



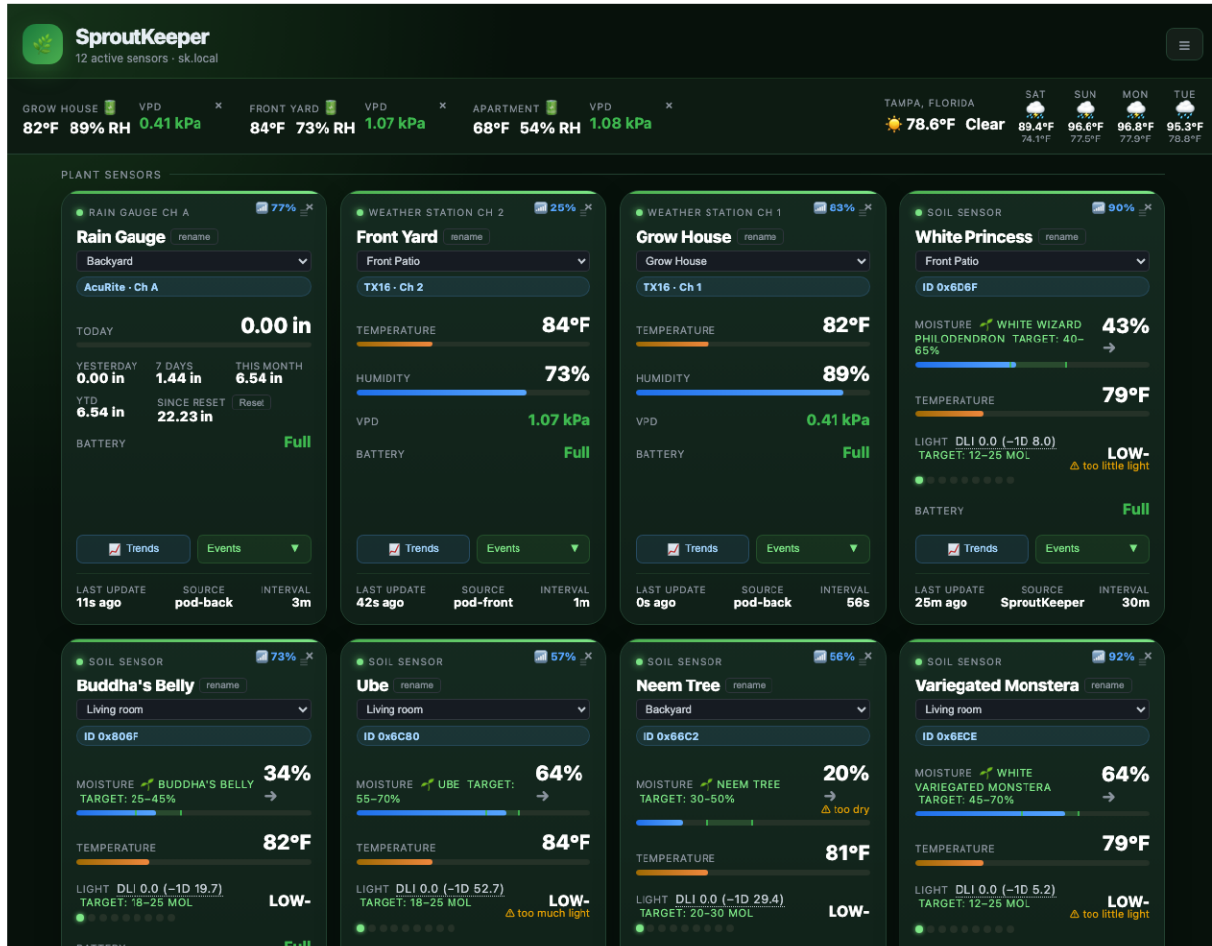
Smart Garden Automation Hub

User Manual - Current Hub Features

Soil Sensors	Moisture, Temperature, Light, Battery, DLI, Trend
Weather Stations	Temperature, Humidity, VPD (kPa), 5-Day Forecast
Rain Gauge	Today, Yesterday, 7 Days, Month, YTD
USB Water Pump	Soil event trigger, built-in relay + remote SproutPod port
USB Grow Light	Timer-controlled, hub or remote SproutPod port
VPD Monitoring	Vapor pressure deficit, color-coded zones, tap for tips
Event Automation	4 events per sensor, AND/OR 2nd condition, timer, enforce
Notifications	Email, SMS, Phone call on any sensor threshold
Freeze / Frost	Real-time & forecast cold alerts with day + temperature
Home Assistant	MQTT auto-discovery, Backup & Restore all settings

SproutKeeper Hub

Smart garden automation hub



FIRST SCREEN IN THE LOCAL APP

A local system for compatible sensors, automations, and outputs.

Important: Install the Hub indoors, away from water. Verify every automation with safe loads before unattended use.

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1 Overview



Pro-grade TDR wireless soil sensor - stainless-steel triple probes, IPX5 waterproof, 8-12 month battery life on 2xAAA

SproutKeeper is a complete growing system built around three components working together: the **SproutHub** - the central 433 MHz receiver and web dashboard; **SproutPod** range extenders - for large spaces or remote USB relay control; and a family of wireless sensors including soil moisture probes, weather stations, and rain gauges, plus Kasa, Shelly, and SproutKeeper smart plugs for automated watering and lighting. No app download, no cloud account - everything runs locally on your home network.

System Components

SproutHub	Central 433 MHz receiver and web dashboard - the heart of the system. Hosts the dashboard at sproutkeeper.local , processes sensor data, runs automations, and controls smart plugs and USB devices.
SproutPod	Range extender and USB relay. Receives 433 MHz sensor packets independently and forwards them to the SproutHub over Wi-Fi - extending coverage to large growing spaces while adding a local USB-A relay port for pumps or grow lights.

Soil sensors	Wireless TDR probes - transmit moisture %, soil temperature, light level, DLI, moisture trend, and battery status every 30-60 minutes.
Weather stations	Report outdoor air temperature and humidity; used to calculate VPD (kPa), 5-day weather forecast, and freeze/frost alerts.
Rain gauges	Track cumulative rainfall: Today, Yesterday, 7-Day, Month, and Year-to-Date totals.
Smart plugs	Kasa (TP-Link), Shelly, and SproutKeeper Smart Plug - auto-discovered on your network. Switched automatically by sensor events or timed schedules.

What It Can Do

- Show live readings from up to 20 soil sensors, 3 weather station channels, and connected rain gauges at once.
- Display VPD, 5-day weather forecast, and freeze/frost alerts directly on the dashboard.
- Automatically turn smart plugs on or off when a reading crosses a threshold.
- Control SproutPod USB outputs to switch USB-powered pumps and grow lights from sensor events.
- Combine two conditions with AND or OR logic for precise automation.
- Send an email, SMS, or voice call alert when something needs attention - and share a live remote dashboard accessible from anywhere (subscription key required, \$24/year).
- Integrate with Home Assistant via MQTT.
- Extend sensor range with a SproutPod unit (see Section 16).
- Back up and restore all sensor names, event rules, and configuration with one click.
- Run completely offline - no internet required for local monitoring and plug control.
- Assign a plant profile from the built-in plant database to any soil sensor. SproutKeeper shows its suggested moisture and DLI targets on the card; use these as a starting point for your own growing conditions (see Section 21).

Local vs Subscription Features

Included locally	Dashboard, sensor readings, local automation, smart plug control, SproutPod relay control, Home Assistant MQTT, backup, and restore.
Needs subscription	Remote Dashboard, email alerts, SMS alerts, and voice call alerts. These features require SproutKeeper to reach services outside your local network.

Quick Start

Use this one-page setup path when you are opening SproutKeeper for the first time. The full explanations begin in Section 3.

1. Power on	Connect power to the SproutHub and wait for its Wi-Fi hotspot to appear.
2. Join Wi-Fi	On your phone or computer, join the Wi-Fi network named SproutKeeper.
3. Open dashboard	Open a browser and visit http://sproutkeeper.local . If that does not load, use http://192.168.4.1 .
4. Connect home Wi-Fi	Open Settings, choose your home Wi-Fi network, enter the password, and save. The hub restarts.
5. Reconnect locally	Return your phone or computer to your normal Wi-Fi, then open http://sproutkeeper.local again.
6. Unlock sensors	Open Menu and make sure Sensor Lock is off. The button should show Sensors, not Locked, before adding a new sensor.
7. Add a sensor	Keep the sensor near the hub, pull the battery tab, and wait for the new card to appear.
8. Rename immediately	Rename the card before placing the sensor outside or in soil so you know which sensor is which.
9. Lock sensors	After all sensors are named, open Menu and tap Sensors to turn on Sensor Lock. The button changes to Locked.

Note: The SproutKeeper hotspot stays active as a fallback. If your home network setup fails, join the SproutKeeper hotspot again and open <http://192.168.4.1>.

Tip: For the first setup, keep new sensors within a few metres of the hub until their cards appear.

Safety Essentials

- Keep the SproutHub, SproutPod, USB power supplies, and smart plugs dry and protected from rain or irrigation spray.
- Use drip loops on cables near water, pumps, reservoirs, and grow trays.
- Do not exceed the rated load of USB ports, relays, smart plugs, pumps, or grow lights.
- Test every automation while you are present before leaving pumps, lights, fans, or heaters unattended.

2 Getting Started



Connecting to Your Network

- Power on the SproutHub.
- On your phone or computer, connect to the Wi-Fi network called **SproutKeeper**.
- Open a browser and go to **<http://sproutkeeper.local>**.
- Click **Settings** in the header, expand the **WiFi** section, choose your home network, and enter the password.
- The device will restart and join your home network. Reconnect to your normal Wi-Fi, then visit **<http://sproutkeeper.local>** again.

***Note:** The SproutKeeper hotspot stays active as a fallback at all times. If you can't reach the dashboard on your home network, connect to the **SproutKeeper** hotspot and try **<http://192.168.4.1>**.*

Adding Your First Soil Sensor



Follow these steps in order. **Do not take the sensor outside until you have completed step 4.**

- **Step 1 - Confirm Sensor Lock is off.** Tap the **Menu** button in the top-right corner of the dashboard. Check the Sensors button: if it shows **Locked**, tap it once to unlock - it will return to **Sensors**. If it already shows **Sensors**, the system is ready to accept a new sensor.
- **Step 2 - Stay near the SproutHub.** Keep the sensor within a few feet of the hub. The Hub accepts a new unnamed soil sensor only after receiving a strong nearby signal. Do not put the sensor in the plant yet.
- **Step 3 - Power on the sensor.** Open the white end cap, pull the battery isolation tab, and close the cap securely. The sensor then begins its normal transmission schedule.

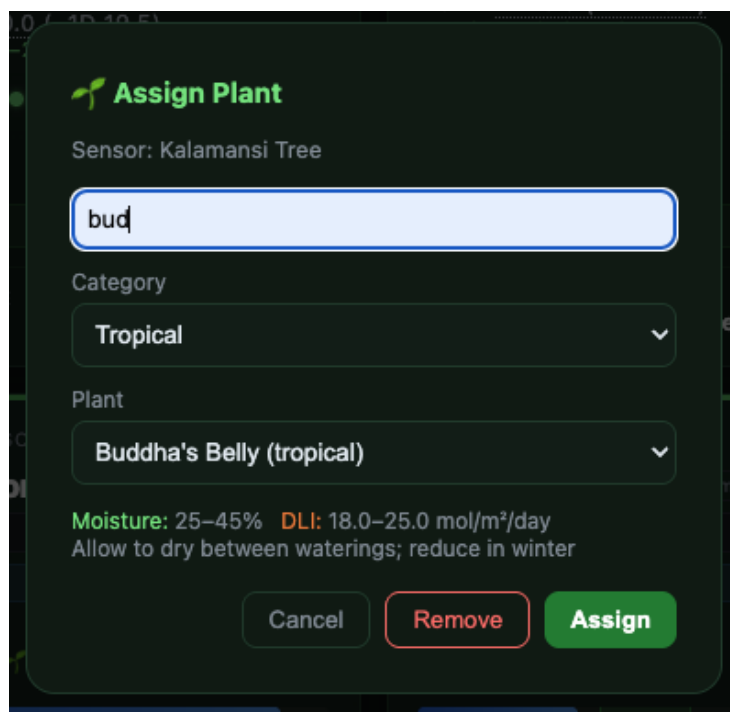
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- **Step 4 - Wait for the card to appear.** The dashboard refreshes automatically. A new unnamed Soil Sensor card appears after a clean transmission. Keep the sensor close and allow time for the next scheduled transmission, which may take about 30 minutes.
 - **Step 5 - Name the sensor immediately.** Click **Rename** on the new card and give it a unique, descriptive name (e.g. *Tomatoes* or *Raised Bed 1*). The name is saved to the device and used in events, notifications, and history. **Always name before placing in the ground** - once buried, you may not know which card belongs to which pot.
 - **Step 6 - Place the sensor.** Optionally assign a plant profile on the new card, then carry the sensor to its growing location and push the probe fully into the soil at root depth. For rain gauges, choose an open area away from overhanging trees or eaves.
 - **Step 7 - Repeat for each sensor, then lock.** Repeat steps 1-6 for every sensor you want to add. When all sensors are named, open the **Menu** button and tap **Sensors** to enable Sensor Lock. The button turns to **Locked**. From this point on, only your named sensors are accepted.

***Note:** Sensor Lock rejects all unnamed transmissions. Always unlock before adding a new sensor, and re-lock once it is named.*

***Tip:** Sensors typically reach 30 m outdoors. Range decreases through thick walls - add a SproutPod if a sensor is intermittent.*

Assign a Plant to the New Sensor

After you name a new soil sensor, select the small **assign plant** link on its card. Search the plant database, choose a category and plant, review the suggested moisture and DLI ranges, then select **Assign**.



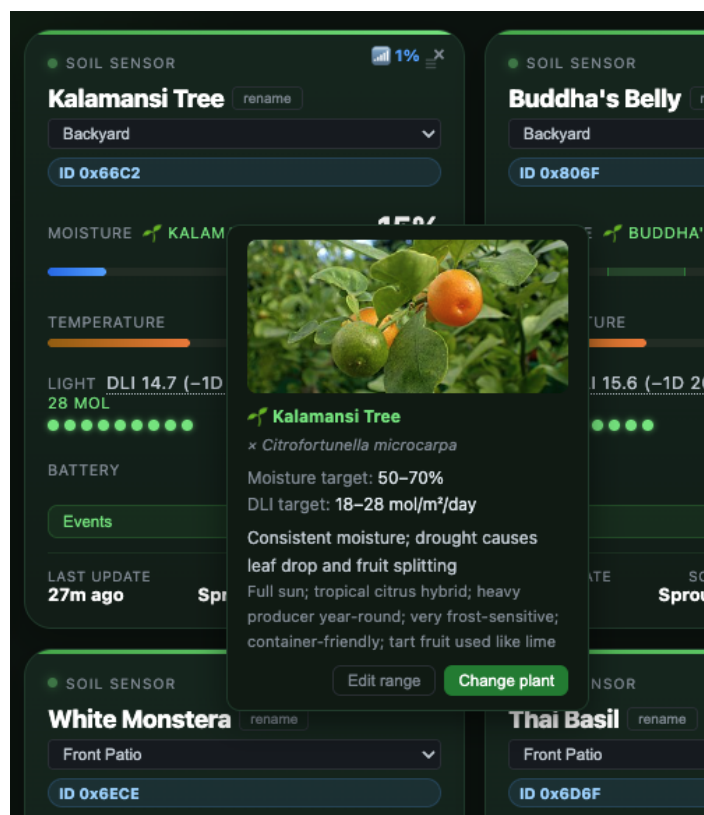
The screenshot shows a dark-themed 'Assign Plant' dialog box. At the top, it says 'Sensor: Kalamansi Tree'. Below that is a search bar containing the text 'bud'. Under the search bar, there are two dropdown menus: 'Category' with 'Tropical' selected, and 'Plant' with 'Buddha's Belly (tropical)' selected. Below the dropdowns, the suggested ranges are displayed: 'Moisture: 25–45%' and 'DLI: 18.0–25.0 mol/m²/day', followed by the instruction 'Allow to dry between waterings; reduce in winter'. At the bottom, there are three buttons: 'Cancel', 'Remove' (highlighted with a red border), and 'Assign' (highlighted in green).

Current Assign Plant selector — search, select a category and plant, then select Assign

An assignment is optional. You can return to this selector later from **Change plant**, remove an assignment, or tailor the saved ranges for the actual pot, medium, light, season, and watering method.

View the Assigned Plant Profile

Once assigned, select the green plant name on the soil-sensor card to view its profile, reference photo, care notes, and suggested targets.



Current assigned plant profile — use Change plant to return to the database or Edit range to tailor targets

Adding More Sensors

SproutKeeper accepts new sensors automatically - there is nothing to pair or configure. Keep each new, unnamed sensor close to the Hub until it has been received with a strong nearby signal. The dashboard adds its card automatically after a clean scheduled transmission.

- Hold the new sensor near the SproutHub and pull its battery tab.
- Allow time for the next scheduled transmission, which may take about 30 minutes.
- Click **Rename** on the new card and give it a name before placing it in the ground.

Note: If Sensor Lock is enabled, the menu button shows **Locked** and unnamed sensors are rejected entirely. Tap **Locked** in the hamburger menu to unlock before adding a new sensor. Rename it, then re-enable Lock.

Sensor Lock

The 433 MHz band is shared. Neighbours may have weather stations, soil sensors, or other wireless devices transmitting on the same frequency - and RF noise can produce corrupted packets that look like real sensor IDs. Without Sensor Lock, any of these can generate unwanted cards on your dashboard.

Sensor Lock solves both problems. Once enabled, SproutKeeper only accepts transmissions from sensors you have already named. Stray sensors from nearby gardens or properties are silently ignored. Corrupted packets that happen to decode as an unknown ID are discarded before they can create a ghost card. Your dashboard shows only your sensors - nothing else.

Enable	Open the Menu button in the top-right corner of the dashboard. Tap Sensors (the open-padlock button). The button immediately changes to Locked - confirming that unnamed cards have been evicted and new unrecognised transmissions are rejected.
Disable	Open the Menu button again and tap Locked . The button returns to Sensors and new sensors can appear on their next transmission.
Persist	The lock state is saved to device memory and survives reboots.

Note: *Named sensors are never affected by Sensor Lock - their cards remain live whether Lock is on or off.*

Tip: *Workflow: power on a new sensor -> it appears as an unnamed card -> rename it -> repeat for all sensors -> tap Sensors in the hamburger menu to lock. The button turns to Locked. From that point on, only your named sensors appear.*

3 Dashboard

The dashboard refreshes automatically every 2 seconds. Readings update in place as new data arrives - no page reload needed.

Header Menu

Tap the **Menu** button in the top-right corner to open the header menu.

Mute	Silence all notifications globally. Plug control continues. Mute state survives reboots.
Sensors / Locked	Toggle Sensor Lock. Shows Sensors when unlocked; tap to lock. Changes to Locked when active; tap again to unlock. When locked, SproutKeeper accepts only sensors you have already named - stray transmissions from nearby gardens or properties are ignored, and corrupted RF packets that decode as unknown IDs are discarded before they can create ghost cards. See Section 2 for the full workflow.
Locations	Manage location names and assign sensors to locations (Section 7).
Remote	Open the Remote Dashboard URL - your live read-only mirror accessible from anywhere with internet (Section 18). Requires a subscription key.
Settings	Open the full configuration panel - Wi-Fi, notifications, Home Assistant, sensors, backup/restore, firmware update, and remote URL.

Environment Bar

When a weather station is active, an environment bar appears above the sensor grid showing outdoor temperature, humidity, and VPD - plus the city name, current conditions, and a 5-day forecast inline. Tap the VPD value to open a colour-coded popup.

Freeze & Frost Alert Banner

A coloured banner above the environment bar when cold conditions are detected:

Frost warning	Real-time TX16 reading below 38°F - dark orange.
Freeze alert	Real-time TX16 reading below 32°F - dark red.
Forecast alert	Upcoming daily low forecast below 38°F or 32°F - shows day name and temperature. Both alerts can appear simultaneously.

Heartbeat Indicator

A dot in the footer pulses green every 2 seconds while the device is responding. Red means no response for 6+ seconds - usually a brief Wi-Fi hiccup that clears on its own.

Sensor Cards

Each detected sensor appears as a card. Cards can be dragged by the drag handle to any position - order is remembered across page loads. Cards stay visible for 24 hours after the last reading.

Plug Panel

Below the sensor grid: SproutKeeper built-in USB, Kasa/Shelly smart plugs, and SproutPod USB outputs. Click any plug card to toggle it. SproutPod units appear automatically after their first transmission.

4 Soil Sensor Cards

Sensor Name	The name you assigned to this sensor (or the short device ID if unnamed). Displayed at the top of the card.
Rename button	Click Rename on the card to give the sensor a new name. The name is saved to the device immediately and persists across reboots. Name your sensor before placing it in the ground - see Section 2.
Moisture	0-100 %. A reading of 0 % usually means the probe is not in soil.
Moisture trend	up rising , down falling , -> stable. Updates when moisture changes by more than 4 % since the previous reading.
Plant badge	Green ■ plant name shown next to Moisture when a plant is assigned. Click it to open the Plant Profile popup (see below). Shows a warning if moisture or DLI is outside the plant's target range.
Temperature	Soil temperature in °F or °C. Shows - if outside a plausible range.
Light	Ambient light level: low-, low, low+, med-, med, med+, hi-, hi, hi+
DLI	Daily Light Integral (mol/m ² /day) - total light dose your plant has received today, accumulated from light level x time between readings. Resets at local midnight. When a plant is assigned, the card shows the target DLI range and warns if today's accumulation is too low or too high for that plant.
Battery	Low (red) , Med (amber) , Full (green)
Signal %	Signal XX % chip in the card header. Shows reception strength of the last packet. Direct reads show SproutKeeper's signal; relayed reads show the SproutPod's signal.
Source	Where the reading was received. 'SproutKeeper' = decoded directly by the hub. A SproutPod device name (e.g. 'pod-front') = relayed via that SproutPod. When both paths receive the same sensor, the stronger signal wins.
Location	Named location assigned to this sensor. Select from the dropdown to change.
Last Update	How long ago the most recent reading was received (e.g. 5m ago).
Interval	Measured time between the last two transmissions. Shows - until two readings received.
Events	Opens the event automation editor for this sensor.

DLI - Daily Light Integral

DLI (mol/m²/day - moles of photons per square metre per day) measures how much usable light your plant received over the course of today. Most growers never track this, but it's one of the most reliable predictors of plant health - too little light slows growth, too much causes stress and bleaching. SproutKeeper calculates it automatically from each sensor's ambient light readings and resets it at local midnight.

Low-light houseplants	3-6 mol/m ² /day - ferns, pothos, peace lily, snake plant.
Herbs & leafy greens	12-20 mol/m ² /day - basil, lettuce, spinach, kale.
Seedlings	6-12 mol/m ² /day - delicate; too much causes bleaching.
Fruiting vegetables	20-30 mol/m ² /day - tomatoes, peppers, cucumbers.
Full-sun / outdoors	30-60 mol/m ² /day - in direct sun these levels are normal.

Tip: Tap the DLI value on any sensor card to open an in-app popup showing these target ranges and a status indicator for the current reading.

Note: DLI needs at least two sensor readings to start accumulating from zero on a new day. After a reboot, it restores from memory and shows immediately on the first reading.

Using DLI in Events

DLI is available as a condition in the event editor (Section 10). This lets you automate grow lights based on actual daily light received rather than a fixed schedule. For example: turn on a grow light when DLI falls below 12 at end of day, or send an alert when DLI exceeds 30 on a day you expected shade.

Note: Soil sensors in battery-saving mode transmit every 30-60 minutes. If a card shows an old reading, the sensor is most likely between transmissions - not offline.

Plant Assignment

Each soil sensor can be linked to a plant profile from the built-in plant database. Once assigned, the dashboard shows the plant's suggested moisture and DLI ranges alongside live readings.

- For an unassigned soil card, select the small **assign plant** link to open the Assign Plant dialog. After assignment, select the green plant name to view its profile.
- Search by name or use the **Category** dropdown to filter by type (Vegetable, Fruit, Herb, Tropical, Succulent, etc.).
- Select a plant from the list. The dialog shows the target moisture %, DLI range, and watering notes before you confirm.
- Click **Assign** to save. Click **Remove** to unlink the current plant. The assignment persists across reboots.

Plant Profile Popup

After assigning a plant, clicking the green ■ badge on the sensor card opens a popup showing:

Plant name	Common name in bold, scientific name in italic below it.
Moisture target	Ideal moisture range for this plant (e.g. 50-70 %).

DLI target	Ideal daily light integral range (e.g. 20-28 mol/m ² /day).
Watering notes	Brief care note about when and how to water this plant.
Growing notes	Additional growing tips — soil preference, sun requirements, special considerations.
Change plant	Button to re-open the Assign Plant dialog and switch to a different profile.

Tip: The Plant Library is also available on the web at sproutkeeper.com/plant-library.php — browse, search, and filter the current database by category.

5 Weather Station Cards

Weather stations (Geevon TX16S) transmit on one of three channels, updating approximately every 48 seconds. Each channel appears as a separate card: **Weather CH1**, **Weather CH2**, or **Weather CH3**.

Station Name	The name assigned to this weather station card. Displayed in the card header.
Rename button	Click Rename on the card to give the station a custom name (e.g. <i>Back Yard</i> or <i>Greenhouse</i>). Saved immediately and persists across reboots.
Temperature	Outdoor air temperature in °F or °C.
Humidity	Relative humidity 0-99 %.
VPD	Vapor Pressure Deficit in kPa - calculated from temperature and humidity. Colour-coded by growing zone. Tap the value for an explanation popup.
Channel	Set using the switch on the back of the TX16 unit (1, 2, or 3).

VPD - Vapor Pressure Deficit

VPD (kPa - kilopascals) measures the drying power of the air. SproutKeeper calculates it automatically from your TX16 reading and displays it colour-coded in the environment bar.

Blue < 0.4 kPa	Too low - high humidity, risk of mould and poor transpiration.
Green 0.4-1.2 kPa	Ideal growing range for most crops.
Orange 1.2-1.6 kPa	Stress - increase humidity or reduce temperature.
Red > 1.6 kPa	High stress - risk of wilting or tip burn.

Tip: Tap the VPD value in the environment bar for a popup with the current zone and an actionable tip.

5-Day Weather Forecast

When a weather city is configured in Settings, SproutKeeper fetches a 5-day forecast from Open-Meteo and displays it inline in the environment bar: current conditions, then four forecast columns (day / icon / high / low). Refreshes every 30 minutes. No API key required.

Note: The forecast is fetched by your browser, not the device. It requires internet access on the device you view the dashboard on. Local readings and plug control work offline even without a forecast.

Freeze & Frost Alerts

Frost warning (live)	TX16 currently below 38°F. Dark orange banner.
Freeze alert (live)	TX16 currently below 32°F. Dark red banner.

Forecast frost/freeze	Upcoming day's low forecast below 38°F or 32°F. Shows day name and temperature. Both alert types can appear simultaneously.
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Tip: Use the freeze alert with an event (Section 10) to automatically turn on a heat mat when temperature drops below 38°F.

6 Rain Gauge Card

AcuRite wireless rain gauges are recognised automatically and displayed as a dedicated Rain Gauge card. Channel (A, B, or C) is shown in the card header. Totals are in **inches** when set to °F, **mm** when set to °C.

Readings

Gauge Name	The name assigned to this rain gauge card. Displayed in the card header.
Rename button	Click Rename on the card to give the gauge a custom name (e.g. <i>Backyard Gauge</i>). Saved immediately and persists across reboots.
Since Reset	Cumulative rainfall since the last manual reset. A Reset button appears while the gauge is live.
Today	Rain accumulated since local midnight today.
Yesterday	Total for the previous local day.
7 Days	Running total since the last 7-day reset point.
This Month	Total since the 1st of the current month.
YTD	Total since 1 January of the current year.
Battery	Low (red) , Med (amber) , Full (green)
Last Update	Time since the last packet was received.
Interval	Measured transmit interval (shows - until two packets received).

Resetting the Counter

Tap **Reset** to open the reset dialog. Choose **Since Reset only** (re-baselines the counter without touching Today/Yesterday/weekly figures) or **Since Reset + Clear all totals** (wipes all accumulated figures). Today/Yesterday/weekly figures roll over automatically at local midnight.

Note: Rain totals use your local midnight, detected from your browser's timezone automatically.

Events on the Rain Gauge

The **Events Events** button is available on rain gauge cards. Supported metrics: **Rain Today** and **Battery**. See Section 10.

Rain Data in Soil Sensor Events

When a rain gauge is present, **Rain Today** is available as a 2nd AND/OR condition in soil sensor events - e.g. water only when soil is below 30 % AND less than 0.25 in has fallen today.

Tip: *Moisture < 30 % AND Rain Today < 0.25 in = irrigation only when soil is dry and it hasn't rained enough.*

7 Sensor Locations

Assign sensors to named locations - Greenhouse, Veggie Bed A, Back Patio - to keep your dashboard organised with many sensors.

Managing the Location List

- Click **Locations** in the header.
- Up to **12 locations** can be defined. Enter a name next to each numbered slot.
- Click the **Delete** button to delete a location name.
- Click **Save Locations** when finished.

Assigning a Sensor

- On the sensor card, use the **Location** dropdown to choose a location.
- The assignment is saved instantly.
- Select the blank entry to remove a location assignment.

Note: Location names are stored on the device and survive reboots. Renaming a location updates it everywhere automatically. Location names can also be managed from the **Setup Page** - see Section 14.

8 Renaming Sensors

By default sensors are labelled by a short ID code. Give any sensor a meaningful name such as *Tomatoes* or *Herb Garden*.

- Click the **Rename** button on the sensor card.
- Type the new name in the field that appears.
- Press **Enter** or click **Save** to confirm.
- The name is saved to the device immediately and survives reboots.

Tip: Name your sensor before placing it in the ground - see Section 2 for the recommended first-use order.

Note: Names appear in notification messages via the %sensor macro (see Section 15 - Message Builder).

9 Hiding & Showing Sensors

- Click the **x** button in the top-right corner of a card to hide it.
- A **Show all** bar appears at the bottom of the grid when cards are hidden.
- Click **Show all** to bring all hidden cards back.

Note: Hidden state is remembered in the browser - hiding on your phone does not affect your computer.

10 Event Automation

Each compatible sensor card supports up to **4 events**. An event watches one or two readings and can switch a plug and/or send a notification when triggered.

Opening the Event Editor

- Click **Events Events** at the bottom of any sensor card.
- Click the pencil (edit) icon to edit, or **+ Add Event** to create a new one.

Condition Basics

A condition compares a selected reading with a threshold. Choose **< below**, **> above**, **≤ at or below**, **≥ at or above**, or **= exactly**. The first four comparisons are normally the most useful: for example, Moisture < 30 starts watering when the reading falls below 30 percent.

Threshold	The value that starts the condition. Units match the selected condition: percent, degrees, light level, DLI, rain, battery, or kPa for VPD.
Below / at or below	Useful for a minimum: Moisture < 30, Temperature ≤ 38, or DLI Today < 12.
Above / at or above	Useful for a maximum or alert: Temperature > 90, Rain Today ≥ a rain-skip amount, or VPD > a stress threshold.
Exactly	Triggers only when the reading equals the threshold. Use it sparingly because a changing sensor reading can pass over an exact value between transmissions.

All Condition Types

Moisture / Humidity	For a soil sensor, this is soil moisture (%). For a TX16 weather-station channel, the same field is labeled Humidity (% RH).
Temperature	The selected sensor's temperature. Use low thresholds for cold protection or high thresholds for heat, fan, or alert rules.
Light	The sensor's current light level on its 0–9 scale. It is an instant reading, unlike DLI which accumulates light across the day.
DLI Today	Daily Light Integral accumulated since local midnight, in mol/m ² /day. Use it to add light only when the day has not supplied enough.
DLI Yesterday	The completed prior day's DLI. Use it for a next-day decision or notification; it does not change during the current day.
Rain Today	Rain accumulated since local midnight. A soil-sensor event can use the first live rain gauge in the system; a rain-gauge event uses that gauge.

Rain Yesterday	The completed prior calendar day's rain total. Useful for a morning rain-skip decision.
Battery	The selected sensor's battery reading. Use a low-threshold condition to notify before a battery becomes unreliable.
VPD	Vapor pressure deficit in kPa, calculated from the TX16 channel's temperature and humidity. It is available only where both measurements exist.
Timer	No sensor reading is tested. Timer is always true while the event is enabled and inside its Check Time window; it uses On Time and Off Time to make a one-time or repeating output cycle.

Which Conditions Each Card Offers

Soil sensor	Moisture, Temperature, Light, DLI Today, DLI Yesterday, Battery, Timer, and Rain Today/Rain Yesterday when at least one live rain gauge is present. VPD is hidden because a soil sensor does not provide both air temperature and humidity.
TX16 weather channel	Humidity, Temperature, Battery, VPD, and Timer. Light, DLI, and rain are hidden because the TX16 channel does not supply those measurements.
Rain gauge	Rain Today, Battery, and Timer. The card does not offer soil, air, light, DLI, or VPD conditions.
Second condition	Uses the compatible measured conditions above, but never Timer. Combine it with a first measured condition using AND or OR.

Optional 2nd Condition (AND / OR)

AND	Both conditions must be true at the same time. Example: Moisture < 30 AND Rain Today < 0.25 prevents watering dry soil when meaningful rain has already fallen.
OR	Either condition can start the event. Example: Temperature > 90 OR VPD > 1.60 can start ventilation for either kind of heat stress.
Availability	The second condition uses the same sensor-compatible reading types, but it does not offer Timer. Use Timer as the first condition for a time-driven event.

Tip: Moisture < 30 % AND Rain Today < 0.25 in - pump only activates when soil is dry and rainfall today is under a quarter inch.

Tip: DLI < 12 - trigger a grow light when your herbs or seedlings haven't received enough light by midday. See Section 4 for DLI target ranges by plant type.

Check Time

Any Time	Event can trigger at any hour of the day (default).
Morning	6 AM–10 AM local time.
Evening	3 PM–7 PM local time.
End of Day	After 3 PM local time.
Daytime / Nighttime	Uses sunrise and sunset from the configured Weather ZIP; manual fallback times are used when needed.
Clock not synced	The Hub applies Check Time windows when its local time is synchronized. Until it has a usable clock, a saved non-Any-Time event is evaluated without the window guard.
Window closes	The Hub applies the opposite plug action once when an active window closes, so an output is not left on outside its allowed period.

Plug, Hold, and Timer Settings

Plug action	Turn the plug ON or OFF when the condition is true. Toggle between the two options.
Plug target	Output to control: SproutKeeper USB, SproutPod USB ports, OzBits or Kasa/Shelly smart plugs. Choose (none - notification only) to send alerts without switching any plug.
Hold plug state	Re-asserts the chosen state while the condition is true. If somebody manually changes the output, the Hub returns it to the rule's state after the Enforce Cooldown. When the condition clears, the Hub applies the opposite action.
Release Margin	Optional hysteresis for a held condition. Moisture < 30 with a 5% margin remains active until moisture reaches 35%; VPD > 1.50 with a 0.30 margin remains active until VPD reaches 1.20 or lower.
Enforce Cooldown	Minimum time before Hold plug state re-asserts an active output. Use seconds or minutes; any duration from 1 second to 30 days is allowed.
Auto-Off Timer	For a sensor condition, runs the selected action then applies the opposite action after the chosen duration. 0 disables it; any duration up to 30 days is allowed.
Timer condition	Choose Timer, normally choose Turn ON, and set an On Time. With Hold plug state off, it runs once when enabled; with Hold on, On Time is followed by Off Time (the renamed Enforce Cooldown) and repeats.

Tip: Timer example: select Timer, Turn ON, Hold plug state on, On Time 30 seconds, and Off Time 10 minutes to repeat a 30-second watering pulse every 10 minutes during the selected Check Time window.

Notifications

Notifications	Check Email , SMS , and/or Call to enable that channel. Multiple can be active at once.
Notify target	Email address or phone number with country code (+1 555 123 4567). Used for whichever notification types are checked above.
Custom message	Leave blank for the default message. Use macros to build a custom alert: %sensor %moisture %temp %tempc %light %battery %rain %ago %value %threshold %op %unit %version
Test buttons	Test Call / Test SMS / Test Email - send an immediate test to the notify target without waiting for a real trigger.

11 Smart Plug Integration

SproutKeeper controls USB relay outputs and Wi-Fi smart plugs - no cloud required. All outputs appear in the plug panel and event editor dropdown.

SproutKeeper USB Power Output

Every SproutKeeper hub has a built-in relay wired to a **USB-A female connector**. It supplies **5 V** to whatever is plugged in when switched on. It appears in the plug panel as **SproutKeeper USB** and is always available - no discovery or configuration needed.

What You Can Connect

USB water pump	Auto-water a plant pot or hydro reservoir. Run on a timer so it only pumps for N seconds per trigger.
USB grow light	Supplement light for seedlings or cuttings. Schedule via a soil sensor's light-level event.
USB fan	Keep air circulating in a grow tent or cabinet. Trigger on temperature or VPD.
USB heat mat	Keep propagation trays warm. Wire to a freeze alert event (< 38 °F).
USB LED strip	Status indicator or supplemental lighting on a schedule.

Note: Connect USB devices rated for 5 V. The relay switches the 5 V supply line - the USB-A port does not negotiate fast-charge protocols.

Controlling the SproutKeeper USB Output

- Toggle manually from the plug panel on the dashboard.
- Assign it as the plug target in any soil sensor, weather station, or rain gauge event.
- Set a **Timer** (seconds) to pulse the output for a fixed duration then turn off automatically.
- Enable **Enforce State** to re-assert the relay every 30 s while the condition holds.

Tip: *Moisture < 30 % -> SproutKeeper USB ON -> Timer 30 s: the pump runs for 30 seconds each time the soil sensor dips below 30 %, then stops automatically.*

SproutPod USB Power Output

Each SproutPod unit has its own **USB-A relay output** - identical in capability to the SproutKeeper built-in output. This lets you place a pump or light exactly where it is needed, powered and controlled by the nearest SproutPod, without running wires back to the main hub.

When a SproutPod connects to your network, its output appears automatically in the SproutKeeper plug panel as **<name> USB** (e.g. *greenhouse USB*). It supports the same on/off, timer, and enforce-state options as any other output.

Typical SproutPod USB Setup

- Place the SproutPod in the area you want to monitor and control.

- Plug a USB pump, light, or fan into the SproutPod USB-A port.
- On the SproutKeeper dashboard, open **Events Events** on a nearby soil sensor.
- Set the plug target to **<name> USB** and configure the trigger condition.
- The SproutPod handles both sensing and actuation at the remote location.

Note: *SproutPod USB only appears in the plug panel after the unit has sent at least one sensor packet to SproutKeeper. If it doesn't appear, check **Last POST** on the SproutPod dashboard - it should show HTTP 200.*

Tip: *Name your SproutPod something descriptive like greenhouse or veggie-bed so its USB output is easy to identify in the event editor dropdown.*

OzBits Smart Plug

The OzBits Smart Plug is the easiest plug to set up with SproutKeeper. It is purpose-built to integrate with SproutKeeper - minimal configuration, no third-party app, and automatic self-discovery on your local network.

Self-discovery	Powers on and announces itself on the network automatically. SproutKeeper finds it without any IP addresses or manual steps.
Minimal setup	Connect to the plug's hotspot once, enter your Wi-Fi - done. No cloud account, no app, no pairing codes.
Built to integrate	Responds to the same local HTTP commands SproutKeeper uses for all plugs. Appears in the plug panel and event editor instantly.
Physical button	Manual on/off button on the unit for override control without touching the dashboard.

Tip: *Use the OzBits Smart Plug to control 120V devices like water pumps, grow lights, fans, and heaters - set up in under 60 seconds, no third-party apps ever required.*

TP-Link Kasa Plugs

- Kasa plugs are found automatically when on the same Wi-Fi network.
- Discovered plugs appear in the plug panel.
- Click **Discover Plugs** in the panel to rescan if a plug doesn't appear.

Shelly Plugs

- Use the **shelly:** prefix: e.g. `shelly:192.168.1.55`

Manual Control

Click any plug card in the panel to toggle it immediately, independent of any events.

12 Notifications

The SproutKeeper subscription key (\$24/year) extends SproutKeeper beyond your local network, unlocking four cloud-connected features that reach you wherever you are:

Remote Dashboard	A live read-only mirror of your local dashboard, accessible from any browser with internet - phone, laptop, or tablet. Check every sensor reading from anywhere without a VPN or port-forwarding setup. See Section 18 for details.
Voice Call Voice Call	SproutKeeper calls your phone and reads the alert aloud in plain language - "Your soil moisture is too low." No app, no login.
SMS SMS Alert	A text message sent the moment an event fires. Fast, direct, no app required.
Email Email	A detailed notification email with the sensor reading, condition that triggered it, and current conditions. No SMTP setup - delivery handled by the SproutKeeper service.

Note: Without a subscription key, SproutKeeper still works fully for local monitoring, automation, smart plug control, and Home Assistant MQTT. The key only unlocks the four features above that require reaching outside your local network.

Setup

- Subscribe at sproutkeeper.com - you receive a service key by email.
- Open **Settings** and enter your **Service Key**.
- In the event editor, tick the notification types you want (Call / SMS / Email).
- Enter the destination in the **Target** field - email address or phone number with country code (e.g. +1 for USA).

Global Mute

The **Mute** button silences all notifications globally. Plug control continues normally. Mute state survives reboots.

Test Buttons

Each event has **Test Call**, **Test SMS**, and **Test Email** buttons that send an immediate test message to verify your target and service key.

13 Home Assistant MQTT

SproutKeeper publishes sensor readings to an MQTT broker and sends Home Assistant auto-discovery messages so sensors appear automatically in HA.

Setup

- Open **Settings** -> Home Assistant section.
- Enter your MQTT broker **host** (IP or hostname).
- Set the **port** (default: 1883).
- Enter broker **username** and **password** if required.
- Set the **Discovery Prefix** (default: homeassistant).
- Enable the toggle and click **Save Config**.

Published Readings

Soil sensors	moisture, temperature, light, battery
Weather stations	temperature, humidity
Availability	online / offline (last-will testament)

Note: *Only sensors with a reading within the last 24 hours are published.*

14 Setup Page

Open by clicking **Settings** in the header.

General

Device Name	Friendly name used in MQTT topics and notifications.
mDNS Name	Local hostname - device reachable at .local. Default: <i>sproutkeeper</i> . Useful for multiple SproutKeeper units on the same network.
Temperature Unit	Fahrenheit or Celsius. Rain totals switch between inches and mm automatically.
Service Key	SproutKeeper subscription key (\$24/year). Unlocks remote dashboard access, voice call, SMS, and email notifications - all features that reach outside your local network.
Weather City	City name for the 5-day weather forecast (e.g. <i>Tampa</i>). Dashboard geocodes it automatically. Leave blank to disable the forecast.

Notifications

Email Target	Email address to receive alert emails. A subscription key is required.
Phone Target	Phone number for SMS and voice call alerts. Include country code (e.g. +1 for USA).

Note: Notification targets can be overridden per-event in the event editor. The values here act as the default target for all events that do not specify their own.

Wi-Fi

Expand the **WiFi** section to scan nearby networks and switch. The SproutKeeper hotspot remains active as a fallback at all times.

Home Assistant

MQTT broker settings - see Section 13 for details.

Sensors

Expand the **Sensors** section for maintenance actions:

■ Clear ghost sensors	Immediately removes all unnamed sensor slots from the dashboard and from device memory. Use this after an RF interference event leaves phantom cards that won't go away on their own.
------------------------------	---

Signal Reset signal calibration	Clears the RSSI floor/ceiling calibration that auto-adjusts over time. Use this if signal % readings look wrong after moving the hub or changing the antenna environment.
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Remote Dashboard

Expand the **Remote Dashboard** section and paste your `sproutkeeper.com/remote.php?token=...` URL. SproutKeeper begins pushing snapshots immediately after saving. See Section 18 for full details on the remote dashboard feature.

Backup & Restore

Save a complete snapshot of all your SproutKeeper settings - device name, service key, notification targets, Home Assistant config, weather city, sensor names, location assignments, and all event rules.

- Click **Save Backup** to download `sproutkeeper-backup.json`.
- Click **Restore** and select a backup file to reload all settings immediately.

Note: *Restore overwrites all current settings. Save a fresh backup before restoring if you want to revert.*

Firmware Update (OTA)

SproutKeeper supports over-the-air firmware updates - no USB cable or computer required.

- Expand the **Firmware** section in Settings.
- The current firmware version is displayed.
- Click **Check for Updates**. SproutKeeper contacts the update server.
- If an update is available, a progress bar appears. The device reboots automatically when done.

Note: *OTA requires the SproutHub to have internet access. All sensor names, events, and configuration are preserved across firmware updates.*

Saving

Click **Save Config** to apply. Wi-Fi changes require a reboot.

15 Message Builder

The **Message** field in the event editor supports macros filled in with live values when the notification is sent. Use these to build custom alert messages that include sensor name, current readings, and trigger details.

%sensor	Sensor name (or ID if unnamed)
%moisture	Current moisture %
%temp	Temperature in the configured unit
%tempc	Temperature always in °C
%light	Light level label (e.g. med+)
%battery	Battery level (Low / Med / Full)
%rain	Today's rain total in the configured unit
%ago	Time since last reading (e.g. 5 min ago)
%value	The reading that triggered the event
%threshold	The threshold value from the event
%op	The condition operator (> or <)
%unit	Temperature unit symbol (°F or °C)
%version	Firmware version

Tip: "%sensor is too dry (%moisture%%) - only %rain in of rain today." -> "Tomatoes is too dry (22%) - only 0.05 in of rain today."

16 SproutPod - Range Extender & USB Relay

SproutPod extends the reach of your sensor network and adds a USB relay output for pumps and grow lights. Place it where sensors are too far from SproutKeeper, and it will forward all decoded readings over Wi-Fi while also controlling USB-powered devices locally - no extra wiring to the main hub.

What SproutPod Does

433 MHz reception	Own RXB6 receiver decodes soil and weather sensor transmissions independently.
Forwarding	Decoded readings sent to SproutKeeper over Wi-Fi. Sensors appear on the main dashboard as if received directly.
Signal reporting	Sends RSSI with every packet. SproutKeeper shows whichever source (direct or SproutPod) has the stronger signal.
USB relay output	Built-in relay switches 5 V to the USB-A connector. Connect a USB pump, grow light, or fan.
Auto-discovery	SproutKeeper detects SproutPod units and shows their USB output in the plug panel automatically.
Multiple units	Run more than one SproutPod - each covers a different area with its own USB output.

Setting Up SproutPod

- Power on the SproutPod unit.
- Join the Wi-Fi network **SproutPod_XXXX** (unique per unit).
- Open **<http://pod.local>** or **<http://192.168.4.1>**.
- Enter your home Wi-Fi and set **SproutKeeper Host** to **sproutkeeper.local**.
- Optionally set a **Device Name** - e.g. *greenhouse* appears as *greenhouse USB* in the plug panel.
- Click **Save & Restart**. SproutPod joins your network and begins forwarding automatically.

Note: The **SproutPod_XXXX** hotspot stays active as a fallback. Reconnect to it and visit **<http://192.168.4.1>** to reconfigure.

Controlling the USB Output

- Toggle it manually from the plug panel on the SproutKeeper dashboard.
- Assign it as a plug target in any sensor event.
- Use a timer to run the pump for N seconds, then turn it off automatically.
- Use Enforce State to re-assert the relay every 30 s while the condition holds.

Tip: Wire a USB pump to the SproutPod USB-A port. Set a moisture event on a nearby soil sensor to activate it when the soil drops below 30 %. SproutPod handles both sensing and actuation remotely.

SproutPod Dashboard

WiFi	Network name when connected, or 'disconnected'.
IP	IP address on your network.
Device Name	mDNS name for this unit (default: pod.local).
SproutKeeper	The SproutKeeper host this unit forwards data to.
Last decode	Most recent decoded sensor reading with elapsed time.
Last POST	Result of the most recent forward to SproutKeeper (should show HTTP 200).
Firmware	Current firmware version and update status.

Firmware Updates

- Open the SproutPod dashboard at **http://pod.local**.
- Click **Check for Updates**.
- A progress bar shows the download; turns green when installation begins.
- The unit reboots automatically and confirms the new version.

Placement Tips

- Position within range of both your sensors and your Wi-Fi network.
- Outdoors or near a window improves 433 MHz reception.
- One SproutPod can serve a full greenhouse or paddock.

***Tip:** If a sensor shows 'late' more often than expected, adding a SproutPod usually resolves it.*

17 Backup & Restore

Backup & Restore saves a complete snapshot of your SproutKeeper configuration: device name, service key, notification targets, Home Assistant MQTT settings, weather city, temperature unit, mDNS name, location names, sensor names, location assignments, and all event rules. Restore to transfer everything to a new device or roll back a change.

Saving a Backup

- Open **Settings** -> Backup & Restore section.
- Click **Save Backup**.
- Your browser downloads sproutkeeper-backup.json.
- Store it on your computer, cloud drive, or email it to yourself.

Restoring a Backup

- Open **Settings** -> Backup & Restore.
- Click **Restore** and select your backup file.
- All settings are applied immediately. The page refreshes to reflect the restored state.

Note: Restore overwrites all current settings. Save a fresh backup before restoring if you want to be able to revert.

When to Use It

New device	Flash a new SproutKeeper unit and restore - all sensor names, events, and config transfer instantly.
Firmware update	OTA updates preserve settings, but a backup beforehand is good practice.
Config experiment	Save before major changes so you can roll back easily.
Multiple locations	Keep separate backup files for different gardens or growing sites.

18 Remote Dashboard

The Remote Dashboard is a read-only mirror of your local SproutKeeper dashboard, accessible from anywhere with an internet connection - no VPN, no port forwarding. It shows the same sensor cards, moisture readings, temperatures, DLI, battery levels, VPD, and 5-day weather forecast that appear on your local dashboard. Remote Dashboard access requires a **SproutKeeper subscription key** (\$24/year) - see Section 12 for details on what the subscription includes.

How It Works

SproutKeeper pushes a snapshot of all current readings to `sproutkeeper.com` every time a sensor update is received. The remote dashboard at your token URL fetches that snapshot and displays it - identical layout to the local dashboard, but served from the cloud so you can check in from anywhere.

Setting Up

- Open **Settings** and expand the **Remote Dashboard** section.
- Enter your Remote URL - the `sproutkeeper.com/remote.php?token=...` address provided with your account.
- Click **Save Config**. SproutKeeper begins pushing snapshots immediately.
- Open the Remote URL in any browser - phone, tablet, or computer - from anywhere with internet.

***Note:** The Remote URL contains a unique token that keeps your data private. Do not share it with anyone you would not want to see your sensor readings.*

What It Shows

Soil sensors	Moisture %, soil temperature, light level, DLI, moisture trend, battery - one card per active sensor.
Weather station	Outdoor temperature, humidity, VPD - displayed in the header strip.
Rain gauge	Today, Yesterday, 7-Day, Month, and Year-to-Date totals.
Weather forecast	5-day forecast icons pulled in the browser from open-meteo using your configured city.
Firmware version	Current SproutKeeper firmware version shown in the header.

Switching Between Remote and Local

The remote dashboard header has a **Local ->** button in the top-right corner. Tapping it opens `http://sproutkeeper.local` on your current device - useful when you are on your home network and want the interactive local dashboard.

***Tip:** Bookmark the Remote URL on your phone for a quick garden check from the grocery store.*

Limitations

Read-only	Card order, sensor names, and events can only be changed from the local dashboard.
Snapshot-based	Data refreshes roughly every 30 seconds (browser auto-reload). Not a live stream.
Internet required	Only the remote URL requires internet. Your local dashboard continues to work even if the internet is down.

19 Troubleshooting

Heartbeat dot is red

- Usually a brief Wi-Fi hiccup - the dot returns to green on its own.
- If it stays red, refresh the page. If that doesn't help, power-cycle the device.

Sensor not appearing on the dashboard

- Check the battery - a flat battery stops transmissions entirely.
- Move the sensor closer to SproutKeeper and wait one transmission cycle.
- Soil sensors transmit every 30-60 minutes in battery-saving mode.
- Weather stations transmit every 48 seconds - if not appearing within 2 minutes, check the channel switch.
- If too far away, add a SproutPod between the sensor and SproutKeeper (Section 16).

Rain gauge card briefly shows as a soil card on first load

Corrects itself as soon as the next RF transmission is decoded - typically within seconds.

Sensor showing - for temperature

Reading was outside expected range and suppressed. Clears automatically on the next valid reading.

Moisture always shows 0 %

Make sure the probe is fully inserted into moist soil. A sensor resting on a bench reads 0 %.

Rain totals seem incorrect after reset

- Since Reset starts from the moment you tapped Reset. Today/Yesterday/weekly figures are unaffected.
- A battery swap on the gauge resets its own counter - tap Reset on the card afterwards.
- Today/Yesterday use your browser's local timezone, detected automatically.

Smart plug not responding

- Make sure the plug is on the same Wi-Fi network as SproutKeeper.
- Click **Discover Plugs** to refresh the Kasa list.
- Shelly plugs need the **shelly:** prefix: `shelly:192.168.1.55`

SproutPod USB not appearing in plug panel

- SproutPod USB appears only after the unit has sent at least one sensor packet to SproutKeeper.
- Check **Last POST** on the SproutPod dashboard - should show **HTTP 200**.
- If SproutPod shows 'disconnected', reconnect to **SproutPod_XXXX** hotspot and re-enter credentials.

Weather forecast not showing

- Make sure a city name is entered in **Settings** -> Weather City.
- Forecast requires internet on your browser device (not the SproutKeeper hub).
- Enter just the city name - e.g. *Tampa*, not *Tampa, FL*.

VPD not displaying

- VPD requires an active TX16 weather station. Appears automatically once a TX16 reading is received.

Notification not received

- Check that **Mute** is not active.
- Use **Test** buttons in the event editor to verify your target and service key.
- Phone numbers must include the country code (e.g. +1 for USA).
- Check your spam folder - the first email may be filtered.

Can't reach sproutkeeper.local

- Connect to the **SproutKeeper** hotspot and open **http://192.168.4.1**.
- Check your router for the SproutKeeper IP address and use that directly.

SproutPod not forwarding

- Open the SproutPod dashboard and confirm **WiFi** shows your network name.
- Confirm **SproutKeeper Host** is set to **sproutkeeper.local**.
- Check **Last POST** - any code other than HTTP 200 means SproutKeeper is not reachable.

20 API Reference

All SproutKeeper endpoints are plain HTTP on port 80 at the device IP or `http://sproutkeeper.local`. GET requests return JSON; POST requests accept JSON body (Content-Type: application/json) unless noted otherwise.

Sensor Data

GET /api/data	Returns the full sensor table. Each slot (index 0-N) contains: valid, deviceId, name, moisture, tempF, light, battery, rain, age (seconds since last read), interval, source, rssi, captures, loc_idx.
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Sensor Management

POST /api/rename	Rename a sensor. Body: {"id":<deviceId>, "name": "New Name"}
GET /api/locations	Return location name list: ["Greenhouse", "Bed A", ...] (12 slots).
POST /api/locations	Save location names. Body: {"locations": ["Greenhouse", ...]}
POST /api/sensor/loc	Assign a sensor to a location slot. Body: {"id":<deviceId>, "loc":<0-11>}. Send "loc": -1 to clear.
POST /api/sensors/clear	Wipe all soil and rain sensor slots. Sensor names and location assignments stored in NVS are preserved.

Event Rules

GET /api/events?id=<deviceId>	Return the 4 event rules for a sensor as a JSON array.
POST /api/events	Save event rules. Body: {"id":<deviceId>, "events":[...]}. Each event object: metric, op, thresh, plug, plug_action, timer, enforce, notify_email, notify_sms, notify_call, target, message, metric2, op2, thresh2, logic2.

Plug Control

GET /api/plugs	Return plug list. Each entry: type, name, ip, target, state.
POST /api/plug/discover	Trigger a UDP broadcast scan for TP-Link Kasa plugs on the local network. Returns discovered plugs in the same format as /api/plugs.

POST /api/plug/set	Set plug state. Body: <code>{"target": "kasa:192.168.1.x", "on": 1}</code> . on accepts 0, 1, or "toggle". Target prefix: kasa:, shelly:, or growpod: for SproutPod USB.
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Configuration

GET /api/config	Return all config fields as JSON: device name, mDNS name, temperature unit, service key, weather city, MQTT settings, notification targets, mute state.
POST /api/config	Save config. Body: JSON object with any subset of config fields to update. Wi-Fi changes require a reboot.
GET /api/wifi-scan	Scan nearby Wi-Fi networks. Returns JSON array of SSIDs with RSSI and security type.
POST /api/wifi-save	Save Wi-Fi credentials. Body: <code>{"ssid": "MyNet", "pass": "secret"}</code> . Device reboots after saving.
GET /api/tz	Return the current timezone offset in seconds, derived from the last browser interaction.

Notifications

POST /api/mute	Toggle global notification mute. Body: <code>{"mute": 1}</code> or <code>{"mute": 0}</code> . Returns <code>{"mute": true false}</code> .
POST /api/test-notify	Send a test message immediately. Body: <code>{"type": "email" "sms" "call", "target": "address or number"}</code> .

Rain Gauge

POST /api/rain/reset	Reset the Since Reset counter. Add "full": 1 to also wipe Today, Yesterday, 7-Day, Month, and YTD totals. Default (no full flag) resets Since Reset only.
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Signal Calibration

POST /api/rssi/reset	Reset RSSI auto-calibration to factory defaults (floor: 698 mV, ceil: 848 mV). Useful after relocating SproutKeeper or adding a SproutPod. Calibration rebuilds automatically from the next received packets.
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Backup & Restore

GET /api/backup	Download a complete settings backup as JSON. Includes: device config (name, service key, notification targets, HA MQTT, weather city, temp unit, mDNS), location names, sensor names + location assignments, all event rules, and RSSI calibration. Browser saves as sproutkeeper-backup.json.
POST /api/restore	Restore from a backup JSON. Body: the full backup JSON returned by /api/backup. Config is applied in-memory and written to NVS immediately. Event rules are written to NVS and applied live for any sensor currently in a slot.

Over-the-Air Firmware Update

POST /api/ota	Trigger an OTA firmware check and install. SproutKeeper fetches the version manifest from the update server; if a newer version is available it downloads and installs it, then reboots. Returns {"ok": true} immediately (update runs in background).
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Note: To flash a specific binary directly, use: `curl -X POST http://sproutkeeper.local/api/ota`

SproutPod API

SproutPod units expose their own HTTP API at `http://pod.local` or the unit's IP.

GET /api/status	Returns: wifi (bool), ssid, ip, gsHost (SproutKeeper hostname), mdnsName, fw (version string), relay_state (0 1), lastDecode, lastPost (HTTP result of last SproutKeeper forward), ota.
GET /relay/set?state=on off	Set the SproutPod USB-A relay. Returns plain text on or off. (SproutKeeper calls this automatically via plug events - direct use is for testing only.)
POST /api/ota	Trigger OTA check on the SproutPod unit.
POST /save	Save SproutPod config. Body: {"ssid":"...", "pass":"...", "gsHost":"sproutkeeper.local", "mdnsName":"pod"}.

21 Plant Library

The Plant Library is a built-in database of care profiles for 344 plant species across 11 categories — vegetables, herbs, fruits, houseplants, flowers, succulents, tropicals, grasses, vines, and trees. Every profile includes target moisture and DLI ranges, watering notes, growing tips, and the full scientific name. SproutKeeper uses these profiles to show live condition warnings directly on each sensor card.

Browsing the Plant Library

The Plant Library is available online at sproutkeeper.com/plant-library.php — no login required. You can browse all species, filter by category, search by name or growing notes, and sort by name.

SPROUTKEEPER

Plant Library

Browse care profiles for every plant in the SproutKeeper system

344 PLANTS **11** CATEGORIES **120** NEW / PENDING

Search by name, category, or growing notes...

CATEGORY All 344 Fruit 60 Vegetable 55 Flower 47 Houseplant 39 Herb 37 Succulent 25 Tree 25 Tropical 23 Grass 16 **Vine 16** Ornamental 1

SHOW All Reviewed Pending Review Name A → Z

16 plants

Black-Eyed Susan Vine
Thunbergia alata

MOISTURE 40–60% · Moderate

*** DLI 15–22 mol/m²/d · Intense Sun

Moderate; consistent moisture

Full sun to partial shade; tropical annual; cheerful orange/yellow blooms

Bougainvillea Vine
Bougainvillea spectabilis

MOISTURE 30–50% · Low

**** DLI 25–35 mol/m²/d · Intense Sun

Drought stress triggers blooming; reduce water in fall

Full sun; less water = more flowers; fast growing; thorny; frost-sensitive

Clematis
Clematis jackmanii

MOISTURE 45–65% · Moderate

*** DLI 15–22 mol/m²/d · Intense Sun

Consistent moisture; mulch roots to keep cool

Full sun head; cool shaded roots; prune per group (1/2/3); stunning blooms

Plant Library — 344 plants, 11 categories, instant search, category filters, care cards, and Reviewed/Pending filters

344 plants	Reference profiles for a broad range of common indoor, outdoor, and food plants.
11 categories	Fruit, Vegetable, Herb, Houseplant, Flower, Succulent, Tree, Tropical, Grass, Vine, and Ornamental.
Search	Instant search by common name, scientific name, category, or growing notes.
Scientific names	Every plant shows its botanical name in italic below the common name.
Care cards	Each card shows moisture range, DLI range with a visual bar and intensity label, watering notes, and growing notes.
Reviewed / Pending	Use the Reviewed and Pending Review filters to distinguish established profiles from newly added entries that may be refined over time.
Reference targets	Profile ranges are a useful starting point. Adjust the saved targets for the actual plant, pot, medium, season, and growing environment.

Assigning a Plant to a Sensor

- On an unassigned soil-sensor card, select the small **assign plant** link. On an assigned card, select **Change plant** from the profile.
- In the **Assign Plant** dialog, type part of the plant name to search, or choose a Category from the dropdown.
- Select the plant from the list. The dialog shows the moisture target, DLI target, and watering notes for the selected plant.
- Click **Assign** to confirm. The plant name appears on the sensor card and SproutKeeper begins monitoring against its targets.
- Click **Remove** to unlink the plant from this sensor. The sensor continues to report readings normally.

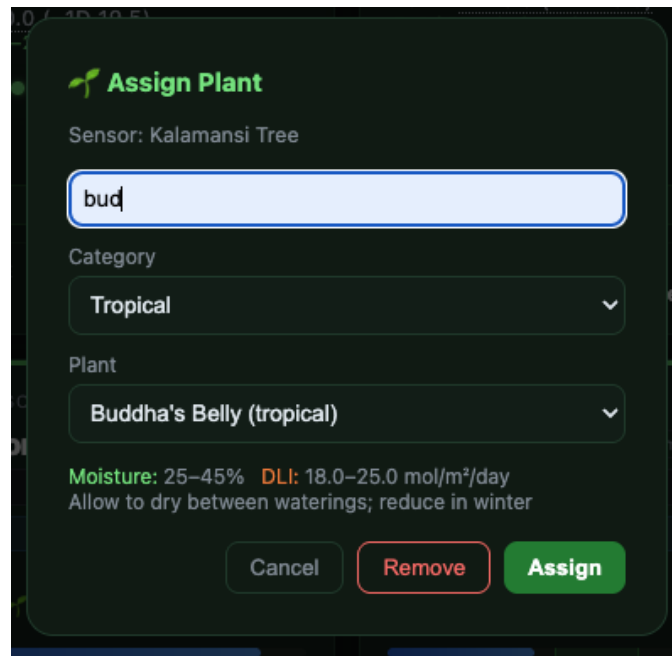


Fig 5 — Assign Plant dialog: search by name, filter by category, preview moisture & DLI targets before confirming

Tip: Plant assignments are stored in the hub's non-volatile memory and survive reboots and OTA firmware updates.

Plant Profile Popup

After a plant is assigned, click the green plant name on the sensor card to open a popup:

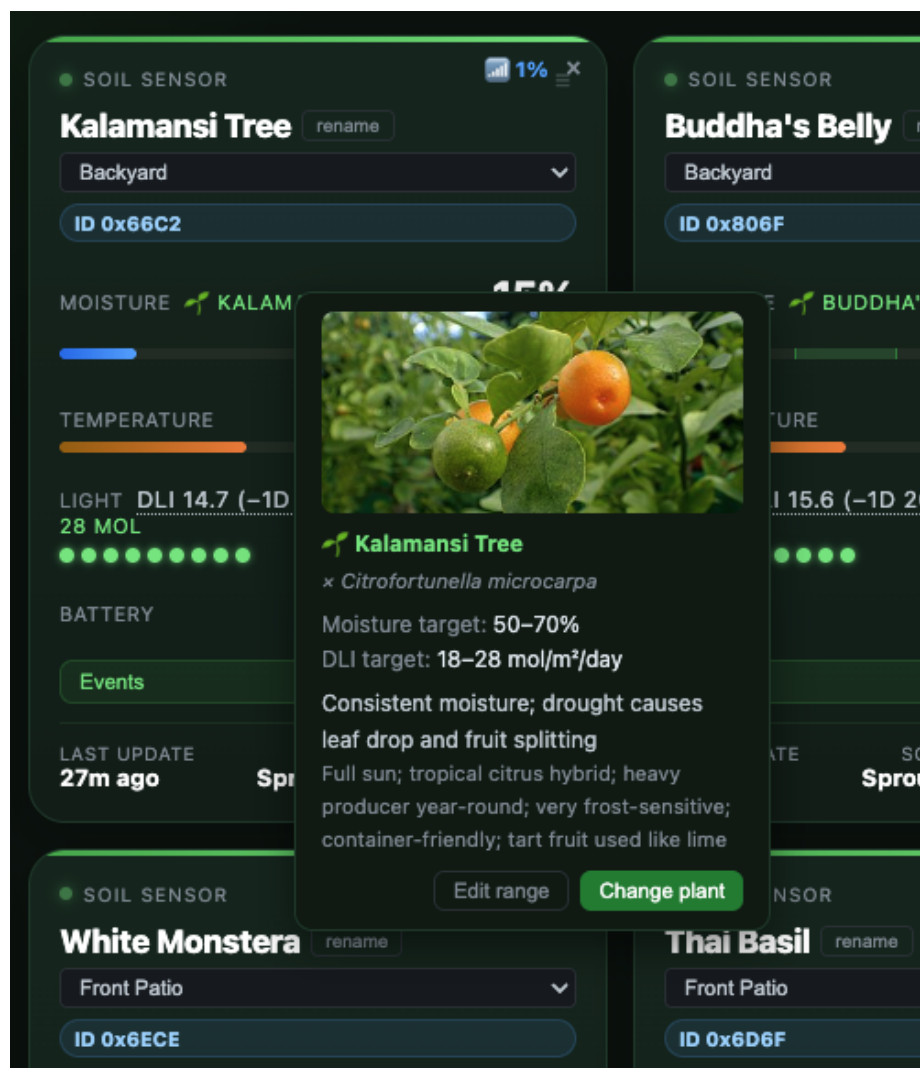


Fig 6 — Plant profile popup: scientific name, moisture & DLI targets, watering notes, growing notes, Change plant button

Name	Common name in bold. Scientific name in italic below it.
Moisture target	Ideal moisture range for this plant species.
DLI target	Ideal daily light integral range (mol/m ² /day).
Watering notes	When and how to water.
Growing notes	Soil, light, temperature, and special growing tips.
Change plant	Re-opens the Assign Plant dialog to switch to a different species.

Note: The same plant profile popup is available in the remote dashboard at sproutkeeper.com. Click the green plant name on any sensor card — the popup includes the scientific name, targets, and care notes pulled from the same library.

Dashboard Warnings

When a plant is assigned and live readings are available, the sensor card shows inline warnings:

too dry	Moisture is below the plant's minimum target.
too wet	Moisture is above the plant's maximum target.
too little light	Yesterday's DLI was below the plant's minimum DLI target.
HI+	Light intensity is high (usually outdoors in full sun). Normal for sun-loving plants.

22 Current Hub Reference

Note: This chapter records the current Hub behavior and labels. Where an earlier legacy description differs, use this chapter for current operation.

Trends, Activity, and Calculated Values

Open **Trends** from a sensor card to review readings stored on the Hub. The Hub stores a compact sample at most once every 15 minutes and retains up to 30 days of sensor history. Choose **24 hours**, **7 days**, or **30 days**; the chart, statistics, Activity Groups, and Related Activity all follow the selected range.

Metric view	Choose one available metric for the sensor, such as moisture, temperature, light, DLI, rain, humidity, or VPD.
All view	Normalizes measurements with different units to a shared 0–100 percent chart scale. The legend retains each metric's real minimum and maximum, and the cards retain normal units.
Statistics	Current, minimum, average, and maximum summarize the selected metric and selected range.
Activity marks	Full-height colored marks show related output actions. Close repeats are grouped and labeled with their count.
Activity Groups	Names repeated actions and totals only the actions that fall inside the chosen trend range.
Calculated values	DLI is calculated from plant-sensor light history. VPD is calculated from TX16 temperature and humidity.



Seven-day VPD Trends — selected-range activity marks and grouped related actions



Seven-day All Trends — normalized lines with actual ranges retained in the legend

Note: Trend history starts when the Hub receives new packets. A new or reset Hub cannot reconstruct readings that were never stored.

Current Event Controls

Each sensor card provides up to four event slots. An event can control one output, send notifications, or do both. The current controls below replace earlier labels such as *Keep Active* or fixed short timer limits.

Condition	Choose the supported metric for that sensor, comparison, and threshold. A second condition may be joined with AND or OR.
Hold plug state	When on, the Hub periodically reasserts the selected plug state while the event remains active. When off, it acts when the condition changes and does not repeatedly reverse a manual override.
Release Margin	Optional hysteresis for Hold plug state. For example, VPD above 1.50 with a 0.30 margin remains active until VPD is 1.20 or below.
Enforce Cooldown	Sets the minimum interval before an active Hold event may reassert its output. Enter any duration from 1 second through 30 days, using seconds or minutes.
Auto-Off Timer	After an event performs its selected action, the Hub performs the opposite action after this duration. Enter any duration through 30 days; 0 disables it.
Startup behavior	After startup, saved rules are evaluated and outputs synchronize to current conditions without creating a false new-alert notification.

Timer and Repeating-Loop Events

Condition-based pulse	Choose a condition, Turn ON, and an Auto-Off Timer. The output turns off when the timer expires. With Hold on and the condition still true, another pulse may begin after the cooldown.
Repeating loop	Choose Timer , Turn ON, and turn Hold plug state on. Auto-Off Timer becomes the On Time; Enforce Cooldown becomes the Off Time. The Hub repeats this on/off loop.
One-time timer	Choose Timer and Turn ON, set On Time, and turn Hold plug state off. Re-enable the event when another one-time run is wanted.
Safe test	Measure actual pump flow and begin with conservative durations. Test both the trigger and release behavior while present.

Time Windows and Notifications

Time windows	Use Any Time, Morning (6–10 AM), Evening (3–7 PM), End of Day (after 3 PM), Daytime, or Nighttime. Daytime and Nighttime use sunrise/sunset from the configured Weather ZIP, with manual fallback values when needed.
Window close	When a time window closes, the Hub sends the opposite of the selected plug action once so a load is not left in its in-window state.
Targets	Leave Notify Target blank to use Default Email for email and Default Phone for SMS or calls. An event-specific target overrides that default.
Messages	Leave Custom Message blank for an automatic sensor/event message, or use Message Help for live-reading and event-detail macros. Test Email, SMS, or Call before depending on delivery.

Current Devices, Settings, and Health

Wireless sensors	Up to 20 plant or rain-sensor identities, plus three TX16 channels. Battery sensors transmit on their own schedule and cannot be remotely awakened.
Outputs	The Hub supports its USB output; up to four SproutPods; four SproutControllers (16 DC channels); eight OzPlugs; eight Tasmota devices; 16 Kasa devices; and supported Shelly custom targets.
Tasmota relinking	The Hub saves a Tasmota device MAC. After a DHCP address change, it can search the local subnet, relink the device, and repair saved event routes while preserving its name.
Device Health Check	Use this to poll configured Wi-Fi outputs. One-way RF sensors cannot be pinged by this test.
Sensor Management	Clear ghost sensors removes unnamed slots only; named sensors are preserved. Reset signal calibration only when the signal display needs a fresh calibration.

Backup, Updates, Reset, and Activity

Backup & Restore	A full backup includes settings, credentials, sensor names and locations, events, totals, activity records, and trend history. Restore replaces saved state; save a fresh backup first.
Firmware update	Check for Updates is manual. The dashboard reports the initial check, reboot into update mode, check in that mode, secure download progress, verification, and restart.
Factory Reset	Erases Wi-Fi, sensors, names, locations, history, trends, totals, events, integrations, service data, and logs while retaining installed firmware. Save a backup first.
Activity Log	Stores up to 500 structured records. Grouped view combines matching actions and counts repeats; Timeline lists them in order. Use it with Trends and Device Health Check when diagnosing behavior.

Note: Local monitoring and automation continue without internet. Remote viewing, online weather, service-key requests, notifications, and firmware checks need internet access.

23 Supported Devices

SproutKeeper Hub is the central brain of a local growing system. It receives compatible wireless sensor data, stores readings and activity, evaluates rules and timers, and controls supported outputs. Local monitoring and automation do not require internet; online weather updates require an internet connection.

Hub and Wireless Sensors

SproutKeeper Hub	Receives 433 MHz wireless sensor packets, displays live conditions and trends, runs event rules and timers, and controls compatible controllers and smart plugs. It stores names, locations, settings, activity, and events locally.
Plant / soil sensors	Battery-powered wireless sensors that report plant-zone conditions. They transmit on their own schedule, typically about every 30 minutes, using one-way 433 MHz radio. The Hub cannot wake one remotely or request an immediate reading; wait for its next transmission.
TX16 weather station	Supports up to three channels of air temperature and humidity. Readings can come directly to the Hub or through a SproutPod. SproutKeeper uses temperature and humidity to calculate VPD.
Rain gauge	Reports cumulative rain. The Hub accepts it directly or through a SproutPod and calculates Today, Yesterday, 7 Days, Month, Year-to-Date, and Since Reset totals. Cumulative readings preserve rain that occurred while a packet was missed.

Note: *Wireless sensor transmissions are one-way. A missed packet is not an indication that the Hub can poll the sensor; check placement, battery, and wait for the next scheduled transmission.*

SproutPod Wi-Fi Bridge and USB Output

A SproutPod receives compatible 433 MHz plant, TX16, and rain packets, then forwards them to the Hub over Wi-Fi. Use it where direct radio coverage is weak or where a remote USB-powered device needs local control.

Coverage	Use up to four SproutPods. A Pod is not a radio repeater: it independently receives the sensor packet, then sends the decoded reading to the Hub over Wi-Fi.
Duplicate handling	If the Hub and a Pod both receive the same packet, the Hub identifies the duplicate and keeps one reading.
USB output	Each Pod has a 5 V USB output for small compatible devices such as a low-power pump or grow light. Confirm the device current and the power supply rating before use.
Network role	The Pod needs Wi-Fi reachability to the Hub. It extends coverage through a Wi-Fi bridge, not by retransmitting 433 MHz radio.

SproutController DC Outputs

SproutController is a four-channel DC controller for pumps, valves, fans, lights, and other compatible DC loads. The Hub can manage up to four controllers, for a total of 16 DC channels.

Power input	Accepts 5–60 V DC. Every output switches the same voltage supplied to the controller; it does not convert voltage. Choose a supply that matches the connected equipment.
Four channels	Each channel can be controlled manually, by a sensor event, or with a timer. Schedules can use weather and rain-skip logic where configured.
Local continuity	A controller can continue a saved local schedule if the Hub is temporarily unavailable. Confirm schedules and connected loads during commissioning.
Example use	A 12 V pump needs a 12 V supply; a 24 V valve needs a 24 V supply. Do not connect an AC load to a DC controller output.

Note: Use correctly rated DC power supplies, fuses, wire, and enclosures. Disconnect power before wiring. Keep all controllers and connections dry, and test an automation while present before relying on it.

Supported Wi-Fi Smart Plugs

OzPlug	Local discovery, control, status, and energy monitoring through the Hub.
Tasmota	Local control by IP address; optional credentials may be required by the device configuration.
TP-Link Kasa	Local discovery and control on the same network as the Hub.
Shelly	Local control using the Shelly local API and a supported custom target.

Smart plugs are for correctly rated AC equipment. SproutController outputs are for DC equipment. Never connect AC mains equipment to a DC controller channel, and never exceed the rating of any plug, controller, cable, or power supply.

How Compatible Devices Work Together

Direct path	Wireless sensor → 433 MHz → SproutKeeper Hub → Wi-Fi → SproutController or supported smart plug → equipment.
Extended path	Wireless sensor → 433 MHz → SproutPod → Wi-Fi → SproutKeeper Hub → Wi-Fi → SproutController or supported smart plug → equipment.
Decision path	The Hub stores the reading, evaluates conditions, time windows, and timers, records activity, then sends the requested output action.