



United Technologies
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System Touch

Installation and Setup Guide





Verify that you have the most current version of this document from www.hvacpartners.com or your local Carrier office.

Important changes are listed in **Document revision history** at the end of this document.

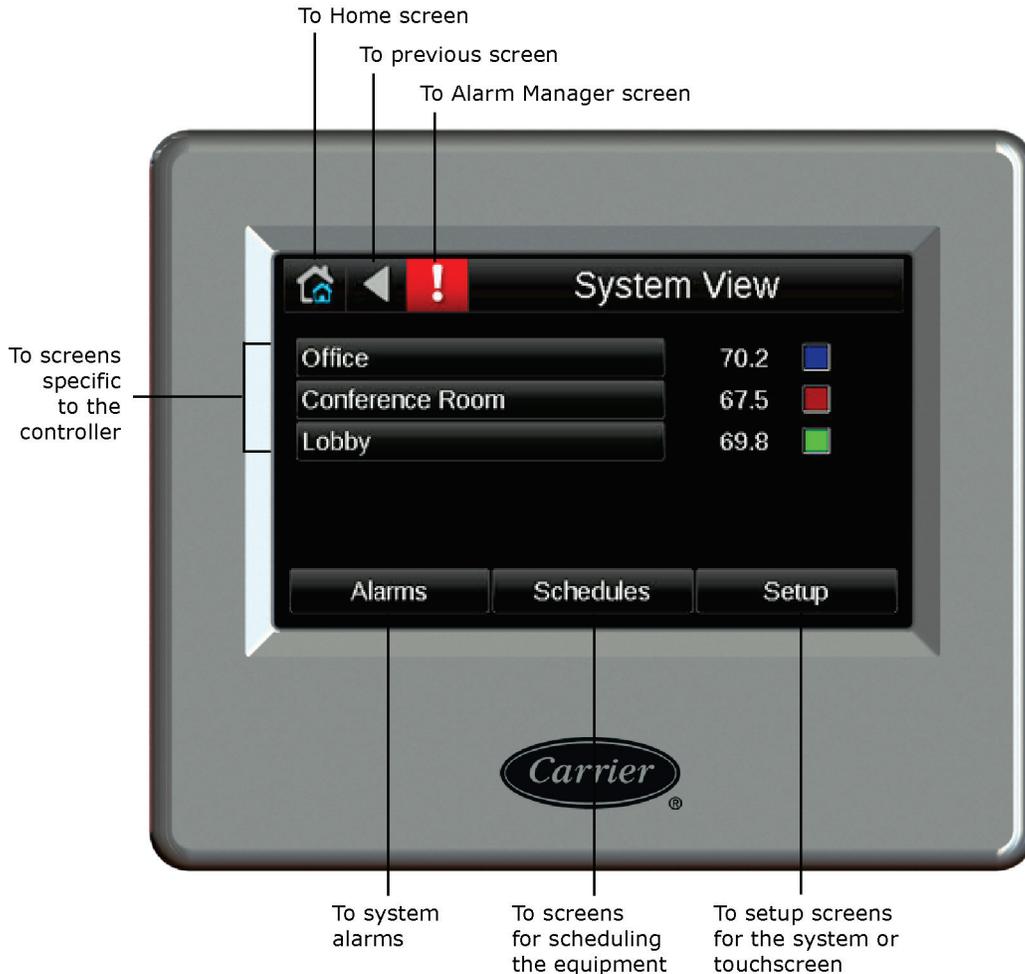
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What is the System Touch?

The System Touch is a touchscreen device with a 4.3 in. color LCD display that acts as a front-end interface to controllers on a BACnet network.



The System Touch has built-in temperature and humidity sensors. You can use their values to control equipment. You can also wire an external thermistor to the System Touch and use its value instead of the built-in temperature sensor's value.

You can install and run the System Touch with only its built-in system screens, or you can create a custom touchscreen file in ViewBuilder. This requires that you create custom screens in ViewBuilder, and then save the touchscreen (.touch) file. See "Working with System Touch screens" in ViewBuilder Help.

NOTE To use custom screens, the System Touch must have v2.00-015 or later firmware.

To set up a System Touch:

- 1 Connect the System Touch to an MS/TP network (page 9).
- 2 Discover BACnet devices on the same network or on a different BACnet ARCnet or BACnet MS/TP network (page 12).
- 3 Create the system database (page 12).
- 4 Install custom screen file (optional) (page 12).

After you set up your system, you can:

- Schedule when equipment should run
- View alarms
- View Equipment Touch screens for individual controllers on the network. The information on the controller screens depends on whether the controller is a Carrier controller or a third-party controller, and if it is an Carrier controller, whether it has an Equipment Touch file.

NOTE To see a controller's Equipment Touch screens on the System Touch, the Equipment Touch file must be downloaded to the controller before you create the System Touch database.

Specifications

Power	24 Vac ($\pm 15\%$), 5 VA, 50–60 Hz, Class 2.	
Display	4.3 in. resistive touchscreen color LCD display with backlighting (Wide Quarter VGA, 480x272 pixels)	
Enclosure	ABS plastic with polycarbonate bezel	
Ports	<ul style="list-style-type: none">• EIA-485 based serial port for BACnet MS/TP communication• USB host port	
Microcontroller	32-bit	
Memory	<ul style="list-style-type: none">• 16 MB Flash memory to store program code and screen file.• 1.5 MB RAM to store variable data and LCD data.• 4 KB Serial EEPROM to store non-volatile configuration data.	
Real-time clock	A365-day real time clock/calendar chip. The time and date will be maintained for a minimum of 72 hours after loss of power (at room temperature).	
Audible alarm notification	A piezoelectric sounder	
Temperature sensor	Range:	-4.0°F to 140°F (-20°C to 60°C)
	Accuracy over 30.0°F to 100°F:	$\pm 1.0^\circ\text{F}$ ($\pm 0.55^\circ\text{C}$)
	Accuracy over full range:	$\pm 2.0^\circ\text{F}$ ($\pm 1.1^\circ\text{C}$)
	Resolution:	0.2°F (0.1°C)

Humidity sensor	Range: 0 to 100% RH Accuracy over 20 to 80% RH: ±3.0% RH Accuracy over full range: ±5.0% RH Resolution: 0.05% RH
Environmental operating range	-4°F to 140°F (-20°C to 60°C), 10–90% RH, non-condensing
Mounting	Wall or panel mounting within the building interior.
Overall dimensions	Width: 5.44 in. (13.82 cm) Height: 4.55 in. (11.56 cm) Depth: 1.24 in. (3.15 cm)
Backplate dimensions	Width: 4.79 in. (12.2 cm) Height: 3.94 in. (10 cm)
Weight	8 oz. (0.23 kg)
Listed by	UL-916 (PAZX), CE, FCC Part 15-Subpart B-Class A
Device identification	The System Touch's box contains a label with the product name and the serial number that begins with STC . Remove the front of the System Touch and turn it over to see the serial number on a label attached to the control board.

System Touch screens

The System Touch will display the system screens shown below and any custom-designed screens.

NOTE To use custom screens, the System Touch must have v2.00-015 or later firmware. Go to **Touchscreen Setup > About** to see the firmware version number.

Screen name	Description
Standby	If included in the touchscreen file, this custom screen displays when the System Touch has had no user activity for the time specified on the Inactivity Timeout screen. This Standby screen is not interactive, and as soon as the user touches the screen, the Home screen displays. If the touchscreen file does not include a Standby screen, the Home screen displays after a period of inactivity. NOTE You can show a device's Home and Standby screens instead of the System Touch's Home and Standby screens. See instructions for Home Screen Setup in <i>To edit touchscreen settings</i> (page 18).
Home	A custom screen for the System Touch.

Screen name	Description
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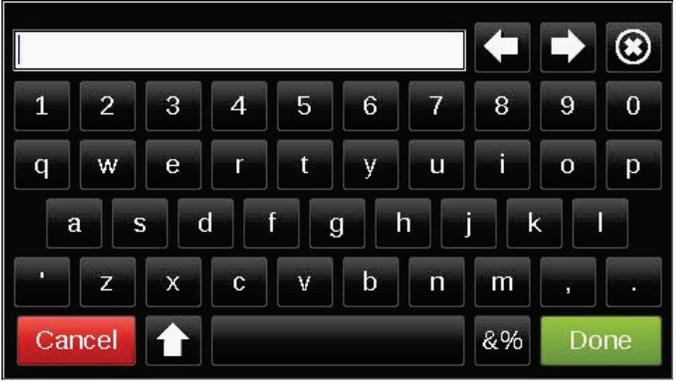
The Home screen that shows each controller in the system (labeled **Office**, **Conference Room**, and **Lobby** in the above example), and for Carrier controllers, shows the zone temperature and zone color. You can touch the button for a controller to go to its Equipment Touch screens. See the controller's *Installation Guide* for a description of those screens.

From this System View screen, you can touch:

- **Alarms** to view, acknowledge or delete alarms
- **Schedules** to view, create, or delete schedules
- **Setup** to edit the system or edit touchscreen settings (requires administrator-level password)

The System View screen displays when the System Touch has had no user activity for a period of time specified on the *Touchscreen Setup > Inactivity Timeout* screen (page 18).

Login



Displays if you select a screen that requires an administrator-level password. If you have an administrator-level password, enter it, then touch **Done**.

NOTES

- The default password for a new System Touch is **admin**.
- You can change the password on the *Touchscreen Setup > Passwords* screen (page 18).
- You log out on the **Setup** screen.
- If you try to go to a screen for a particular controller and you are prompted to log in, the Equipment Touch screen for that controller requires a different password.

Screen name	Description
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Alarm Manager



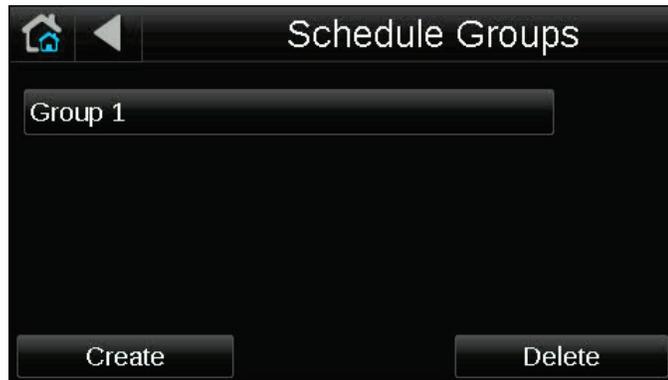
Lets you view all alarms in the system. See "Viewing alarms" in the *System Touch User Guide*.

Alarm Detail



Shows details of a single alarm. See "Viewing alarms" in the *System Touch User Guide*.

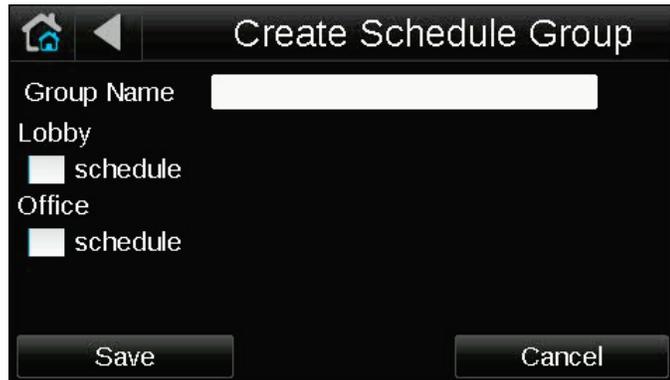
Schedule Groups



Lets you create groups of equipment so that you can set up a common operating schedule for each group. From this screen, you can also edit or delete existing schedule groups. See "Setting up schedules" in the *System Touch User Guide*.

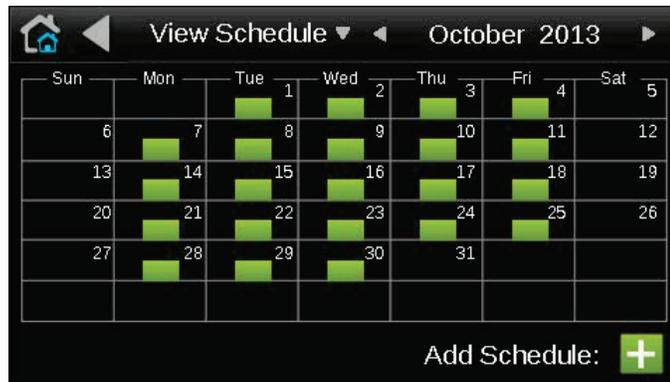
Screen name	Description
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Create Schedule Group



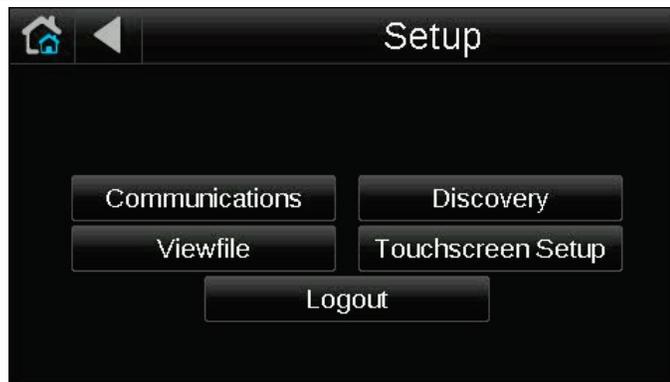
Lets you create a group and assign equipment to it. See "Setting up schedules" in the *System Touch User Guide*.

Schedules



Lets you view, add, edit, or delete BACnet schedules in the controller. See "Setting up schedules" in the *System Touch User Guide*.

Setup



Touch a button to go to the **Communications**, **Discovery**, **Viewfile**, or **Touchscreen Setup** screen, or to log out.

Screen name	Description
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Communications



Lets you define network communications for the System Touch. You also define the network that you want the System Touch to scan during discovery. See *Setting up the system* (page 12).

Discovery



Lets you discover controllers on the network so that you can create the system database. See *Setting up the system* (page 12).

Set Range



Lets you set a range (0-255) of MAC addresses to be discovered. See *Setting up the system* (page 12).

What is the System Touch?

Screen name	Description
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Discovery
after discovering
controllers



Lets you rename discovered controller, select the controllers that you want to include in the system, and then create the system database. See *Setting up the system* (page 12).

Touchscreen Setup



Lets you edit the touchscreen settings (page 18).

Wiring and mounting the System Touch

CAUTION If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

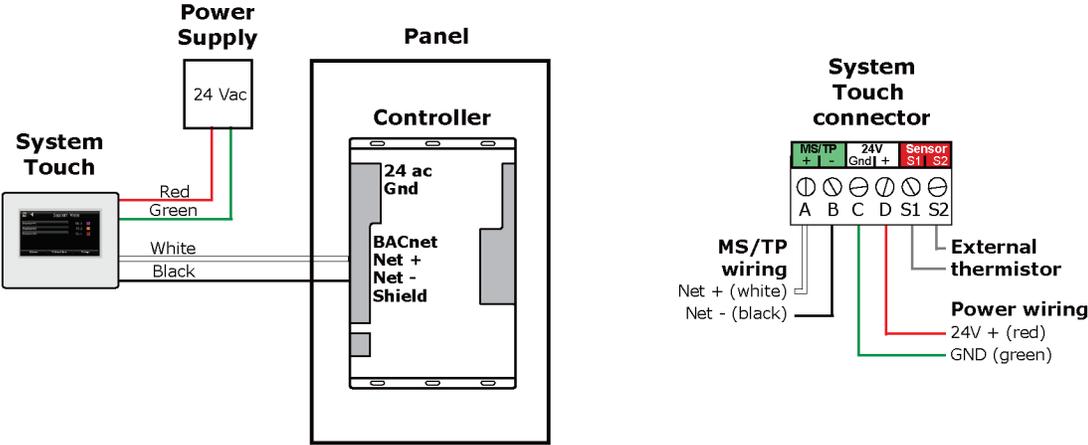
Mounting

The Equipment must be mounted within the building interior. You can mount the System Touch:

- In a panel or on the panel door
- On a wall

Wiring

- The System Touch is wired to an MS/TP network and a 24 Vac power supply.
- You can also wire an external 10 kOhm, Type II thermistor (Carrier part number 33ZCT55SPT) to the System Touch. See *Appendix: External sensor resistance requirements* (page 23).



Wiring specifications

Power wiring

2-conductor wire 18 AWG for distances up to 100 feet. All transformer secondaries must be grounded. Wiring connections must be in accordance with NEC and local codes.

MS/TP network wiring

22 AWG, low-capacitance, twisted, stranded, shielded copper wire.
Maximum network length: 2000 feet (610 meters)

See *MS/TP Networking and Wiring Installation Guide* for more information.

To wire and mount the System Touch

- 1 Remove the backplate from the System Touch:
 - a) Hold the System Touch as shown in the picture below.

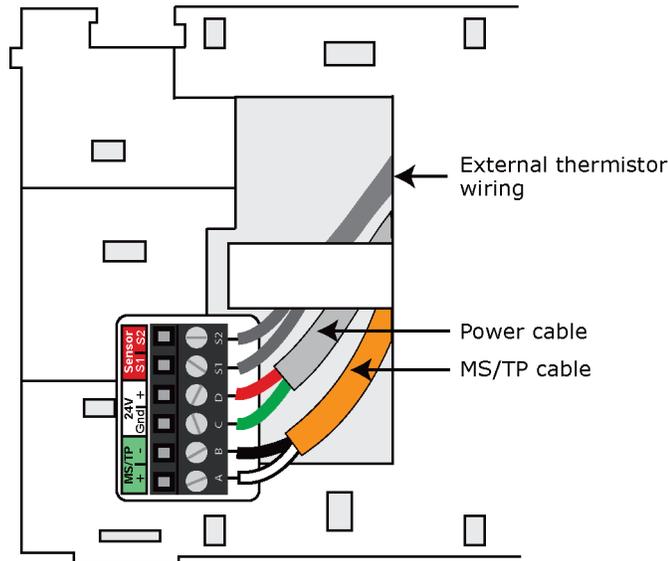


- b) While firmly pressing the 2 tabs on top of the System Touch, pull on the backplate with your index finger until the backplate releases from the System Touch.
- 2 Pull the communication cable, the power cable, and external thermistor wiring (if applicable) through the large hole in the center of the backplate. See figure in step 5.
- 3 Partially cut, then bend and pull off the outer jacket of the cable(s). Do not nick the individual wire insulation.

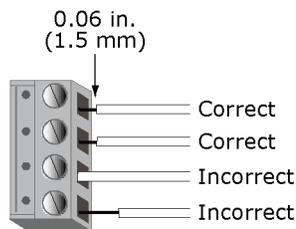
- 4 If wiring 1 cable to the System Touch, cut the shield wire off at the outer jacket, then wrap the cable with tape at the outer jacket to cover the end of the shield wire.

If wiring 2 cables in a daisy-chain configuration, twist together the shield wires, then wrap the shield wires with tape.

- 5 Strip about 0.25 inch (0.6 cm) insulation from the end of each wire.
- 6 Connect wiring to the System Touch as shown below:



CAUTION Allow no more than 0.06 inch (1.5 mm) bare communication wire to protrude. If bare communication wire contacts the cable's foil shield, shield wire, or a metal surface other than the terminal block, the device may not communicate correctly.



- 7 Attach the backplate to the wall or panel. If mounting in or on a panel:
 - a) Drill two 3/16 inch (4.8 mm) pilot holes in the panel.
 - b) Attach backplate using pan head 6-32 x 3/8" to 1/2" long machine screws. Do not overtighten screws to prevent damage to plastic housing.

RECOMMENDATION Use Loctite 220 on screw threads if the System Touch will be subject to vibration.
- 8 Attach the System Touch to the backplate:
 - a) Place the bottom of the System Touch onto the backplate by aligning the 2 slots on the System Touch with the tabs on the backplate.
 - b) Push the System Touch onto the backplate until the tabs at the top of the System Touch snap onto the backplate.
- 9 Connect power wiring to a 24 Vac power supply.

Setting up the system

Step 1: Set up communications

- 1 On the **System View** (home) screen, touch **Setup > Communications**.
- 2 In the left column, select the baud rate of the MS/TP network that the System Touch is on.



- 3 Use the following information to set the 3 fields on the right.

Field	Description
My Device Instance	The System Touch's BACnet Device Instance. This number must be unique on the MS/TP network. Leave this at the default (160099) unless there is another System Touch or other device on the network with this number.
My Address	The System Touch's address. This number must be unique on the MS/TP network. Leave this at the default (127) unless there is another System Touch or other device on the network with this address.
Destination Network	The network number of the BACnet ARCnet or BACnet MS/TP network that the System Touch will discover controllers on. To discover controllers on the System Touch's own MS/TP network, this field must be set to 0. NOTE The System Touch cannot discover controllers on a BACnet IP network.

CAUTION The System Touch's Device Instance number is added to each controller's alarm recipients list when you create the system database. If you change **My Device Instance** after you create the database, you must rediscover the controllers to have the System Touch receive alarms from controllers.

- 4 Touch **Save**.

Step 2: Discover controllers

In the previous step, you defined the network that the System Touch will discover devices on. To discover controllers:

- 1 On the **Setup** screen, touch **Discovery > Set Range**.
- 2 System Touch can scan the network for all MAC addresses (0 to 255), or you can define a smaller range of addresses to search for. Touch each field on the **Set Range** screen, and then enter an address.



- 3 Touch **Save**.
- 4 On the **Discovery** screen, touch **Discover**. When discovery is complete, the screen lists every BACnet controller that was found on the network.



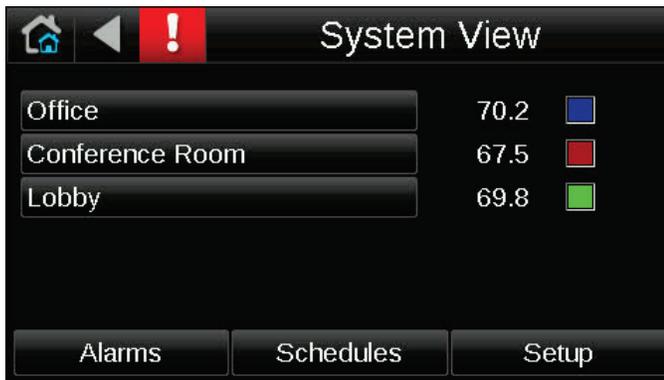
Step 3: Create the system database

The discovery process finds every BACnet controller on the network, but you may not want to include them all in the system you are creating. Carrier recommends that you have no more than 32 devices in your system.

- 1 Touch each controller that you want to include in the system and change its name to something that will be meaningful to a user (maximum 21 characters). For example, if the first controller on the screen controls the lobby, change the name to "Lobby".



- 2 Select the controllers that you want to include in the system by touching individual boxes on the left side of the screen or by touching **Select All**.
- 3 Touch **Create DB** (database). The **System View** screen shows your new system.



NOTE Clear DB deletes the system (controllers, alarms, and schedule groups) and returns the System Touch to its initial state.

Step 4: Optional - Install custom screen file

PREREQUISITES

- The System Touch must have v2.00-015 or later firmware to display custom screens.
- You need a USB flash drive that is formatted as FAT, FAT16, or FAT32. To verify, insert the flash drive into your computer, then right-click the flash drive in Windows Explorer and select **Properties**. **File system** should show **FATxx**. If **File system** shows NTFS or anything else, you must reformat the drive. Right-click the flash drive, then select **Format**. In the **File system** field, select **FAT (Default)**, then click **Start**.



CAUTION Before you install your custom screen file, make sure that the creator of the file included navigation from the custom screens to the system screens.

To install the custom screen file:

- 1 Create a folder on the flash drive called **Touch**, then put the xxxxx.stv file in the folder.
- 2 Plug the flash drive into the System Touch's USB port.
- 3 From the System Touch's Home screen, touch **Setup > Viewfile**.
- 4 Touch **OK**. The following series of messages appear:
Verifying Firmware Image.
Loading View file.
- 5 When the Home screen displays, remove the flash drive.

NOTE To remove the .stv file from the System Touch so that it returns to its original state with only built-in screens, follow the procedure above except remove all files from the **Touch** folder mentioned in step 1.

Step 5: Set up scheduling functionality

You can define BACnet schedules for any controller whose control program(s) support time schedules.

To allow a user to create schedules on the Equipment Touch:

- 1 In the i-Vu® or Field Assistant tree, right-click the controller, and then select **Driver Properties**.
- 2 On the **Settings** tab, scroll down to **TouchScreen Control** and verify that **TouchScreen Schedule Edit Enable** is checked.



CAUTION If scheduling for this system will be done in the i-Vu® interface, you should disable scheduling in the System Touch so that they do not overwrite each other's schedules. To disable scheduling, uncheck the **TouchScreen Schedule Edit Enable** field on the controller's **Driver** page.

See "To create a schedule for a group of equipment" in the *System Touch User Guide*.

Step 6: Optional - Adjust touchscreen settings

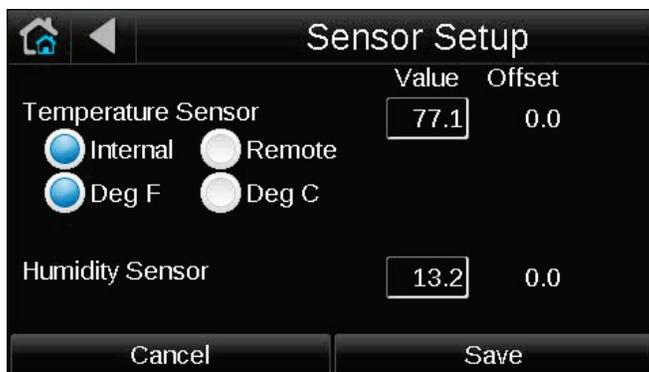
See *To edit touchscreen settings* (page 18) to adjust the following settings:

- To show a particular device's Home and Standby screens instead of the System Touch's Home and Standby screens. For example, you may want the System Touch to show the conditions of the room where it is mounted instead of the entire system.
- The time of inactivity before the System Touch returns to the Home screen
- The location, units, and offset of temperature and humidity sensor values
- Whether the System Touch makes a sound when you touch the screen
- Whether the System Touch makes a warning sound when it receives an alarm
- The language used for System Touch screens
- The User or Admin password, if allowed

Using System Touch's temperature and humidity sensors to control equipment

To set up the sensors on the System Touch

Go to **Setup > Touchscreen Setup > Sensor Setup**.



On this screen, you can:

- **Select the temperature sensor**—You can use values from the System Touch's internal temperature sensor. Or, you can wire an external (remote) thermistor to the System Touch and use its temperature value instead of the internal temperature sensor's value.
- **Select temperature units**—The sensor's temperature can be requested by a controller's control program. Select whether the temperature is to be returned as **Deg F** or **Deg C**.
- **Set an offset**—Enter a correct temperature/humidity value to create an offset for all future values.

To use the temperature or humidity value in a control program

- 1 In Snap, place an Analog Network Input microblock **ANI | point name** in your control program.
- 2 In the microblock's **Address** field, enter `bacnet://160099/` and then one of the following:

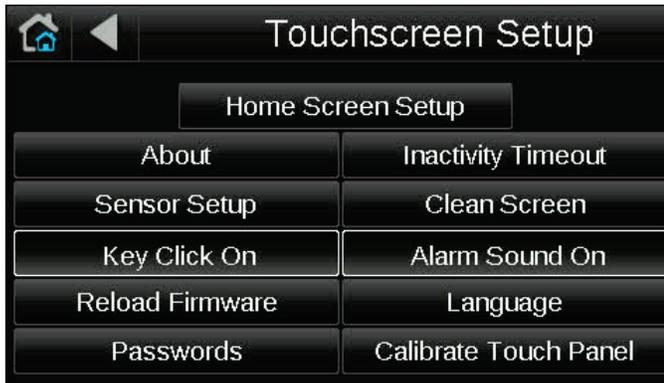
Use...	For...
AI:1	Internal °F temperature value
AI:2	Remote °F temperature value
AI:4	Humidity value
AI:5	Internal °C temperature value
AI:6	Remote °C temperature value

For example, `bacnet://160099/AI:2`

NOTE 160099 in the above address is the System Touch's Device Instance number. If you change this number on the **Communications** screen, use the new number in your microblock's **Address** field.

To edit touchscreen settings

- 1 On the **System View** screen, touch **Setup > Touchscreen Setup**.



- 2 Touch a button to jump to one of the following screens:

Screen	Description
Home Screen Setup	To show a particular device's Home and Standby screens instead of the System Touch's Home and Standby screens: 1. Touch Home Screen Setup . 2. Select Use Equipment standby/home screen . 3. Select the device whose screens you want to use. 4. Touch Save .
About	Displays information about the touchscreen firmware.
Inactivity Timeout	Lets you define how long the System Touch can have no activity before returning to the Home screen and logging out the user. Set to 0 to deactivate this feature.
Sensor Setup	Lets you set up the System Touch's temperature and humidity sensors. See <i>Using System Touch's temperature and humidity sensors to control equipment</i> (page 17).
Clean Screen	Displays a one-minute countdown timer so that you can clean fingerprints from the display window without touching something that would affect equipment operation.
Key Click Off/On	Touch Key Click Off to turn off the sound when you touch a field or button. Touch Key Click On to turn on the sound.
Alarm Sound Off/On	For future use.
Reload Firmware	Erases the current firmware so that you can load new firmware through the USB port. See <i>To update the System Touch's firmware</i> (page 20).

Screen	Description
Language	 <p>English German Portuguese Simplified Chinese French Italian Korean Spanish Japanese Traditional Chinese Swedish Thai Russian</p>
	Lets you select the language to use for the System Touch default screens.
Passwords	Lets you change the User or Admin password, if allowed.
Callbrate Touch Panel	Lets you recalibrate the System Touch by touching targets. The device is calibrated in the factory, but time, temperature, or handling could affect the calibration. Recalibrate the screen if you touch it in one location and it responds as if you touched it in another.

To update the System Touch's firmware

The System Touch has a USB port at the bottom that allows you to update the device's firmware from a USB flash drive.

PREREQUISITE The USB flash drive must be formatted as FAT, FAT16, or FAT32. To verify, right-click the flash drive in Windows Explorer, then select **Properties**. **File system** should show **FATxx**. If **File system** shows NTFS or anything else, you must reformat the drive. Right-click the flash drive, then select **Format**. In the **File system** field, select **FAT (Default)**, then click **Start**.



CAUTION Follow the steps below in order. If you select **Reload Firmware** (step 3) on the display before you insert the USB drive (step 2), the touchscreen will become inoperable.

To update the firmware:

- 1 Create a folder on the flash drive called **Touch**, then put the STxxxxx.hex file in the folder.
- 2 Plug the flash drive into the System Touch's USB port.
- 3 From the Home screen, touch **Setup > Touchscreen Setup > Reload Firmware**.
- 4 A warning message appears. Touch **Yes** to continue.
- 5 The following series of messages appear:
Verifying Firmware Image.
Reading Firmware Image from USB.
Installing Application.
Verifying Firmware Image.

When the Home screen displays, remove the flash drive.

Resetting the System Touch

You can create a reset.dat file and put it on a USB flash drive to reset some of the System Touch's functionality.

PREREQUISITE The USB flash drive must be formatted as FAT, FAT16, or FAT32. To verify, right-click the flash drive in Windows Explorer, then select **Properties**. **File system** should show **FATxx**. If **File system** shows NTFS or anything else, you must reformat the drive. Right-click the flash drive, then select **Format**. In the **File system** field, select **FAT (Default)**, then click **Start**.

- 1 Insert the USB flash drive into your computer.
- 2 Create a folder on the flash drive named **Touch**.
- 3 In a text editor such as Notepad, start a new file.
- 4 In the file, type a function number from the table below.
- 5 Save the file to the flash drive's **Touch** folder with the name **reset.dat**.
- 6 For function 01 or 02, copy any updated firmware .hex file or .stv file in the **Touch** folder.
- 7 Insert the flash drive into the USB port at the bottom of the System Touch.
- 8 Cycle power to the System Touch.

If...	Then you should...	Function number
You cannot get to the Touchscreen Setup screen	Reload the firmware	01
You need to quickly update the firmware on several System Touch devices	Reload the firmware - Put the new firmware in the Touch folder with the reset.dat file.	01
Your custom screens did not provide links to the system screens	Reload the .stv file - Fix the .stv file in ViewBuilder, and then save it to the Touch folder with the reset.dat file.	02
<ul style="list-style-type: none"> • You want to carry your System Touch from site to site • Your System Touch has a unrecoverable error 	Reset factory defaults	04
The System Touch does not respond correctly to the location where you touched the screen	Calibrate the touchscreen	08

Compliance

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



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

CE Compliance



WARNING This is a Class A product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

Appendix: External sensor resistance requirements

Temp (°C)	Temp (°F)	Resistance (Ohms)
-40	-40	335,651
-35	-31	242,195
-30	-22	176,683
-25	-13	130,243
-20	-4	96,974
-15	5	72,895
-10	14	55,298
-5	23	42,315
0	32	32,651
5	41	25,395
10	50	19,903
15	59	15,714
20	68	12,494
25	77	10,000
30	86	8,056
35	95	6,530
40	104	5,325
45	113	4,367
50	122	3,601
55	131	2,985
60	140	2,487
65	149	2,082
70	158	1,752

Document revision history

Important changes to this document are listed below. Minor changes such as typographical or formatting errors are not listed.

Date	Topic	Change description	Code*
4/1/16	To edit touchscreen settings	For Alarm Sound Off/On, changed to "For future use."	X-TS-DB-E
11/12/15	Step 4: Optional - Install custom screen file	Removed caution "Follow the steps below in order...touchscreen will become inoperable." Switched order of steps 2 and 3.	X-O-JM-E
9/29/15	To edit touchscreen settings	For Alarm Sound Off/On, removed sentence, "An alarm will generate a sound only if it is set up in ViewBuilder to do so."	X-O-TC-O
7/29/15	System Touch screens	For the System View screen, added that you can touch a controller's button to go to the controller's Equipment Touch screens.	X-TS-OC-E
	Wiring and mounting the System Touch	Changed part number for external thermistor from 33ZCT57SPT to 33ZCT55SPT	C-TS-RD-F
5/7/15	What is the System Touch	Added information about creating and installing custom screens	X-D-CP
	System Touch screens	<ul style="list-style-type: none"> • Added comments at beginning of topic regarding custom screens and required firmware version. • Added the Standby and Home screens • Image for Touchscreen Setup now includes Home Screen Setup. 	
	Step 1: Set up communications	Added note that the System Touch cannot discover controllers on a BACnet IP network	
	Step 3: Create the system database	<ul style="list-style-type: none"> • Added recommendation that you have no more than 32 devices in our system. • Added in step 1 that a name can be no more than 21 characters. 	
	Step 4: Optional - Install custom screen file	New topic	
	Step 6: Optional - Adjust touchscreen settings	Added the first bullet about showing a device's Home and Standby screens	
	Using System Touch's temperature and humidity sensors to control equipment	In step 2 of "To use the temperature or humidity value in a control program", added AI:5 and AI:6.	
	To edit touchscreen settings	<ul style="list-style-type: none"> • Added new image in step 1 and description in step 2 for Home Screen Setup • Added description for Alarm Sound Off/On 	
	To update the System Touch's firmware	In step 5, removed instructions for touching the targets to calibrate the screen.	
	Resetting the System Touch	New topic	

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