# SEM-DSC PowerSeries Dual-Path (SEM300) - Installation Guide

Alarm.com Dual-Path System Enhancement Module (SEM) is the most cost-effective and comprehensive solution to migrate compatible DSC PowerSeries™ PC1616, PC1832, and PC 1864 panels to Alarm.com's award-winning interactive services. The Dual-Path SEM supports the 4G LTE cellular network and optional Broadband Ethernet. This ensures the longest life cycle with the most secure and reliable service.

Equipment

System Enhancement Module
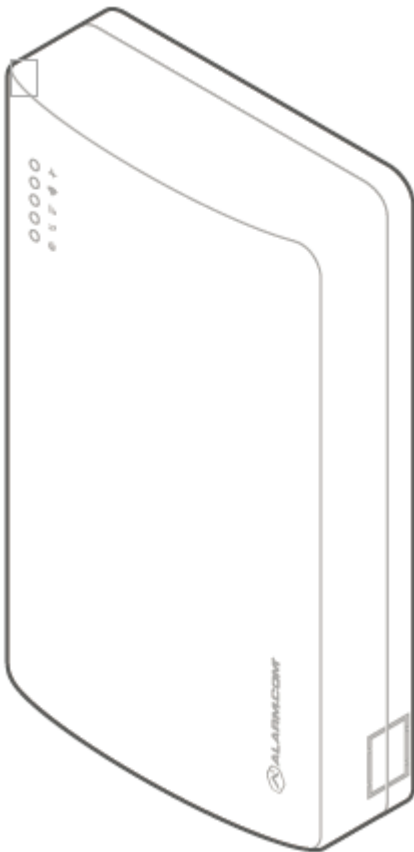
Installation guide

Wire

Wall anchors and screws

Panel compatibility

The SEM-DSC PowerSeries is only compatible with the following panels that are version 4.20+:

- PC1616
- PC1832
- PC1864

Recommended tools and supplies

Note: These are not included.

- Screwdrivers: Small blade and Phillips
- Drill and bits for screws and/or wall anchors
- Ethernet cable
- Alpha keypad (Version 1.2+)
  - Alarm.com strongly recommends installing an alpha keypad to ensure the failure to communicate (FTC) trouble condition is displayed.
- Four-conductor, 22 AWG or larger stranded wire

  The following table shows the maximum wire length for each gauge.

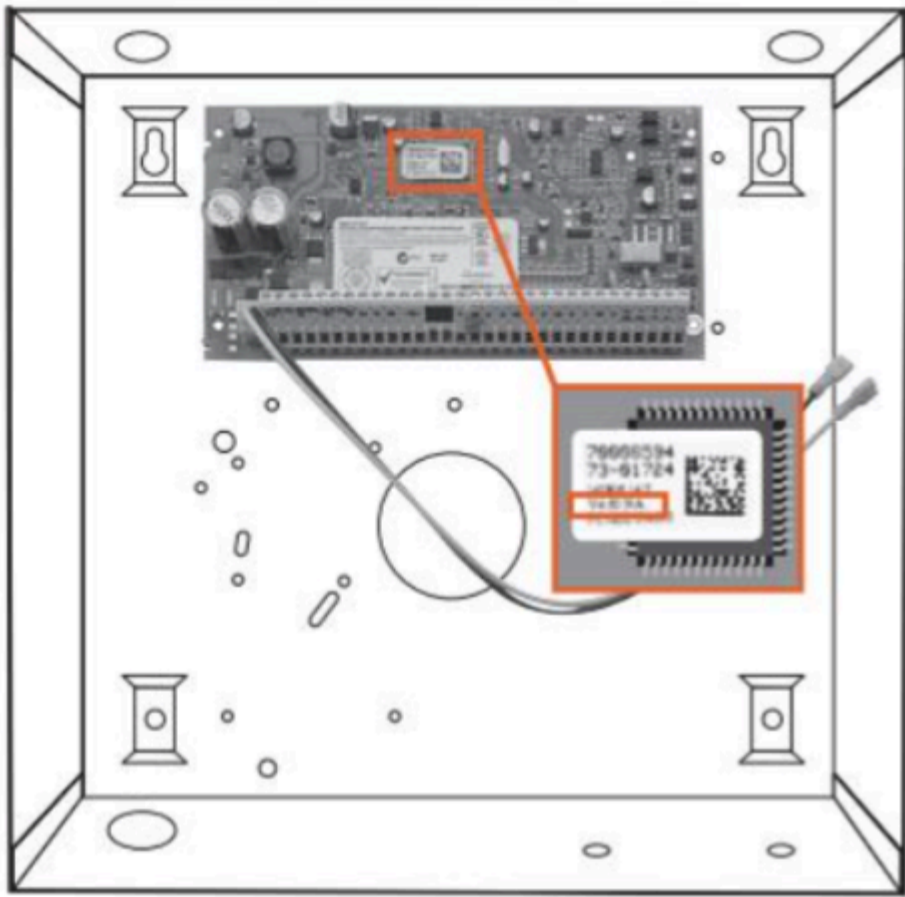 | Gauge | Maximum wire length |
  | --- | --- |
  | 22 gauge | 40 feet (12.2 m) |
  | 18 gauge | 90 feet (27.4 m) |

Prepare the system

Before powering down the system:

Verify panel compatibility

Verify that the panel is compatible by checking the version and year printed on the PROM chip inside the panel enclosure.

Inspect for peripheral devices

1. Take inventory of all peripheral devices (wireless receivers, zone expanders, keypads, power supplies, etc.) wired to the system.

2. Inspect peripheral device wiring to verify there are no loose ends or intermittent connections between the device and system.

   Note: The presence of peripheral device issues can often cause the SEM installation process to take longer than expected.

3. Verify all peripheral devices are supervised by the panel. To verify peripheral devices are supervised by the panel:

   a. Press **[*][8]**.

   b. Enter the installer code.

   c. Press **[903]**.

4. Reset supervision if necessary. To reset supervision:

   a. Press **[*][8]**.

   b. Enter the installer code.

   c. Press **[902]**.

**Disarm and power down the panel**

1. Verify the panel is disarmed and clear of any alarms, troubles, or system faults.

2. If you do not know the current installer code, check the installer code at the panel before powering down the panel.

3. Then remove AC power and disconnect the backup battery to completely power down the system.
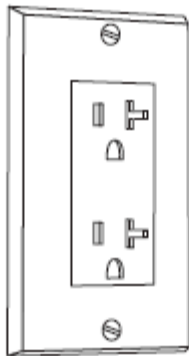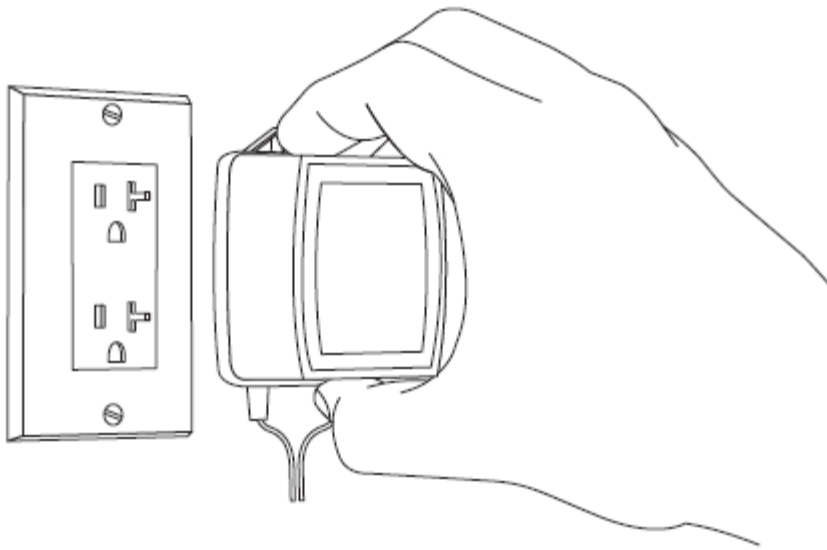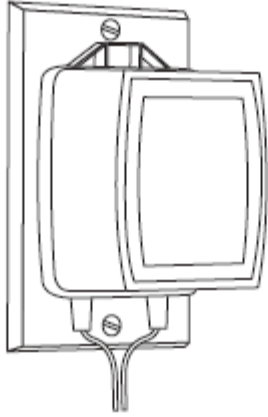
Create an Alarm.com account

1. Create a new Alarm.com customer account using the Partner Portal or MobileTech app. The IMEI located on the Alarm.com module will be needed to create this account.
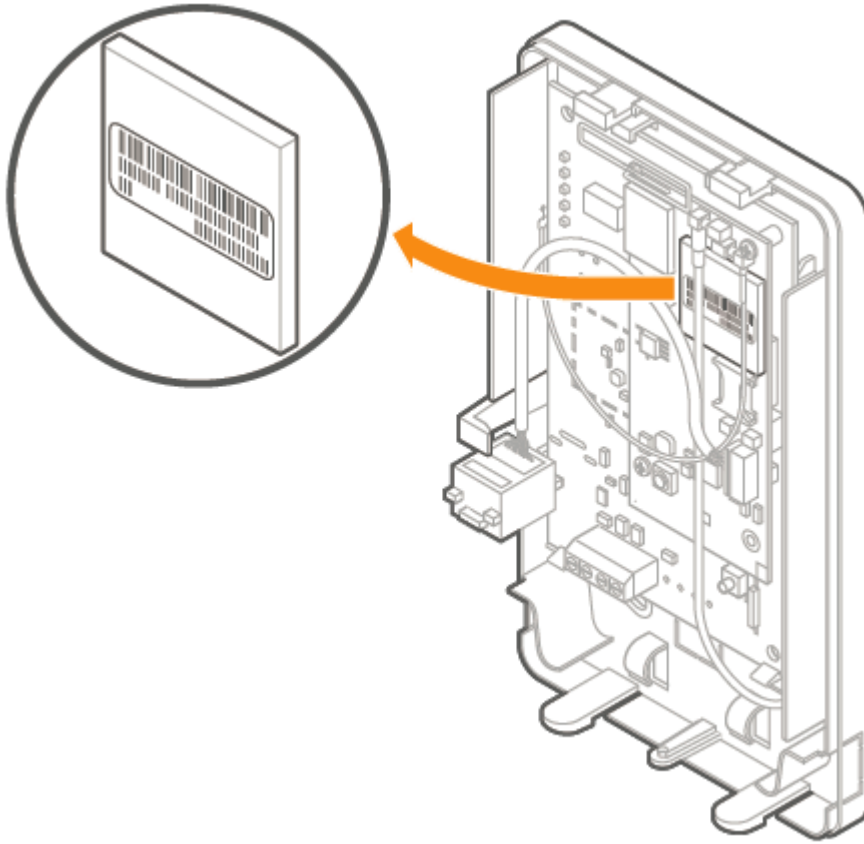
2. During the account creation process, you are prompted to enter the current installer code on the panel. Alarm.com uses this code to access panel programming and read information stored on the panel.

3. At the end of the *Create New Customer* process, you are able to print or email a Welcome Letter for the customer, which includes login information for the Alarm.com Customer Website.

For more information about creating a customer account, see [How to create an Alarm.com customer account](#).

After powering down the system:

Remove third party communication

If there are any third-party communicators installed or a POTS line connected to the panel, remove them.

The SEM is not compatible with POTS, IP/GSM devices, or other third-party communicators. Therefore, the SEM should be the only communication device installed for alarm signaling to the monitoring station.

Connect the SEM

Mounting

Before mounting the SEM to the wall:

1. Evaluate how the wiring cables will be routed from the SEM to the panel.
2. Remove the snap-off plastics. There are two routing options available: the side of the enclosure for side routing or the rear of the enclosure for wall routing.
3. Verify the wiring of the primary antenna, diversity antenna, and ethernet dongle are routed correctly.

Note: The Cat-M variant (indicated by the ME910 Telit radio) only requires the primary antenna.
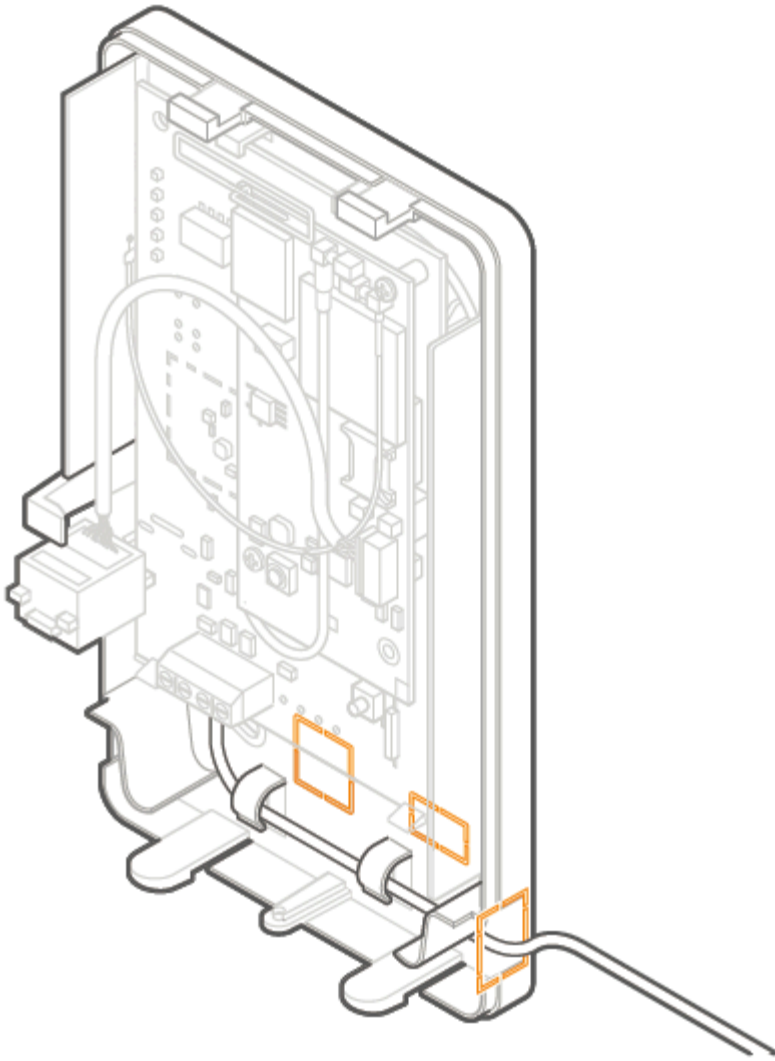
When ready to mount:

1. Press in on the thumb tabs located at the bottom of the enclosure, then swing up the top half of the enclosure cover to expose the internal components.

2. Place the SEM enclosure backplate against the wall at the desired mounting location and mark the four mounting holes.

3. Using the provided mounting screws and wall anchors (if needed), place the first mounting screw through the top-right enclosure hole. This screw will be used to hang the SEM from the wall while mounting and should not be tightened until the last step.

4. Place the second mounting screw through the bottom-left mounting hole. This screw is used to level the enclosure on the wall and should not be tightened until the last step. A standard leveling device may be used to ensure the unit is level.

5. Place the third mounting screw through the top-left enclosure hole. This screw should be tightened fully against the unit and wall before moving to the next step.

6. Place the final mounting screw through the bottom-right enclosure hole. This screw should be tightened fully

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against the unit and wall before moving to the next step.

Important: This screw is critical for the wall tamper functionality and should not be overlooked.

7. Tighten the first two mounting screws fully to the unit and wall to complete the mounting process.
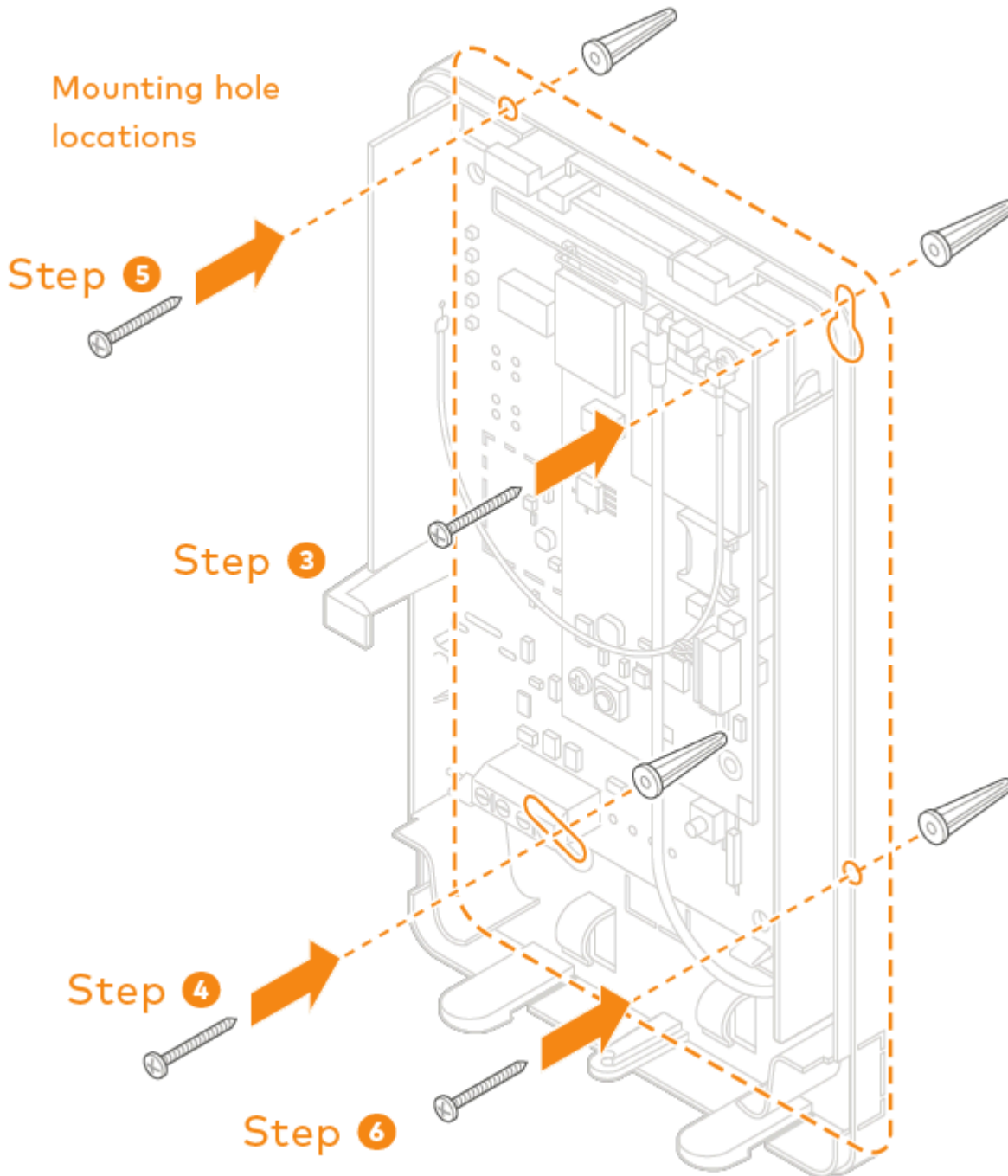
Wiring
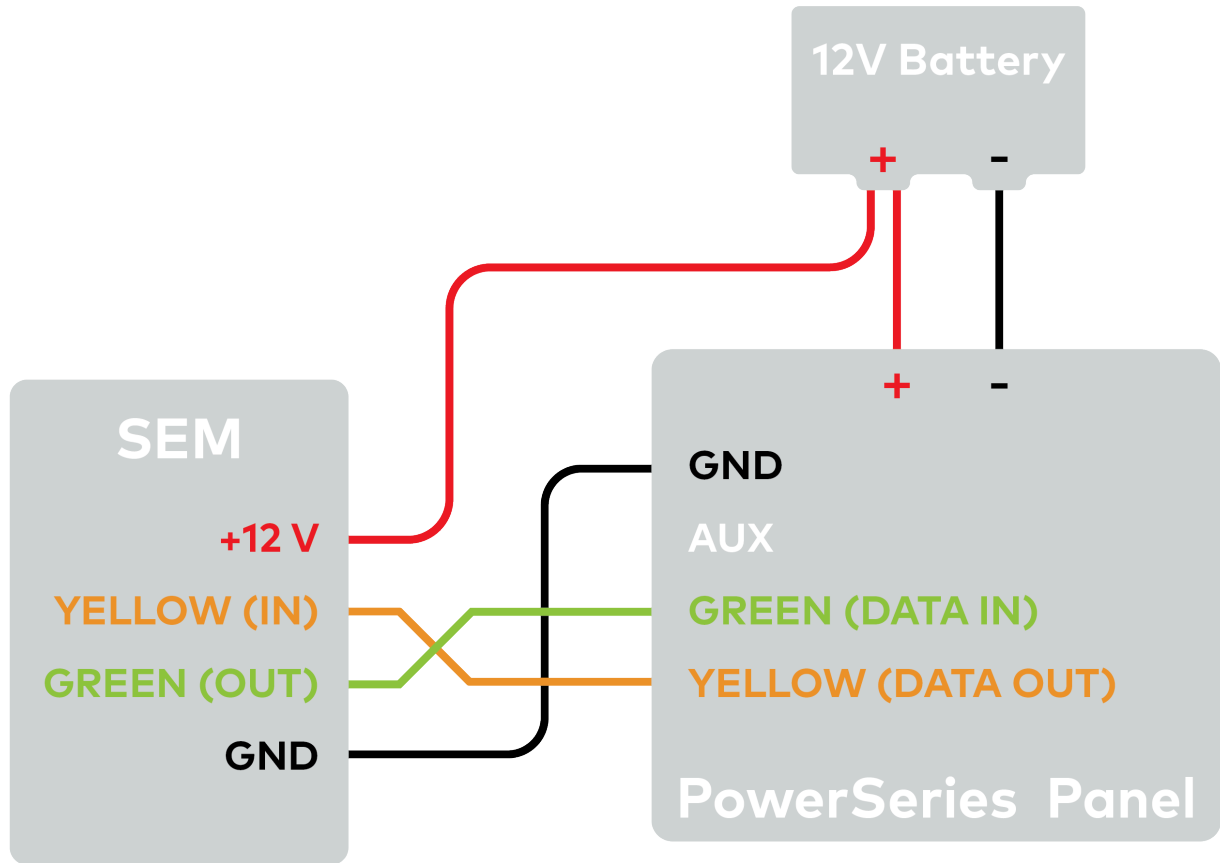
To wire the panel:

1. Connect the yellow/green data cables and red/black power supply cables to the designated locations at the SEM and panel.

2. Connect an Ethernet cable to the pre-installed Ethernet jack to utilize dual-path communication. Local network changes may be required before the broadband path activates. For more information about Dual-Path communication, see Configure Dual-Path communication for a panel remotely.

3. Remove the snap-off plastics from the enclosure side at the desired locations, then route the cables around the internal strain relief walls and out the side of the enclosure.
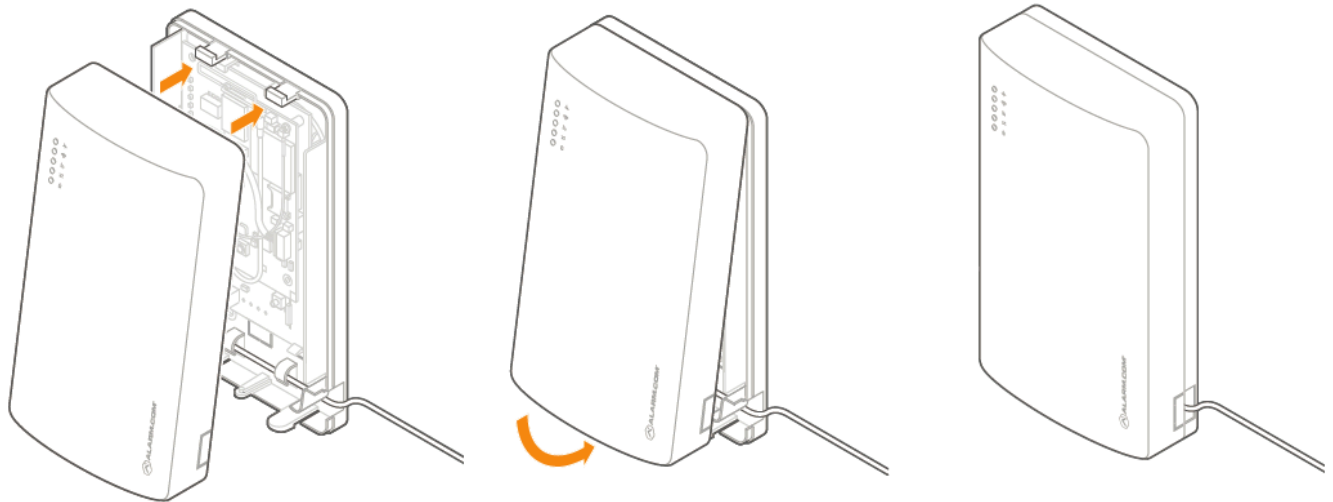
4. Before completing the mounting, verify the wiring connections are secure and all internal components are in their proper location.

5. Then close the enclosure by sliding the cover into the mounting points at the top of the enclosure base and then swinging down the cover to snap the thumb tabs into place.

Zone scan

Connect the backup battery and restore AC power to the panel. For the SEM to interact with the existing zones on the system, it must read them from the PowerSeries panel. The SEM does a zone scan to read this information.
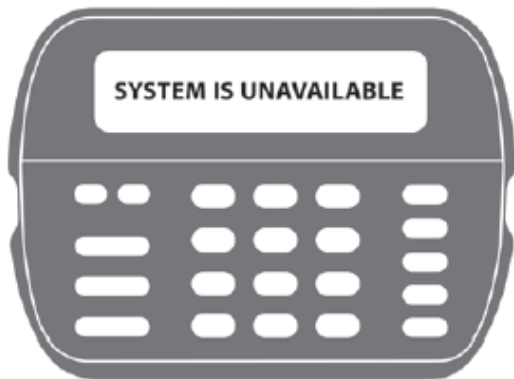
The zone scan automatically begins within one minute after the panel is powered up and should take between 5 and 15 minutes, depending on the number of partitions and zones on the system. Do not touch the panel, keypad, or SEM at this time.

The zone scan is complete when the green and yellow lights on the keypad remain solid. If you press any buttons on the keypad during the zone scan, the message *System unavailable* displays on the screen. The date and time shows on the screen when the zone scan is complete.

Important: If the system was previously communicating over a phone line, we recommend Disabling Telco Line Monitoring (Section 015, Option 7) and Removing the Phone Numbers (Section 301-303).

Broadcast sensor names

For the SEM to be able to read the sensor names stored on the panel and display them on Alarm.com, you must broadcast the sensor names stored on the keypads. This should be done for every install with an LCD keypad and is necessary even if there is only one keypad on the system.
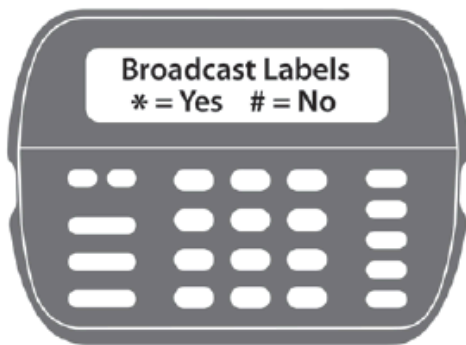
Broadcast sensor names by selecting the following:

[*] + [8] + [Installer Code] + [*] to enter LCD programming.

From LCD programming, go to field 998 and press [*] to broadcast sensor names.

Note: Once broadcasted, sensor names are updated on the Partner Portal and MobileTech app. If the sensor names are not updated, please request the sensor names by selecting **Request Sensor Names** on the Partner Portal or MobileTech app.

Confirm communication

Before completing the installation, verify that the SEM is fully in sync with the panel and communicating with Alarm.com by verifying:

1. The correct devices are present on the account equipment list in Alarm.com MobileTech app.
2. The customer can view all user codes in the Alarm.com Customer app or Customer Website, and the correct users are reported when arming or disarming at the panel.
3. All alarms are reported correctly to Alarm.com and the monitoring station.

It is also recommended to execute a System Check in Alarm.com MobileTech app to verify the health of the account and identify any other issues. For more information about performing a System Check, see System Check User Guide.

Additional information

Z-Wave devices

Alarm.com recommends using the MobileTech app or the Partner Portal to complete the installation of any Z-Wave devices. For more information about enrolling Z-Wave devices, see Manage Z-Wave devices on a SEM-DSC

[PowerSeries](#).

For more information about Z-Wave communication, Z-Wave signal strength, and additional Z-Wave resources, see [General Z-Wave Information](#).

Installation settings

For the SEM to communicate with the panel and report all alarms, certain panel settings must be set at the panel. These settings are automatically changed during installation, so no further action is required by the installer.

Edit master code

Section 015, option 6 is disabled. This setting is required for SEM to change the master code via the User Programming *5 menu.

Arm/Disarm with Trouble

Section 021, option 8 is disabled. This setting is required for SEM to arm the panel when a trouble is active. This setting is available on select DSC panel versions.

Swinger Shutdown

Section 1xy, option 6 is enabled or disabled based on the default zone attributes (i.e., section 101, option 6 is enabled for zones programmed as group 01 Delay 1, but disabled for zones programmed as group 08 24 HR Fire). This setting is required for SEM to support the swinger shutdown feature.

Transmission Delay

Section 1xy, option 7 is disabled. This setting is required for SEM to report zone alarms immediately.

Report codes

Sections 320-349 do not determine or impact event reporting on Alarm.com.

Important: All monitoring station forwarding settings should be set up via Alarm.com Monitoring Settings.

Gateway LED reference

The enclosure gateway LEDs can be used to indicate communication errors, panel communication, network communication, and signal strength.
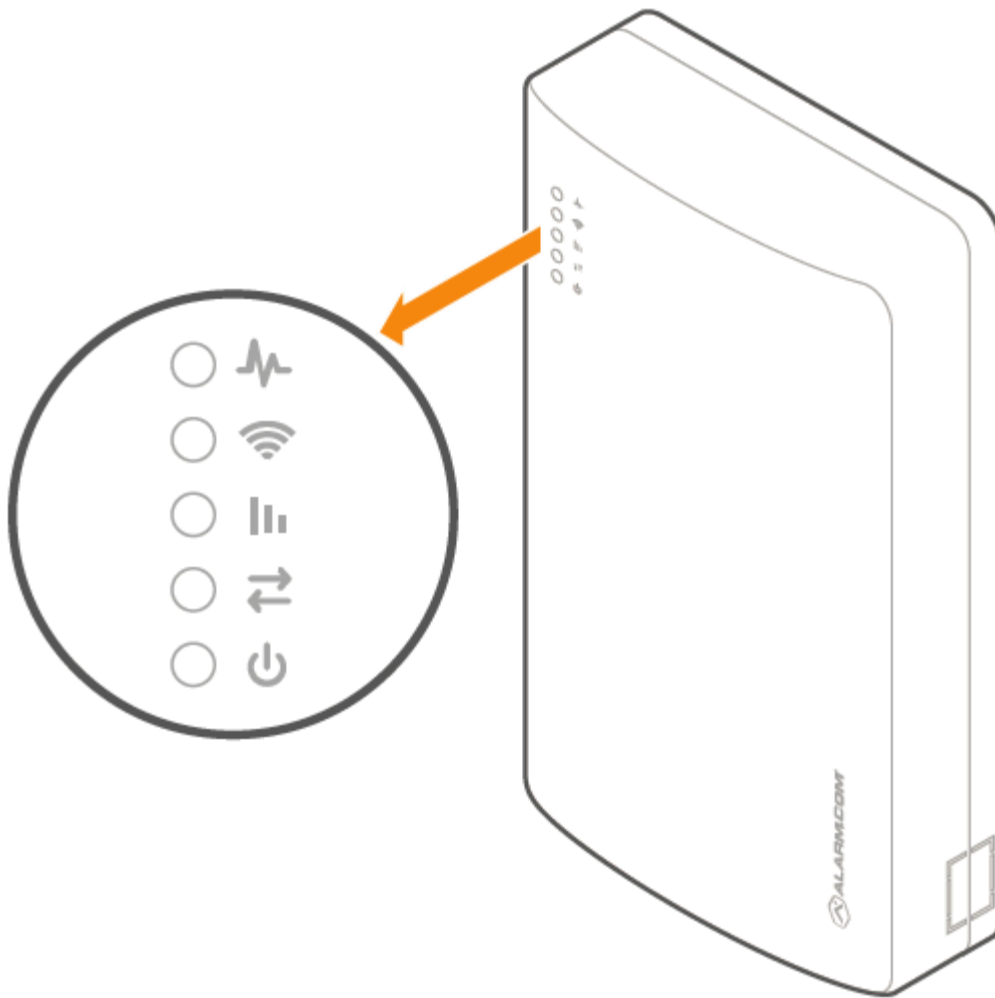
Note: For advanced troubleshooting, open the cover to look at the Alarm.com module LEDs. For more information about the module LEDs, see SEM-DSC PowerSeries - Module LED Troubleshooting.

Trouble LED

The *Trouble* LED flashes 1 to 8 times in a four-second interval to indicate specific error conditions.

Flash pattern	Description
1	The Alarm.com module cannot communicate with the panel. Perform a power cycle on the panel. If the error persists, contact Alarm.com CORE Technical Support.

Flash pattern	Description
2 then 4	The Alarm.com module provisioning process could not be completed. Power cycle the system. If the error persists, contact Alarm.com CORE Technical Support.
2 then 5	The Alarm.com module provisioning process could not be completed because the module is currently roaming off the carrier's primary network.
3	The Alarm.com module is trying to register on the cellular network. If it persists for more than a few minutes, the module is having problems registering. Check L4 for signal level. If signal level is lower than 2 bars, change the panel's location or use a remote antenna option.
4	The Alarm.com module is registered on the cellular network but could not connect with Alarm.com. If the error persists, contact Alarm.com CORE Technical Support.
5	The radio on 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 please verify that the module is flashing 5 times.
6	This indicates an error only if it persists for more than a minute. Otherwise, it's an indication that the module is resolving an unusual condition regarding communication with the cellular network.
7	The SEM is unable to access panel programming. Check the panel wiring and installer code.
8	If this error persists, the account may have been set up incorrectly. Check that the serial number being used matches the serial number used to create the account. If the serial numbers are the same, contact Alarm.com CORE Technical Support.

Path LED

The *Path* LED flashes to indicate the active communication path (cellular, broadband, or both) to Alarm.com.

Flash pattern	Description
Steady long flash (~2 sec)	The cellular communication path is active.
Long flash (~2 sec) followed by a short flash (~0.5 sec)	Both cellular and broadband communication paths are active.
Steady short flash (~0.5 sec)	The broadband communication path is active. This should also accompany an error LED flash.
No flash	Both communication paths are not communicating. This should also accompany an error LED flash.

Signal LED

The *Signal* LED flashes to indicate the cellular signal strength (0 to 6 bars).

Panel LED

The *Panel* LED flashes with every communication to the panel.

Power LED

The *Power* LED illuminates solid when power is supplied.

Troubleshooting

Communication to Alarm.com or monitoring station

If there is no activity present in the event history or the account is not signaling to Alarm.com:

1. Initiate a communication test from the SEM by pressing **[#]** + **[987]** + **[*]** to initialize communication with Alarm.com or verify the module is communicating on the cellular network.

2. For this test to send a signal to the monitoring station, verify *Phone Tests* is selected as an *Event to Forward* in the customer's Monitoring Settings. For more information about updating the Monitoring Settings, see Change the monitoring settings on a customer account.

Customer equipment list

If the device list is empty on the MobileTech app or Partner Portal equipment page, the SEM may be having problems communicating with the panel. To resolve:

1. Check for and remove any incompatible devices. For information about incompatible devices, see Are any devices incompatible with the SEM-DSC PowerSeries?.
2. Verify all wiring is correct and secure.
3. Resync the installer code if a zone scan is not initiating upon power-up.
   a. To resync the installer code, use the keypad to change the installer code to a new, unique code.
   b. After resyncing the installer code, power cycle the panel and verify a zone scan is initiated.
4. Verify the panel is disarmed and then request an updated equipment list using the MobileTech app or the Partner Portal. Verify the firmware version is displaying properly. For more information about requesting an updated equipment list, see Request an updated sensor list and system status.
5. Verify the zone scan has started in the event history through mobile tech or partner portal. There should be zone scan event messages in the history.

   Note: Ready light may be off or flickering during the zone scan process.

Customer user codes

If user codes are not visible, The SEM may be having issues scanning the user codes programmed at the panel. To resolve:

1. Verify an equipment list is present on the equipment page. If some equipment is not present, see Customer equipment list.
2. Verify that all user codes are present on the Customer Website or Customer app.

   Note: Any duplicate or sequential user codes (ex: 4567 and 4568) will be removed during user code scan process.

3. Arm and disarm with all user codes locally.
4. Verify that all user codes are present on the Customer Website or Customer app.
5. Verify that the correct username and slot number are reported to the Customer Website or Partner Portal.

Keypad displays zone 32/64 open or Communication Failure

The highest zone (32 or 64) for the SEM-DSC PowerSeries™ is reserved for an FTC zone (failure to communicate). If sensor names have not been broadcasted, then the highest zone in the panel displays as open.

Important: Since the highest zone for the SEM-DSC PowerSeries™ is reserved for an FTC zone, no sensors can be enrolled in the highest zone. They may appear to successfully enroll, but the sensor is removed as soon as the sensor is tripped

Questions?

If you are experiencing difficulties with your installation, please contact [Alarm.com CORE Technical Support](#) and we'll be happy to assist further.

Specifications

Power requirements	12 V nominal, 130 mA (continuous) 2000 mA (instantaneous peaks) maximum (from panel battery)
Cellular network	4G LTE with 3G HSPA, 2G GSM fallback **Note**: Cat-M uses the 4G LTE Cat-M1 network, no fallback
Panel interfaces	Two keypad BUS connections, 12 V power and ground
Alarm.com module indicators	Five LEDs (red, yellow, or green)
SEM circuit board indicators	Five LEDs (red, green, yellow, or blue)
Operating temperature	14 to 131°F (-10 to 55°C)
Storage temperature	-30 to 140°F (-34 to 60°C)
Humidity	90% relative humidity non-condensing
Enclosure dimensions	(L x W x D) 7.66 x 4.35 x 1.65 in. (19.46 x 11.05 x 4.19 cm)
Enclosure color	White
Case material	Fire-retardant PC/ABS, PC

Regulatory information

Contains FCC: YL6-143470L, Model: ADC-470L

Changes or modifications not expressly approved by Alarm.com 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 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.

Operation is subject to the following two conditions:

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

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.

All cables used for installation should not exceed 30 meters.

IC regulations

Contains IC: 9111A-143470L, Model: ADC-470L

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

This device may not cause interference.

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.