

Smart Building Hub (SBH300)

The Smart Building Hub (SBH300) is the base controller for the Verasys™ Building Automation System (BAS) and provides wired and wireless connection between all Smart Equipment layers and Verasys controls. Use this guide to complete the following tasks:

- Connect BACnet® MS/TP devices
- Connect the TMR coordinator
- Power the SBH300
- Log on to the SBH300 local UI
- Configure the Internet connection

Table 1: Factory default parameters

Wi-Fi AP SSID: VERASYS-SBH
Wi-Fi AP Passphrase: Place label here
UI Username: admin
UI Password: Place label here
Device ID: Place label here

- ① **Note:** Save this guide. It contains your default username and password information needed to access this device after a network reset.

Connecting BACnet Equipment to the SBH300

About this task:

When the SBH300 is connected to a MS/TP network through a wired connection or a wireless TMR connection, you can access Verasys controllers and third-party BACnet MS/TP devices. The SBH300 connects to the MS/TP network through the System Bus.

To view a device on the network to see its setpoints, alarms, and other parameters, use a web-enabled device with a supported internet browser connected to the SBH300 Wi-Fi network.

1. To connect the SBH300 to the Verasys System, use the four-terminal System Bus port. Wire the System Bus communications to the blue four-terminal connector.
2. If the SBH is at the end of a line, set the end-of-line (EOL) switch to ON.
3. Connect the Wi-Fi adapter to one of the USB ports.

Connecting a TMR coordinator

You can connect equipment over a MS/TP wireless network to the SBH300 with a TMR set to coordinator mode. You can connect up to two TMRs in Coordinator Mode to the SBH300. The first TMR connected to the System Bus of the SBH300 automatically resets to Coordinator Mode. When you connect a second TMR to the SBH300, you must manually set the TMR to Coordinator Mode. For



more information about Coordinator Mode, refer to the *Mode selection* section of *Verasys TMR Series Wireless Router Installation Guide (LIT-12014167)*.

About this task:

To connect the TMRs to the SBH300, complete the following steps:

1. Connect the TMR RJ-12 port to the SBH System Bus RJ-12 port.
2. If the System Bus RJ-12 port is already in use, or to connect a second TMR, use the System Bus (FC) four-pin terminal block.
 - ① **Note:** The SBH300 provides power for the TMR on +15V pin of the System Bus (FC) connector. If the SBH300 is wired to other MS/TP devices, do not connect the cable's shield wire to the four-terminal System Bus port. Leave the shield disconnected, or wire-nut the shield wires together and bypass the SBH300. For more information about wiring the System Bus terminal block refer to the *Screw Terminal Blocks for Connecting the Bus Cable* section of the *Verasys BACnet MS/TP Communications Technical Bulletin (LIT-12012362)*.
 - ① **Note:** If the System Bus starts at the SBH300, connect the shield to earth ground. If the SBH is in the middle of the run, wire nut the shields together and bypass the SBH300.

Powering the SBH300

To power the SBH300, use one of the following power supplies:

- 24 VAC power supply.
- 24 VDC power supply.

Connecting a 24 VAC power supply

- Connect the 24 VAC power source to the Hot and COM terminals on the SBH.
 - **Important:** If using a separate 24 VAC to supply power to the SBH, ensure transformer is sized properly.

Connecting a 24 VDC power supply

1. If you are using the 24 VDC power adapter, plug the power adapter into the round 24 VDC barrel plug located in the upper right corner of the SBH300.
2. Connect the power supply to the power cord.
3. Connect the power cord to a 100 VAC to 240 VAC outlet.

Connecting to the SBH with the Wi-Fi access point

About this task:

Complete the following steps to access the SBH300 local UI and monitor equipment connected to the SBH300 on the Device List.

1. Plug the Wi-Fi adapter into the USB port.
2. Verify that the Wi-Fi AP LED is flashing.
3. Access the Wi-Fi settings on your Wi-Fi connected mobile phone, tablet, or computer.
 - ① **Note:** Turn off VPN applications, such as Zscaler or Cisco® AnyConnect, on your device.
4. Select the SBH300's default Wi-Fi access point (AP) SSID and enter the SBH300's default Wi-Fi AP Passphrase, located on the label of the *Verasys Smart Building Hub (SBH300) Quick Start Guide (Part No. A16381V57K)* included with the SBH300.

5. Open a web browser and enter `https://192.168.142.1` as the browser address.
 - ❗ **Note:** Your web browser may display a warning that your connection is not private or secure. This message appears because the security certificate is a privately signed certificate and cannot be verified by the web browser. You can ignore this warning and click **Advanced** or **Show more details**, and then click the **Proceed to https://192.168.142.1 (unsafe)** link.
6. Use the factory default UI Username and UI Password, located on the label of the *Verasys Smart Building Hub (SBH300) Quick Start Guide (Part No. A16381V57K)* included with the SBH300.
7. Read and accept the SBH300 license agreement.
8. The first time you log on to the SBH300, you must change the admin password, Wi-Fi AP Passphrase, and the Wi-Fi AP SSID.
 - **Important:** After you change the Wi-Fi AP passphrase or Wi-Fi AP SSID, the web server restarts and you need to rejoin the SBH300 Wi-Fi network using the new SSID and passphrase. On some computers and mobile devices, click on the original Wi-Fi AP network before you rejoin the network with the new passphrase.

Result

When you logon to the SBH300 connected to the MS/TP network, all the devices on the network that have unique addresses appear in the device list and are available to configure.

Configuring the Internet connection with Ethernet

Before you begin:

Do not turn Ethernet and Wi-Fi Client on at the same time. When you use the Ethernet connection, make sure that Wi-Fi Client is off. To turn off the Wi-Fi Client, navigate to **Settings > Wi-Fi Client**. From the **Enabled** list, select **Off**.

About this task:

Before you commission the Airwall and can access the SBH300 over the Internet, configure the Ethernet setting. To configure the SBH300 Ethernet settings complete the following steps:

1. Connect the Ethernet cable from SBH300 to an external router, cellular modem, or building network LAN port.
2. Log on to the SBH300 local UI with the Wi-Fi access point. See [Connecting to the SBH with the Wi-Fi access point](#).
3. To configure an Ethernet cable connection, click **Settings > Ethernet**, and enter the necessary data as outlined in the following table:

Table 2: SBH300 Ethernet settings

Field	Setting	Notes
Ethernet	Default: On	
Hostname	Default: SBH300 followed by the Ethernet MAC Address.	You can change the Hostname, but it must be unique for each device on a network.
Domain Name Suffix	Automatically populated	
Ethernet MAC Address	Automatically populated	

Table 2: SBH300 Ethernet settings

Field	Setting	Notes
Auto DHCP Configure	Default: On	If you want or need to use the SBH300 with a static IP address, you must set this field to Off. Obtain the IP Address, Subnet Mask, and Default Gateway from your IT Department and fill out the fields manually. When left to On, these fields populate automatically.
IP Address	See Auto DHCP Configure above.	
Subnet Mask	See Auto DHCP Configure above.	
Default Gateway	See Auto DHCP Configure above.	
Auto DNS Configure	Off. Read-only.	Do not change the Auto DNS Configure setting. Airwall protection requires Auto DNS set to Off.
Primary DNS Server	9.9.9.9. Read-only.	Do not change the Primary DNS Server setting. Airwall protection requires Primary DNS Server set to 9.9.9.9.
Secondary DNS Server	149.112.112.112. Read-only.	Do not change the Secondary DNS Server setting. Airwall protection requires Secondary DNS Server set to 149.112.112.112.

- To save your changes, click **Save**.

What to do next:

The SBH300 includes industry standard Zero Trust Security. The SBH300 requires certain ports open on the network to establish secure communications to Johnson Controls cloud services.

If you are using a building network or building owner provided wireless internet source, make sure that the network allows ports TCP 8096, UDP 10500, and UDP 53 open outbound only.

For more information on how to access the SBH through an Ethernet connection, see [Airwall Commissioning for SBH300 remote access](#)

Configuring the Internet connection Wi-Fi Client

Before you begin:

The SBH300 Wi-Fi Client uses the WPA2-PSK protocol. Ensure that the external Wi-Fi router is set to WPA2-PSK mode.

Do not turn Wi-Fi Client and Ethernet on at the same time. When you use the Wi-Fi Client, make sure that Ethernet is off. To turn off Ethernet, navigate to **Settings > Ethernet**. From the **Enabled** list, select **Off**.

About this task:

To connect the SBH300 to the Internet over Wi-Fi, complete the following steps:

- Plug the Wi-Fi adapter into the USB port.
- Log on to the SBH300 local UI. See [Connecting to the SBH with the Wi-Fi access point](#).

3. Click **Settings > Wi-Fi Client**.
4. From the **Enabled** list, select **On**.
5. Click the **Select SSID** button.
6. From the **SSID list**, select the SSID of the wireless network you want to connect to.
 - ① **Note:** Ensure the SSID of the wireless network does not contain special characters, such as ' , * , @ , \$, ! , # . Special characters prevent the SBH300 connecting to wireless networks.
7. In the **Passphrase** field, enter the passphrase of the wireless network.
8. Click **Save**. To see your changes, refresh the page.
 - ① **Note:** If you do not intend to permanently connect the SBH to the Internet, it is best practice to use the Wi-Fi Client to temporarily connect to the Internet to ensure that the SBH300 downloads the latest firmware packages.

Airwall Commissioning for SBH300 remote access

Before you can remotely access the SBH300, you must first commission the Airwall Agent. The Airwall Agent provides remote access to the SBH300 from anywhere and secures your connection with industry standard Zero Trust Based Security.

The following QR codes link to step by step instructions for commissioning the Airwall Agent on Windows, Apple Mac, Apple iOS, and Android devices.

Windows Airwall Agent Application Note QR code



Document link: <https://docs.jci.com/BAS/Windows-Airwall-Agent-Application-Note>

Apple macOS Airwall Agent Application Note QR code



Document link: <https://docs.jci.com/BAS/Apple-macOS-Airwall-Agent-Application-Note>

Apple iOS Airwall Agent Application Note QR code



Document link: <https://docs.jci.com/BAS/Apple-iOS-Airwall-Agent-Application-Note>

Android Airwall Agent Application Note QR code



Document link: <https://docs.jci.com/BAS/Android-Airwall-Agent-Application-Note>

Related documentation

The following table contains a list of the related Verasys documents. View Verasys documentation at <https://docs.johnsoncontrols.com/bas/>.

Table 3: Verasys documentation

Information	Refer to
Installing the SBH300	<i>Verasys Smart Building Hub (SBH300) Installation Guide SBH300 (LIT-12014293)</i>
Verasys overview	<i>Verasys System Product Bulletin (LIT-12012342)</i>
Using the Verasys system	<i>Verasys System User Guide (LIT-12012371)</i>
Overview of Verasys system components, features, and operating modes	<i>Verasys System Operation Overview Technical Bulletin (LIT-12012370)</i>
SBH300 network and IT guidance	<i>Verasys Smart Building Hub (SBH) Network and IT Guidance Technical Bulletin (LIT-12012324)</i>
Overview of Verasys BACnet MS/TP communication	<i>Verasys BACnet MS/TP Communications Technical Bulletin (LIT-12012362)</i>
BACnet over IP integration	<i>Verasys BACnet over IP Integration User Guide (LIT-12013287)</i>
Verasys Enterprise overview	<i>Verasys Enterprise Product Bulletin (LIT-12013647)</i>
Using the Verasys Enterprise user interface	<i>Verasys Enterprise Security and IT Guide (LIT-12013026)</i>
Using the Verasys Enterprise user interface	<i>Verasys Enterprise Configuration and User Guide (LIT-12012995)</i>
Verasys Enterprise security and IT overview	<i>Verasys Enterprise Security and IT Guide (LIT-12013026)</i>
Wireless system overview	<i>Verasys TMR Series Wireless Best Practices (LIT-12014163)</i>
Installing the TMR	<i>Verasys TMR Series Wireless Router Installation Guide (LIT-12014167)</i>

Technical specifications



Table 4: Technical specifications

Specification	Description
Product code numbers	LC-SBH300-0 , Verasys Smart Building Hub (SBH300)
	LC-SBH300-0C , Connected Verasys Smart Building Hub (SBH300) with ICG-150 cellular modem

Table 4: Technical specifications

Specification	Description
Power requirement	Dedicated nominal 24 VAC power transformer or a portable power adapter that supplies 24 VDC. In North America, use a Class 2, 24 VAC power supply with a 50 VA minimum output. Outside North America, use a 24 VAC SELV transformer at the appropriate rating. The minimum input voltage for the SBH300 to operate properly is 20 VAC: ACC-PWRKIT-1A24 ; Europe Plug Type: ACC-PWRKIT-1E24
Power consumption	38 W maximum
Ambient temperature conditions	Operating: -30°C to 70°C (-22°F to 158°F) Operating survival: -30°C to 70°C (-22°F to 158°F) Non-operating: -40°C to 70°C (-40°F to 158°F)
Ambient humidity conditions	Storage: 5% RH to 95% RH, 30°C (86°F) maximum dew point conditions Operating: 10% RH to 90% RH, 30°C (86°F) maximum dew point conditions
Transmission speeds	Ethernet communication: 10 Mbps, 100 Mbps, 1Gbps
Transmission power Wi-Fi access point dongle, maximum	100 mW
Transmission range Wi-Fi access point dongle	Wi-Fi communication: 30 m (100 ft) line-of-sight indoors
Serial interfaces	One FC Bus port: One 6-pin RJ-12 jack and one 4-pin screw terminal Three USB ports: One Micro-B port and two USB A ports. All support USB 2.0 and Open Host Controller Interface [Open HCI] specification.
Dimensions (H x W x D)	190 mm x 125 mm x 44.5 mm (7.48 in. x 4.92 in. x 1.75 in.)
Weight	0.853 lb (0.387 kg)
Housing	Black polycarbonate and acrylonitrile butadiene styrene (ABS) blend.
Web browser requirements for computers and handheld devices	Computer: Microsoft® Edge® version 91 or later. Google® Chrome™ version 91 or later. Mozilla® Firefox® version 71 or later. Apple™ Safari® version 14 or later. Handheld device: Microsoft Edge version 91 or later. Google Chrome version 91 or later. Mozilla Firefox version 90. Apple Safari version 14 or later.

Table 4: Technical specifications

Specification	Description
Compliance	United States: UL Listed File E107041, CCN PAZX, UL 916, Energy Management Equipment, FCC Compliant to CFR47, Part 15, Subpart B, Class B. Canada: UL listed file E107041, CCN PAZX7, CAN/CSA C22.2 No.205, Signal Equipment; Industry Canada Compliant.
	Europe: CE Mark – Johnson Controls, Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.
	Australia and New Zealand: RCM Mark, Australia/NZ

Compliance

The operation of this equipment is subject to the following two conditions:

1. It is possible that this equipment or device may not cause harmful interference, and
2. This equipment or device must accept any interference, including interference that may cause undesired operation.

UL Standard

Table 5: UL60730-1 UL Standard

Information	Description
Purpose of control	Operating Control (Optional If Marked On Product)
Construction of control and whether the control is electronic	Independently mounted
TYPE 1 or TYPE 2 action	TYPE 1
External Pollution Situation	Pollution Degree 2
RATED IMPULSE VOLTAGE	330 V
24 V External Power Supply	24 Vac 24 Vdc SELV; Class 2 or LPS (Limited Power Source) ITE Equipment Power Supply

North American emissions compliance

United States

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that

interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada

This Class (B) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe (B) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Industry Canada Statement(s)

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage, et
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Patents

Patents: <https://jciapat.com>

Single point of contact

APAC	EU	UK	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS VOLTAWEG 20 6101 XK ECHT THE NETHERLANDS	JOHNSON CONTROLS TYCO PARK GRIMSHAW LANE MANCHESTER M40 2WL UNITED KINGDOM	JOHNSON CONTROLS 5757 N GREEN BAY AVE. GLENDALE, WI 53209 USA

Contact information

Contact your local Johnson Controls representative: www.johnsoncontrols.com/locations

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