

A horizontal bar with an orange segment on the left and a blue segment on the right. The word "HBOX" with a registered trademark symbol is centered in white on the blue segment.

HBOX®

OPERATING INSTRUCTIONS

Version: 01.00.00-1

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Intended Use Statement

HBox® is a generic hardware platform designed by NantHealth to host software medical devices. These can be NantHealth developed software medical devices. By itself, the HBox platform is not a medical device but instead carries the classification of the software medical device it is hosting.

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About This Guide

Intended Audience

The intended audience for this guide is system administrators and other technical personnel responsible for installing, managing or maintaining an HBox system in an indoor, healthcare environment.

Client Support Contact Information

NantHealth Client Support contact information and hours of operation:

The support line hours are 24/7. The number is 866-202-2124
The e-mail address is support@nanthealth.com

Manufacturer Contact

NantHealth, LLC
430 West 5th Street
Suite 800
Panama City, FL 32401
United States of America
www.nanthealth.com

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Chapter 1: Compliance and Safety Information.

FCC ID: IFU1001008

Federal Communications Commission (FCC)

This device complies with part 15 of the Federal Communications Commission (FCC) Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

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

- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

This device is restricted to indoor use only when operating in the 5.15 to 5.25 GHz frequency band (U-NII 1).

The end user has no means, either through software or hardware, to change the RF characteristics of the radios within HBox.

Personal Electronics Warning

As a safety measure to prevent potential adverse results to data transmission, users should not plug personal electronics into an HBox USB port.

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Safe Distance Warning

The device is to be installed as to provide a separation of at least 7.9 inches (20cm) from all persons during operation.

Disposal and recycling information

HBox must be disposed of properly in accordance to local laws and regulations separately from household and standard waste. For detailed information on disposal and recycling options contact local waste management authorities for electronics containing lithium-ion batteries.

Symbols

Symbol	Meaning
	Manufacturer
	Consult instructions for use
	Caution, consult accompanying documents
	Serial Number

Table 1. Symbols

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Chapter 2: Wi-Fi Connectivity

802.11 a/b/g/n Connectivity

HBox supports connectivity to Wi-Fi using the following standards:

- 802.11a
- 802.11b
- 802.11g
- 802.11n

Security Standards

When connecting to a Wi-Fi network, HBox uses the following security standards:

- WEP
- WPA
- WPA2

STA Mode

HBox connects to a Wi-Fi access point which supports STA mode.

Chapter 3: Ethernet Connectivity

Single Ethernet Port

HBox has one Ethernet port which supports speeds of 10/100 mbps.

Chapter 4: USB Connectivity

Built-In USB Port

- HBox USB ports are type A female

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- USB version 2.0 compliant
- HBox connects two USB devices without the need of a USB hub
- Each USB port holds ten newtons of tension so that unintentional withdrawal of the USB connection is better prevented

Chapter 5: HBox Processing Power

Processor Specifications

- 32-bit ARM
- One core
- Clock speed of up to 1.0 GHz

RAM Specifications

HBox has RAM of 2 GB.

Storage Space

HBox has a solid state, 8 GB storage space.

Expandable Storage via SD Card

- HBox is capable of expanding its storage space by up to 64 GB using an SD card
- The SD card slot is made inaccessible to the lay user
- HBox stores and retrieves files from the SD card

Chapter 6: Preventing Data Corruption

Powering On

HBox powers on and boots up automatically when it is plugged in. A power button is not required.

HBox Battery

To prevent data corruption during power loss, the internal lithium-ion battery has the capacity to safely shut down the HBox three consecutive times without time allowance for charging the battery. When not in use the HBox battery has a standby life of one year.

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Note: Do not attempt to remove or replace the HBox internal battery. The lithium-ion battery in HBox should be serviced only by NantHealth, and must be recycled or disposed of separately from household waste.

Safe Shutdown

- HBox remains operational without interruption when power is discontinued and then returned in less than 10 seconds
- HBox completes a safe shutdown if power is discontinued for more than 10 seconds
- If power is returned while HBox is shutting down, HBox will immediately reboot once the shutdown process completes

Master Reset Button

The master reset button is for the purpose of rebooting the HBox in the event it becomes unresponsive due to a software or a firmware crash. The button is located underneath the plastic door on the side of HBox. It is accessible only by paperclip or pin.

- HBox will immediately power down when master reset button is pressed
- HBox will begin normal startup when master reset button is released

Chapter 7: HBox Mounting Options

Universal Mount

HBox has a wall mount which allows it to be mounted to any flat surface such as a wall, table stand, or medical equipment carts.

- The universal mount is compatible with a hole pattern that consists of two horizontal holes that range from 1 ¼ inches to 2 ¾ inches apart
- The maximum screw diameter is 3.2mm

Note: Even if not mounted to a wall, HBox should always be used with the back mounting bracket so that unintentional disconnection of the Ethernet cable will not occur.

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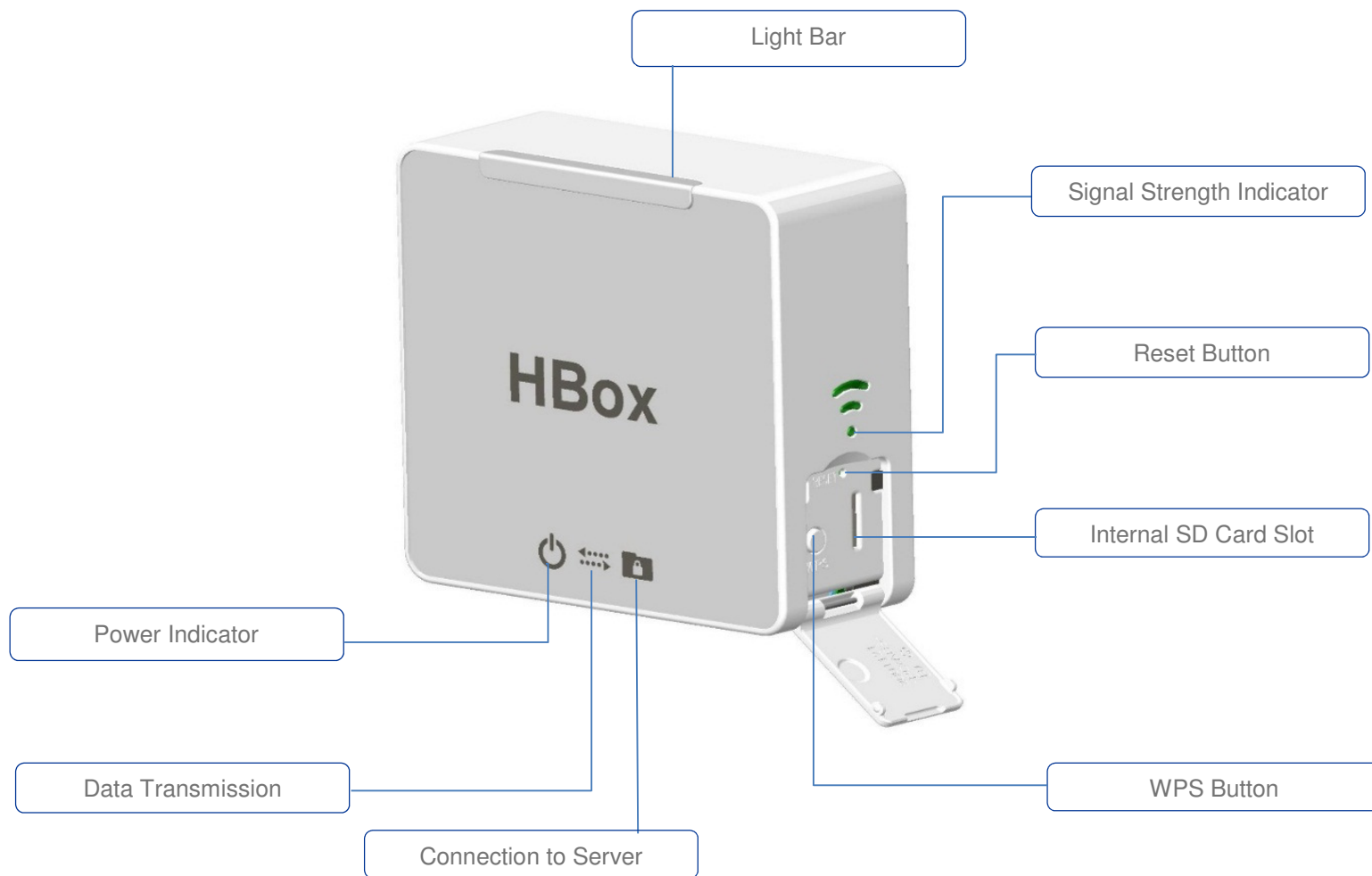


Figure 1. Front View and Side Panel

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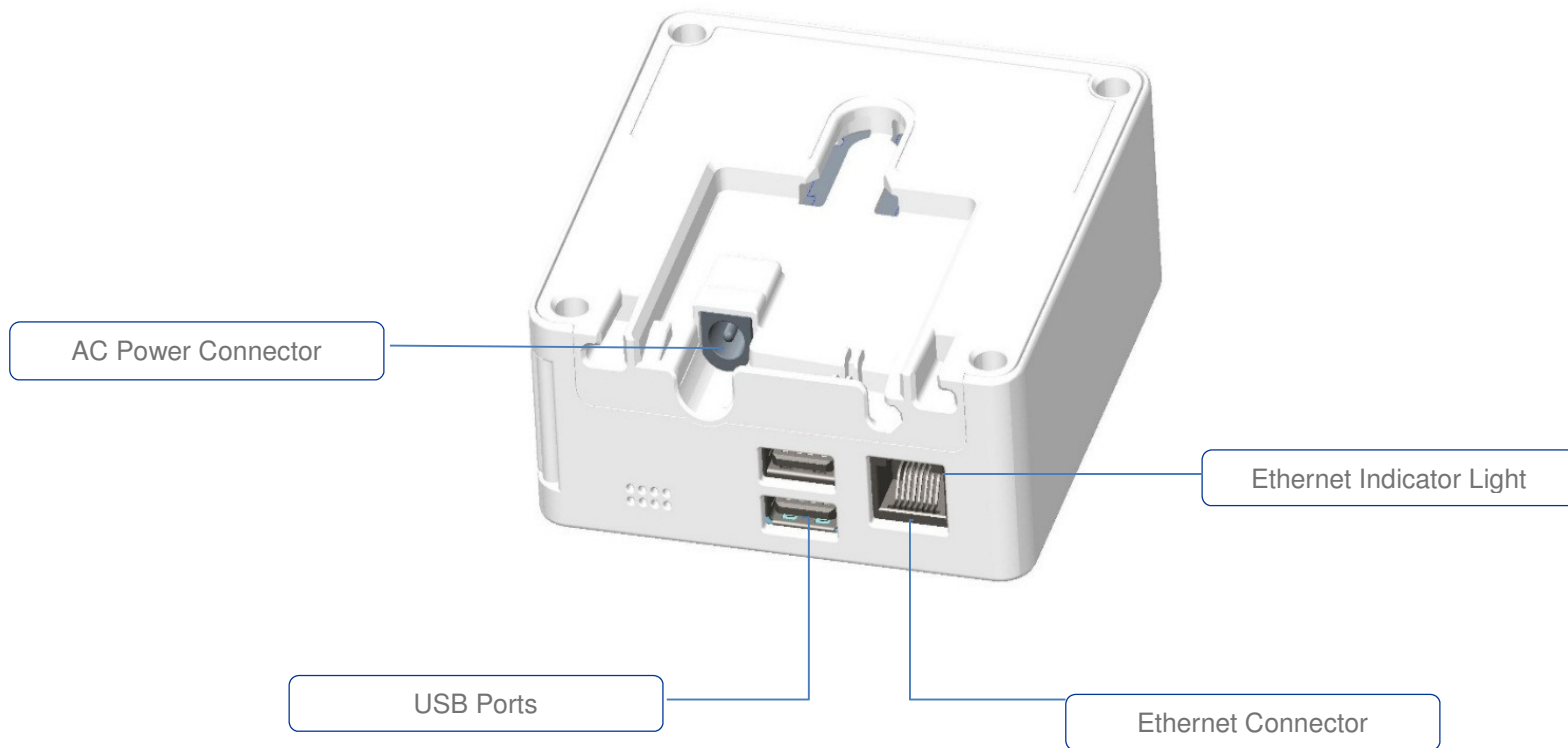


Figure 2. Rear and Bottom View

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Figure 3. Removable Mounting Bracket

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Chapter 8: Indicator Lights

Power Indicator

Once powered on, and while in the process of booting, the power indicator light on the forward face panel will blink green. After the boot process completes, the indicator light displays as solid green, visible from a distance of up to 5 feet.

Connection to Server Indicator

Located on the forward face panel is a light that indicates server connection status. The connection to server indicator can be seen from a viewing distance of 5 feet.

- When connected to the server, the server indicator displays as green
- When there is no connection to the server, the server indicator displays as blue

Data Transmission Indicator

HBox contains a single light that indicates when data is being transmitted from HBox to the server. The data transmission indicator can be seen from a viewing distance of 5 feet.

When data is being transmitted from HBox to the server, the data transmission indicator light displays as green.

Signal Strength Indicator

Located on the right side panel there are three green signal strength bars which indicate signal strength. The signal strength indicator bars can be seen from a viewing distance of 5 feet.

- The first bar indicates the lowest signal strength
- The second bar indicates greater signal strength than the first bar
- The third bar indicates the highest signal strength



Figure 4 - Signal Strength Indicator

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Ethernet Connection Indicator

HBox contains a single light that indicates wired Ethernet connectivity.

- When wired Ethernet connectivity is present, the Ethernet connection indicator blinks green
- When there is no wired Ethernet connectivity, the Ethernet connection indicator displays as solid orange

Chapter 9: Bluetooth

Bluetooth 4.0

The HBox contains a Bluetooth chipset and connects to devices via Bluetooth. The Bluetooth chipset supports:

- Bluetooth 4.0
 - Classic
 - Bluetooth high speed
 - Bluetooth low energy

Chapter 10: Environmental Requirements

Operating Temperature

- Range of +5 deg C to +40 deg C
- Range of +41 deg F to +104 deg F

Atmospheric Pressure

- Range of 700 hPa to 1060 hPa

Storage Temperature

- Range of -25 deg C to +70 deg C
- Range of -13 deg F to + 158 deg F

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Humidity

- Range of 0% to 93%, non-condensing

Chapter 11: Sterilization

General Cleaning

HBox is water resistant and may be wiped down or sterilized with alcohol or liquid cleaners that contain up to 10% bleach without degrading.

Note: Medical disinfectant wipes are recommended.

IP Rating

- HBox has an IP rating of IP52
- Vertically dripping water has no harmful effect when HBox is tilted at an angle of up to 15° from its upright position

Note: Ingress of dust is not entirely preventable.

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Appendix I: Key Features

Ability to run multiple software titles
Setup and configuration is through wired LAN
Support for multiple communication methods to servers • Ethernet • Wi-Fi
Support for multiple connection methods to medical devices • Ethernet • USB
Support for many USB devices • 2 USB ports on HBox • USB ports are version 2.0 compliant • Supports use of powered USB hub for additional USB ports
Supports SD card expansion up to 64 GB
Mounting options • Wall mount
Ease of use by automatically powering on when plugged in
Battery support for safe shutdown
Ability to remotely administer and troubleshoot
Simple user interface • Signal strength indicator • Connection to server indicator • Data transmission indicator • Ethernet connector indicator

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