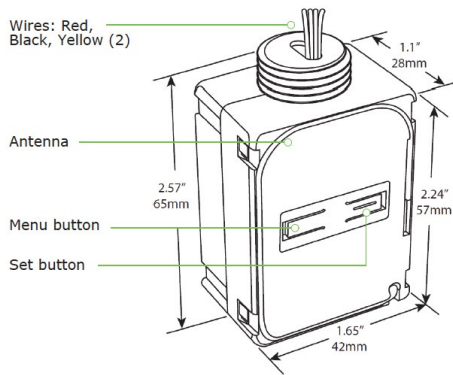


HVAC Setback Module

[Mx-EHSM]



Package Contents:

- HVAC Setback Module.
- Double-sided adhesive pad.

Tools Required:

- Owner's manual for the HVAC model.
- Wiring connectors, type varies per HVAC model.

Product Description:

The Magnum HVAC Setback Module is a simple way to save energy by switching HVAC units between normal and setback modes.

It is low voltage, mounts easily in a typical HVAC enclosure, and communicates wirelessly with Magnum occupancy detection and lighting control products.

Features Include:

- Switches HVAC to setback mode to save energy
- Powered by HVAC via standard 24VAC connection
- Receives wireless messages from Magnum devices to determine room occupancy
- Controls setback range by built-in temperature sensor
- Provides simple input signal by dry contact to compatible HVAC systems
- Concealed easily within HVAC enclosure
- Sends wireless messages to other controlled devices; configurable transceiver

SPECIFICATIONS

Part Numbers	M9-EHSM (902 MHz - North America) M8-EHSM (868 MHz - Europe and China) MJ-EHSM (928 MHz - Japan)
Input Voltage	9-28 VAC / 12-38 VDC
Maximum Load	1A @ 24 VAC/VDC
Temperature Sensor Range	-30° to 50° F (-34° to 10° C)
Temperature Sensor Accuracy	± 2.8° F @ 50° to 90° F (± 1.6° C @ 10° to 32° C)
Transmission Range	80ft. (25m)
Dimensions	2.57" H x 1.65" W x 1.1" D (65mm x 42mm x 28mm)
Weight	1.9oz. (54g)
Environment	<ul style="list-style-type: none"> • Indoor use only • 32° to 104°F (0° to 40°C) • 20% to 95% relative humidity (non-condensing)
Agency Compliance	FCC and I.C.



1. Planning

Take a moment to plan for the module's successful operation and optimal communication with other system components.

- Always use a qualified installer
- Review HVAC unit's manual to assess control compatibility
- Identify the high voltage wiring and how to disconnect it locally and at the circuit breaker panel
- Identify a location in the HVAC enclosure that is free from housing obstructions and as far away as possible from the HVAC unit's control panel to avoid signal interference
- Make sure the wires are straight (avoid loops and coils)
- Take care not to damage the radio antenna that runs in a groove on the front side of the module
- Consider the construction materials in the space and obstacles that may interfere with RF signals



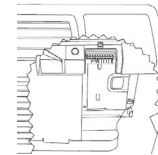
2. Installing

Read and understand instructions completely before starting.

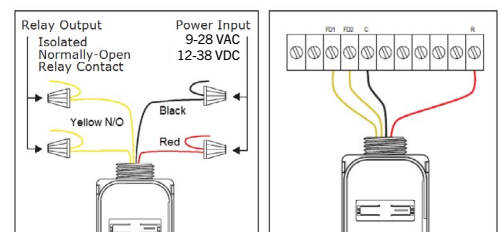
Warning: ELECTRICAL SHOCK HAZARD.

This device must be installed by a qualified installer or electrician. Follow all applicable electrical codes for installation.

1. Turn off power at the circuit breaker or unplug the HVAC unit and test that power is off.
2. Consult the HVAC unit's manual to:
 - Safely remove the enclosure and any obstructions that prevent access to the wiring.
 - Confirm the HVAC unit has the required control input, typically called, front desk or energy management.
 - Identify low voltage output to power the module.
 - Identify the type and the number of control terminals. Each HVAC brand uses their own terminal codes, e.g.: FD1, FD2, CDC1, CDC2, or EMS1, EMS2.



- Identify the appropriate electrical connectors: terminal screws or pins, butt splice connectors, wire nuts.
3. Connect the module's Red and Black wires to the low voltage power output from the HVAC unit.
4. Connect the module's Yellow wires to the appropriate control terminals of the HVAC unit.



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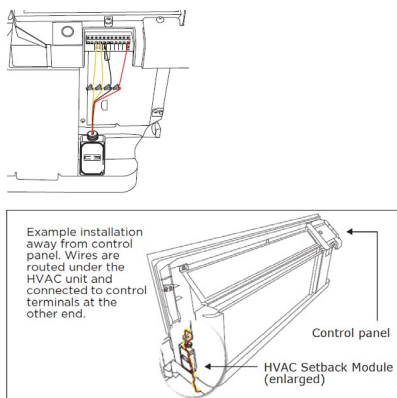
5. Apply the double-sided adhesive pad to the back of the module.

Tip: To avoid distorting the temperature sensor, do not install the module in the path of blowing air.

Note: It may be easier to link and configure devices before mounting the module, see the Linking and Configuring sections.

6. Attach the module to the inside wall of the HVAC enclosure and position it so you can access the setup interface (buttons/LEDs) to create links and configure settings locally.

Tip: To limit the potential risk of signal interference, position the module within the enclosure as far away as possible from the unit's control panel.



7. Restore power to the circuit.

The LEDs on the module will blink and then the right LED will display solid red when the relay is open, or green when the relay is closed (setback engaged).

3. Linking

Magnum wireless systems are highly flexible; two or more compatible devices can be linked and configured to provide the desired control. There are two basic types of devices in the Magnum system; transmitters and transceivers.

- Transmitters are simple energy-harvesting devices that send RF messages to communicate a condition, level, or state. Transmitters can only be linked to transceivers.
- Transceivers are wire-powered controlling devices that send as well as receive RF messages. They also process relevant control logic, and actuate the appropriate outputs (switching a light on or off for example). Transceivers can be linked to transmitters as well as other transceivers. A Magnum transceiver can have up to 30 devices linked to it.

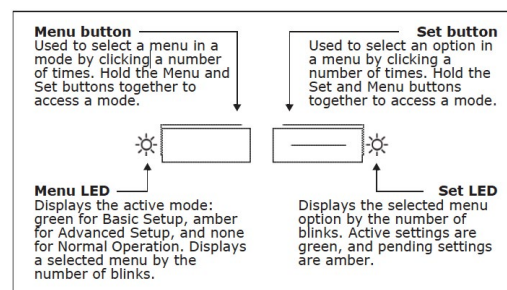
The HVAC Setback Module is a Transceiver -To link devices, the transceiver must first be powered, within the transmission range, and set to accepts links using the setup interface on the transceiver. Next, the desired transmitter, or another transceiver, is triggered to send a special link message. The awaiting transceiver receives and stores the link permanently so the devices can interact to provide a variety of intelligent control options.

About the Setup Interface

The setup interface has two buttons, Menu and Set, that each have a corresponding 3-color LED (green, amber, red). This simple interface is used to link and configure devices as a system.

The buttons and LEDs are used to navigate and select linking and setup options through a 3-tier menu system consisting of different Modes > Menus > Options. The LEDs respond by showing solid or blinking lights of different colors to indicate active options and pending changes. To use the interface, hold the module so both thumbs can click the buttons without obscuring the LEDs. The illustration and legend below describe how the buttons are used and the meaning of the LED responses.

Tip: To exit and start over from anywhere in a menu, click both buttons at the same time once.



The Menu LED or Set LED display solid for a number of seconds in a certain color to indicate a mode or a confirmation.



The Menu LED blinks a number of times in a color to indicate a selected menu.



The Set LED blinks a number of times in a color to indicate an option.



A number in a white box indicates the number of times to click the Menu button or Set button.



A number in a black box indicates the number of seconds to hold down the Menu button or Set button.

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To link a transmitter to a transceiver:

1. Access Basic Setup mode.



Note: By default, the Accept Link option in the Linking menu is selected. Once activated, this option stays active for two minutes to provide time to link multiple devices.

Ready to accept links.



2. On the transmitter to be linked,

do one of the following according to the type of device:

- Sensor: click the designated link button.
- Key Card Switch: insert/remove the card 3 times quickly.
- Rocker Pad: click the top button 3 times quickly.

Device linked successfully. Set LED

displays solid green for 3 seconds.



Ready to accept new links.



3. To exit to normal operation, hold both buttons for 1 second.

To link a transceiver to another transceiver: When two transceivers are linked to share system activity events, either one of them can be used to send the link signal.

1. Access Basic Setup mode on both devices.



Ready to accept links.



2. On one of the devices, select the Send Link option.



3. Send a link signal from that device.



Devices linked successfully.



Note: The links established on the HVAC Setback Module are associated with Magnum devices in the area where it is installed. If the HVAC unit has to be removed for servicing or maintenance, it must be returned to the same area to resume operation with the existing linked devices within range.



4: Configuring

The default settings on the module support common control and installation scenarios. However, some setback and occupancy settings can be adjusted on the module using the setup interface, if required.

Setting	Default	Application
Heat Setback	40°F (5°C)	If setback range is managed by the HVAC unit.
Cool Setback	Disabled	If setback range is managed by the HVAC unit.
Vacancy Check	5 minutes	If linked to an occupancy sensor and a door sensor.
Door / Window Ajar	2 minutes	If linked to an occupancy sensor.
Egress	30 seconds	If linked to a key card switch.

Temperature Setback Points

The heating and cooling setback points determine a temperature range where the HVAC system will remain inactive when setback is engaged. If the ambient temperature exceeds the setback range, the HVAC system will override the setback to avoid temperature extremes. By default, the setback range is managed by the HVAC system. However, the Magnum HVAC Setback Module includes a built-in temperature sensor which can be used to control the setback range when applicable. From the Heat and Cool Setback menus, the active option is indicated by the number of green

blinks on the Set LED; amber blinks indicate an unsaved change. Click the Set button an appropriate number of times to select an option.

Note: The temperature sensing accuracy of the Mx-EHSM is only ensured when powered at 24VAC. If another voltage is used, such as 12VDC, an external temperature sensor is recommended for improved accuracy.

Note: The ability of the Mx-EHSM to accurately sense ambient room temperature is highly dependent on where it is installed. Installing the device where it may be subject to local heat / cool sources, will distort setback range accuracy.

Heat Options	Clicks	Blinks
Disabled	1	1
66°F (19°C)	2	2
62°F (17°C)	3	3
58°F (14°C)	4	4
40°F (5°C) (default)	5	5

Cool Options	Clicks	Blinks
Disabled (default)	1	1
76°F (24°C)	2	2
80°F (27°C)	3	3
84°F (29°C)	4	4
88°F (31°C)	5	5

To set a temperature range:

1. Access Advanced Setup mode.



2. Select the Heat Setback menu.



3. Select an option.



4. Save the selection.



5. Select the Cool Setback menu.



6. Select an option.



7. Save the selection.



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Vacancy Check

The vacancy check is a time delay that is activated when a door opens and closes. The linked loads will turn off, if the sensor(s) do not confirm occupancy within the time delay.

From the Vacancy Check menu, the active option is indicated by the number of green blinks on the Set LED; amber blinks indicate an unsaved change. Click the Set button an appropriate number of times to select an option.

Options	Clicks	Blinks
5 mins. (default)	1	1
15 mins.	2	2
30 mins.	3	3
60 mins.	4	4
120 mins.	5	5

To change the vacancy check option:

This example shows changing the option from 5 to 15 minutes.

1. Access Basic Setup mode.
2. Select the Vacancy Check menu. 3 1
3. Select an option. 3 2
4. Save the selection. 3 2

Trouble Shooting

- | | |
|---|---|
| <p>The device does not power up.</p> | <ul style="list-style-type: none"> • Check the wiring for errors • Check the circuit breaker • Use a voltage meter to confirm power |
| <p>The device does not control linked load.</p> | <ul style="list-style-type: none"> • Click the Set button to open/close the relay manually • Turn off the power and then restore it |
| <p>Cannot link other devices.</p> | <ul style="list-style-type: none"> • Check if Accept Link option can be accessed • Move closer to the device; it may be out of range • Try linking a different device • Check for environmental conditions that interfere with RF messages • Verify the maximum number of devices (30) has not been exceeded |
| <p>Cannot change settings on the device.</p> | <ul style="list-style-type: none"> • Check if menu item can be accessed • Check if changes can be saved |
| <p>Device does not respond to wireless messages or selected settings.</p> | <ul style="list-style-type: none"> • Check for environment or range issues • Verify the device is linked • Check if appropriate devices are linked according to good system planning • Verify the temperature sensing is controlled either by the HVAC unit or by the HVAC Setback Module; setting a range on both will create a conflict |

FCC SZV-STM900C
I.C. 5713A-STM900C



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.