)started Floracle synchronises time once automaticly
- Clicking synchronise time forces a synchronisation manually.

Device Settings → Time

N/a

Floracle uses an NTP server (internet time) to set the Real Time Clock chip. After a restart, if the clock is invalid and WiFi is connected, Floracle tries to sync automatically. Press “Synchronise time” to trigger a sync at any time (e.g. after changing timezone or to correct drift).

NETWORK INFORMATION

Displays Wi-Fi SSID, hostname, and IP address of your Floracle

- Your router chooses the hostname and IP address of your Floracle(s)
- Use the hostname or IP to add a already WiFi connected Floracle to the app.

Device Settings → Network

Menu → System

The hostname is usually the device name plus a suffix (e.g. from the MAC). Your router assigns both the hostname and the IP. Use the hostname or IP in the app to add a Floracle that is already on your Wi-Fi. To add a Floracle that is already connected to your network to the app, you simply find the IP and hostname in the e-ink menu on the controller: push the knob to open the menu. Rotate to **system** and click to enter. In the **system** menu you will find the **hostname**, and **ip address**.

FIRMWARE VERSION & UPDATE

Shows installed firmware and allows updates (when available).

- We improve Floracle by offering updates with bug fixes and new features
- When there is a new firmware version available, press the update button to install it.
- You decide if you want to update, not us. Updates will never install automaticly.

Device Settings → System

Menu → System

The version number is shown on the device (Menu → SYSTEM → VERSION) and in the app. You **cannot** start a firmware update from the controller (e-paper menu); the update button is only in the app (Device Settings → System). When an update is available there, use it to install. Floracle never installs updates by itself; you choose if and when to update.
Do not remove power while an update is in progress (the display will show “Installing Update”). Cutting power during an update can corrupt the firmware and make the device unusable. In that case contact support.

RESTART

Restarts Floracle safely

- Temporarily interrupts connected devices
- Does not erase any settings, just a reboot

Device Settings → System

n/a

Restart is a reboot, all settings are kept. Connected accessories (heater, lights, etc.) will briefly lose power. Use after changing network settings or if the device is unresponsive.
Restart is not available from the e-paper menu. If you need to reboot without the app, **unplugging power has the same effect** and is not harmful: Floracle does not need a “graceful” shutdown. Settings are stored and the clock keeps time on battery backup, so it's safe to power off and on at any time (except during a firmware update)

FACTORY RESET

Restores Floracle to factory defaults

- Erases Wi-Fi credentials and settings (e.g. target temperature)
- Intended for ownership transfer or fresh setup

Device Settings → System

Menu → System → Factory Reset

Factory reset removes Wi-Fi credentials and stored settings (e.g. target temperature, schedule). The device returns to out-of-box state. Use when handing the device to someone else or for a clean setup. This action cannot be undone.

24. Functions & Settings in detail: STATUS & MONITORING

CURRENT TEMPERATURE

Shows the live air temperature inside the cabinet.

- Influenced by heater, lights, ambient conditions
- Used to determine heater behaviour and VPD calculation

My Floracle → Temperature | Home screen

This is the temperature at the sensor (including any calibration offset). It drives heater control and is one of the inputs to the VPD calculation. Place the sensor away from direct heat from lights or heater for a representative reading.

CURRENT HUMIDITY

Shows the current relative humidity inside the cabinet.

- Influenced by humidifier, airflow, temperature
- Used together with temperature to calculate VPD

My Floracle → Humidity | Home screen

Relative humidity at the sensor (including any calibration offset). Together with temperature it determines VPD. Good airflow and sensor placement help the reading reflect the whole cabinet.

CURRENT VPD

Shows the current Vapor Pressure Deficit, representing how much moisture the air can still absorb.

- Calculated from temperature and humidity
- Used to control the humidifier

My Floracle → VPD | Home screen

VPD (vapor pressure deficit) is derived from the current temperature and humidity. It represents how much more moisture the air could hold. Floracle compares this value to your target VPD to decide when to run the humidifier. If you want to learn more about VPD, and why Floracle uses it, read "insight: VPD" on page 31 of this manual.

SCHEDULE STATUS (DAY / NIGHT)

Indicates whether Floracle is currently in Day or Night phase.

- Influenced by day/night start times
- Determines active temperature targets and light state

My Floracle → Schedule | n/a

“Day” or “Night” shows which part of the light schedule you are in. It follows the day start and night start times. This state decides whether the lights are on and which temperature target (day or night) is active when Day/Night temperature mode is enabled.

25. Functions & Settings in detail: ACCESSOIRY STATE

HUMIDIFIER

Indicates whether the humidifier is active.

- Controlled automatically by Target VPD
- Humidifier turns on when the (Current) VPD is HIGHER than the target VPD

My Floracle → Humidifier

n/a

The humidifier can not be toggled manually. We chose not to implement this, because of the possible negative concequences when the humidifier is enabled by mistake. If you want to intentionally enable your humidifier (for testing purpouses), adjust the target VPD to a value LOWER than the current VPD.

HEATER

Indicates whether the heater is active.

- Controlled automatically by Target temperature, Target day temperature or Target night temperature
- Heater turns on when (current) temperature is LOWER than the target temperature

My Floracle → Heater

Menu → Temperature → Heater status

The heater can not be toggled manually. We chose not to implement this, because of the possible negative concequences when the heater is enabled by mistake. If you want to intentionally enable your heater (for testing purpouses), adjust the target temperature (with day/night temperature disabled) to a value higher than the current temperature.

LIGHTS

Indicates whether the lights are active.

- Controlled automatically by the current phase (day or night)
- Can be switched manually, therefore overwriting the schedule

My Floracle → Lights

Menu → Lights → Toggle lights

You can manually toggle the grow lights. Useful when you want to do some plant maintenance in the evening or you need a long sleep in the morning.
Any manual changes that you made during a phase, will be reset when the phase ends. EXAMPLE: Turning the lights off during the day phase means they will remain off the rest of the day. Day ends, the next phase is the night (lights remain off, since that is scheduled). When the night ends, the day starts again and the lights turn on (as scheduled)

26. Calibrating the humidity sensor using the salt method

Calibrating Your Floracle Humidity Sensor using the salt method

1

Place a teaspoon of regular table salt in a bottle cap or small cup.
Add just a few drops of water, so the salt becomes damp, but not dissolved.

2

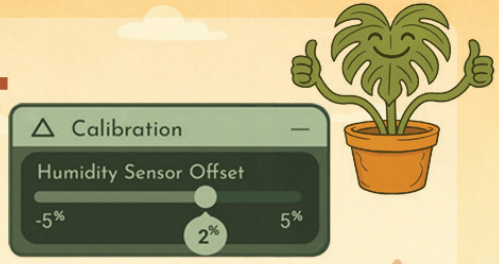
Put the damp salt and your Floracle's humidity sensor inside a airtight zip-lock bag. Make sure the connector of the sensor cable is outside of the bag and there's some air inside before sealing it.

3

Leave the bag closed for at least 6 hours. The air inside will stabilise at 75% relative humidity.

Connect the sensor and check the humidity reading on the e-ink display or in the Floracle app.

4



If the reading shows a value other than 75%, calculate the difference.

Example: If the sensor reads 73% instead of 75%, so it's 2% to low. Set the Humidity Sensor Offset to +2% to correct that in the e-ink menu or the Floracle app

Once set, Floracle will always apply this correction automatically.

27. Insight: VPD (Vapor Pressure Deficit)

What is VPD?

Vapor Pressure Deficit (VPD) is the difference between how much moisture the air *could* hold when fully saturated and how much it *actually* holds. It is expressed in pressure units, usually kilopascals (kPa).

So VPD describes the "thirst" or "drying power" of the air: a high VPD means the air can still take up a lot of water; a low VPD means the air is close to saturated. At 0 kPa the air is 100% saturated and there is no gradient for moisture to leave the leaves.

Why do growth experts (and Floracle) use VPD?

Plants continuously lose water vapour through their leaves (transpiration). That flow of water:

- Pulls water and dissolved nutrients from the roots through the plant
- Helps cool the plant
- Is linked to how open the stomata are and how much CO_2 the plant can take in for photosynthesis

The **driving force** for this water loss is the difference in vapour pressure between the moist interior of the leaf and the surrounding air; in other words, VPD. So VPD has a direct, predictable relationship with transpiration and water use, which is why greenhouse and indoor growers use it to steer growth and health.

- **Too low VPD** (air too humid): transpiration and nutrient flow slow down, which can lead to weaker growth and mineral deficiencies (e.g. calcium). It also favours fungal diseases.
- **Too high VPD** (air too dry): plants lose water very quickly and can wilt or show stress (e.g. leaf edge burn, fruit cracking in some crops) if water supply cannot keep up.

In controlled environments, experts therefore aim for a **target VPD range** (often around 0.5–1.2 kPa depending on crop and stage) instead of only aiming for "high" or "low" humidity.

Why is VPD better than humidity alone?

Relative humidity (RH) is "how full the air is" as a percentage of what it can hold. But the amount of water air can hold **depends strongly on temperature**: warmer air can hold much more vapour than cooler air. So the *same* RH at different temperatures means very different conditions for the plant.

Example (from extension literature): if you keep RH constant at 70% and raise temperature in steps (e.g. 16 °C → 24 °C → 32 °C), VPD can range from about 0.55 kPa to 1.45 kPa. So "70% RH" alone does not tell you whether the air is gently or aggressively pulling moisture from the leaves.

VPD, by contrast, is a measure that reflects the actual *pressure difference* that drives water out of the leaf. It is much less dependent on temperature in the same way RH is, and it correlates directly with transpiration and plant water loss. That is why greenhouse and indoor growing guides recommend managing **VPD** (via both temperature and humidity) rather than RH alone, so you control what the plant actually "feels" and avoid misleading readings.

In short

- **VPD** = how much more moisture the air can absorb (in kPa).
- **Experts use it** because it directly drives transpiration, nutrient flow, and stress (too low → disease and poor uptake; too high → wilting and stress).
- **It's better than humidity alone** because RH changes meaning with temperature, while VPD reflects the real "drying power" of the air and predicts plant behaviour more reliably.

Floracle lets you set a **target VPD** so the humidifier keeps the cabinet in a range that suits your plants, instead of chasing a single humidity percentage that can mean different things at different temperatures.

If you want to learn more about VPD, you can find scientific and reliable sources here, here and on the Wikipedia page about VPD.

28. Insight: Smart Fan mode

What is Smart Fan Mode?

Smart Fan Mode lets Floracle decide when the fans run, while you still set how fast they run (fan speed). The goal is to only move air when it helps the climate especially when the humidifier has been on or when temperature and humidity are still changing. The fans turn off when the cabinet is stable, so you get even conditions without running the fans all the time.

How does it work?

The firmware runs a Smart Fan routine every 30 seconds. Each run it:

1. Reads the current sensor values (temperature and relative humidity)
2. Keeps a short history of those values
   The last 5 readings (about 2.5 minutes at 30 s intervals) are stored. That history is used only to see how much temperature and humidity are changing over time, not the absolute setpoints.
3. Computes simple "rate of change": (newest reading – oldest reading) ÷ number of readings → average change per 30 s in °C or %RH.
   So the system is only asking: "Is the climate still shifting, or has it settled?"
4. Decides whether the fans should be on using two ideas: humidifier + distribution, and stability.

Triggers: when do the fans run?

The fans are turned on when any of the following is true:

1. Humidifier is on

If the humidifier is running, the fans are always on. That way the added moisture is mixed through the cabinet instead of staying near the humidifier.

2. Post-humidification distribution

When the humidifier switches off, the fans keep running so the moisture that was just added can be spread through the space.

That period is dynamic:

30 second plus an additional variable time: the faster humidity was changing (from the history), the longer the fans keep running: about 60 seconds extra per 1% RH change (per 30 s interval). So right after a humidifier burst, when humidity was rising quickly, the distribution time is longer; when humidity was almost flat, it stays closer to the base 30 s.

3. Climate "unstable" (after humidifier off & distribution period end)

- **Temperature**: rate of change ⩾ about 0.2 °C per 30 s interval → "unstable" → fans on.

- **Humidity**: rate of change ⩾ about 0.5 % RH per 30 s interval → "unstable" → fans on.

So after watering, lights-on, or other changes, the fans run until temperature and humidity have settled (low rate of change over the last few readings). Then the fans are allowed to turn off.

The fans are turned **off** only when:

- Smart Fan Mode is on, and The humidifier is off, and The post-humidification distribution period has ended, and both temperature and humidity are stable (rate of change below the thresholds above).

In short

- **Smart Fan Mode** = Floracle turns the fans on or off automatically; you keep control of fan speed.

- **Triggers for ON**: humidifier running, or post-humidification distribution period, or temperature/humidity still changing (unstable).

- **Trigger for OFF**: humidifier off, distribution period over, and temperature and humidity both stable (low rate of change over the last few 30 s readings).

- **Data**: only the last few temperature and humidity samples are used, to compute simple rates of change; no long-term logging or complex models.

This keeps the cabinet mixed when it matters (humidifier, or climate still settling) and lets the fans rest when the environment is stable.

29. Glossary (Definitions)

Page numbers in parentheses (p. ...) show where the subject is discussed in the manual.

DAY PHASE - The period between Day Start Time and Night Start Time when the grow lights are on. Used to apply Target Day Temperature (if Day/Night Mode is enabled) and to show "Day" in the schedule status. **(p. 23, 24, 27)**

DAY START TIME - The time of day when the day phase begins: lights turn on and, if Day/Night Temperature Mode is enabled, the Target Day Temperature becomes active. Set in the Lights menu (E-ink menu) or Climate Control → **Lights. (p. 23)**

E-INK DISPLAY - The low-power display on the Floracle controller that shows current temperature, humidity, VPD, and the menu. Refresh rate is limited to extend display life; rotating the knob refreshes the display. **(p. 6, 14)**

FACTORY RESET - A system action that restores Floracle to out-of-box state: Wi-Fi credentials and stored settings (e.g. target temperature, schedule) are erased. Intended for ownership transfer or a clean setup. Found in Device Settings → System (app) or Menu → System → Factory Reset. Cannot be undone. **(p. 26)**

FAN GROUP - Floracle has two fan outputs (Fan Group 1 and Fan Group 2). Each group can be toggled and have its speed set independently. Speed is set in 10% steps; the same speed is used when Smart Fan Mode is on. **(p. 22)**

FLORACLE - The name of the physical unit (controller) where you plug in your accessoiries (lights, heater, etc.). **(p. 6, 7)**

FIRMWARE - The software running inside the Floracle controller. Updates (bug fixes and new features) are installed manually from the app (Device Settings → System). Do not remove power during an update. **(p. 26)**

GREENHOUSE CABINET - An enclosed, climate-controlled space (e.g. a glass-fronted cabinet) used as a small indoor greenhouse. Typically includes grow lights, humidifier, heater, and fans. Floracle is designed to control these elements in such a setup. **(p. 8)**

GROW LIGHTS - Lighting (often full-spectrum LEDs) that provide intensity and day length for plants inside the cabinet. Floracle switches them on and off according to the Day Start Time and Night Start Time. **(p. 6, 23)**

HEATER - A mains-powered heating device (e.g. heating cable or mat) connected to Floracle's heater outlet. Floracle turns it on when the measured temperature is below the active target (Target Temperature, or Target Day/Night Temperature when Day/Night Mode is on). **(p. 6, 24, 28)**

HOME ASSISTANT - Optional smarthome integration when Floracle is connected to Wi-Fi. Allows monitoring and control of Floracle from your home automation system. Data stays on your local network. **(p. 7, 11, 20)**

HUMIDIFIER - A mains-powered device connected to Floracle's humidifier outlet. This device add moisture to the air. Floracle runs it when current VPD is higher than your Target VPD, so the cabinet stays within the desired moisture range. Cannot be toggled manually. **(p. 6, 28)**

HUMIDITY SENSOR OFFSET - A calibration value added to the raw humidity reading. Used to correct the sensor against a known reference (e.g. salt method). Affects VPD calculation and humidifier control. Set in Device Settings → Calibration (App) or Menu → System → Sensor Calibration. (E-ink menu)**(p. 25, 30)**

INTENDED USE - Floracle is intended to control lighting, humidifiers, heating cables or mats, and 12 V DC fans in indoor plant cabinets or similar controlled environments. Use outside this purpose may be unsafe and can void warranty. **(p. 4)**

LIGHTS TOGGLE - Manual override to turn grow lights on or off. Overrides the schedule until the next day/night transition, when automatic control resumes.
Available on the device (Menu → Lights) and in the app (Climate Control → Lights). **(p. 23, 28)**

NIGHT PHASE - The period from Night Start Time until the next Day Start Time.
Lights are off and, if Day/Night Temperature Mode is enabled, Target Night Temperature is used. **(p. 23, 24, 27)**

NIGHT START TIME - The time when the day phase ends: lights go off and, if Day/Night Mode is on, Target Night Temperature becomes active.
Together with Day Start Time it defines Day duration (photoperiod). **(p. 23)**

NTP (NETWORK TIME PROTOCOL) - Internet time service used by Floracle to synchronise its internal clock when connected to Wi-Fi.
Ensures correct day/night switching, light schedules, and temperature targets. **(p. 11, 25)**

PHOTOPERIOD - The length of the day phase (day length). Many plants use it to sense season; shorter days can encourage flowering or dormancy, longer days vegetative growth.
Set by Day Start Time and Night Start Time. **(p. 23)**

PWM (PULSE WIDTH MODULATION) - Method used by Floracle to control fan speed for 4-pin fans. Speed is set in 10% steps. Only 4-pin fans support PWM.
3-pin fans run at full speed only. **(p. 22)**

RELATIVE HUMIDITY (RH) - The amount of moisture in the air as a percentage of the maximum it could hold at that temperature. Floracle displays current RH; it is used together with temperature to calculate VPD. **(p. 27)**

RTC (REAL TIME CLOCK) - Floracle's built-in clock (DS3231 with battery backup). Keeps time even when the device is powered off.
Time is set manually on the device or automatically via the app (NTP). **(p. 12, 25)**

SALT METHOD - Calibration method for the humidity sensor using a saturated salt solution in a sealed container to create a known relative humidity at a given temperature. Described in detail in the manual (Device Settings / Calibration section). **(p. 25, 30)**

SENSOR CABLE - The cable that connects the temperature and humidity sensor to the Floracle controller.
Must be placed away from direct heat, humidity, and airflow sources so readings represent the general cabinet climate. **(p. 5, 9, 10)**

SMART FAN MODE - Mode in which Floracle decides when the fans run; you set fan speed. Fans run when the humidifier is on, during a post-humidification distribution period, or when temperature or humidity are still changing. They turn off when the cabinet is stable. See "Insight: Smart Fan mode" in the manual. **(p. 22, 31)**

SSID - The name of your Wi-Fi network. Entered during app pairing so Floracle can connect to your local network. Stored only on the device; not uploaded to the cloud. **(p. 13)**

STAND-ALONE MODE - Using Floracle without the app or Wi-Fi. Time is set manually on the device; control is via the E-ink display and rotary knob.
All core functions work. However there is no firmware updates or remote access. **(p. 11)**

TARGET DAY TEMPERATURE - The desired temperature during the day phase. Used only when Day/Night Temperature Mode is enabled.
Floracle runs the heater to reach this target when the cabinet is in the day phase. **(p. 24)**

TARGET NIGHT TEMPERATURE - The desired temperature during the night phase. Used only when Day/Night Temperature Mode is enabled.
Often set lower than day target to save energy and mimic natural temperature drop. **(p. 24)**

TARGET TEMPERATURE (SINGLE) - A single temperature target used at all times when Day/Night Temperature Mode is off.
Also used as fallback when Day/Night Mode is on but time has not been set or synced. **(p. 24)**

TARGET VPD - The Vapor Pressure Deficit value you want inside the cabinet. Floracle runs the humidifier when current VPD is higher than this target, so conditions match how plants experience moisture. Set in Climate Control → VPD or Temperature/VPD menus. **(p. 19, 30)**

TEMPERATURE SENSOR OFFSET - A calibration value added to the raw temperature reading. All temperature-based logic (heater, VPD, display) uses this corrected value. Calibrate with a reliable reference thermometer. **(p. 25)**

TIMEZONE - Floracle's setting for your local time zone. Used for the internal clock and correct day/night and schedule behaviour; supports daylight saving time. Set in Menu → System → Clock → Timezone or in the app (Device Settings → Time). **(p. 12, 25)**

TRANSPIRATION - The loss of water vapour through plant leaves. Driven by VPD; it pulls water and nutrients from the roots and is linked to stomata opening and CO_2 uptake. VPD is used to manage transpiration and avoid stress or disease. **(p. 30)**

VPD (VAPOR PRESSURE DEFICIT) - The difference between how much moisture the air could hold when saturated and how much it actually holds, expressed in kilopascals (kPa). It describes the "drying power" of the air and drives transpiration. Floracle uses target VPD to control the humidifier. See "Insight: VPD" in the manual. **(p. 27, 30)**

WI-FI - Optional connection that enables the Floracle app, time sync, firmware updates, and Home Assistant. Credentials are stored only on the device; data stays local. Floracle works fully without Wi-Fi (stand-alone). **(p. 11, 13, 26)**