REV	DESCRIPTION	INT:	REV. DATE	APPROVED
1	ECO# C01429	MJS	9/7/05	CG
2	ECO# 02412	DR		

TITLE BOX PAGE ONLY.
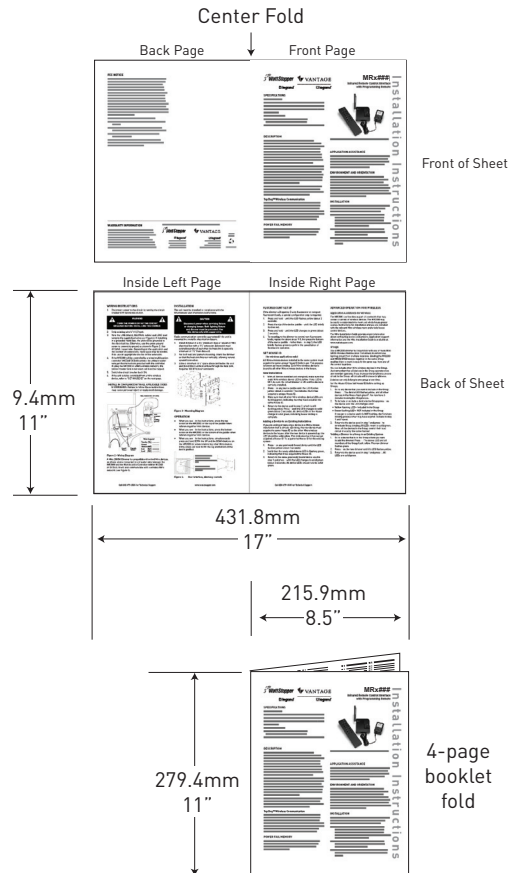**DO <u>NOT</u> MAKE FILM • DO <u>NOT</u> PRINT**

MATERIAL: White 16lb (60g/m sq), uncoated, prefer recycled stock

Ink: Black

Print Two Sides, 2 sheets 8.5" (Wide) x 11" (High),
stapled upper left corner

OR

Print Two Sides, 1 sheet 11" x 17"
folded to 8.5" x 11"

Center Fold

Back Page   Front Page

Front of Sheet

Inside Left Page   Inside Right Page

9.4mm
11"

Back of Sheet

431.8mm
17"

215.9mm
8.5"

279.4mm
11"

4-page
booklet
fold

IF YOU HAVE ANY QUESTIONS REGARDING SPECIFICATIONS OR REQUIRE
ADDITIONAL FILE FORMATTING, PLEASE CONTACT Mary Jo Sowinski.

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DRAWN BY	REVEL		
PLM		**WattStopper** ⎸ **legrand**®	
MARCOM		SANTA CLARA, CALIFORNIA	
ENGINEERING		Title: MRHC3/MRRC3 Installation Instructions	
QA			
TITLE BOX PG	SCALE 1:1	**Drawing #:** 05813	**Orig. Drawing Date:** 28 JUL 05 / **Revision Date:** 28 SEP 07	**REV. #:** 2

MRHC3 and MRRC3
House and Room Scene Inerfaces

SPECIFICATIONS

UL and cUL Listed

Input Voltage .... 12-24VDC, 200mA minimum

Control Inputs ....3-24VDC, 33ms hold time minimum

Output ....24VDC, 150mA maximum

AC-DC adaptor (provided)

    Input...120VAC, 60Hz

    Output 24VDC, 200mA

DESCRIPTION

The MRHC3 and MRRC3 Scene Interfaces offer Top Dog™ wireless network interconnectivity to common electronic control devices. With this interconnectivity, house and room scenes are invoked based on inputs from the external control device. Application examples include alarm systems, astronomic time clocks, motion sensors and garage doors integrated with the wireless network to execute house and room scenes.

TOP DOG™ WIRELESS COMMUNICATION

Wireless devices use radio signals to communicate with each other to control lighting and other types of electric loads in selected areas. These wireless devices use the 900MHz band for high-speed control communication. Using the "frequency-agile" Top Dog™ technology, these wireless devices avoid interference with other 900MHz devices, such as cordless phones and baby monitors.

OPERATION

The scene interfaces can be setup in one of two operating modes to accept either maintained or momentary inputs. They can initiate scenes based on active high, active low, maintained or momentary control signals. For momentary applications, a minimum hold time of 33ms is required so the scene interface can process the change-of-state. The scene assignments are fixed and cannot be changed.

Mode A, typically used with momentary control signals, uses scenes 6 and 8 for inputs 1 and 2. Input 3 invokes the house or room on/off scene of a controller paddle.

Mode B, typically used with maintained control signals, uses scenes 6, 7, 8 and 9 for inputs 1 and 2. Input 3 on the MRHC3 invokes the house "panic" scene, and on the MRRC3 it can be used to inhibit execution of scenes bound to the other inputs.

The MRHC3 interface is a house level scene controller. Please refer to Table 1 and Table 2 for more information about its operating modes.

The MRRC3 interface is a room level scene controller. Please refer to Table 3 and Table 4 for more information about its operating modes.

Removable Terminal Block

House or Room Scene Interface

Power Supply

Status LED
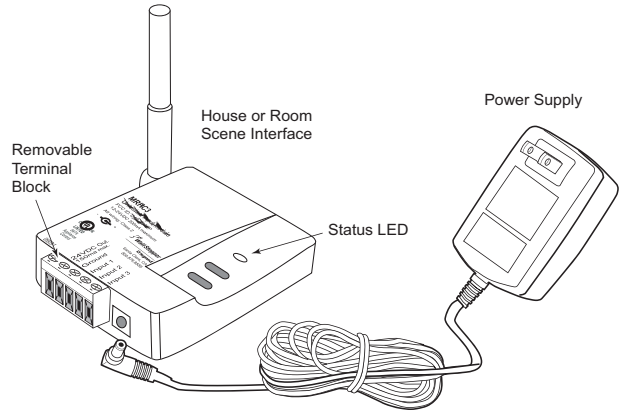
POWER FAIL MEMORY

After a power failure, all wireless devices automatically return to the state that they were in immediately prior to loss of power. All configuration and scene control information is preserved.

APPLICATION ASSISTANCE

The Scene Interfaces function as part of a network that may contain a variety of wireless devices. Instructions for installation, binding operations, and use are included with the relevant wireless devices. Application support information and installation guides for Legrand wireless network devices are available online.

INSTALLATION

The interface can be installed in an equipment room, garage or user occupied space within radio range of the wireless network devices and within convenient wiring distance to the external output device.

A screw slot on the base of the unit is provided for wall mounting. Radio communication cannot be guaranteed if the unit is mounted in a metallic electrical enclosure.

1. Complete the physical installation and binding of all other wireless devices in the network. Use an appropriate scene controller or hand held scene remote programmed for scene set 6-10 to set up the scenes that will be executed based on the inputs from the MRHC3 or MRRC3. See "More Scenes" in the installation instructions provided with the controller or remote to program the device for scenes 6-10.

2. Wire the external devices to the appropriate terminals on the MRHC3 or MRRC3, according to the instructions in the WIRING APPLICATIONS section of this manual.

3. Plug the power supply into a convenient 120VAC outlet, and connect the power cord to the MRHC3 or MRRC3's power socket.

4. The status LED lights yellow, indicating that the unit is ready for configuration. See SET HOUSE ID in this manual.
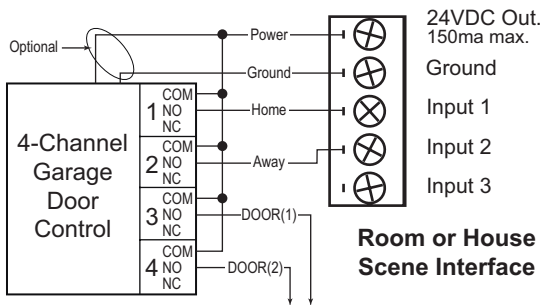
WIRING APPLICATIONS

All wiring to the MRHC3 and MRRC3 is Class 2 low voltage and shall meet local code for Class 2 Equipment wiring. Both interfaces use removable screw terminal blocks for easy wiring access. Power to the scene interfaces is provided by a plug-in power supply.

Output Power: Two terminals allow the interfaces to power external sensors: 24VDC and Ground. The 24VDC output is capable of supplying up to 150mA to power external occupancy sensors or other devices.

Primary applications include motion sensors, alarm systems, time clock and home/away functions when interfaced to a garage door. The followng sections provide wiring instructions specific to each type of application along with operating mode suggestions.

Garage Door

Interface the MRHC3 or MRRC3 to a multi-channel garage door controller with at least 3 channels. Use two channels to execute the home and away features, while the third channel toggles the garage door open or closed. On a 4-channel interface, the 4th channel can operate a gate or second door. Use Mode-A to set up the MRHC3 or MRRC3 for home and away applications.

**Room or House Scene Interface**

Motion Sensor

A motion sensor application could use either Mode-A or Mode-B. Most applications would use Mode-B. In this configuration, a scene executes when the sensor initially detects motion and a second scene executes when the motion sensor determines that the space is unoccupied. However, Mode-A allows Auto-ON, Manual-OFF and Manual-ON Auto-OFF functions. A manual-ON Auto-OFF application requires the input to be wired to a NC contact and the scene stored to turn the appropriate lighting off.

Room or House Scene Interface
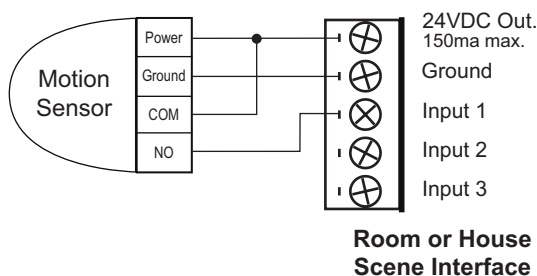
Astronomic Time Clock

A time clock application is nearly identical to that of a motion sensor. Mode-B allows a transition between two scenes, or Mode-A executes a single scene.

Room or House Scene Interface
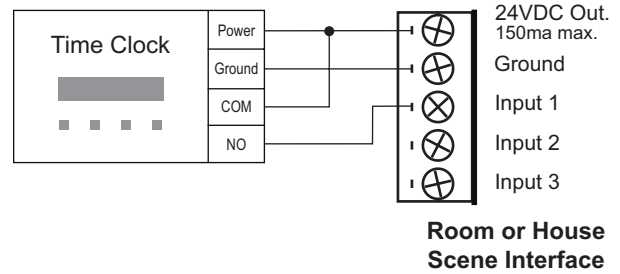
MRRC3 (Only) — Scene Inhibit

The purpose of the scene inhibit feature in Mode-B is to lock out signals on input 1 and 2 when input 3 is high. When input 3 goes high, signals to inputs 1 & 2 are ignored. This function is commonly used with a motion detector in conjunction with a time clock or similar device.

When input 3 goes low, signals at input 1 and input 2 will recall scenes as appropriate for MRRC3 Mode-B binding (see Table 4).

MRRC3 Room Scene Interface (Only)
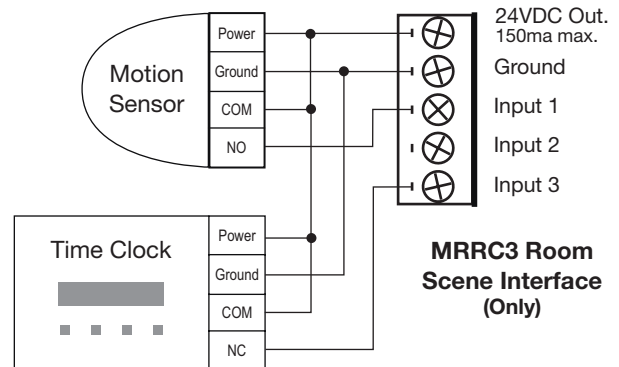
USER INTERFACE

The user interface consists of two pushbuttons and a multi-color LED for device status.

PUSHBUTTONS

The pushbuttons are the Top button (⇧) and the Bottom button (⇩).

Binding Operations

Press both buttons simultaneously (⇕) for about 2 seconds to initiate binding operations.

Operating Mode Selection

See Switching Operating Modes, next page.

Reset to Factory Default/unconfigure

When both the buttons are simultaneously pressed for a period of 10 seconds, the device performs a system reset and clears all memory contents. This resets the device to an unbound un-configured state (the LED changes to solid yellow).

Status LED Indicator

The LED can display one of three colors: green, yellow (amber, a combination of red and green), or red. The color can be constant, or can flash at one of three rates to further distinguish reported conditions.

To determine the flash rate, count the number of flashes in 5 seconds:

5 flashes ....1 Hz
10 flashes...2 Hz
15 flashes...3 Hz

MRHC3/MRRC3 LED Indications are as follows:

Color	Behavior	Meaning
none	Off	Device is not powered.
Green	On, not flashing	Device is powered, has a house ID, operating normally.
Green	Flashing @ 2 Hz	Device transmitted a message on the wireless network.
Yellow	On, not flashing	Device does not have a house ID.
Yellow	Flashing @ 2 Hz	Device is part of a binding process. Binding was started by some other device.
Yellow	Flashing @ 3 Hz	Device is the master of a binding process. Binding was started on this device and must be stopped on this device.
Red	Flashing @ 2 Hz	Device has encountered an error. An invalid command was attempted. If MRRC3 and it flashes after button press or input change of state, the unit needs to be bound to a room.

SET HOUSE ID

All wireless devices installed in the same system must acquire the same unique House ID before use. This process is known as house binding. Each wireless device is bound to all other wireless devices in the house. If you are not familiar with the binding processes for the wireless devices in your installation, please review the Installation Guide, or individual installation instructions provided with the devices.

The House ID binding serves two functions. First, it gives the Scene Interface the same House ID as the rest of the wireless network, second, it defaults the interface to operating Mode-A.

1. Make sure all devices are installed and energized and all group, house, and room bindings are complete. Make sure that every other wireless device LED is green and the MRHC3/MRRC3 is yellow (amber).

2. Press ↕ on any previously bound device until its LED flashes amber (about 2 seconds).

3. Verify that the LED on the MRHC3/MRRC3 starts flashing green. This sets the House ID to match the other devices in the house, and sets the interface for operating Mode-A.

4. Return to the same previously bound device used in step 2 and press ↕ until its LED changes to solid green (about 2 seconds). All device LEDs including the MRHC3/MRRC3 should now be solid green.

    To change to Mode-B, see Switching Operating Modes.

Scene Binding

Bind other wireless devices in the system to appropriate groups and rooms before you attempt to execute scenes from the Scene Interface. The Scene Interface can not be used to set up or record scenes. Use an appropriate scene controller, scene remote or a MR232 and a PC running a terminal emulator to set up and record scenes.

Switching Operating Modes

You can change the operating mode selection at any time.

1. Press both buttons on the MRHC3/MRRC3 simultaneously (↕) until the LED starts flashing (about 2 seconds).

• To configure for Mode-A press and hold the top button (⇑) until the LED flashes RED.

• To configure for Mode-B press and hold the bottom button (⇓) until the LED flashes GREEN.

2. Press both buttons on the MRHC3/MRRC3 simultaneously (↕) again until the LED stops flashing and changes to solid green (about 2 seconds).

MRHC3 - HOUSE OPERATING MODE-A

For Mode-A, inputs 1 & 2 execute their scene on the rising edge only. No scene executes on the falling edge. Mode-A is primarily intended for momentary control signals, however, some maintained applications can use this feature to provide either an Auto-On, Manual-OFF or Manual-On, Auto-OFF control configuration.

Input 3 is intended for maintained input signals to execute a House-ON scene on the rising edge and a House-OFF scene on the falling edge, as outlined in Table 1 below.

Table 1: Default House Mode-A

INPUT	State	Function
1	High	House Scene 6
	Low	None
2	High	House Scene 8
	Low	None
3	High	House On Scene
	Low	House Off Scene

MRHC3 - HOUSE OPERATING MODE-B

In Mode-B, inputs 1, 2, and 3 are applicable to maintained inputs only since a scene is executed on both the rising and falling edges.

Inputs 1 and 2 use fixed house scenes as shown in Table 2 below. The scene shown is executed on the rising (high) and falling (low) edges.

Input 3 provides an Over-Ride to PANIC scene on the rising edge and a Revert Over-Ride to return the house (exit PANIC) to the previous state on the falling edge.

Table 2: House Mode-B

INPUT	State	Function
1	High	House Scene 6
	Low	House Scene 7
2	High	House Scene 8
	Low	House Scene 9
3	High	Over-Ride to Panic
	Low	Revert Over-Ride (Panic Off)

MRRC3 - ROOM OPERATING MODE-A

In Mode-A, inputs 1 & 2 execute their scene on the rising edge only. No scene executes on the falling edge. Mode-A is primarily intended for momentary control signals, however, some maintained applications can use this feature to provide either an Auto-On, Manual-OFF or Manual-On, Auto-OFF control configuration.

Input 3 is intended for maintained input signals to execute a Room-ON scene on the rising edge and a Room-OFF scene on the falling edge, as outlined in Table 4 below.

Table 3: Default Room Mode-A

INPUT	State	Function
1	High	Room Scene 6
	Low	None
2	High	Room Scene 8
	Low	None
3	High	Room On Scene
	Low	Room Off Scene

MRRC3 - ROOM OPERATING MODE-B

In Mode-B, input 1 and 2 are applicable to maintained inputs only since a scene is executed on both rising and falling edges.

Input 3 provides a scene Active/Inhibit feature. It can be used to stop scenes from executing when a change of state occurs on inputs 1 and 2. Input 3 can connect to a time clock or similar device. When input 3 goes low (Scenes Active) the controller executes the scene that corresponds to the state of each input as if the change-of-state condition had just occurred. When input 3 goes high (inhibit), a Room-OFF scene is executed with the change-of-state and inputs 1 and 2 will have no effect on scenes until input 3 goes low.

Table 4: Room Mode-B

INPUT	State	Function
1	High	Room Scene 6
	Low	Room Scene 7
2	High	Room Scene 8
	Low	Room Scene 9
3	High	Scene Inhibit (Room-Off)
	Low	Scenes Active

TESTING

You can test scene recall for Inputs 1 & 2 by pressing the top button (⇧) or the bottom button (⇩). The LED will blink twice indicating the command was sent.

You can recall scene 6 (⇧) and scene 8 (⇩) to confirm scene bindings prior to connecting signals to Input 1 or Input 2.

External input signals can be simulated using a wire jumper between +24VDC and Inputs 1, 2 or 3. Scene recall behavior will be as shown in the Mode-A or Mode-B tables and the LED will blink green twice to indicate that the input was seen and the message was sent over the radio network.

Once the connections have been made to Inputs 1, 2 or 3 the LED blinks twice when the input goes High or Low indicating the input signal was received and the scene execution message was sent out over the radio network.

TROUBLESHOOTING

During Set House ID, the LED is not flashing on some Wireless devices.

• If LED is solid green before initiating house ID binding:

The device already has another house ID. Reset it to the factory default so that it can be bound to the desired house ID. Resetting to factory defaults is described in the "I need to start over" issue.

• If LED is solid yellow after initiating house ID binding:

The device may be out of range of the initiating device. It may be necessary to add a MRR2 Repeater if reception to a particular area of the house is blocked.

I need to start over.

You can reset any wireless device to factory default settings by pressing and holding ⇕ until the LED changes to solid yellow (approximately 10 seconds). During the process, the LED flashes yellow and when complete, it changes to solid yellow. The device can then be reconfigured, exactly like any new device.

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