

Doc No. IN-HABOX-1000 · Rev. A · Installation Instructions

Konceptux HA Box

Installation Instructions — Essential, Pro & Premium tiers

1. Before You Begin

Read this entire document before unpacking, powering, or mounting the Konceptux HA Box. Retain these instructions for future reference and for any future owner of this property.

WARNING — ELECTRICAL SAFETY

Use only the supplied USB-C power supply. Do not expose the unit, cables, or power supply to moisture, standing water, or direct weather. Disconnect power before cleaning or servicing.

WARNING — ESD & HANDLING

The internal Raspberry Pi board and NVMe module are static-sensitive. Ground yourself before opening the enclosure. Handle the unit by its enclosure, not by the Zigbee antenna.

WARNING — VENTILATION

Do not block the ventilation holes on the top panel. Maintain at least 5cm of clearance on all sides. Do not place the unit inside a sealed cabinet or near a heat source.

WARNING — INDOOR USE ONLY

This product is rated for indoor, dry-location use only (0–40°C ambient). It is not weatherproof and must not be installed outdoors or in damp areas (e.g. unconditioned garages, crawl spaces).

2. Mounting

The HA Box is designed to sit on a flat shelf, countertop, or utility closet surface. No tools are required for a standard countertop installation.

2.1 Choosing a location

- Central to the property for the best Zigbee mesh coverage — avoid exterior walls or corners.
- Away from direct sunlight, heat sources, and moisture (kitchens, bathrooms, unconditioned spaces).
- Elevated slightly off the floor where possible — a shelf or cabinet top is ideal.
- Within Ethernet cable reach of your router or network switch, or within reliable Wi-Fi range.
- Clear of metal cabinets or large appliances that can shield Zigbee/Wi-Fi signal.

2.2 Orientation

Place the unit with the ventilated top panel facing up and the port side (Ethernet, USB-C power) facing outward for easy cable access. The Zigbee antenna should be left upright and unobstructed.

2.3 Optional wall mount

An optional wall-mount bracket (part no. HABOX-ACC-MOUNT) is available for installations where shelf space is not available. Secure the bracket to a stud or use appropriate drywall anchors rated for at least 0.5kg. The HA Box enclosure clips into the bracket without additional hardware.

3. Wiring & Connections

The HA Box has exactly two required connections: network and power. The table below summarizes every connector on the unit.

Connector	Function	Cable / Notes
Ethernet (RJ45)	Network uplink to router / switch	Cat5e or Cat6 patch cable
USB-C (power)	DC power input, 5V/5A	Official Raspberry Pi 5 27W USB-C PSU (included)
Zigbee coordinator	Radio uplink to Zigbee mesh	Pre-installed internally — do not remove
USB 3.0 (x2)	Reserved — local storage / peripherals	Not required for standard installation

3.1 Connection sequence

- Connect a Cat5e/Cat6 Ethernet cable from the HA Box to your router or network switch.
- Connect the supplied USB-C power supply to the HA Box, then to a wall outlet.
- Wait approximately 10 seconds for the unit to complete its boot sequence.
- Confirm the status LED is solid green — this indicates the system is ready.
- If the LED remains off or flashes red for more than 60 seconds, see Section 6, Servicing.

4. Network Configuration

By default, the HA Box requests an IP address automatically via DHCP from your router. No manual network configuration is required for a standard installation.

4.1 Locating the device

- On most networks, the unit is reachable at: `homeassistant.local:8123`
- Alternatively, check your router's connected-devices list for a device named "homeassistant" or "Konceptux-HABOX" and note its IP address.
- Enter that address in a browser on any device connected to the same network.

4.2 Reserving a static IP (recommended)

For the most reliable long-term access, reserve a static IP address for the HA Box in your router's DHCP settings using its MAC address (printed on the underside label).

4.3 Wi-Fi fallback

The HA Box includes 802.11ac Wi-Fi and can operate wirelessly if an Ethernet run is not available. Wired Ethernet is recommended for reliability; Wi-Fi credentials can be configured from the onboarding wizard described in Section 5.

5. Dashboard Access & First-Run Setup

The dashboard is accessed through any standard web browser — no app installation is required, though a companion mobile app is available.

5.1 First-run wizard

- Navigate to <http://homeassistant.local:8123> from a phone, tablet, or computer on the same network.
- Create your administrator account (name, username, password).
- Confirm your location and time zone — this is used for automations and sunrise/sunset scenes.
- Your pre-configured Konceptux dashboard loads automatically once setup completes.

5.2 Ongoing access

- Bookmark the dashboard URL on any household device for quick access.
- Optional: install the free “Home Assistant” companion app (iOS / Android) for notifications and location-based automations.
- Optional: mount a dedicated tablet on a wall as a permanent control panel.

6. Servicing & Maintenance

The HA Box is designed to run unattended for years with minimal maintenance.

6.1 Routine maintenance

- Wipe the exterior with a dry or slightly damp cloth only — never use solvents or abrasives on the painted PETG finish.
- Periodically check that ventilation holes are free of dust; use compressed air if needed.
- Firmware and Home Assistant updates are delivered one-click OTA from the Supervisor dashboard — do not disconnect power during an update.

6.2 Opening the enclosure

Internal access (e.g. storage upgrade) should only be performed by a qualified technician. Disconnect power first. Remove the four corner screws on the underside, lift the lid away from the port side first, and observe ESD precautions from Section 1 at all times.

6.3 Troubleshooting

Symptom	Likely Cause	Action
No LED / no boot	Power supply or cable fault	Confirm official 27W USB-C PSU is used and fully seated
LED red / not reachable	Network cable or DHCP issue	Reseat Ethernet cable; check router DHCP client list
Zigbee devices drop out	Antenna obstructed or mesh gap	See Section 7, Calibration
Dashboard slow to load	Pending OTA update in progress	Wait for update to complete; do not power-cycle

7. Calibration

7.1 Zigbee mesh range check

After pairing your Zigbee sensors (per each sensor's own instructions), verify signal quality from the Zigbee2MQTT panel in the dashboard. Devices reporting a link quality below 50% should be relocated closer to the hub or to a mesh-extending repeater device.

- Recommended maximum unobstructed range: 30m per hop.
- Add a mains-powered Zigbee repeater (e.g. a smart plug) partway to any sensor reporting weak signal.
- Re-run the range check after adding a repeater to confirm improvement.

7.2 System clock

Time is synchronized automatically via NTP whenever the unit has an internet connection. No manual calibration is required. If operating fully offline, set the time manually in Settings → System → General.

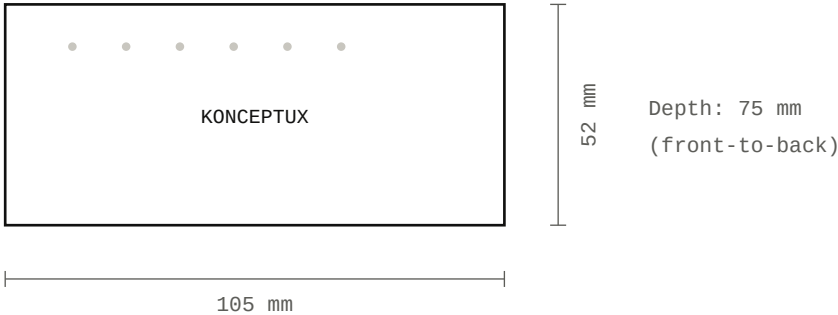
7.3 Sensor calibration

Third-party Zigbee sensors (temperature, humidity, contact, motion) are calibrated at the factory by their manufacturer. If a reading appears offset, apply a calibration adjustment in Settings → Devices & Services → [device] → Entities, rather than modifying the hub itself.

8. Specifications & Dimensions

Processor	Raspberry Pi 5 — BCM2712 quad-core Cortex-A76 @ 2.4GHz (Pi 4 4GB on Essential tier)
RAM	4GB or 8GB LPDDR4X-4267
Storage	256GB or 512GB M.2 NVMe (PCIe 2.0) via M.2 HAT+; 256GB USB 3.1 SSD on Essential tier
Network	Gigabit Ethernet · 802.11ac Wi-Fi · Bluetooth 5.0
Zigbee Radio	Sonoff USB Dongle Plus · EFR32MG21 chipset · Zigbee 3.0
Power Input	5V/5A USB-C — official Raspberry Pi 5 27W PSU (included)
Cooling	Official Raspberry Pi 5 Active Cooler, fan + bonded heatsink (Pro/Premium)
Enclosure	Custom PETG, 3D-printed, metallic-painted finish · 105 × 75 × 52mm · Konzeptux logo embossed on lid
Software	Home Assistant OS + Supervisor · Zigbee2MQTT · Mosquitto · InfluxDB · Grafana
Automation Model	100% local processing — no internet connection required to operate
Boot Time	Under 10 seconds from cold start
Firmware Updates	One-click OTA from the Home Assistant Supervisor dashboard
Operating Temp.	0°C to 40°C ambient, indoor use only

8.1 Enclosure dimensions



All dimensions in millimeters. Weight approx. 220g (Essential) / 240g (Pro, Premium).