ECOsmart™
by Telkonet

EcoContact+

Firmware Version 2.x

Installation, Operation & Maintenance Guide

Revised 4/26/16:

Added troubleshooting tip if EcoContact+ loses network communication. See page 14.

Revised 6/27/16:

EcoContact+ requires an EcoCommander EGS server 4.5 (not 4.0). Update appears on page 3.

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The EcoSmart Energy Management System

The EcoSmart Energy Management System is designed to reduce HVAC energy consumption without interfering with an occupant's comfort.

EcoSmart thermostats will automatically learn and adapt to the heating and cooling patterns of each room. For example, a room on the east side of a building will receive direct sunlight in the morning and will either need less HVAC heating or more HVAC cooling. However, as the day progresses, the room will need more HVAC heating or less HVAC cooling as it moves into the shade. An EcoSmart thermostat will continually monitor the room, learn its patterns, and adjust its heating and cooling profiles accordingly.

EcoSmart thermostats also learn and adapt to occupant schedules. When a room is unoccupied, an EcoSmart thermostat will enter an energy saving mode, allowing the room to drift away from the desired setpoint. During this drift period, the thermostat will operate the HVAC unit less often, reducing energy costs. When the room becomes occupied again, the EcoSmart Recovery Time™ technology built into each thermostat will return the room to the setpoint without the occupant noticing

FCC Notice

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 the 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 the receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or experienced radio/TV technician for help.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of the manufacturer could void the user's authority to operate the equipment.

To satisfy RF exposure requirements, this device and its antennas must operate with a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC ID: XV6SS6255

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference and
(2) this device must accept any interference received, including interference that may cause undesired operation.

To View the FCC ID, slide sensor cover away from the 'target' end of the sensor, and lift off the cover.

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Conventions Used in this Guide

This is an informational tip, used to convey relevant but not necessarily urgent information.

This is a warning, used to convey important information.

This is a strong warning, used to convey urgent and often safety-related information.

Chapter Names

Main chapters in this manual will have headings in large green font as shown above. Main chapter names also appear in the footer.

Sub-Chapter Names

Within the main chapters will be relevant sub-chapters, which are presented with bold, black headings as shown above.

Footers

Footers contain the document name, chapter name, document version number and page number, as shown here:
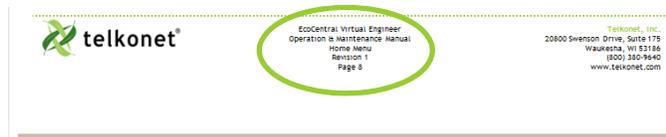
Procedure: Steps Described Here

Procedural Steps are indicated as such in the heading, which begins with the word, "**Procedure:**" as shown above. The steps are outlined as shown in the following example:

Step 1	Navigate to the Config Menu > Alert Setup.
Step 2	Click the **Add New Alert Trigger** button in the top left corner of the Alert Setup Screen.
Step 3	Enter a descriptive **Alert Name**.

Introducing a New Screen

When a screen is introduced, a screen print is provided. Below the screen print will be its location and an explanation of the screen's intended purpose as shown in this example:

Screen and Tab Names

Screen and Tab names are underlined, as shown in this example:

> The Thermostat Status Screen shows all rooms and their status information at a glance.

Field Names

Field names appear in bold font; field explanations appear next to the field name as shown in this example:

Device	Select the device type.
Position	The order in which attached devices are associated.
MAC Address	MAC address of the attached device.

Field Selection Choices

Field selection choices are in italics as shown in this example:

> Select the **Alerting Device Type** from the dropdown menu. Choices are: *All Thermostats, All Pipe Sensors, Single Device* and *Outdoor Temperature.*

Tables provide visual presentations of related data such as hardware components and explanations as shown in this example:

Pin	Label on Backplate	Function
1	iaculis	Lorem ipsum dolor sit
2	velit	Fusce pharetra risus eu
3	sagittis	Uisque laoreet augue eu

Troubleshooting

Assistance with troubleshooting begins with the red "Troubleshooting" header as shown above.

![telkonet logo]

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EcoContact+ Explained

The EcoContact+ uses a magnetic contact to detect occupancy. It recognizes when entry doors, patio doors and windows open and close. It then transmits this data to the thermostat, which is programmed to act accordingly, in the manner that has been defined by the property and configured for the room.

The EcoContact+ requires an EcoCommander EGS 4.5 (not 4.0).

Components

The EcoContact+ consists of two components: a sensor and a magnet. One component is installed on the door/window and the other is installed on the door/window frame, or vice versa. (In this guide, any reference to "door" will mean "door and/or window".)

Each EcoContact+ set includes:

1. One EcoContact+ sensor
2. One magnet (or magnet set if in-door)
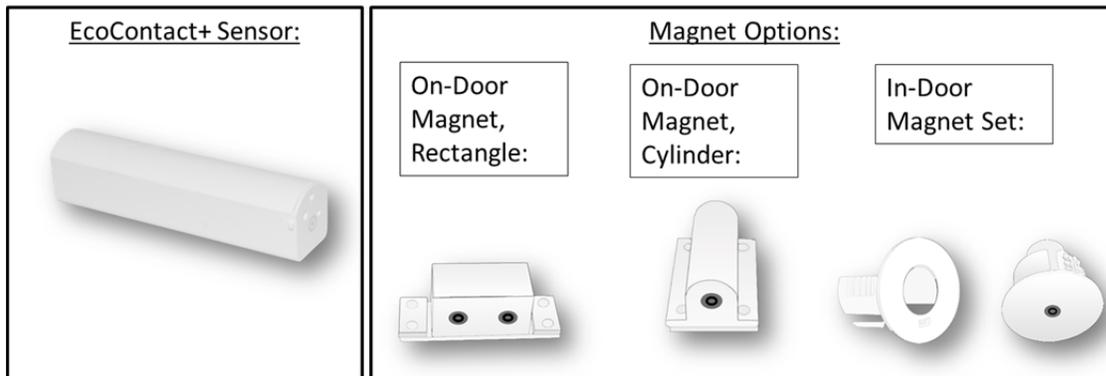
Your magnet was selected during the order phase of your project, based on the door and frame design (material, size, etc.).[1]

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[1] Telkonet is not responsible for any door warranty that may be voided when our product is inserted in or on a door or frame.

Anatomy of an EcoSense+

"Holes" in EcoContact+ Sensor
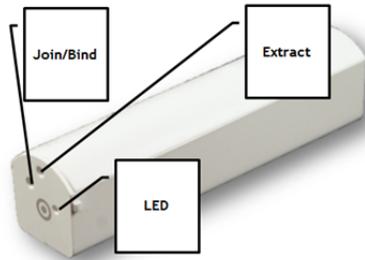
Figure 1 Sensor "Holes"

Targets

When installed, the magnet "target" must be aligned with the sensor target. For example:
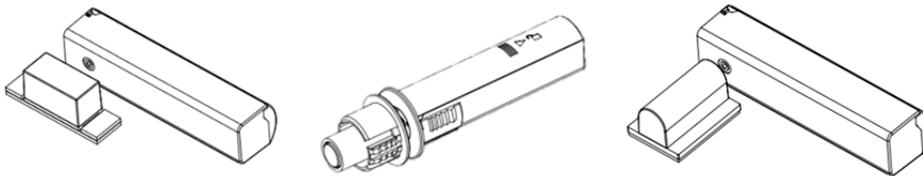
The EcoContact+ sensor and the rectangle magnet each contains 2 targets (for additional placement options).

	Rectangular surface magnet and sensor each has 2 targets, for additional configuration options.

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Placement

Mounting options:
Top & side

Cylinder

Rectangle

In-door

Install sensor in or on the
door/window or frame

Mounting option:
Hinge side

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Rectangular Magnet-Distance Requirements
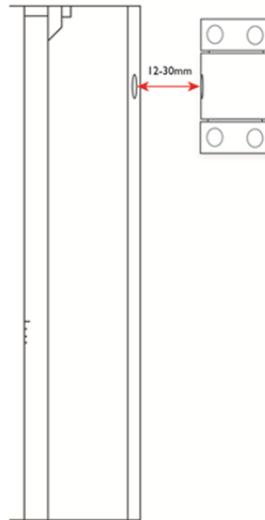
Recommended Gap

Minimum distance between sensor target and magnet target = 12mm

Maximum distance between sensor target and magnet target = 30mm

Recommended Alignment
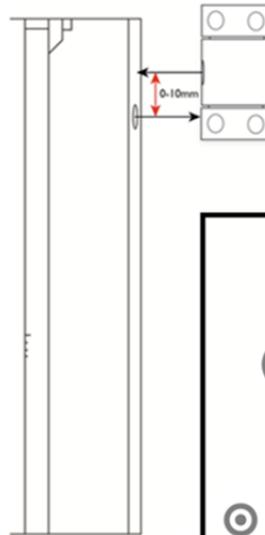
Maximum distance between target center points* = 10mm
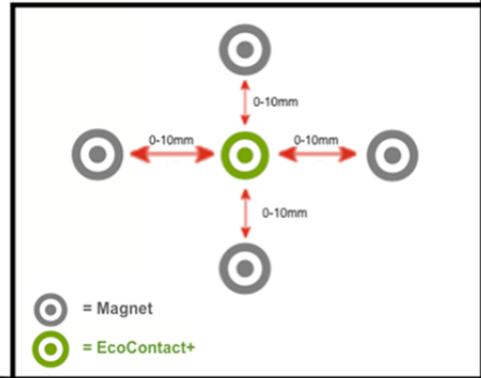
= Magnet

= EcoContact+

* If the distance exceeds 10mm in any direction, shimming may be required to ensure proper alignment of center points.

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Cylinder Magnet- Distance Requirements
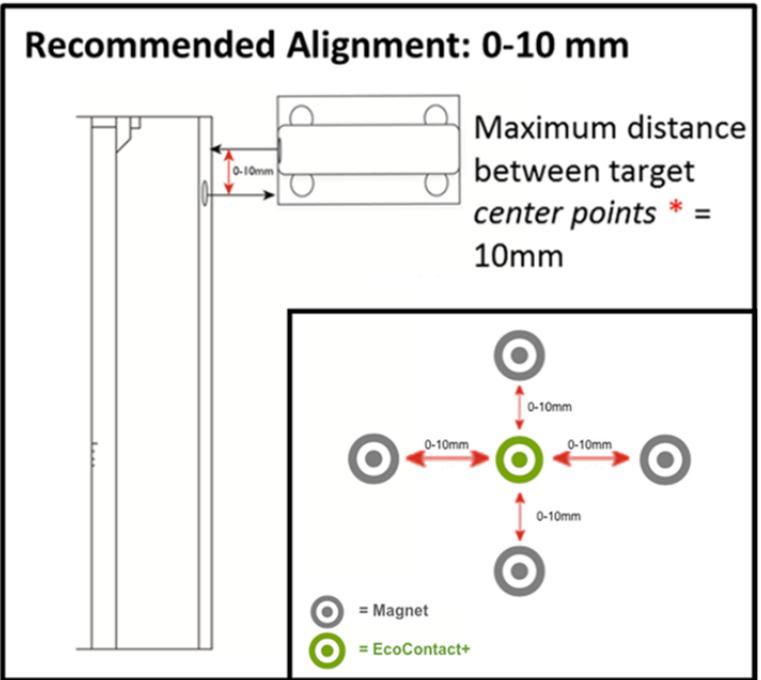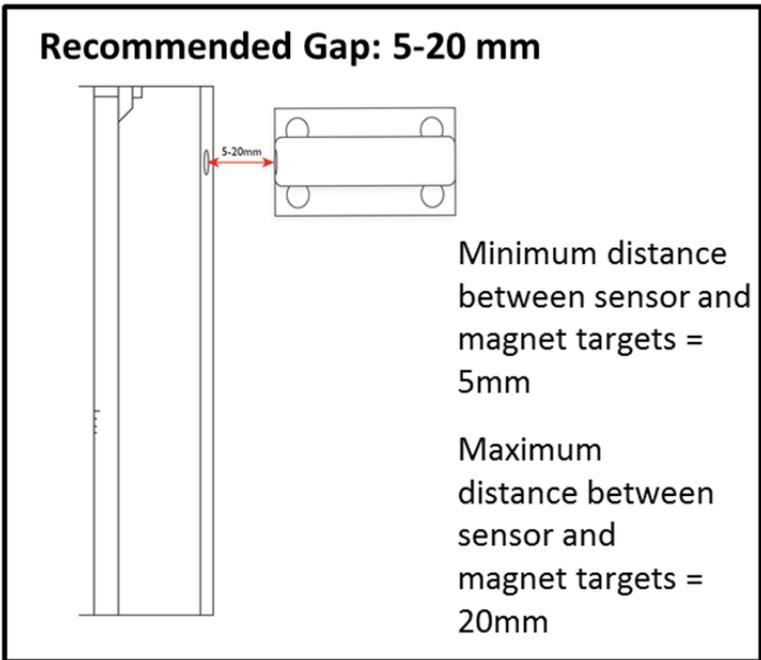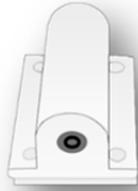
Recommended Gap: 5-20 mm

5-20mm

Minimum distance between sensor and magnet targets = 5mm

Maximum distance between sensor and magnet targets = 20mm

Recommended Alignment: 0-10 mm

0-10mm

Maximum distance between target *center points* * = 10mm

0-10mm

0-10mm

0-10mm

0-10mm

= Magnet

= EcoContact+

* If the distance exceeds 10mm in any direction, shimming may be required to ensure proper alignment of center points.

Magnet Type:	Minimum distance between target on magnet and target on sensor:	Maximum distance between target on magnet and target on sensor:	Distance between target center points
In-door magnet	0mm	30mm (if magnet is installed in a metal door frame, this distance is reduced)	0-10mm
On-door cylinder magnet	5mm	20mm	0-10mm
On-door rectangular magnet	12mm	30mm	0-10mm

Special Considerations for In-Door Mounting Placement

Do This, Not That

Correct- sensor and magnet are within the maximum distance when the door is closed:
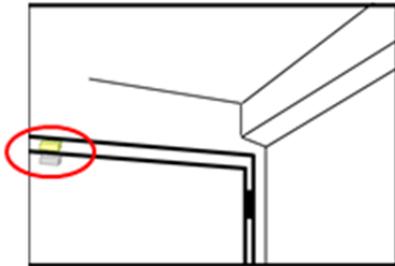
Incorrect-door would have to swing all the way open in order for the sensor to read the magnet:
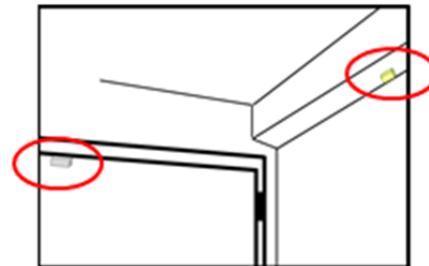
Sensor: Door vs. Frame

Consider this: If your sensor is drilled into the door, and at some later date the door gets replaced, you risk losing the sensor. In that scenario, it is worth considering drilling the magnet into the door instead of drilling the sensor into the door. The magnet is less expensive to replace than the sensor.

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Word of Caution about In-Door Mounting in Metal Doors/Frames

If your door/window or frame is constructed of metal, do NOT install the EcoContact sensor in it. Metal will interfere with wireless signal.

The magnet, however, CAN be installed in a metal door/window or frame.

Component:	Install in metal?	Install in non-metal (e.g. fiberglass, wood)?
EcoContact+ sensor	NO	Yes
EcoContact+ in-door magnet	Yes	Yes

Installation Procedures

Required Equipment

On-Door Mount:	In-Door Mount:
AAA Battery	AAA Battery
1 Sensor	1 Sensor
1 Magnet	1 Magnet Set
Adhesive strip	Drill with Forstner drill bit

Install AAA Battery in Sensor

Step 1   Slide sensor cover away from the "target' end of the sensor, and lift off the cover:

Figure 2 Remove Cover

Step 2   Install the AAA battery.

Step 3   Replace the cover.

Identify Target Sensor to be Used

Step 4   Using the straight end of the extractor tool, press the EcoContact+ sensor button 8 times. The LED will blink twice:

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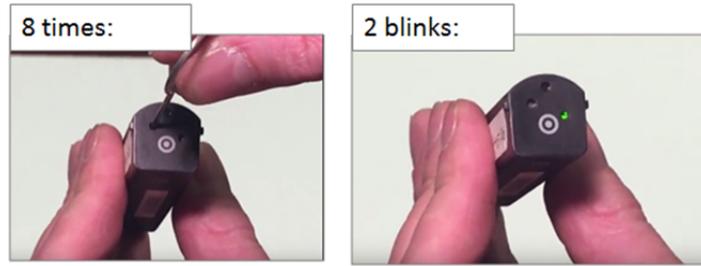
Step 5 Touch the sensor's target to the magnet's target. Release when you hear 3 single beeps (side target) or 3 double beeps (top target):
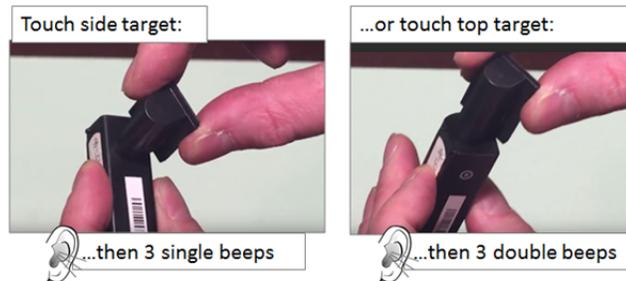
Join/Bind

Step 6 Join your EcoContact+ to the network and bind it with the thermostat. (See <u>Device Association Guide</u> for instructions.)

Step 7 Continue with either In-Door Mounting Option (next) or On-Door Mounting Option (page 11).

In-Door Mounting Option

Step 8 Connect sensor and carriage as shown here. You will hear a click:
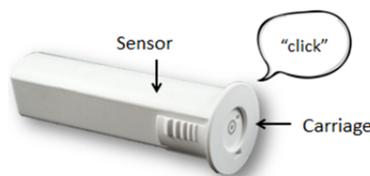
Figure 3 Connect Carriage to Sensor

Step 9 Determine the best sensor and magnet locations, so that the targets are aligned when the door is closed, and the maximum distance between interior mount magnet and sensor when door/window is closed is 25mm.

Step 10 Mark the installation locations on the door and frame.

Step 11 Drill 7/8″ hole for sensor/attached carriage.

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Step 12   Drop sensor with attached carriage into the door so that it is flush with the door edge.

Step 13   Drill a 7/8" hole in the frame and insert the magnet, target side out, into the door frame.

💡	Reminder: components can be reversed if desired: magnet can be inserted in door/window and sensor can be inserted in frame (excludes door/window and frames of <u>metal</u> construction; see "Word of Caution" on page 9).

On-Door Mounting Option

The rectangular or cylindrical magnets are used for the exterior mount:
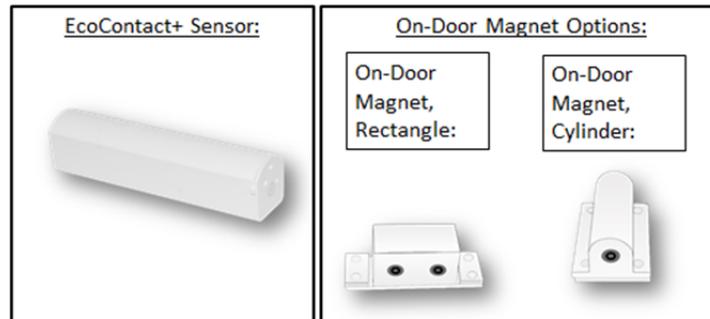
🔲	If your magnet is the rectangular design, you may need to remove the detachable "feet" (see Figure 4 below) for exceptionally tight spaces, such as recessed or narrow frames. The feet should remain attached whenever space allows.

Figure 4 Detachable "Feet" for Exceptionally Tight Spaces

Step 1   Determine the appropriate location to install the sensor and magnet on the door and door frame (see page 5).

Step 2   Make sure all mounting surfaces are clean and dry.

Step 3   The sensor features 2 targets. Determine which sensor target will be aligned with the magnet target so that the targets are aligned when the door is closed. (Rectangle magnet also has 2 targets. Determine which magnet target will be used.

Step 4   Rectangle magnet only: Remove one or both detachable feet as space dictates

Step 5   The magnet comes with an adhesive strip already attached. Remove the protective film and adhere the magnet to the door frame.

Step 6   For the sensor, remove the plastic film from one side of the separate adhesive strip. Affix the adhesive strip to the appropriate side of the sensor. Remove the protective film from other side and affix the sensor to the door/window/frame.

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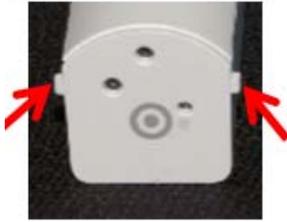
FAQ: Will these notches interfere with the mounting surface?

A: No. When the adhesive strip is affixed, the notch will not interfere whatsoever.

Step 7   Verify the magnet is facing the correct direction and is in line with the target on the EcoContact+.

Step 8   Connect your thermostat to ESU. In ESU navigate to the Devices/Sensors tab. Verify that the EcoContact+ listed under the EcoInsight or EcoSource. (This means it is bound to the thermostat.)

Step 9   Also in the Devices/Sensors tab, verify that the EcoContact is communicating and sending information packets: look for an increase of RX/TX packets on the EcoContact line.

Step 10   In the Devices/Sensors tab, Sensor Index, verify an entry for the EcoContact+, 2 entries if you are configuring both *Lanai* and *Occupancy*.

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Maintenance

EcoContact+ battery life is approximately 4 years.

If your EcoContact+ is mounted <u>in</u> the door, extract the sensor from the door using the extractor (see Figure 5) to "hook" into the extractor hole (see Figure 1) and gently pull the sensor out of the door/frame.
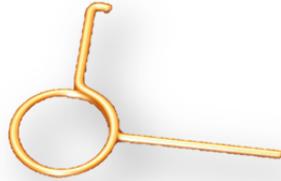
Figure 5 Extractor

Figure 6 Extractor Hole When Carriage is Attached

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Troubleshooting

Problem:

The EcoContact+ does not begin communicating with the network.

Solution:

1. Ensure the battery is installed in the correct position.
2. Ensure the EcoContact is joined to the network before binding it to the thermostat.
3. When all else fails, issue a LEAVE command (12 consecutive recessed button presses) two or three times in a row and then attempt to rejoin it to the network (see Device Association Guide for joining instructions).

Problem:

EcoContact+ lost communication with the network.

Possible cause:

The EcoConnect Coordinator has lost power.

Solution:

1. Plug the EcoConnect to its power source.
2. Expect automatic EcoContact+ re-connection based on a specific interval attempt pattern (see table below).

How it Works: When EcoConnect power is lost, the EcoContact+ will automatically jump into action, attempting to reconnect to the EcoConnect at regular intervals. It will eventually reconnect to the (powered) EcoConnect, but be mindful of the interval: the EcoContact+ will try to reconnect every 15 minutes for a total of 3 attempts, then every hour (4 attempts), then every 4 hours (4 attempts) and once every 24 hours thereafter.

Network Re-Connection Pattern and Timing:

	X 3 attempts
	X 4 attempts
	X 4 attempts
	thereafter

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