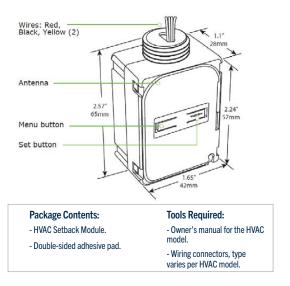
HVAC Setback Module



[M9-ehsm]



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	\pm 2.8° F @ 50° to 90° F $(\pm$ 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	• 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.

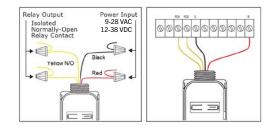
- 1. Turn off power at the circuit breaker or unplug the HVAC unit and test that power is off.
- 2. Consult the HVAC unit's manual to:
- Safely remove the enclosure and any obstructions that prevent access to the wiring.
- Confirm the HVAC unit has the required control input, typically called, front 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.



HVAC Setback Module



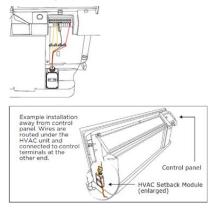
5. Apply the double-sided adhesive pad to the back of the module.

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.

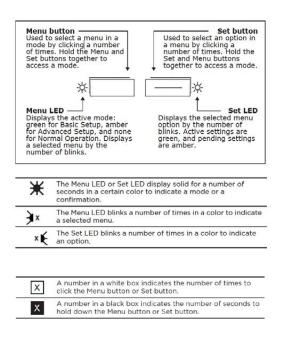
The HVAC Setback Module is a Transceiver -To link devices, the transceiver must first be powered, within the transmission range, and set to accepts links using the setup interface on the transceiver. Next, the desired transmitter, or another transceiver, is triggered to send a special link message. The 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.





To link a transmitter to a transceiver:

1. Access Basic Setup mode.



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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



Ready to accept new links.

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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.

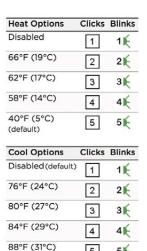
4: Configuring

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 a occupancy senor 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



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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.

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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HVAC Setback Module



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 exting

an appropriate number	Of the contract of the contrac		A ABHAR	
	Ontions	Cliebre	Dlinks	

Options	Clicks	Blinks
5 mins. (default)	1	11
15 mins.	2	21
30 mins.	3	з 🜔
60 mins.	4	4
120 mins.	5	56

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. Select an option.
- 4. Save the selection.

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The device does not power up.	 Check the wiring for errors Check the circuit breaker 		
	Use a voltage meter to confirm power		
The device does not control linked load.	 Click the Set button to open/close the relay manually 		
	 Turn off the power and then restore it 		
Cannot link other devices.	 Check if Accept Link option can be accessed 		
	 Move closer to the device; it may be ou 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		
Cannot change settings on the device.	 Check if menu item can be accessed Check if changes can be saved 		
Device does not respond to wireless	Check for environment or range issues		
messages or selected settings.	 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		



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.



EHSM to EBOX Integration Procedure

Click ESHM in Driver column, click unlock under device control

6	Magnum airConfig 5.08.37 (advanced)	- ¤ ×
File Settings		
	Device configuration	Sensors (0)
ML2	#1 #2 Rocker Switch	
	Auto Off Timeout	
	Occupancy Sensor Auto Off Timeout 3600	
RBWIRPW	Occupancy Timeout 1800	
RBW/RPW (new)	Door/Window Sensor	
MES RPW	Door / Window Timeout 120	
RSB10	Sensor Settings Grace Period Timeout 45	
RTSI	Sensor Heartbeat Timeout 3600	
RTS3	Heating / Cooling	
SR06	Heat Setback Point (°F) 00.0 Cool Setback Point (°F) 79.5	
SR65(DI)	Device Control	
SR65(LI)	Unlock-Code: S6657276	
SR65(T)	Q Identify device	
SR65(n+)	Lenor Unientry X Exit	
ESHM 🗸	🗸 🕼 Reset 💣 Clear All 😥 returned	
🚫 airConfig 📃 👩 🔗 🔗 dr		Coll 🔕 Oor
Endorand) 26002/203 Type: HVAC Relay Mandaturer Endoran, Inc		
RSSI: -54 do		

Right click ESHM, Query devices

Θ	Magnum airConfig 5.08.37 (advanced)	- 🗆 ×
File Settings		
Driver Devices (1)	Device configuration	Sensors (0) 🙃
MD15 0x01990603 0	#1 #2	
ML2 RSSE -54 dB	Rocker Switch	
	Auto Off Timeout 0	
	Occupancy Sensor	
RBWIRPW	Auto on Thineout	
RBW/RPW (new)	Occupancy Timeout 1800	
MES RPW	Door / Window Sensor Door / Window Timeout 120	
RSB10	Sensor Settings	
KSBTU	Grace Period Timeout 45	
RTSI	Sensor Heartbeat Timeout 3600	
T RTS3	Heating / Cooling 60.0	
SR06	Heat Setback Point (°F) 50.00 Cool Setback Point (°F) 79.5	
	Device Control	
SR65(DI)	Unlock-Code:	
SR65(LI)	Unlock Lock 56657276	
SR65(T)	Q identify device: 00 Set Code	
SR65(/H)	🚅 Learn 👔 Unlearn 🔀 Exit	
ESHM Query devices <f11></f11>	Reset Clear All	
Cain(5 Rename ≪2> Delete 		📞 oli 🔕 🔘 oli
Endocean-00 2680/2013 Dester <f d=""> Paster <f< td=""><td></td><td></td></f<></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f></f>		
RSSI: -54 db all		



File Settings		magnani arconny 506.57 (auvanceu)			
Driver MD15	Devices (1) 0x01990603 26805763	Device configuration		Sensors (0)	^
■ ML2	R\$SE -54 dB	Rocker Switch	0		
itrv		Auto Off Timeout Occupancy Sensor			
RBWIRPW		Auto Off Timeout Occupancy Timeout	3600		
RBWIRPW (new)		Door / Window Sensor			
MES RPW		Door / Window Timeout Sensor Settings	120		
RSB10		Grace Period Timeout	45		
		Sensor Heartbeat Timeout Heating / Cooling	3600		
		Heat Setback Point ("F)	60.0		
sro6		Cool Setback Point (°F) Device Control	79.5		
SR65(DI)			Unlock-Code:		
9R65(7)			56657276		
SR65(nH)		Q Identify device	()() Set Code		
E ESHIV		Clear All			
airConfig	v On O Cit	Civil All		Coll Ø	
EnOsean ID: 26805763 Tyse HVAC Rolay Manufactorer: EnOcean, Inc					
RSSI: -54 db					

Click ESHM under devices tab and then click learn under device control

Right click eBox in the driver column, query devices

0	Magnum airConfig 5.08.37 (advanced)	
File Settings		
Driver Devices (1)	Device configuration	Sensors (0)
URD1 0x05884190 eBox 3 test	Network Mesh Config FDR Inputs Outputs AutoLRN Backup	
C-10V, PWM	Network	
Dali Node	eBox IP Address	
CCT Node	192 \$ 168 \$ 1 \$ 59 \$	
Outdoor Node	eBox Subnet Mask 255 255 255 255 0	
P32	eBox Gateway	
MCB14.4	192 168 1 1	
AP2	eBox Hostname ebox.mes	
AP3	WLAN Settings	
VenerayCTR	SSID: Password:	
X-Later	MAC Address	
евох	74-E1-82-8D-A9-91	
CBox 2/8 Query devices <f11></f11>	Control / Security	
CBox Manual IP query Request Mesh status	Key 1: ···	
Collector Load device	Key 2:	
Copy 43>		Coll 💿 💿 ait
EnOcean-ID: 92815760 Load preset		
Type: BACnoUIP gateway Manufacturer		
Magnum Innovations		
Driver file	1. Alexandre and the second se	



File Settings				
Driver	Devices (1)	Device configura	tion	Sensors (0)
urbi 🖻	eBox 3 te	Sort	Config FDR Inputs Outputs AutoLRN Backup	
0-10V, PWM	RSSL	Rename <f2></f2>		
		Delete 	DHCP WLAN Security: disabled V	
Dali Node		Request configuration <f5></f5>		
CCT Node		Send configuration <f6> Set LEARN mode</f6>	192 0 168 0 168 0 168	
	-	Load configuration	*	
Outdoor Node	-	Save configuration	255 255 255 0	
PS2		Load device list Save device list		
MCB14.4		Copy <f3></f3>	192 🗘 168 🗘 168 🗘 1 🗘	
		Paste <f4> Paste All</f4>		
AP2		Connect through TCP/IP	ebox	
AP3		Add to account		
	Myu ma Cody	Remove from account	Password:	
VenergyCTR		Radio Pass-Through		
X-Later	e e e e e e e e e e e e e e e e e e e	Select all		
eBox			n/a	
0Box 2/3		Control / Secu	ity	
свох			Key 1:	
		V Reboot	not connected Key 2:	
Collector		De carge de		
OairConfig	<u>_</u>	© cir		tia 🔕 🔹 ita 🥜
Endocean-ID. 92815760 Type: BACnet/IP gateway Manufacture: Magnum Innovations				
RSSI: -43 db 🚮				

Right click ebox in devices column, request configuration

Click outputs tab under device configuration

0		Magnum airConfig 5.08.37 (advanced)	
File Settings			
Driver	Devices (1)	Device configuration	Sensors (0)
URD1	0x05884190 eBox 3 test	Network Mesh Config FDR inputs Outputs AutoLRN Backup	
0-10V, PWM	RSSI: n/a	Outputs: (0)	
Dali Node			
CCT Node			
Outdoor Node			
PS2			
MCB14,4			
AP2			
P3			
VenergyCTR			
X-Later			
еВох			
eEox 2/3			
СВох		Profile F6-01-01 Push button	
Collector		Manufacturer 0x29 - Magnum Innovations	
OairConfig	on 🔇 🛇 dr		Coll 🔕 🔘 dr
EnOcean-ID: 92815760 Type: BACnet/IP gateway Manufacturer: Magnum Innovations			
Driver file		v	



-Devices (1) Sensors (0) URD1 eBox 3 test RSSI: ork Mesh Config FDR 0-10V, PWN Dali Node CCT Nod Cutdoor No PS2 МСВ14.4 AP2 AP3 VenergyCTR X-Late eBox eBox 2/3 🤝 сВох Profil F6-01-01 Push button Collector F6-01-01 Push but F6-02 01 Rocke airConfig 0 0 0 F6-02-02 F

Click drop down menu to select profile, F6-02-02

Click blue add button

0		Magnum airConfig 5.08.37 (advanced)	
File Settings			
Driver	Devices (1)	Device configuration	Sensors (0)
URD1	0x05884190 eBox 3 test	Network Mesh Config FDR Inputs Outputs AutoLRN Backup	
0-10V, FWM	RSSI: n/a	Outputs: (1)	
Dall Node		aaron (auto) (Broadcast)	
CCT Node			
Outdoor Node =			
PS2			
MCB14.4			
AP2			
P3			
VenergyCTR			
X-Later			
еВох			
e£ox 2/3			
СВох			
Collector		Profile F6-02-02 Rocker US	
OairConfig	on Ø Ocir	Manufacturer 0x29 - Magnum Innovations	Coll 🔕 Ocr
EnOcean-ID 92815760 Type: BACnetIP gateway Manufacturer: Magnum Innovations			
Driver tile			



File Settings		magnum ancomig 506.57 (auvanceu)	
	Devices (1)	Device configuration	Sensors (0)
URD1	0x05884190 A	Network Mesh Config FDR Inputs Outputs AutoLRN Backup	Sensors (0)
0-10V, PWM	RSSI: n/a	Outputs: (1)	
Dali Node		aaron (auto) ^ ^	
CCT Node		Delete 	
Outdoor Node		Destination / MsgServer	
P32		send LRN send LRN (3x) send LRN (UTE)	
MCB14.4		Change BACnet ID	
AP2			
AP3			
VenergyCTR			
X-Later			
eBox			
eBox 2/3			
cBox		Profile F6 02 02 Rocker US	
Collector			
OairConfig	🔍 on 🔕 🔕 dr	Manufacturer 0x29 Magnum Innovations	Coll & Ocl
EnOcean-ID: 92815760 Tyte: Tyte:ChockIP gateway Manufacture: Magnum Innovations			
Driver file			

Right click new switch that was just created under outputs and click send LRN (3x)

EBOX can now send on/off to ESHM for (occ/unocc) setback