Installation and Operation

Emergency Power Off System

by Schneider Electric

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IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during installation, operation, and maintenance of the EPO system.

Safety Instructions for North America

WARNING: Only certified electricians may install the system and the wiring to the products IT controls.

WARNING: Assembly has not been evaluated for emergency life critical applications, but is intended for emergency equipment power off.

Note: Wiring from the system to the products IT controls can either be installed in conduits or installed without conduits if the wires are in accordance with Article 725 of the National Electrical Code (NFPA 70) and Section 16 of the Canadian Electrical Code (C22.1).

Caution: Only Class 2 circuits rated 30 V or less can be connected to terminals 1–8. Class 2 circuits are defined in Article 725 of the National Electrical Code (NFPA 70) and Section 16 of the Canadian Electrical Code (C22.1). A Class 2 circuit is a source having limited voltage and energy capacity as follows:

A. If an Inherently Limited Power Source, voltage is limited to 30 VAC or 30 VDC, and energy is limited to 8 A.

B. If not an Inherently Limited Power Source, voltage is limited to 30 VAC or 30 VDC, energy is limited to 250 VA, and current is limited to 1000/Vmax. The fuse is limited to 5 A if maximum voltage is 20 V, or 100/Vmax if voltage is greater than 20 V but less than 30 V.

Safety Instructions for Europe, Middle East, and Africa

WARNING: Only certified electricians may install the system and the wiring to the products IT controls.

WARNING: Assembly has not been evaluated for emergency life critical applications, but is intended for emergency equipment power off.

Note: Wiring from the system to the products IT controls can either be installed in conduits or installed without conduits if the wires are in accordance with IEC/EN 60364-5-52 or equivalent local electric code.

Caution: EPO can be achieved with either a contact closure or application of an external 24 VAC or 24 VDC from a SELV or PELV source. It is important to note that hazardous voltage from the mains voltage must be isolated from the contact closure or 24 VAC, 24 VDC. The EPO circuit contact closure, the 24 VAC, or the 24 VDC are considered SELV circuits as defined in EN60950 “Safety of Information Technology Equipment” or PELV circuits as defined in IEC 60364-4-41 “Electrical Installations of Buildings Protection for Safety—Protection Against Electric Shock.” SELV is an abbreviation for Safety Extra Low Voltage. PELV is an abbreviation for Protective Extra Low Voltage. SELV and PELV circuits are isolated from the mains through a safety isolating transformer, and designed so that under isolated from the mains through a safety isolating transformer, and designed so that under normal conditions the voltage is limited to 42.4 Vpeak or 60 VDC.

Specifications

Electrical

Input/Output	
Voltage	24 VDC 48 VDC/240 VAC (External circuit)
Current	1 A at 24 VDC 1 A at 48 VDC (External circuit)
Frequency	50/60 Hz
Circuits (qty)	9
Contact state	Normally Open (NO)

Physical

Dimensions (W×L×D)	
EPO box	226 × 251×66 mm (8.9×9.9×2.6 in)
Shipping	305 × 305×140 mm (12×12×5.5 in)
Weight	
EPO box	2.9 kg (6.4 lb)
Shipping	3.1 kg (6.9 lb)
Mounting	Surface mount
Connection	Removable panels in rear, 13 mm (½ in) and 6 mm (¾ in) knockouts on top and bottom
Push button	Standard, 22 mm metallic body; 40 mm mushroom head; Push/pull
Wire connections	0.10 to 0.75 mm² (24 to 18 AWG) wire ground stud for #8 ring lug

Environmental

Temperature	–5 to 45 °C (23 to 113 °F)
Humidity	5 to 95%, non-condensing
Elevation	3000 m (10000 ft)

Compliance

Standards	NFPA 70, NFPA 75, NEC Article 645, 29 CFR 1910.36, 29 CFR 1910.306
Approvals	UL, C-UL, CE

Overview

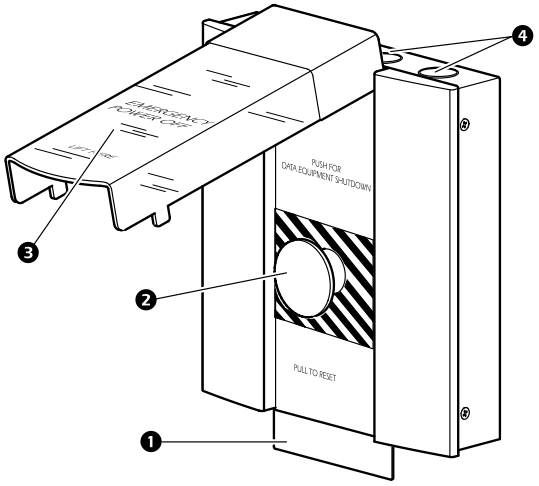
Emergency Power Off System

The Emergency Power Off (EPO) System consists of one or more wall-mounted, push-button EPO boxes. Each EPO box provides a single point of equipment shutdown for up to eight APC devices and one third-party device (such as an upstream breaker), using Normally Open (NO) contact closure connections. An EPO box can be cascaded with other EPO boxes to support multiple points of equipment shutdown.

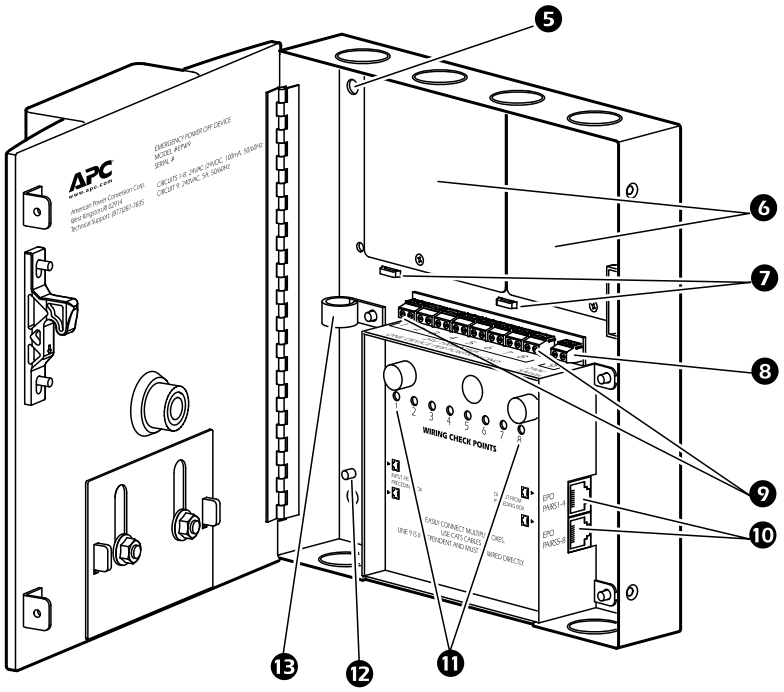
Note: Although the EPO is designed specifically for APC products, the system can be used for tripping any devices that fall within its parameters. See ***"Specifications"*** to confirm proper application. Install the EPO according to the instructions in this manual.

EPO Box Components

1	Flag
2	Button
3	Shield
4	Knockouts



5	Mounting holes
6	Blanking panels
7	Wire anchors
8	Auxiliary device terminal
9	Device terminal block
10	Cascading jacks
11	Wiring check points
12	Ground stud
13	Cable clamps



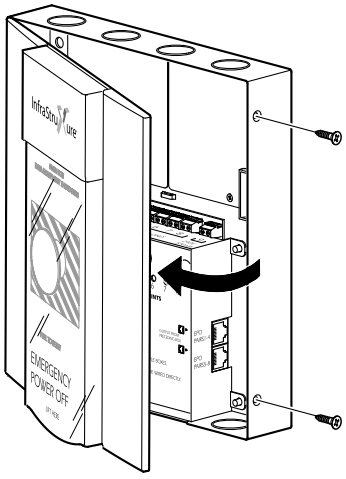
Note:

Wiring, conduits, and mounting hardware are not provided.

Installation

Prepare the EPO

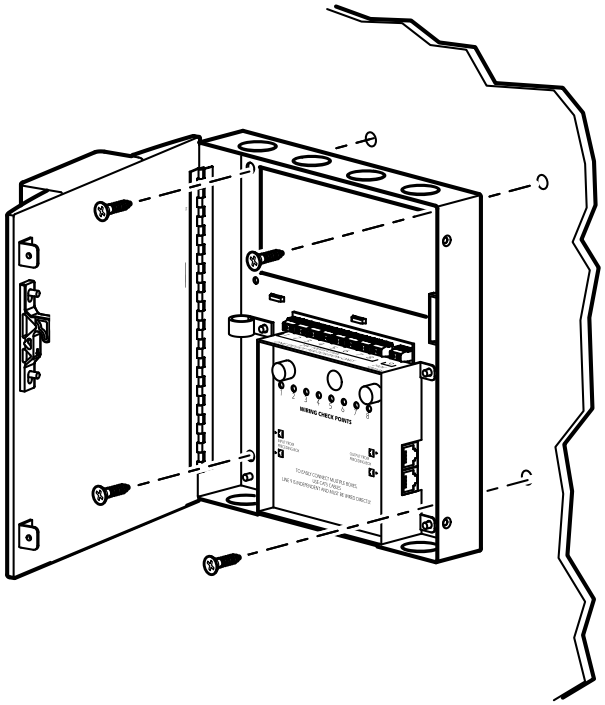
1. Open the EPO System box by removing the screws on the side. Keep the screws for use after the system is installed. The box will not close securely without the screws in place.
2. Mount the system in a readily-accessible area, on a wall near the principal entrance doors, according to NEC Articles 645.10 and 645.11, IEC/EN 60354-5-537, or equivalent local regulation. There are two different procedures for mounting the system, depending on whether you are running conduits (or cables) along the wall or behind the wall.



Note: If not using conduits, run the cables from the connected devices or the cascaded EPO boxes directly to the EPO using shielding troughs and cable ladders.

Mount the EPO (Running Conduits or Cables Along the Wall)

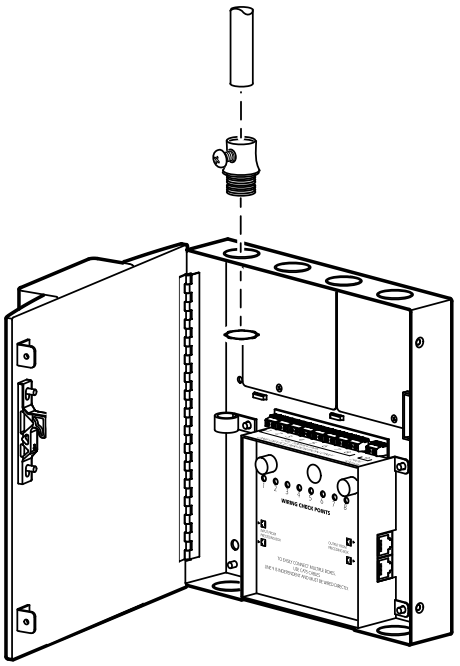
1. Fasten four 6.35 mm (¼ in) screws through the four mounting holes at each corner of the EPO box and into the wall.
2. Run the conduits (or cables) for the connected devices to the EPO box. If using conduits, it will contain all wiring from the connected devices and all cascading cables. The knockouts in the top and bottom of the EPO box accept 13 mm (½ in) and 19 mm (¾ in) conduits or clusters of cables. Remove the knockouts required for installation.



Note: When planning conduits requirements, consider that two cascading cables will fit in 13 mm (½ in) conduits and four cascading cables will fit in 19 mm (¾ in) conduits. See ***"Cascade Multiple EPO Boxes"*** for more information.

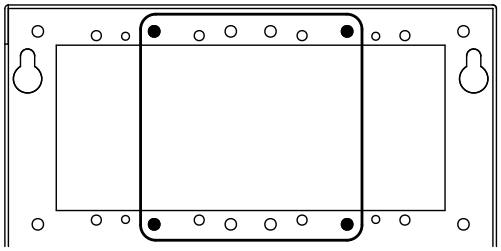
3. Install an appropriate fitting with a lock-nut for each knockout used.
4. Connect conduits to the fittings.

Note: If not using conduits, run the cables through the knockout directly.

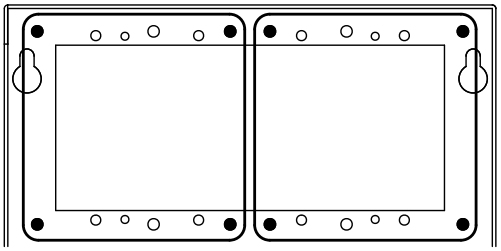


Mount the EPO (running conduits or cables behind the wall)

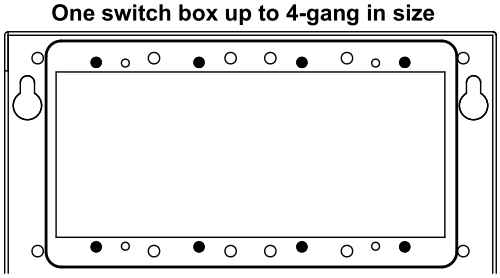
One 120 mm (4 in) square junction box



Two 120 mm (4 in) square junction boxes

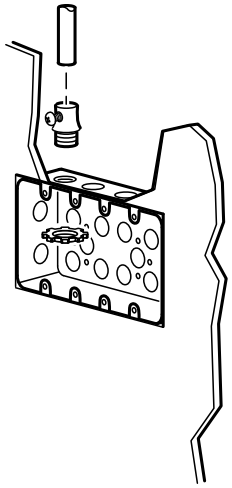


One switch box up to 4-gang in size



1. Install a junction box or a switch box behind the wall. The EPO box will fasten directly to the box. Use one of the options above.

2. Run the conduits (or cables) from the connected devices to the junction or switch box. If using conduits, it will contain all wiring from the connected devices and all cascading cables. Remove the knockouts required for installation.

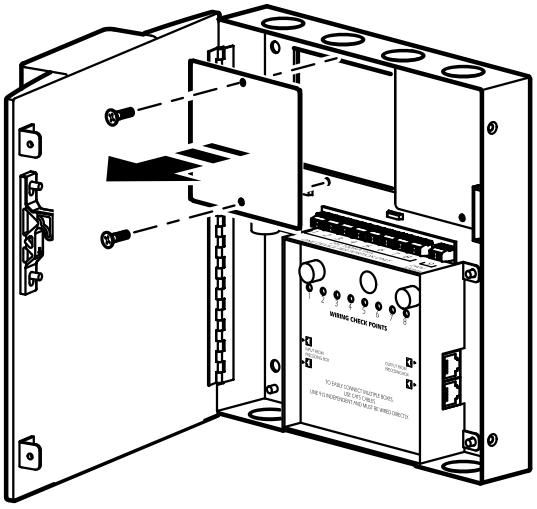


Note: When planning conduit requirements, consider that two cascading cables will fit in 13 mm (½ in) conduits and four cascading cables will fit in 19 mm cascading cables will fit in 13 mm (¾ in) conduits. See ***"Cascade Multiple EPO Boxes"*** for more information.

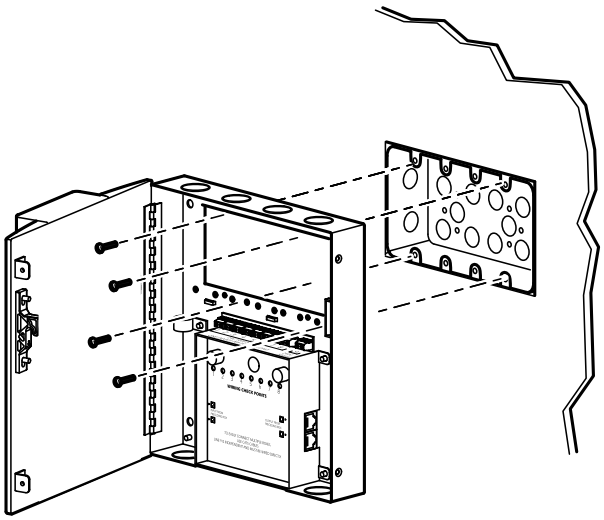
3. Install an appropriate fitting with a lock-nut for each knockout used.
4. Connect the conduits to the fitting.

Note: If not using conduits, run the cables through the knockout directly.

5. Remove one or both of the blanking panels covering the window in the back of the box, as required.

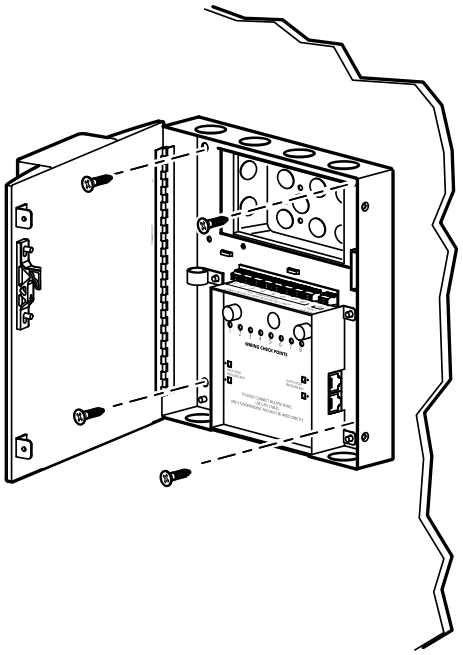


6. Secure the EPO box directly to the junction box or switch box with the appropriate number of 6-32 screws around the access window.



7. Reinforce the EPO box with 6 mm (¼ in) screws in the corner mounting holes.

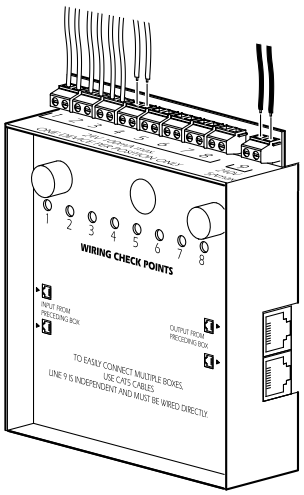
Note: The top two 6 mm (¼ in) mounting holes may be blocked by some junction boxes. In this instance, use only the bottom two 6 mm (¼ in) mounting holes for reinforcement.



Connect Devices to the EPO Box

Connect APC devices to terminals 1–8. Connect an auxiliary device to terminal 9. Connect only one 0.10–0.75 mm² (24–18 AWG) wire pair to each terminal block.

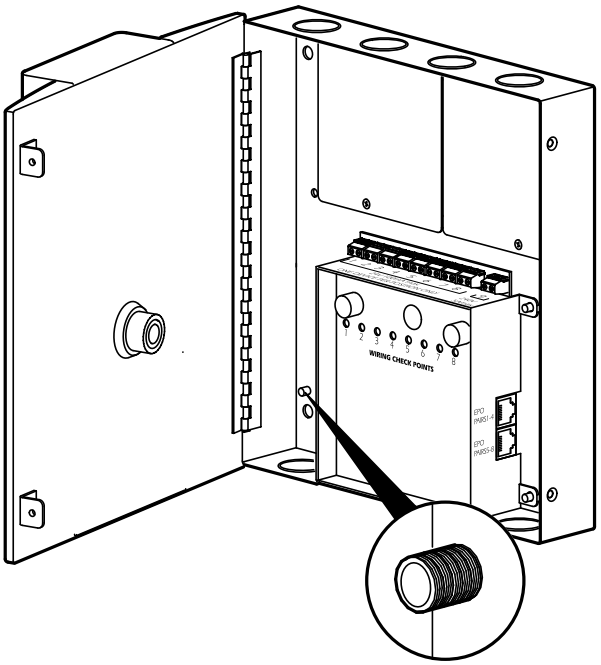
1. Attach EPO circuits to each device according to the specific instructions for that device. Use the Normally Open (NO) contact option.
2. Run a suitable 0.10–0.75 mm² (24–18 AWG) wire from the devices to terminals 1–8 on the EPO box terminal block. If you are using conduits, run the wires through the conduits to the terminal(s). Make the connections to the terminal block in numerical order (terminal 1, and then terminal 2, etc.).
3. Run a suitable 0.25–0.10 mm² (22–18 AWG) wire from the contact closure points for any auxiliary device to terminal 9 on the EPO box terminal block. If you are using conduits, run the wires through the conduits to the terminal.



Note: The auxiliary circuit is rated 1A at 48 VDC/240 VAC.

4. If necessary, secure the wires inside the box using the releasable wire ties (provided).

5. Connect a suitable ground or PE wire to the #8-32 ground stud in the lower left corner of the EPO box.

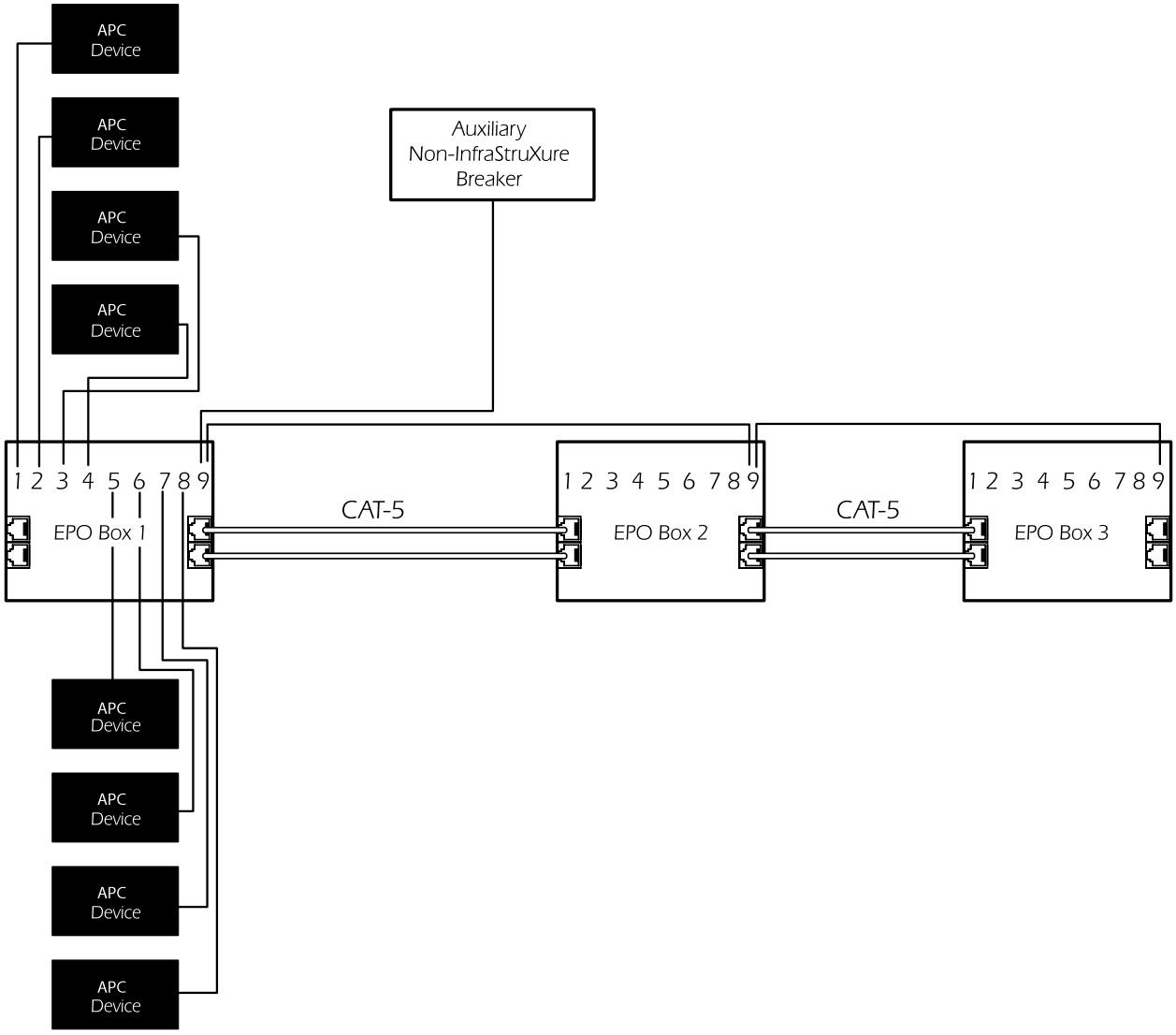


Mount Additional EPO Boxes

There are two alternatives for wiring additional EPO boxes. Either cascade the boxes only to wire devices to one box (see ***"Cascade Multiple EPO Boxes"***), or wire devices directly to each EPO box (see ***"Direct Wiring Alternative"***).

Cascade Multiple EPO Boxes

When cascading EPO boxes, connect a wire pair from each device to the first EPO box according to the procedure in ***"Connect Devices to the EPO Box"***. Jumper the subsequent EPO boxes with cascading cables (standard CAT-5 cable)— this procedure will join the EPO boxes in parallel.

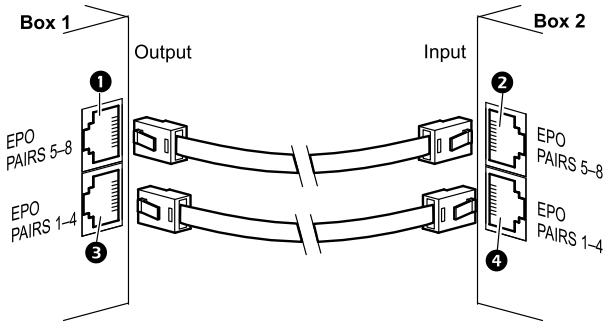


Note: The recommended maximum total distance of wire, to run per circuit is 300 m (1000 ft).

Cascade the APC Devices with CAT-5 Cables

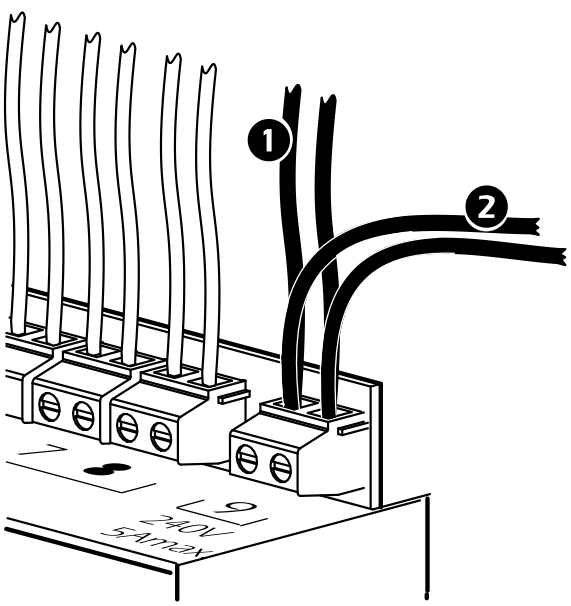
Connect the CAT-5 cables to the jacks inside the EPO box. Each cable can support up to four APC device wire pairs. Follow these guidelines when connecting CAT-5 cables:

- Use only the bottom jacks (3 and 4) if cascading four (4) or fewer devices.
- Use both the bottom and the top jacks (1, 2, 3 and 4) if cascading five (5) or more devices.
- Connect the output jacks (1 and 3) of the first EPO box to the input jacks (2 and 4) of the second EPO box.
- Continue until all boxes are connected.
- If necessary, use the white cable clamps to secure the CAT-5 cables.



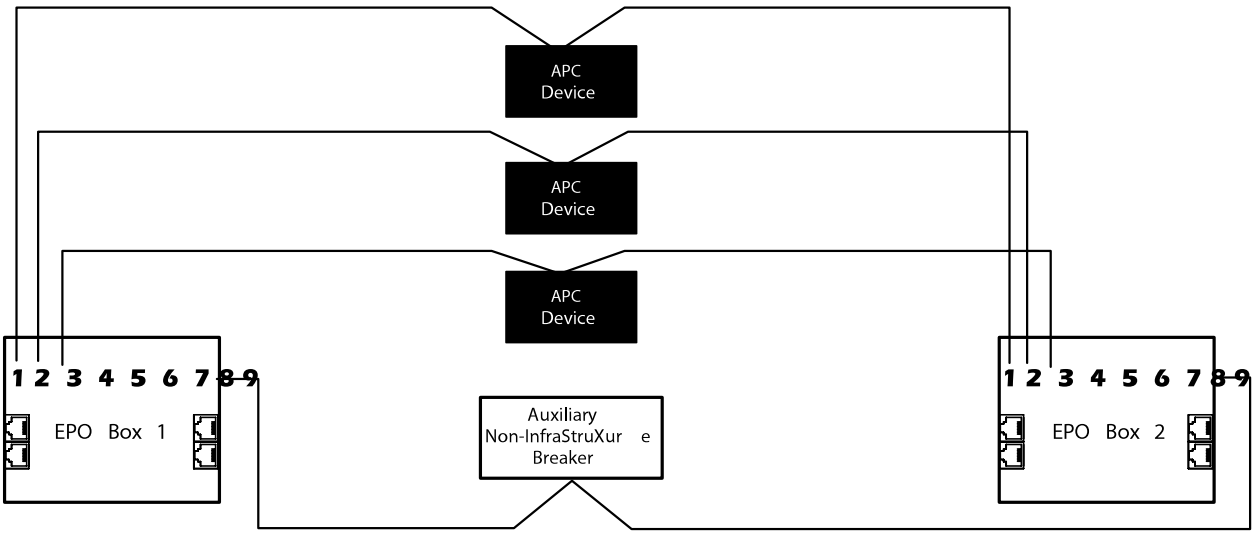
Cascade the Auxiliary Device with Wire Pairs

1. After wires are run from auxiliary device (1) to terminal block position 9, run a second set of wires (2) from terminal block position 9 on the first EPO box to terminal block position 9 on the second EPO box.
2. Continue until all boxes are connected. (See the diagram in ***"Cascade Multiple EPO Boxes"*** for reference.)



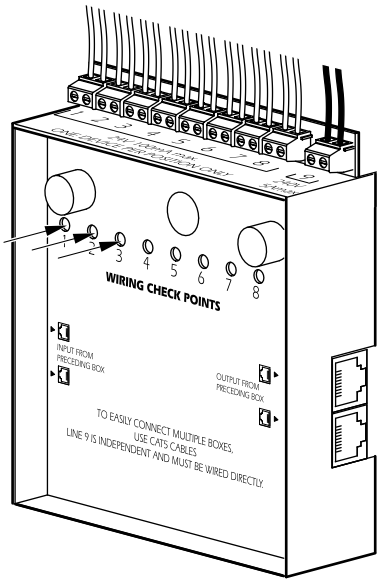
Direct Wiring Alternative

If the APC devices are centrally located between exit doors, it may be more practical to run separate wire pairs from the devices to each EPO box. This wiring method requires terminal block connections in every EPO box, rather than cascading cables between boxes. Connect wire pairs from the Normally Open (NO) contacts on the devices to each EPO box. Because this alternative results in multiple wire pairs at the terminals of the devices, APC does not recommend using it with more than three EPO boxes.



Verify Connections at each EPO Box

1. Verify that the wiring is correct before attaching critical load devices to your devices:
   A. With the devices powered ON, use a small tool to press each check point, one at a time.



Note: If an APC FM Series Precision Air Conditioning System connected to the EPO box, pressing the check point will shut off functionality to the unit, but the unit will still be powered.

B. After verifying the wiring, close the system box, making sure not to pin wires or disturb connections, and secure with the screws, previously removed when opening the box.

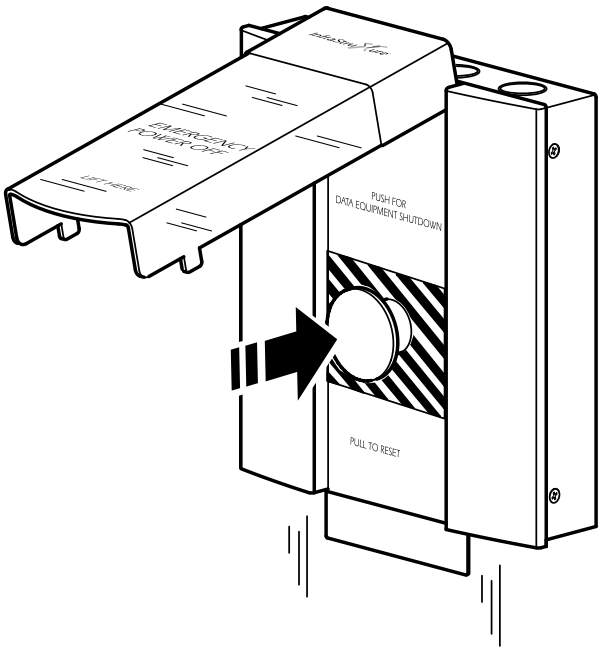
C. As a final test, apply power to all APC devices and auxiliary devices, and press the EPO button. All connected devices should power OFF immediately. Repeat this final test at every EPO box in the system.

WARNING: Pressing the check point will shut down the connected device and any load it is supporting.

Operation

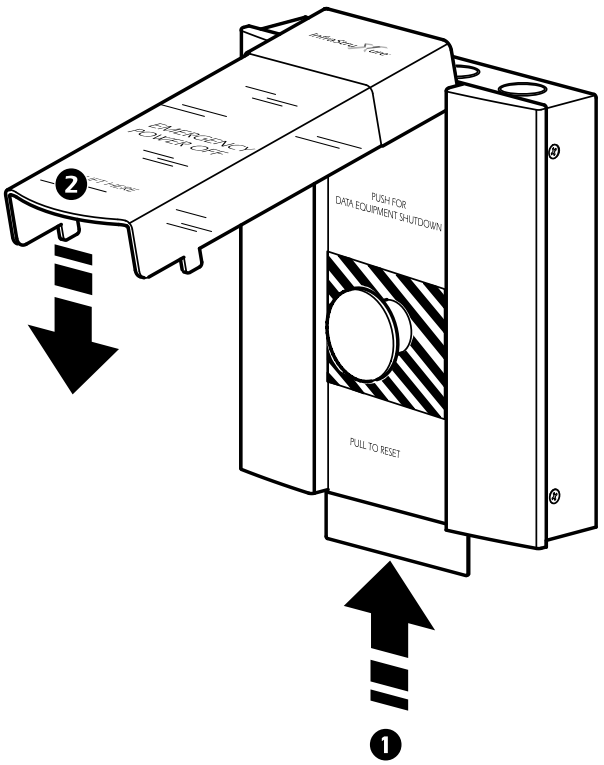
Engage the System

1. Lift the shield on any of the installed EPO boxes and press the button. A red flag will drop down from the box, providing an easy visual mark as to which EPO box in your room has been activated.



Reset the EPO System

1. Pull the button towards you (1) and push the flag up until it catches (2). Pulling the button does not bring power back to the connected equipment; it only resets the EPO system. Close the shield after resetting the system.

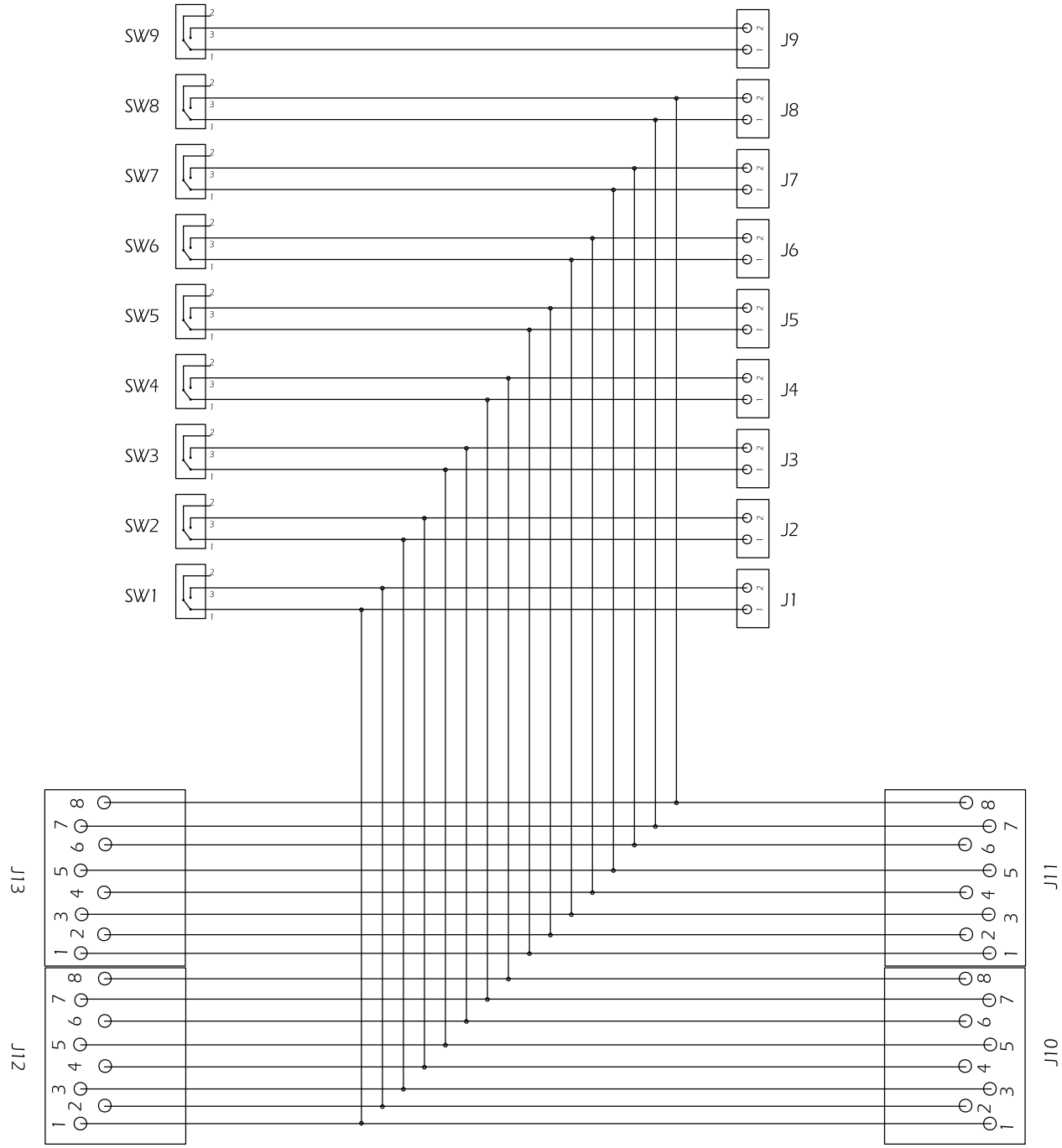


Reset the Equipment

Apply power to the devices according to the procedures for each device.

Note: Refer to the operation manual included with each device for specific instructions on how to apply power to the device.

Wiring Diagram



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