

NX-592E NetworX Cellular Module Installation Sheet

Part Number	Description
NX-592E-GSM-ZX-AT	NetworX Cellular Module, Alarm.com HSPA 3G GSM with Z-wave, AT&T
NX-592E-GSM-ZX-RG	NetworX Cellular Module, Alarm.com HSPA 3G GSM with Z-wave, Rogers (Canada use only)
NX-592E-GSM-ZX-TM	NetworX Cellular Module, Alarm.com HSPA 3G GSM with Z-wave, T-Mobile
NX-592E-CDMA-ZX-VZ	NetworX Cellular Module, Alarm.com 1xRTT CDMA with Z-wave, Verizon

Description

The NX-592E Cellular Module interfaces with the NetworX panel data bus and is powered by the panel or an auxiliary 12 VDC power supply. Status LEDs indicate bus and cellular network communications.

Figure 1 below shows the location of the main module components and Table 1 below describes the component functions.

Figure 1: Components

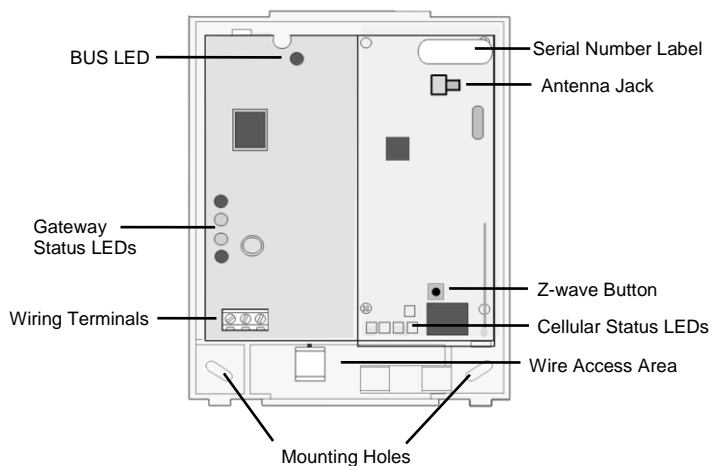


Table 1: Components

Component	Function
BUS LED	Indicates data bus activity between the panel and the bus module
Gateway Status LEDs	Not Used
Wiring Terminals	Provides panel wiring connections
Antenna Jack	Antenna connection for snap-in MMCX antenna
Cellular status LEDs	Indicates communication with the cellular network, report errors and signal strength
Serial number	A 15-digit number. Only the last 10 digits (after the dash "-") are used for account activation

Account creation

Before installing the Alarm.com cellular module in a NetworX system, a new customer account needs to be created with Alarm.com. We recommend creating the account at least 24 hours in advance of installation to ensure that the radio is activated prior to installation.

To activate an account go to www.alarm.com/dealer and login. Under the "Customers" heading at the top left of the page click on "Create New Customer". You will need the following customer information to create the account:

- Customer Name
- Customer Address
- Customer Phone Number
- Customer E-mail
- Preferred login name for the customer
- Alarm.com Module Serial Number

At the end of the account creation process you will be able to print a Welcome Letter for the customer that has their login information and temporary password for the Alarm.com website.

Installation Tips

Use the following tips to ensure success with the Alarm.com NetworX cellular module:

- Make sure you create the customer account on the Alarm.com dealer website at least 24 hours before installation.
- Use the Cellular Status LEDs on the module to check the signal strength before you permanently mount the module.
- NetworX panels support a maximum of one wireless gateway per system.
- Do a manual phone test to initiate communication (see "Power up" on page 3).

Installation

The module draws a maximum of 65 mA (continuous) from the panel in power save mode, and 100 mA (continuous) from the panel in idle and connected modes. The module can draw up to 1600 mA (instantaneous peaks) from the panel. Do not exceed the panel total output power when using panel power for bus devices and hardwired sensors (refer to the panel documentation).

Use three-conductor, 22 or 18 gauge stranded wire to connect the module to the panel. Table 2 below shows the maximum wire length for each gauge.

Table 2: Maximum wire length

Gauge	Maximum wire length to panel
22 gauge	40 ft. (12.2 m)
18 gauge	90 ft. (27.4 m)

You will need the following tools and supplies to install the module:

- Small blade and Phillips screwdrivers
- Drill and bits for screws and/or anchors
- Wire cutter/stripper
- Three-conductor, 22-gauge or larger stranded wire
- #6 pan head screws (4 included)
- Wall anchors (four included)
- 3.3-Kohm EOL resistors (included with main NX panel)

Use the following guidelines to choose a location for the module:

- Check the signal strength before choosing a location. Do a walking signal strength test by powering the module off the battery directly (connect the COM and POS terminals). After 2 minutes, cellular status LED 4 will flash between one and five times, where 5 indicates strongest signal level. We recommend a signal level of two or higher.
- Do not mount the module inside the panel's metal enclosure.

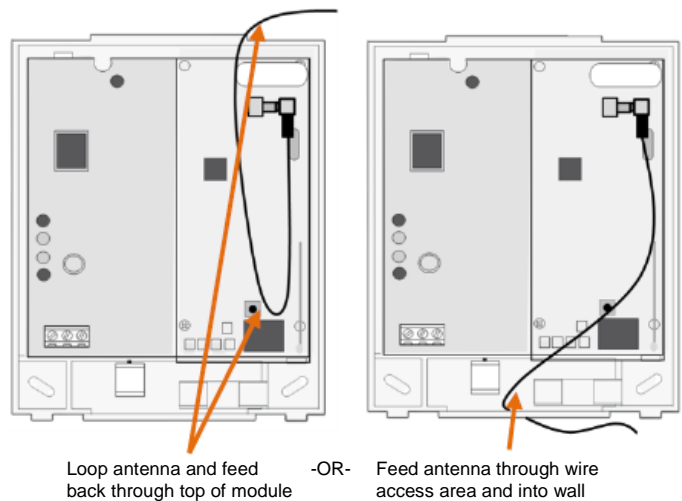
- Avoid mounting the module in areas with excessive metal or electrical wiring, such as furnace or utility rooms.
- Locate the module near an outside wall, preferably on an upper level.
- For homes or businesses located in canyons or with hills nearby, it is necessary to place the antenna higher in the building.

Caution: You must be free of static electricity before handling electronic components. Touch a grounded metal surface before touching the circuit board.

To mount the module:

1. Press down on the top of the enclosure cover, remove it, and set it aside.
2. Snap the antenna onto the antenna connector (see Figure 1 on page 1). To connect the antenna, place one of your thumbs or fingers behind the antenna connector. With your other hand, press the end of the micro miniature coaxial connector (MMCX) into the antenna connector until you hear a slight click.
3. Place the back plate on the wall at the desired mounting location, check for level, and mark the three mounting holes and the wire access area (see Figure 1 on page 1).
4. To avoid placing unnecessary strain on the antenna connector, which can damage the module, use either of the following orientations shown in Figure 2.

Figure 2: Antenna Routing



5. Set the back plate aside and drill holes at the mounting and wire access area locations.
6. Use wall anchors where studs are not present and secure the back plate to the wall with the enclosed screws.

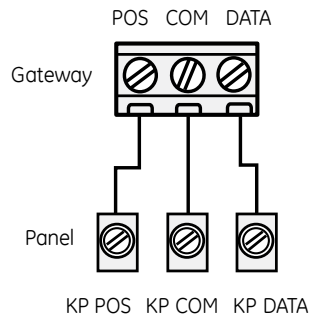
Wiring Connections

Caution: To prevent damaging the panel or module, you must remove panel AC power and disconnect the backup battery before making or changing wiring connections.

To wire the module:

1. Remove AC panel power and disconnect the backup battery.
2. Wire the module to the panel bus and power terminals (see Figure 3 below).

Figure 3: Wiring connections



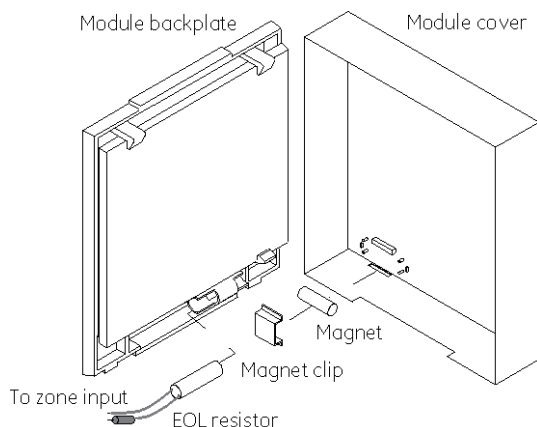
Case tamper switch (optional)

If the module is easily accessible, you can add case tamper detection to activate an alarm or trouble (depending on panel programming) when the cover is removed.

To install the tamper switch:

1. Slide the reed switch into the plastic holder on the module back plate.
2. Connect a UL-Listed reed switch (with EOL resistor) to any unused hardwired input on the panel.
3. Insert the magnet into the nibs on the top cover and press the magnet clip down over the magnet until it clicks into place into the cover.

Figure 4: Case tamper switch



Power up

You will need to power up the module and panel to start communication between them.

To power up:

1. Verify that all wiring between the panel and module is correct.
2. Connect the backup battery and restore AC power to the panel.
3. Verify that radio status LED 1 is not flashing any errors (see Cellular Status LEDs on page 4). Also, verify that LED 4 is flashing a cellular signal level of two or higher. Otherwise, relocate the module. If LED 1 and LED 4 are not flashing, and LED 2 and LED 3 are flashing together, the module is in Power Save mode and the battery needs to be charged.
4. Perform a manual phone test by pressing *44 while the system is disarmed (Make sure that panel's Location 37, Segment 2, Bit 7 is set).

Note: if Location 37, Segment 2, Bit 6 is set, performing the phone test will trigger the local siren. To avoid triggering the siren when performing the phone test, make sure Bit 6 is OFF.

The panel will not show any indication that the phone test signal has been sent. You can check the radio status LEDs L3 and L4: L4 should be blinking on for 2 seconds and off for 2 seconds. L3 will blink once briefly as soon as you press *44. If the account is reporting to a Central Station, wait for a minute and check with the Central Station to see if the phone test signal was received correctly. The phone test is also used by Alarm.com to set the module's parameters the first time the module is powered up. It ensures that Alarm.com will receive the sensors list and any other information required for proper signaling.

Enrolling the module

The NetworX control panels automatically find and store in memory the presence of all keypads, zone expanders, wireless receivers, output modules, and any other device on the keypad bus, allowing these devices to be supervised by the control panel. To enroll the devices, enter Program Mode (refer to your control panel documentation). When you exit Program Mode, the control panel automatically enrolls the devices. This process takes about 12 seconds. During this time, the Service LED will illuminate and User codes will not be accepted. Once a module is enrolled, if it is not detected by the control panel, the Service LED will illuminate. When initially powering up, the control panel automatically performs the device enrollment process.

Programming using the keypad

The wireless gateway needs to know the address of at least one of the LCD keypads. Some commands, such as getting the zone names for display on the website, will not work if the keypad address is not known. By default, the wireless gateway assumes a keypad address of 192 (keypad 1, partition 1). If your LCD keypad is programmed differently (press *94 +

installer code to check), you must change the wireless gateway keypad address.

To change the gateway keypad address:

1. Press *, then 8.
2. Enter the “Go to program” code (the default code is 9, 7, 1, 3). If the code is valid the keypad display will prompt you for a device address.
3. Enter the address of the NX-592E (7, 8) then press #. At this point, the keypad display will prompt you for a programming location to be entered.
4. Enter 0, followed by the # key. Location 0, which is the LCD address will display. The default is 192. For a list of address, see Table 3 below.
5. To change the LCD keypad address, enter the new address, followed by the * key. The display will return to the location prompt.
6. To exit this location without changing the data, press the # key.
7. To review the data, repeat the above procedure, pressing the * key without entering data first. If you attempt to program an invalid entry for a particular segment, the keypad sounder will emit a triple error beep and remain in that segment waiting for a valid entry.
8. Press the Exit key to exit this programming level. Press the Exit key again to exit Program Mode.

While in programming mode and not in a location, the number in parentheses is the location you were previously changing. For example, if the display reads “Enter location, then # (2)”, it is reminding you that location 2 was the last location you programmed.

Location 0: LCD keypad address

Certain commands in the module require it to know the location of at least one LCD keypad (if one exists in the system). If your system has an LCD keypad we recommend that you place it in Partition 1 Keypad 1. This will allow Location 0 to be left at the factory default. If the LCD keypad is selected as something other than Partition 1 Keypad 1, program the appropriate address in Location 0.

Table 3: Addresses

Keypad	Partition							
	1	2	3	4	5	6	7	8
1	192	193	194	195	196	197	198	199
2	200	201	202	203	204	205	206	207
3	208	209	210	211	212	213	214	215
4	216	217	218	219	220	221	222	223
5	224	225	226	227	228	229	230	231
6	232	233	234	235	236	237	238	239
7	240	241	242	243	244	245	246	247
8	248	249	250	251	252	253	254	255

Cellular Status LEDs

The cellular radio status LEDs are five small LEDs located near the bottom of the radio daughter board.

Figure 5: Cellular Status LEDs

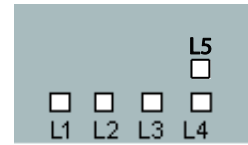


Table 4: Cellular Status LED Functions

LED	Function
L1	Error LED. Flashes 1 to 8 times in an 8-second interval to indicate a specific error. See Table 6 for errors and common fixes.
L2	Panel Communication and Z-Wave status messages. Flashes every time the module communicates with the panel and flashes in patterns to indicate Z-Wave status.
L3	Cellular Communication. Flashes every time the cellular signal level is checked and when packets are exchanged with Alarm.com.
L4	Cellular Signal Level. Flashes 0 to 5 times to indicate signal strength, or toggles on/off slowly when communicating with Alarm.com servers.
L5	Z-Wave Error LED. See Table 7 for error descriptions.

LED Details

LED L1 (red). L1 flashes when there is an error. The number of flashes indicates the error number. If there are two or more errors at the same time, the errors will flash one after the other. The LED will stay off for at least four seconds between errors.

Table 5: LED L1 errors

Flashes	Error
1	Module cannot communicate with the panel. Perform a power cycle on the panel. If the error persists lift the module out of the gateway and re-insert it. If the error is still observed try a different module. Finally, if that does not fix the problem try a different panel.
2	The SIM card is missing. The SIM card holder can be found on the module. Verify that the SIM card holder is closed securely and that there is a SIM card in the holder.
2 then 4	The module provisioning process could not be completed.
2 then 5	The module provisioning process could not be completed because the module is currently roaming on the carrier's network.

Flashes	Error
3	The module is trying to register on the cellular network. If it persists for more than a few minutes, the module is having problems registering with the network. Check L4 for signal level. If signal level is lower than 2 "bars," change the module's location or use a remote antenna option. If the signal is good, the module may be roaming on a network that does not partner with our providers, or the SIM card was not activated yet because the Alarm.com account was not created correctly.
4	The module is registered on the network, but cannot connect with Alarm.com. Contact Alarm.com technical support.
5	Radio portion of the module is not working correctly. If this persists for more than a few minutes the module may need to be replaced. This error is extremely rare so verify that the module is flashing 5 times.
6	This is an error only if it persists for more than a minute. Otherwise, it's just an indication that the module is fixing an unusual condition regarding communication with the network.
7	There are bit sets in Location 21 that prevent Alarm.com from getting the sensor list from the panel. In Location 21, segment 1, if bits 5 and 6 are set the module cannot retrieve the sensor list. Note that bit 7 will prevent location 21 from being displayed at the keypad. Bits 5, 6 and 7 can only be set via the Downloader program. This could also mean that the module is not compatible with the current panel type..
8	If it persists, the account may have been set up incorrectly. Contact Alarm.com Technical Support. You will be asked to check the serial number of the module.

LED L2 (yellow). Flashes with every communication between the module and the panel. Normal pattern calls for a series of quick flashes every 2 seconds in idle mode or every 4 seconds in power save mode. It also occasionally flashes in patterns to indicate Z-wave status. See Table 6 below for a description of various possibilities.

LED L3 (yellow). Flashes with every communication between the module and its radio unit in idle mode and with every communication with Alarm.com in connected mode. In power save mode, this LED flashes in unison with LED L2.

LED L4 (green). Indicates cellular signal level as a number of flashes (0 to 5). The signal level is updated every 10 seconds if it fluctuates or every 30 seconds if it is fairly stable.

No flashes indicate one of the following:

- The module is in power save mode.
- The module is just powering up, or has just exited power save mode.
- There is no carrier coverage in the area.

In connected mode, the LED toggles on and off.

LED L5 (yellow) Indicates Z-Wave errors. The possible signals and what they indicate is shown in 6 below

Table 6: Z-wave LED Status Indicators

LED L2	LED L5	Device Status or Error	Description
4-blink		Add mode (lasts 120 seconds or until a device is added)	In this mode you can add a device to the local Z-Wave network. Devices cannot be added to a network if they are already a part of a network.
2-blink		Delete mode (lasts 120 seconds or until a device is deleted)	In this mode you can delete a device from a Z-Wave network. A device can only be in one network at a time, and must receive a "delete" command before it can be learned into a new network.
Solid		Successful add node/remove node/ replication (lasts 60 seconds)	After receiving this signal leave all devices by the cellular module for 1 minute. Locks must be left next to the module for 4 minutes.
Solid with one blink		Add node attempt failed because node already in network (lasts 60 seconds)	The device you attempted to add to a network is already in a network, and must be "deleted" before it can join a new network.
	2-blink	No other nodes are in the network (lasts until a device is added to the network)	No devices have been added that can be controlled by the cellular module. See above for instructions on how to add devices.
	5-blink	Learn mode error (lasts 60 seconds)	The device you attempted to add into a Z-Wave network was not successfully added.
	6-blink	No Home ID present (lasts until the module connects to Alarm.com and is configured)	When the cellular module first connects to Alarm.com it is configured with a necessary unique network ID.

Module modes

The module modes (states) include:

Idle mode

AC power is up, the battery level is greater than 11.5 volts, and the module is currently not connected to Alarm.com servers.

This is normal for the module and the most common state.

- LED L1 flashes errors, if any.
- LED L2 indicates communication with panel.
- LED L3 indicates communication with radio unit.
- LED L4 indicates the signal level (1 to 5 bars).

Power save mode

The module just powered up, AC power is down, or battery

level is less than 11.5 volts. The radio part of the module draws 10 mA in power save mode. It is fully functional and will go into connected mode as soon as a signal needs to be sent. Doing a manual phone test will switch the module into idle mode and update the signal level reading.

- LED L1 is inactive.
- LED L2 indicates communication with panel.
- LED L3 flashes in unison with LED L2.
- LED L4 is inactive.

Connected mode

The module is connected to the Alarm.com servers and reported an alarm or other condition. The module stays in connected mode for at least 6 minutes after the last message is exchanged. Entering the panel's Installer Programming mode will cause the module to go into idle mode.

- LED L1 flashes errors, if any.
- LED L2 indicates communication with panel.
- LED L3 indicates communication with Alarm.com.
- LED L4 alternates 2 seconds on, then 2 seconds off.

Module Troubleshooting Information

During account creation and other troubleshooting it may be necessary to know the serial number, the SIM card number, or the types of reports that the cellular module is allowed to transmit. These can be found using the following procedure on an LCD keypad (Skip this section if there is no LCD keypad connected to the panel):

The cellular module will record its serial number, SIM card number, or list of allowed reports into the name fields of zones 190, 191, and 192 of the LCD keypad. These zone names can be viewed on any LCD keypad, even if the panel doesn't support 192 zones. To access these zone names, press *92 + installer code to enter Zone Name Programming Mode. Then enter 192# for the module serial number, 191# for the SIM number, or 190# for the reports list.

By default, the keypad shows "Zone 190", "Zone 191", or "Zone 192". To tell the cellular module to show its information in place of these zone names, add a space in front of the zone names by pressing the Stay button, followed by * and # to validate the entry. When you are done with all 3 zones, press Exit to leave programming mode.

Within 1 to 2 minutes, the module will update the zone names that start with a space with the required information. Zone 192 will show the updated serial number, zone 191 will show the updated SIM card number, and zone 190 will show the updated list of allowed reports. You can tell that the module updated the fields by the fact that the leading space will have been removed.

Table 7 describes the reporting bits as indicated in the text field for zone #190:

Table 7: Reporting Bits

B	Phone Test	M	Panel Programming
E	Alarms	N	Tamper
F	System Trouble	O	Cancel
G	Sensor Trouble	P	Normal Activity
H	Arming/Disarming	Q	Modem Online
J	Sensor Bypass	R	Pings
K	AC Power Failure	V	Panel Low Battery
L	Phone failure (phone failure will always be reported for alarms and cancels)		

Equipment List and Zones

On NX, the Alarm.com module cannot automatically determine how many zones are installed. The module assumes that the first 20 zones are installed by default. The module needs to know the highest numbered zone installed in order to send an accurate equipment list to Alarm.com. The equipment list is used for alarm reporting to the Central Station and is displayed on the Alarm.com websites.

The number of zones can be changed via one of these 4 methods:

- Trip the highest zone installed (put the zone in alarm or perform the Walk-Test procedure). This method can only increase the number of zones. To decrease the number of zones, use one of the alternative options below.
- Send the "Highest Zone Number" command from the Equipment page on the Dealer Web Site.
- Enter the max zone number in location 189 of the main LCD keypad (see procedure below).
- Zones that are not installed should be skipped by setting their partition to 0 (locations 26, 28, 32...) or else they will be listed in the equipment list on the web site.

Note: *NX-8E supports up to 192 Zones. Alarm.com can monitor any of the first 120 zones for Normal Activity (non-alarm sensor activity - subject to the limitations of the Alarm.com service plan). All 192 zones are monitored for Alarms and troubles.*

Procedure for displaying or for changing the number of zones via location 189 of an LCD keypad:

1. Type *92 + installer code to enter Zone Name Programming Mode.

2. Enter 189#.
3. Press the STAY button to add a space at the beginning of the zone name.
4. Press * to validate the space.
5. Press # and EXIT to exit Zone Name Programming Mode.

Wait one minute and then repeat the steps above. You should see “ZMAX:xxx”, with no space at the beginning, and with xxx being the highest zone number that the cellular module is going to list in the equipment list. To change this number of zones, do the following:

1. Press the STAY button to add a space at the beginning of the zone name.
2. Press * to move over the “:”
3. Press “Chime” to remove the “:”
4. Press * to move over the digit you want to change.
5. Press the up or down arrow to change the digit.
6. Press * to validate the new digit.
7. Repeat steps 4, 5, and 6 with the other digits.
8. Press # and EXIT to exit Zone Name Programming Mode.

Within one minute, the cellular module will update its equipment list according to the number of zones you specified. This equipment list will be sent with the next phone test or alarm.

Local Zones

Bit 8, segment 1 of the Zone Type Characteristic Select locations determines whether the cellular module will report alarms for this sensor type (See locations 111, 113, ..., 169).

If bit 8 is set, the panel and the module consider this sensor type as “local” and will not report an alarm (The alarm will be “reported” locally via the siren if so programmed).

Bypassed Zones

The cellular module will report bypass on a zone only when the zone is in an “armed” state. The arming level of a zone is determined by 4 bits of segment 1 of the Zone Type Characteristic Select locations:

Bit 1: Fire zone – Bypass is sent regardless of panel arming state

Bit 2: 24 Hour zone – Bypass is sent regardless of panel arming state

Bit 7: Interior zone – Bypass is sent only when panel is armed away

Bit 8: Local zone – Bypass is never sent how the updated list of allowed reports. You can tell that the module updated the fields by the fact that the leading space will have been removed.

Troubleshooting/Testing

Check the cellular status LED 1 to see if it is flashing any errors. See Table 5 on page 5 for descriptions of the errors indicated.

Check cellular status LED 4 for signal strength (if it is toggling on and off it is connected). If signal strength is less than 2, do a walking signal strength test (see Module Location Guidelines on page 2).

If touchpads/sirens are beeping even though the system is not armed, press * 2 to display the trouble condition. Refer to specific touchpad manual for more details.

Z-Wave devices

Required items for installation

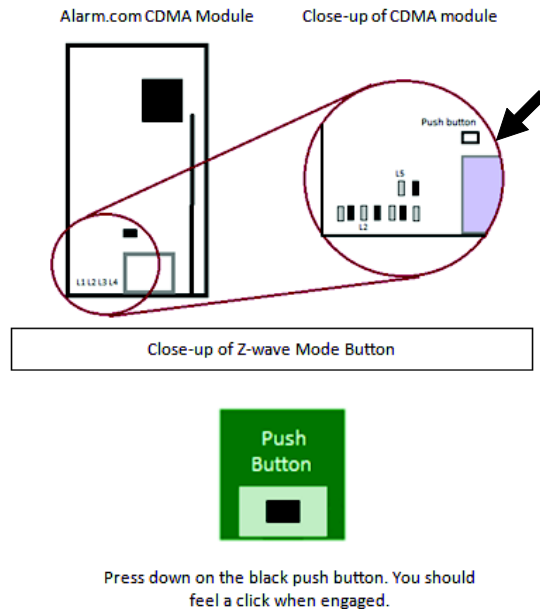
- NetworX panel (NX versions 4V2, 6V2, 8V2, 8E)
- Alarm.com cellular Module with integrated Z-wave support
- Z-Wave peripherals to be installed

Account creation and system setup

1. Create a new account on the Alarm.com Dealer Site (or swap the module into an existing customer account). Add the appropriate emPower services (Lights, Thermostats, and/or Locks) on the service plan page. (Note that “Light Automation” refers to X10 and is not compatible with emPower.)
2. Install the Alarm.com Z-Wave-enabled cellular module and gateway, connecting it to the NetworX panel.
3. Perform a cellular test at the panel to initiate communication between the module and Alarm.com.

Make sure to install the Alarm.com module and gateway outside the metal can. If it is inside the can, this will negatively impact Z-Wave signal transmission.

Figure 6: Z-Wave module overview



Adding z-Wave devices

Make sure the NetworX panel is connected to AC power when enrolling Z-Wave devices.

When adding devices, first add the devices closest to the Alarm.com system, and then move outwards.

Devices must be within 6 ft of the Alarm.com module when adding it to the network. Install each of the Z-Wave peripherals in their desired locations, following the manufacturer's instructions. Then follow the instructions to add (include) each device into the Alarm.com module's network. If a device will not be within 6 ft. of the Alarm.com module in its permanent installation location, include it in the network before installation or use a controller (controllers are not available for locks, see below).

If installing a portable Z-Wave controller, first add the controller to the Alarm.com Z-Wave network using the NetworX panel, and then use the portable controller to add the remaining devices to the network while the devices are in their permanent locations. (Locks cannot be added to the controller, and will need to be added by the Alarm.com module.) Devices must be within 6 ft. of the controller if a controller is being used to learn in devices.

Add a Z-Wave device to the Alarm.com module's network (Device Inclusion)

1. Put the Alarm.com module into Z-Wave Add mode.

On the Alarm.com module, press and hold down the Z-Wave Mode button for a few seconds, until the LED L2 begins flashing a 4-blink pattern to indicate Z-Wave Add mode. (See Figure 6 on page 8) for illustration of how to press the button.)

Alternatively, use a portable Z-Wave controller to add devices to the network. (See the section on Controllers for details).

2. Press buttons on the Z-Wave device to add.

Once the module (or controller) is in Z-Wave Add mode, press the appropriate buttons on the Z-Wave device to add it to the network. See Device-specific instructions (or the instructions that came with the device) for more information.

3. Confirm the Z-Wave device is added successfully.

Once the device has been added successfully, the panel will beep, and the yellow LED L2 will become solid and stay solid for 1 minute (allow up to 5 seconds for confirmation once the device has been triggered).

To add another device, repeat the steps above. (You do not need to wait for the solid light to go away before holding down the Alarm.com Z-Wave button to enter Add mode again.

See Table 6 on page 5 or "Z-Wave Troubleshooting" on page 12 for more information on interpreting the Z-Wave LEDs on the module.

Checking the Devices list with Alarm.com

Once you've added the devices, the customer website will automatically update the Devices list (under the emPower tab) within about 2 minutes of the last device being added. (To manually trigger the update sooner, you can perform a cellular phone test at the panel.) You can also view the Z-Wave devices through the Alarm.com Dealer website by pulling up the customer account and clicking on the emPower Devices link in the left-hand navigation.

Testing device communication with Alarm.com

Once the Z-Wave devices have been installed in their permanent locations and are displayed in the device list on Alarm.com, we recommend sending a remote command to each device (e.g., turn on a light; adjust the target temperature at a thermostat) to verify that it is successfully communicating with the Alarm.com module.

If you are onsite at the customer location and do not have access to the website, you can also check communication using the Z-Wave LED L2. When the Alarm.com module is in Normal mode it is by default off, but issues a single flash whenever it receives a message from a device in its own Z-Wave network. If a device is next to the panel, you can use this feature to test whether or not the device is currently installed on the Alarm.com Z-Wave network, and whether or not it is communicating properly.

To check communication between a Z-Wave device and the Alarm.com module:

1. Ensure that the Z-Wave device is powered on, and then press the same button you would use if you were trying to add it to a network (check the device's installation instructions if you are unsure which button to press).
2. The LED L2 on the module will issue a quick single flash to indicate it has heard the signal from the device. If the LED L2 does not flash when the device's button is pressed, this is most likely because of one of the following: a) the device is not in the Alarm.com module's Z-Wave network; b) it is out of direct communication range from the Alarm.com module; or c) the device is not powered on or working properly.

Deleting a Z-Wave device (Device Exclusion)

You can enter Delete mode to:

- Delete a Z-Wave device from the Alarm.com module's Z-Wave network if you no longer want the device in the network (e.g., if it is no longer in use).
- Delete a Z-Wave device from a different network so that it can then be added into the Alarm.com network. (A given Z-Wave device can only be assigned to one Z-Wave network at a time. If it is already assigned to one network, it needs to be deleted from that network before it can be added to another network.)

Whether you are deleting a device from the Alarm.com module's Z-Wave network or another Z-Wave network, the steps are the same.

1. Put the Alarm.com module into Z-Wave Add mode.

On the Alarm.com module, press and hold down the Z-Wave Mode button to enter Add mode (4-blink pattern on the LED L2). Once in Add mode, press and hold down the Z-Wave Mode button again until the LED L2 begins flashing a 2-blink pattern to indicate Z-Wave Delete mode. (See Figure 6 on page 8 for illustration of how to press the button.)

2. Press buttons on the Z-Wave device to delete.

Once the module (or controller) is in Z-Wave Delete mode, press the appropriate buttons on the Z-Wave device to delete it from the network. See Device-specific instructions (or the instructions that came with the device) for more information.

3. Confirm the Z-Wave device was deleted successfully.
4. Once the device has been deleted successfully, the panel will beep, and the yellow LED L2 on the Alarm.com module's Z-Wave board will become solid and stay solid for 1 minute (allow up to 5 seconds for confirmation once the device has been triggered).

If a device is no longer functioning, you can also delete it through the Device Automation page on the Alarm.com Dealer website. Send a remote command to the device and wait a few minutes for the command to register as failed. The failed device will have a remote node link next to it.

emPower on the Alarm.com Dealer website

Through the Alarm.com Dealer Website you can modify the emPower service plan, view the Z-Wave device list, and order emPower modules and devices. To add or remove emPower features from your customer's service plan, go to the customer's service plan page and check the features (lights, locks, thermostat, or the energy package - lights and thermostat) that you would like to add/remove. To view a list of your customer's Z-Wave devices, pull up their account and click the "emPower Devices" link.

Device-specific instructions

Controllers

Advanced Remote Controller

Note: if a controller will be used with the system, Alarm.com recommends adding it before the rest of the Z-Wave devices. Refer to the instructions that came with your controller for more information on controller features and operation.

To add the controller to the security panel (system):

1. Enter your panel into Add mode.
2. With the controller close to your panel, press and hold the Setup button on the controller until the controller screen displays "Lights Setup".
3. Use the arrow buttons to scroll until you see "Transfer" on the controller screen. Press the OK button.
4. The controller screen should now display "Primary". Use the arrow buttons to scroll until you see "Receive".
5. Press the OK button. The controller screen should display "Receiving".
6. The controller screen will briefly display "Success" after the controller has been successfully included into the panel.

To add a light module to the system using the controller:

1. Press and hold the Setup button on the controller until the screen displays "Light Setup". Press the OK button.
2. The controller screen should now display "Add". Press the OK button.
3. The controller screen should now display "To Network".
4. Use the arrow buttons to scroll until you see "To a Key" and then press the OK button.
5. Press a number key 1 to 9 or Setup (Shift) and a number key for numbers 10 to 18.
6. Press the OK button and the screen should now display "Setup Waiting".
7. Double-click the button on the light module. The controller screen will briefly display "Success" to confirm you have

added the device to the controller key and system network.

Note: To add a light module using the controller without adding it to a specific number key on the controller, skip steps 4 and 5.

To add a thermostat to the system using the controller:

1. Press and hold the Setup button on the controller until the screen displays "Light Setup".
2. Use the arrow buttons to scroll until the screen displays "Thermostat". Press the OK button.
3. The screen should now display "Add". Press the OK button.
4. The screen should now display "Setup Waiting". Follow the device-specific directions for the thermostat you are adding to the system to trigger it. The controller screen will display "Success" to confirm you have successfully added it to the system network.

To remove a light module from the system network using the controller:

1. Press and hold the Setup button on the controller until the screen displays "Light Setup". Press the OK button.
2. The controller screen should now display "Add". Use the arrow buttons to scroll until you see "Delete". Press the OK button.
3. Double-click the button on the light module. The controller screen will briefly display "Success" to confirm you have removed the device from the controller key and system network.

To remove the thermostat from the system network using the controller:

1. Press and hold the Setup button on the controller until the screen displays "Light Setup". Press the OK button.
2. Use the arrow buttons to scroll until the screen displays "Thermostat". Press the OK button.
3. The controller screen should now display "Add". Use the arrow buttons to scroll until you see "Delete". Press the OK button. The screen should now display "Setup Waiting".
4. Follow the device-specific directions for the thermostat that you are removing from the system to trigger it. The controller screen will briefly display "Success" to confirm you have removed it from the system network.

To delete the controller from the security panel (system):

1. Enter your panel into Delete mode.
2. Follow steps 2 to 5 in the instructions for "To add the controller to the security panel (system):" on page 9.
3. The controller screen will briefly display "Success" after the controller has been successfully deleted from the panel.

Lights and appliances

Plug-in Lamp Module or Plug-in Fluorescent Light/Appliance Module

1. Plug in the device.
2. Enter Add mode on the security panel.
3. To add the device, double-click the button in the middle of the light or appliance module. (If there is no beep at the panel confirming successful enrollment of the device, try pressing the button again.)

Tips

- Lamp modules cannot be used with compact fluorescent bulbs (CFBs). Use appliance modules instead.
- Make sure the lamp to be controlled is plugged into the Z-Wave side of the module (indicated by the Z-Wave logo).
- We recommend using a non-switched outlet for the module. If using an outlet controlled by a switch, make sure the outlet is switched on before sending light commands.
- Keep lamps switch on to allow control through the Z-Wave module, Alarm.com website, and mobile applications.
- Control dimming of lamp modules by pressing and holding the button on the module, or through the Alarm.com website

In-Wall Dimmer Light Switch or In-Wall On/Off Light Switch

1. Follow the provided directions to install the device and ensure that it functions properly with manual on/off control.
2. Enter Add mode on the security panel.
3. To add the device, turn on and turn off the light switch. (If there is no beep at the panel confirming successful enrollment of the device, try turning the device on and off again.)

Tips

- Dimmer switches and on/off switches cannot be interchanged. Use the appropriate type of switch.
- If it is not practical to move the security panel 3 to 6 ft. to the device, consider investing in a controller for installations.

In-Wall Outlet Receptacle

1. Follow the provided directions to install the device and ensure that it functions properly with manual control.
2. Enter Add mode on the security panel.
3. To add the device, double-click the button in the middle of the outlet. (If there is no beep at the panel confirming successful enrollment of the device, try double-clicking the button again.)

Tips

- If it is not practical to move the security panel 3 to 6 ft. to the device, consider investing in a controller for installations.
- We recommend using a non-switched outlet for the Z-Wave outlet. If using a switch outlet, make sure the outlet is switched on before sending commands.

- Only the lower outlet is controlled by Z-Wave. Ensure you are plugging devices into the lower outlet while testing if the outlet works for Z-Wave control. The opposite is true if the device is installed upside down.

Locks

Note: If the security panel cannot be taken to within 6 ft. of the lock installation location, add the lock to the system first as directed beginning in step 2. (You will need to connect the battery pack to the keypad before attempting to perform these steps.)

Tips

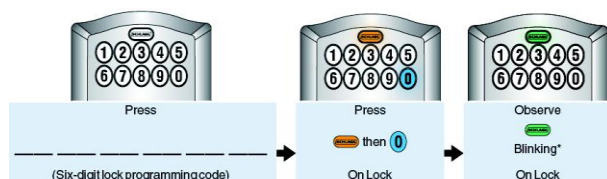
- Before removing old locks or beginning installation, check the layout of the door to make sure the new lock will not conflict with existing hardware.
- Contact a locksmith if you experience difficulties removing old hardware or installing the new lock.
- Send user codes to the lock (via the customer website - see step 4) before leaving the property. Alarm.com does not recommend programming codes locally via the lock keypad - all codes should be programmed through the Alarm.com interface.
- Ask your customer to save the programming code that comes with the lock (Schlage only). This will be convenient to have if they ever have issues in the future.

Schlage lever lock or Schlage deadbolt

1. Follow the instructions included with the lock. When prompted to continue setup online, do the following steps to program the lock into the Concord panel.
2. Enter Add mode on the security panel.
3. On the lock keypad, enter the six-digit programming code (given by Schlage), then press the Schlage button, followed by 0. The Schlage button will flash green (Figure 7 below).

Note: Wait until the light flashes green before disrupting the lock or panel. Failure to do so will result in lock malfunctions.

Figure 7: Schlage lock



4. Login online to the customer account at www.alarm.com to select which user codes are allowed to use this lock. To do this, go to the emPower then Locks tab. On the User Code table, you will see a column labeled Lock Access. Check the box of the lock you want to allow each user code to access.

Tip

If you observe a red blinking light at the end of the installation keystrokes instead of green, follow these instructions:

1. Enter the panel into Delete mode (see “Deleting a Z-Wave device (Device Exclusion)” on page 9).
2. Enter the six-digit programming code on the keypad and wait for three orange lights and three beeps.
3. Press the Schlage button and then 0 on the keypad. Wait for three orange lights and three beeps.
4. Wait for all lights to stop blinking. You should now be able to enroll the lock normally by repeating the steps shown above (after re-entering Add mode).

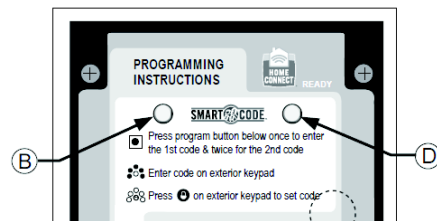
Kwikset deadbolt

1. Follow all instructions provided to install the lock onto the door and double-check that the programmable keypad lock works.
2. Enter the panel into Add mode.
3. To trigger the lock to add it, press button “B” (Figure 8 below).

Note: Wait until the red light (under the paper next to button “B”) stops flashing before disrupting the lock or panel. Failure to do so will result in lock malfunctions.

4. Login online to the customer account at www.Alarm.com to select which user codes are allowed to use this lock. To do this, go to the emPower then Locks tab. On the User Codes table, you will see a column labeled Lock Access. Check the box of the lock you want to allow each user code to access.

Figure 8: Lock trigger button



Thermostats

Tips

- The new thermostat should be placed in the same location as the original thermostat unless an HVAC professional approves the new location.
- Learn the thermostat into your emPower network while it is powered using the power source (AC power vs. battery power) it will use during regular use after installation.

UTC Z-Wave Thermostat

1. Follow the manufacturer’s instructions to install the thermostat.
2. Enter Add mode on your panel.
3. Under the top cover of the thermostat, press the black Mate button located in the upper right hand side.

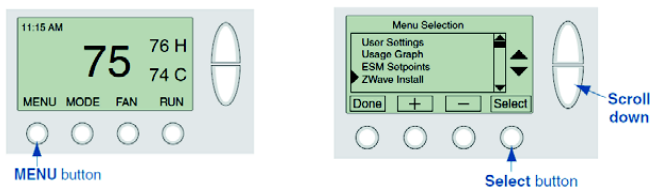
Note: The thermostat should be connected to AC before it is learned into the network.

Trane Remote Energy Management Thermostat

Note: The Trane thermostat requires a 24 VAC common wire to power the thermostat. Before beginning installation, verify the HVAC system has a common wire or contact a qualified HVAC technician. If the security panel cannot be taken to within 6 ft of the thermostat installation location and you do not have a portable controller, power the thermostat temporarily using a 24 volt transformer and add the thermostat to the system as described in steps 2 and 3 before installing the thermostat.

1. Follow the instructions included with the thermostat through step 19.
2. Instead of step 20, enter Add mode on your panel.
3. Hit the Menu button on the thermostat panel. Scroll down to Z-Wave Install and press Select (Figure 9 below). Press the Yes button to enroll the thermostat.

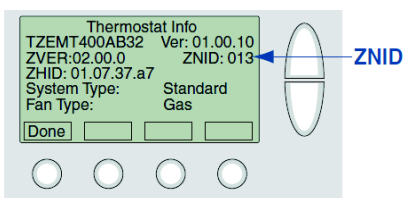
Figure 9: Trane thermostat



Tip

Verify the enrollment of the thermostat. Scroll down to Thermostat Info and press the Select button. Look at the number listed after ZNID. If the number listed is anything other than 000, the thermostat was successfully enrolled. If the number listed is 000, then the thermostat has not been successfully enrolled. Try enrollment again or verify that the thermostat is not currently part of another network.

Figure 10: Verify enrollment



Z-Wave Troubleshooting

Device not added successfully

If there is an error, or the two-minute time limit expires when adding a device, LED L5 will issue a 5-blink, and the LED L2 will never light up to indicate that the device was added successfully.

Try the following troubleshooting steps:

- The device may already be part of a Z-Wave network (whether or not you have learned the device into a network or not, the manufacturer may have tested the device and left it learned into another system). Try deleting

(excluding) it from its network and the try adding it again. If you receive a Timeout/Error message when trying to delete the device, the issue is likely range-related.

- If the device is too far from the Alarm.com module when you are adding it, you may need to move the device closer to the panel (or vice versa) while adding it, or else use a portable controller to add it.
- Other 900 MHz wireless devices may be interfering with the Z-Wave messages. Try moving or replacing any 900 MHz headsets, cordless phones, baby monitors, wireless speaker extenders, IR remote control extenders, or similar devices.

Increasing wireless range of device network

- Expand your network in pairs:

If a device has been added successfully but does not appear to be communicating reliably with the system, it may be necessary to place another Z-Wave device (that's already on the network) between the panel and the problem device, to serve as a repeater that can relay messages between the two. We recommend expanding your network in pairs of devices. More devices allow for multiple Z-Wave communication paths, preventing any one device from becoming a bottleneck in the network.

- Expand your network using beaming devices:

Locks and battery-powered thermostats enter sleep mode to conserve battery life, and therefore can only communicate directly with the panel or with beaming devices that can send a wake-up message. In general, devices powered off of batteries do not beam, and most (but not all) devices powered off of AC power beam.

Note: Newer light/appliance modules support beaming, but some earlier versions did not. To find out if a given module is beaming-compatible, check the label. The light/appliance plug-in module supports beaming if the date code starts with 11 or the version includes the letter a or the letter b.

Lock not securely enrolled

Lock devices must complete a secure enrollment process during addition, which can take up to a minute to complete while the lock is within 6 ft. of the panel. If this process is interrupted before completing, the lock will not function properly. A warning message will display on the Alarm.com customer site and on the Dealer site that secure enrollment is not complete. The lock should be deleted from the network and re-added, making sure to allow enough time for secure enrollment to complete before disrupting the lock or panel.

No Home ID (6 flashes on Z-Wave LED L5)

This error occurs when the Alarm.com module has not received the Z-Wave "Home ID". Usually, this occurs when the module has not yet communicated with Alarm.com since the Home ID is sent during initial communication. Perform the CDMA phone test and confirm that communication between Alarm.com and the module has been initiated. If the module is already communicating with Alarm.com and this error persists, check that the Z-Wave daughterboard is securely connected to the module and power cycle the unit.

Device already in Network (steady LED L2 with one blink)

The device being added is already part of a Z-Wave network (whether the existing network or an old network) and cannot be

added again. Clear the device by deleting (excluding) it from its network.

Note: The Alarm.com module can be used to delete devices in any network. The device will clear itself and be able to be added to another network. The device's old network will still list that device as part of its network (but the device will not be able to be controlled by that network) until the device is removed from its old network.

Specifications

Compatibility	NetworX panels: NX V2 4, 6, 8 and 8E. (Note: certain older V1 NX4, 6 and 8 may not be fully supported).
Voltage	9.5 to 15 VDC, 12 V nominal, 65 mA (continuous), 1600 mA (instantaneous peak), maximum from panel or auxiliary power supply
Cellular network	1xRTT CDMA Verizon; 3G HSPA AT&T, T-Mobile or Rogers
Power/data bus	One 3-wire NetworX power/communication data bus
Indicators	One module/panel communication status LED, one module power LED, one automation LED, three wireless communication status LEDs, and 4 GSM status LEDs
Dimensions	5.25 x 4.125 x 1 in. (133 x 105 x 25 mm)
Case color	Belgian gray
Case material	High-impact, ABS plastic
Operating temperature	32 to 120°F (0 to 49°C)
Storage temperature	-30 to 140°F (-34 to 60°C)
Relative humidity	90% noncondensing (maximum)

Regulatory information

FCC

Changes or modifications not expressly approved by UTC Fire and Security can void the user's authority to operate the equipment.

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 in to an outlet on a circuit different from that which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This device complies with Industry Canada license-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.

FCC ID: YL6-143200H5V4 (GSM), YL6-143200C5V4 (CDMA)
IC: 9111A-143200H5V4 (GSM)

Contact information

www.utcfireandsecurity.com or www.interlogix.com

For customer support, see www.interlogix.com/customer-support

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