



# RadioRA 2

## Programming Examples and Templates

This document is a tool to be used by RadioRA 2 installers and system designers to reduce the time required for layout, installation, and programming of a RadioRA 2 system. Design and programming of the RadioRA 2 system is done through the RadioRA 2 programming software. Qualified accounts can download the latest version of software by using the myLutron portal of **lutron.com**.

Video tutorials demonstrating how to use the software are available on myLutron, from the Learning Hub section of the myLutron home page.



**lutron.com**  
Lutron Electronics Co., Inc., 7200 Suter Road, Coopersburg, PA 18036-1299

### Customer Assistance

Online: [lutron.com/help](http://lutron.com/help)

Email: [support@lutron.com](mailto:support@lutron.com)

Phone: 1.844.LUTRON1 (588.7661) — includes 24/7 technical support

☼, GRAFIK T, Lutron, Pico, RadioRA 2, seeTouch, Serena, Sivoia QS, and Triathlon are trademarks of Lutron Electronics Co., Inc., registered in the U.S. and other countries.

Android is a trademark of Google Inc.



© 2016 Lutron Electronics Co., Inc. | P/N 368-4251 REV B



## Table of Contents

Lighting Control System Benefits .....	3
Keypads.....	5
Keypad Styles.....	6
Keypad Programming .....	7
Keypad Programming Best Practices .....	10
Keypad Programming Examples.....	12
Entry Controls .....	12
Kitchen Controls.....	13
Home Theater Controls.....	14
Garage and Car Visor Controls.....	15
Master Bedroom Controls .....	16
Living Room Controls .....	17
Multi-Location Control Solutions .....	18
Typical 3-way Installation.....	18
Installation with Remote Dimmer Replaced by Keypad.....	19
Installation with Remote Dimmer Replaced by a Pico .....	20
Timeclock Programming.....	21
Advantages of Timeclock Programming .....	21
Timeclock Modes.....	21
Common Uses of Timeclock Modes .....	21
Timeclock Events.....	21
Examples of Commonly Used Timeclock Scenes/Events .....	22
HVAC Programming .....	22
HVAC Schedule Programming.....	22
HVAC Button Programming and Zone Control .....	23
Occupancy/Vacancy Sensor Programming.....	24
Security Mode Programming .....	25
Glossary of Common Scenes.....	25
Additional Resources.....	27

## Lighting Control System Benefits

<b>C</b> Convenience	<b>S</b> Security
<b>A</b> Ambiance/Aesthetics	<b>E</b> Energy Savings

### Control the system from the car... **C A S E**

Interior and exterior lighting can be controlled from the safety of a car’s visor or HomeLink buttons, lighting a safe path throughout the home while pulling into the driveway. The homeowner can also activate an “Away” scene from the car, via the Lutron Connect app. This scene turns specified lights on to dim levels for security and others off, and lowers shades, as the homeowner drives away.

### Control the system from anywhere... **C S E**

Lutron’s mobile applications for Android™ and iOS devices provide convenient and intuitive control of the entire RadioRA 2 system while at home or anywhere in the world.

### Save energy by seamlessly controlling electric light, natural light, and temperature... **C E**

Save energy from a single button press (example: the Away scene) or an automatically scheduled event. Shades can raise or lower to let the sun’s rays in or block them, naturally heating and cooling the house. Thermostats can run on automatic schedules to set a comfortable temperature while home and save energy while away.

### Conveniently control lights with an astronomic timeclock... **C A S E**

Landscape lighting can automatically turn on at sunset, off at sunrise or adjust to preset levels at any desired time. Interior and exterior lighting and window shades no longer need to be controlled manually, adding security and convenience.

### Make the home appear occupied, even when no one is there... **S E**

When the home is vacant for extended periods of time (vacations, business travel, etc.), the astronomic timeclock can adjust light and shade levels in an Away mode to create a lived-in appearance, while also setting back HVAC setpoints to save energy.

### Seamless integration for a true connected home experience... **C A S**

RadioRA 2 integrates with third-party control systems to help create a cohesive connected home experience, layering together lighting, shade, temperature, and appliance control with custom touchscreen interfaces and A/V systems.

### Help emergency services find the right house, quickly... **S**

RadioRA 2 integrates with security systems — turning selected interior lights on, flashing selected exterior lights, and opening shades — to alert neighbors and police in an emergency. This can save critical time when emergency assistance is required.





- C Convenience
- S Security
- A Ambiance/Aesthetics
- E Energy Savings

**Eliminate ugly gang boxes... A**

Reduce wall clutter by replacing a multi-gang switchbox with an attractive single-gang keypad.

**No longer worry about leaving lights on... C E**

Radio Powr Savr battery-powered wireless sensors automatically turn lights off after 1, 5, 15, or 30 minutes. This is perfect for children's rooms, laundry rooms, and bathrooms.

**No new wiring means no mess... C A**

Designed to use the home's existing wiring, RadioRA 2 is easy to install and program in any home. Easily add automated window treatments with battery-powered Sivoia QS Triathlon shades. There's no need to rewire or cut holes in the walls – saving time and money.

**Color-coordinate all of the switches and outlets... A**

RadioRA 2 devices are available in a wide array of colors, to complement a room's style. Coordinating receptacles, phone jacks, cable jacks, and other accessories are also available.

## Keypads

A keypad is a multi-button device that can:

- Monitor which lights are on or off
- Turn a light or a group of lights on or off
- Adjust a single light, shade, or thermostat to predetermined levels
- Adjust a group of lights, shades, and/or thermostats to predetermined levels
- Change timeclock modes (example: changing to vacation mode)
- Trim lights and thermostat setpoints by initiating a green mode

**Keypads reduce wall clutter** (See photos below)

To accomplish this type of system configuration, dimmers and switches can be hidden in the basement, closet, or any out-of-sight location within range of a repeater. Wallbox power modules can also be used to save wall space and cost for these types of centralized applications. This scheme is typically best suited for new construction or major renovation projects.

**Use keypads at room entry locations**

Wall-mounted keypads should be used at room entry points where there are two or more switches. Tabletop keypads or Pico remotes within the room will also allow for convenient control of the system. In areas where the entry switch currently controls a light, a hybrid keypad can be used to both dim the lights and act as a keypad.

**4-gang to single-gang**



RRD-W3BSRL-WH

## Keypad Styles

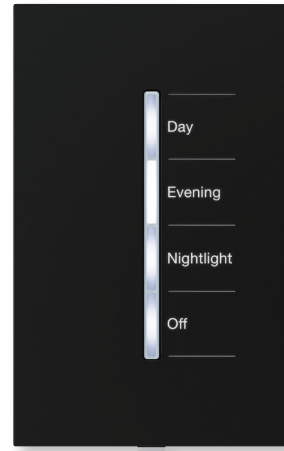
RadioRA 2 offers three keypad styles: Pico, seeTouch, and GRAFIK T.



PJ2-3BRL-GWH-L01



RRD-W2RLD-WH



RRT-GH4B-BL

Each keypad style has a different aesthetic and unique functional features.

Feature	Keypad Style		
	Pico	seeTouch	GRAFIK T*
Toggle/Room Monitoring	No	Yes	Yes
Single Action Scene	Yes	Yes	Yes
Path of Light	No	Yes	Yes
Shade Toggle	No	Yes	Yes
Shade Tilt View Toggle	Yes	Yes	Yes
Timeclock Button	No	Yes	Yes
Green Button	No	Yes	Yes
Status LEDs	No	Yes	Yes
Backlighting	Yes (Nightlight version only)	Yes	Yes
Adjust Backlighting	No	Static, Reqs transfer	Dynamic w/ ambient light
Custom Engraving	Yes (4-button version only)	Yes	Yes
Colors	Gloss	Designer Gloss and Satin	New Architectural
Power	Battery (CR2032, 10 yr life)	120V	120V

## Keypad Programming

Keypad buttons are typically programmed to work with the user's daily activities. Keeping the button programming simple and consistent will ensure customer satisfaction.

Some tips to consider:

- Keep brighter scenes on the top buttons and dim scenes toward the bottom buttons
- Use as few buttons as possible to perform exactly what is needed for the application (too many buttons can be confusing to the homeowner and may cause unnecessary programming)
- Only use whole home scenes where they're needed (such as Welcome or Away)

For more details about these best practices, see "Keypad Programming Best Practices" on page 10.

### Getting Started

Before programming any of the devices, it is important to note that keypad buttons can be programmed as a variety of button types (described below). The button type defines what the function of the button will be and how the LED status is determined.

### Toggle Control/Room Monitoring Buttons

"Room" buttons are used to monitor current status.

- Allows monitoring of on/off status of a single load or groups of loads throughout the home.
  - **Example:** If the lower level or basement lights were left on, use the master bedroom tabletop seeTouch keypad to toggle the lights off.
- Button status LED will be ON if any load programmed to the button is on at any level (1 to 100%).
- If the status LED is OFF, the next button press will send the assigned loads to their programmed levels and turn the status LED ON.
- If the status LED is currently ON, the next button press will send all assigned loads to 0% (toggle functionality).
- Local adjustment of assigned load level will not affect LED status, as long as one assigned load remains ON at any level.
- Shades always go to their assigned levels and do not toggle between open and close. LED status is not dependent on shade position and may lead to confusing LED feedback. For the toggle function on a shade, it is recommended to use Shade Toggle.



### Single/Multi-Room Scene Buttons

“Scene” buttons are used to create mood or match lighting to an activity in a room or through the whole home.

- Allows recall of preset lighting scenes from a keypad. Each light assigned to a scene button will go to its predefined level; lights can even be turned off as part of a scene.
  - **Example:** A Movie scene sets the perfect light level for enjoying a movie, closing blackout shades and dimming lights to very low levels.
- Scene LED will be ON only when all loads assigned to that scene are on to their exact levels.
- If the status LED is OFF, the next button press will send the assigned loads to their programmed levels and turn the status LED ON.
- If the status LED is currently ON, the next button press will send all assigned loads to the programmed levels again (the current levels in the system won't change). (Single Action functionality)
- Local adjustment of assigned load level will turn off LED status, as the level of the load would no longer match the assigned programming.

### Path of Light Buttons

“Path” buttons are used to illuminate a convenient path from one point of the residence to another.

- Status LED will be ON only when all loads assigned to that scene are on to their exact levels (similar to scene LED logic).
- If the status LED is OFF, the next button press will send the assigned loads to their programmed levels and turn the status LED ON.
- If the status LED is currently ON, the next button press will send all assigned loads to 0% (toggle functionality).
- Local adjustment of assigned load level will turn off LED status, as the level of the load would no longer match the assigned programming.
- Shades always go to their assigned levels and do not toggle between open and close.

### Shade Toggle Buttons

“Shade Toggle” buttons are used to control shade(s) through their full range of motion using just one physical button.

- Status LED will be ON when the assigned shades are in motion.
- If the status LED is OFF, the next button press will send the assigned shades to the open or close limit, depending on the last movement direction from the last button press.
- If the status LED is currently ON, the next button press will stop all shades in their current position, prior to reaching their open or close limit.

### Shade Tilt View Toggle Buttons

“Shade Tilt View Toggle” buttons are used to control venetian blinds or horizontal sheer shades, toggling between a preset that allows viewing the outside and a privacy setting.

- Status LED will be ON when the assigned shades are at the 50% tilt level and programmed lift level (horizontal sheer blinds must be at 0% lift to adjust the tilt level).
- If the status LED is OFF, the next button press will send the assigned shades to the programmed lift level and 50% tilt to provide a view of the outside.
- If the status LED is currently ON, the next button press will set all assigned shades to a 0% tilt level.

### Timeclock Mode Buttons

“Timeclock” buttons are used to set a different mode for the timeclock for a variety of purposes, such as holidays, parties, or going on a vacation.

- Status LED will be ON when the assigned timeclock mode is active.
- If the status LED is OFF, the next button press will set the timeclock to the assigned mode (only one mode can be active at a time).
- If the status LED is currently ON, the next button press will set the timeclock back to “Normal” timeclock mode (toggle functionality).
- For “Away” mode (vacation mode), HVAC zones can be set to a permanently held setpoint while the “Away” mode is active.

### Green Buttons

“Green” buttons are used to set a high-end trim on all dimmable zones and a temperature setback on all HVAC zones in the system.

- Status LED will be ON when the assigned green mode is active.
- If the status LED is OFF, the next button press will set the system into the assigned green mode.
- If the status LED is currently ON, the next button press will set the system back into normal operating mode (no green mode). (toggle functionality)
- Shades and switched loads are not automatically built into green modes, but can manually be assigned and set to a specific level.

## Keypad Programming Best Practices

### Less is more

It is best practice to use only the amount of buttons required for a control location. Too many buttons can lead to confusion. If you find yourself struggling to develop programming for a button and feel that the keypad currently provides adequate control for the space, that may be a sign that there are too many buttons. Remember, the button quantity can always be changed during the engraving process.

A great example is the keypad by the Entry door. Functionally, the homeowner wants control when he arrives home (Welcome) and when he leaves the residence (Away). If this is a front door, there may also be a porch light or landscape light to control. The entry keypad would likely not need to control much else; a good system design will provide many more keypads for the homeowner to control their system as they move through the residence.

### Minimize whole house scene usage

When thinking of what lighting control is, most picture the whole house scene: All On, All Off, Welcome, and Away. These types of scenes provide a lot of value and emphasize convenience and security. That said, a house full of keypads with access to whole house scenes will become a house with a poor user experience, as the homeowners constantly interfere with each other and guests have undesired access to control of the entire residence's lights from one button.

Master bedrooms and entry points to the residence will certainly have whole house scenes but once the end user is in their house, the control from room to room should shift from whole house scenes to more local scene and room control.

Another great place for whole house scenes: The Lutron Connect app — access is limited and an actual physical button is not required in the space.

### Place green modes and timeclock modes on virtual keypads

Similar to whole house scenes, homeowners will not want to allow everyone to access functions that impact the entire house. Placing timeclock and green mode buttons in the physical space can lead to undesired functionality, confusion, and support calls when the lights are unexpectedly more dim than usual, or lights, temperature setpoints, and shades appear to randomly change levels on their own.

A virtual keypad is designed into the database as a real keypad but no physical keypad gets installed and activated. Despite the fact that it is not a real keypad, it will show up in the XML integration file on the main repeater and will thus show in the mobile app where the homeowner can have restricted access.

Virtual keypads are also great for whole house scenes.

### Start with brighter scenes at the top and dim scenes toward the bottom

Having the brighter actions at the top of the keypad and dim scenes toward the bottom, along with easily understood engraving, helps make the keypad intuitive.

### Use shared scenes

Shared scenes are a feature of the Inclusive software and are intended to create efficiency for the programmer. If there are scenes which are used on multiple keypads through the house, it is ideal to use a shared scene or shared toggle button type. Shared scenes and shared toggles are created once and then can quickly be applied to any button that needs to “share” the same programming. The feature is similar to copy and paste with the key difference lying in the button programming editing. All edits to shared scenes and shared toggles are shared among all buttons sharing the programming.

Common examples of shared scenes are All On, All Off, Welcome, and Away.

## Keypad Programming Examples

### Entry Controls

A seeTouch hybrid keypad is being used to control exterior lighting, replacing an old traditional switch by the front door.



RRD-HN3BSRL-SW

- **Top button** toggles the locally dimmed load (common for hybrid keypads)
- **Welcome and Away** provide the enter and exit function for the residence
- **Raise and Lower** set to only control the locally dimmed load (exterior lights)

### Kitchen Controls

A seeTouch wall-mounted keypad is being used in a kitchen backsplash to control local scenes and lighting zones. Imagine a dining room nearby, separated by a half-wall.



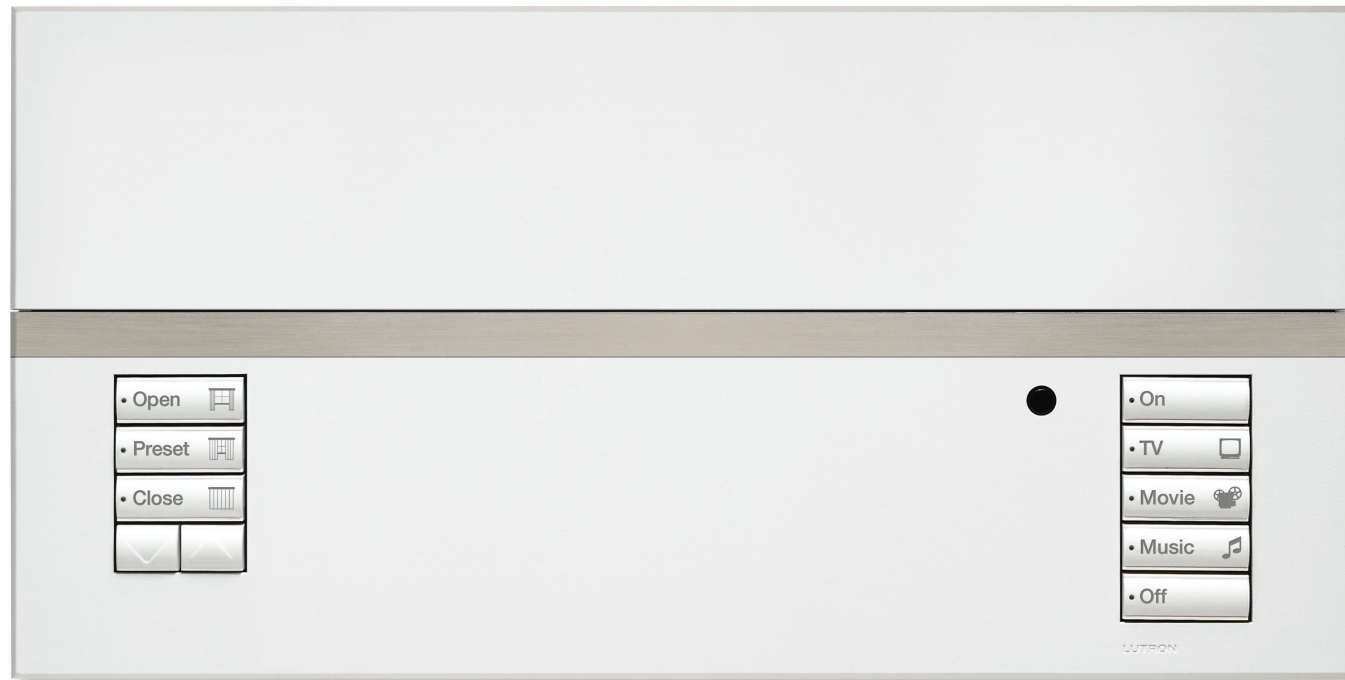
RRD-W3S-SW

- **Prepare** sets a scene with higher light levels in the kitchen to prepare food
- **Dining** sets the kitchen lights to a low level and brings the dining room table lights on to a level that puts the focus on the dinner and family time
- **Clean Up** brings the dining room and kitchen lights on to a bright level to clean up after the meal



### Home Theater Controls

A GRAFIK Eye QS has been placed into a home theater with a projector screen being controlled by a Sivoia QS Wireless quiet electronic drive and integrating with a third-party control system for audio and video control.



QSGRJ-6P w/additional button kit

- **TV** sets a moderately lit scene, lowering blackout shades in the window to remove glare and lower the projector screen.
- **Movie** sets the lighting to a very low level, drops the blackout shades in the windows, and lowers the projector screen. The third-party system monitors for the button press and will turn on the projector and media player to start the movie.
- **Music** sets the lighting to a relaxing level to enjoy music in the space, through the speaker system. The third-party system monitors for the button press and, once Music is pressed, turns on the music to a favorite source.
- **The additional buttons on the left** allow the homeowner to control just the projector screen, as needed.
- **Underneath the top lid of the GRAFIK Eye QS** are individual zone controls for local dimming.

### Garage and Car Visor Controls

A visor control receiver is mounted on the ceiling of the garage or on the wall where the door push buttons are, allowing for doors, gates, and lighting control.

- **The Welcome and Away** scenes provide enter and exit function from the visor control transmitter (copies or Shared Scenes\* of the foyer keypad).
- **Input 1** is wired to a third-party external motion sensor and programmed to turn on exterior spots for perimeter security lighting.
- **Contact Closure Outputs 1 to 3** are used for pulsed control of the garage door motors.
- **Contact Closure Output 4** is used for pulsed control of a property entry gate.

A visor control transmitter has been manually paired with the above visor control receiver using the Learn button, to allow for system control from the car (don't forget that this transmitter can be mapped over to HomeLink).

- **Welcome** allows the homeowner to illuminate a safe path of light with the press of a single button in the car, so he doesn't have to walk into a dark house.
- **Away** conveniently turns off lights throughout the house while the homeowner leaves the driveway to go out for a couple of hours.
- **The Door 1** button provides quick control of the garage door from the car.

\* Only available in Inclusive software



RR-VCRX-WH

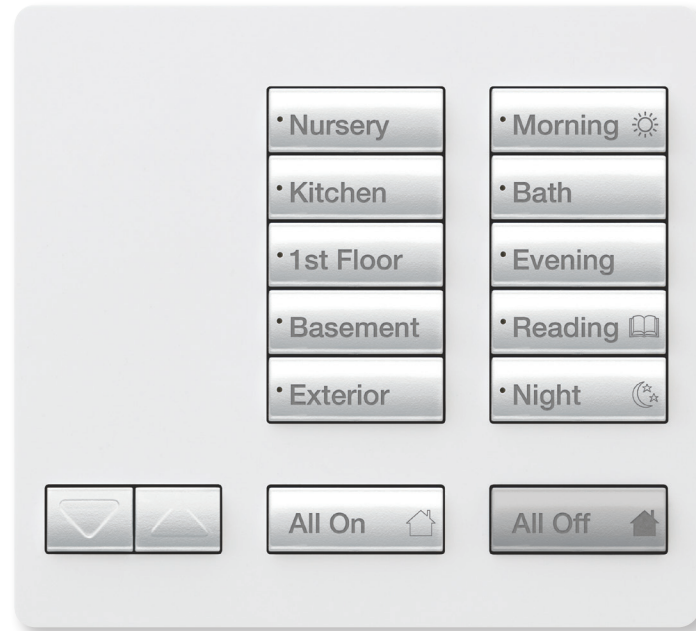


LR-3B-H-SW



### Master Bedroom Controls

A 10-button tabletop keypad has been placed on the nightstand in the master bedroom for convenient system monitoring and control.



RR-T10RL-SW

- Left columns are mostly toggle buttons that allow the user to monitor the status of the zones in the specified areas
  - Except **Nursery**, which illuminates a path of light to the nursery when the baby wakes during the night
- Right column, with the exception of bath, are scenes oriented from brightest at the top to dimmest at the bottom
  - **Bath** illuminates a path of light to the bathroom in the middle of the night
- **Morning** is a multi-room scene which sets the master bedroom lights, hallway, bathroom, and kitchen lights to moderate light levels with a longer fade to allow eyes time to adjust and the homeowner to complete all morning activities
- **Evening** scene sets lighting throughout the residence to comfortable levels for relaxing; this scene could be a copy or shared scene from the kitchen keypad
- **Reading** sets a lower light level for bedroom lamp for reading
- **All On** and **All Off** are shared Scenes to easily control lights in the house
- **Raise** and **lower** are set to master raise and lower to control the loads on the last button that was pressed on the keypad

### Living Room Controls

Pico remote controls have been placed on pedestal in the living room for convenient, local control of lights, shades, and audio.



PJ2-3BRL-GWH-L01 (Lights), PJ2-3BRL-GWH-S01 (Shades), PJ2-3BRL-GWH-A02 (Audio), L-PED-3 (Pedestal)

- **Lights** - On, off, raise, lower, and favorite settings for a single light or a group of local lighting zones in a room
- **Shades** - open, close, raise, lower, or set a preset for a shade or a group of shades in a room
- **Audio** - play/pause, cycle favorite stations, track forward, and volume control for an audio zone

### Multi-Location Control Solutions\*

#### Typical 3-way Installation

Main Dimmer (Top of Stairs)



RRD-6CL-XX

Remote Dimmer (Bottom of Stairs)



RD-RD-XX

#### Installation with Remote Dimmer Replaced by Keypad

Main Dimmer (Top of Stairs)



RRD-6CL-XX

Keypad (Bottom of Stairs)



RRD-W

\*A 3-way dimming application is one where multiple switches control the same light. These examples show how to use a keypad in place of a remote dimmer. For more information, refer to Application Note #41.



## Installation with Remote Dimmer Replaced by a Pico

Main Dimmer (Top of Stairs)



RRD-10ND-XX

Pico (Bottom of Stairs)



PJ2-3BRL-GWH-L01

## Timeclock Programming

## Advantages of Timeclock Programming

- Schedule timed events for a specific time of day.
- Schedule timed events relative to sunrise/sunset time.
- Can provide a Vacation Mode, giving the appearance that someone is home.
- Can enable and disable sensor modes to limit the amount of time a sensor is occupancy-enabled and help to maximize energy savings.

## Timeclock Modes

Timeclock modes are essentially groups of timeclock events. A system can have multiple timeclock modes but only one mode can run at a time. In order to toggle out of one mode and into another, the homeowner must do one of the following:

- Press a keypad button (using the timeclock button type)
- Press a button using the Lutron Connect app
- Press a button from a third-party integration system sending a telnet or RS232 command

## Common Uses of Timeclock Modes

- **Holiday Modes** – used to alter the timeclock schedule to turn on holiday lighting or for use during Orthodox Jewish Holidays. For example: Automatically controlling lights and shades during periods when the homeowner is not permitted to interact with the local controls
- **Vacation Mode** – create a lived-in appearance while away for an extended period of time to enhance security, and also ensure that lights aren't left on unnecessarily
- **Party Mode** – if guests will be staying at the house during times when the timeclock may interfere and cause distractions, a party mode could be enabled to alter the schedule

When using a button press on a Lutron device to change the timeclock mode from “Normal” to “Away” (Vacation), the programmer can add another energy-saving feature: a permanent hold of all HVAC schedules. If a cleaning crew enters the house and changes the HVAC setpoints, for example, the held setpoints refresh every 6 hours.

## Timeclock Events

Timeclock events are essentially scenes that occur automatically based on the time programmed to the event. They can be programmed to occur at a fixed time, such as 8:00 p.m., or based upon astronomic times during the day, such as sunset, throughout the year. The events can trigger independent scenes, shared scenes, or green modes.

**Examples of Commonly Used Timeclock Scenes/Events**

- **Landscape On or Off** – automatically turn lights on and off before, after, or at sunset and sunrise
- **Goodnight** – turn lights off after going to bed (12 a.m.); useful in the event that the homeowner falls asleep prior to triggering the Goodnight scene
- **Morning** – have lights turn on before the homeowner awakens (5 a.m.); this scene often includes opening the bedroom shades to allow natural light to enter the room and naturally wake the homeowner
- **Holiday Lights On or Off** – automatically turn exterior holiday lights on and off before, after, or at sunset and sunrise
- **Sensor enabled or disabled** – enable or disable Radio Powr Savr sensor modes using timeclock events to maximize energy efficiency by only using the occupancy, or auto-on, feature when it is actually required
- **Privacy event** – lowers all shades in the evening to provide privacy for the homeowner

**HVAC Programming**

**HVAC Schedule Programming**

HVAC schedules aim to add a superior level of convenience and energy savings by removing the need for manual thermostat adjustment, unless desired by the homeowner. This moves the daily control of setpoints to an automatic schedule which works to set a comfortable temperature for when the homeowner is home, and turns back the setpoints to save energy when the homeowner is away.

Once an HVAC controller or TouchPRO thermostat are added to the Design tab of the software, the option for programming thermostat schedules will appear in the Program tab of the software.

Each HVAC zone has its own independent schedules. For ease of programming, schedules can be copied and pasted from one HVAC zone to another. An HVAC schedule can contain up to seven daily schedules, each with a maximum of four events. By default, similar to most programmable thermostats, there are two daily schedules: One for weekends and one for weekdays.

Four events can occur within each schedule:

1. **Wake** – an event set to start 20-30 minutes prior to the homeowner's wake up time, so that temperatures are comfortable while getting ready for the day.
2. **Away** – an event that triggers once the homeowner has left for work for the day. The idea is to move the setpoint further out from the comfortable settings to save energy when not at home.
3. **Home** – an event that starts 20-30 minutes before the homeowner returns home from work so that it is comfortable for the evening.
4. **Sleep** – a final event that moves the setpoints slightly away from the comfortable setpoints to save energy while sleeping.

At least one of these events must be checked for the schedule to run on the assigned day(s). Each event has a start time and a target setpoint range. The lower value of the range is the heat setpoint and the higher value is the cool setpoint.

Schedules can be held (and subsequently re-run) from a few triggers/devices in the system:

- Lutron Connect app
- Timeclock mode change (Away Mode can be programmed to hold schedules)
- Third-party control systems

Below is an example of an HVAC zone schedule in the RadioRA 2 programming software.

Saturday			Weekdays			Sunday		
Enabled	Time of Day	Target Range	Enabled	Time of Day	Target Range	Enabled	Time of Day	Target Range
<input checked="" type="checkbox"/>	Wake 6:45 AM	68 - 72 °F	<input checked="" type="checkbox"/>	Wake 5:30 AM	68 - 72 °F	<input checked="" type="checkbox"/>	Wake 6:45 AM	68 - 72 °F
<input type="checkbox"/>	Away 7:30 AM	65 - 78 °F	<input checked="" type="checkbox"/>	Away 7:00 AM	65 - 75 °F	<input type="checkbox"/>	Away 7:30 AM	65 - 78 °F
<input type="checkbox"/>	Home 6:30 PM	70 - 73 °F	<input checked="" type="checkbox"/>	Home 6:15 PM	68 - 72 °F	<input type="checkbox"/>	Home 6:30 PM	70 - 73 °F
<input checked="" type="checkbox"/>	Sleep 11:30 PM	67 - 73 °F	<input checked="" type="checkbox"/>	Sleep 10:30 PM	67 - 73 °F	<input checked="" type="checkbox"/>	Sleep 10:15 PM	67 - 73 °F

**HVAC Button Programming and Zone Control**

Aside from automatic schedules, HVAC zones can have a number of parameters adjusted by various user actions. For example, HVAC zone setpoints can be changed as part of a scene from a Lutron keypad. Setpoints can also be changed from a third-party control system touchscreen when they're part of a scene. The scene might start the A/V system, change HVAC setpoints to a comfortable level for guests, and hold the HVAC schedule.

Setpoints can be adjusted by the following triggers/devices:

- seeTouch keypad buttons
- GRAFIK T keypad buttons
- Timeclock events
- Occupancy sensors
- Lutron Connect app
- seeTemp wall control
- Third-party control systems

Changing HVAC operating modes (heat, cool, and auto) can be performed by the following triggers/devices:

- seeTemp wall control
- Lutron Connect app
- Third-party control systems



## Occupancy/Vacancy Sensor Programming

Radio Powr Savr sensors can be added to a RadioRA 2 system. These sensors allow for automatic control of the system based upon movement within a specific area and aim to save energy by turning loads off that were inadvertently left on. The sensors can also add convenience by automatically turning lights on upon entering the room. Certain model numbers of the Radio Powr Savr sensors are intended for wall mounting and others are intended for ceiling mounting. There are two types of sensors:

1. **Occupancy** – a sensor capable of automatically turning on loads and automatically turning them back off after a pre-determined period of time
2. **Vacancy** – a sensor capable of automatically turning off loads that were manually turned on by the homeowner

The sensors have three different detection sensitivity settings and four different unoccupied timeout settings (1, 5, 15, and 30 minutes) which are set locally, on the sensor.

Common applications for sensors include:

- Closets
- Laundry rooms
- Bathrooms (control of lights and exhaust fan)
- Bedrooms (vacancy only)
- Garages
- Basements

In the RadioRA 2 programming software, sensors are programmed along with the system keypads. Two actions can be programmed on the sensors:

1. **Occupied** – the automatic ON function of the sensor (occupancy sensors only)
2. **Unoccupied** – the automatic OFF function of the sensor

Sensors can also be controlled via timeclock events in order to have the sensor function in a different mode depending on time of day. This increases energy savings by turning off the Auto ON mode during periods of time where there is natural light available. The available modes are:

1. **Enabled** – occupied and unoccupied functions enabled
2. **Enabled (Vacancy Only)** – unoccupied function enabled, occupied function disabled
3. **Disabled** – occupied and unoccupied functions disabled

## Security Mode Programming

Security Mode is a function that is programmed onto a main repeater phantom button or the dedicated contact closure input on a visor control receiver. The purpose of Security Mode is to trigger an event that will execute when the alarm is triggered on a security panel. The alarm will trigger the RadioRA 2 system in one of two ways:

Main repeater – via an RS-232 or Ethernet string from the security system  
VCRX – via the closure of a programmable CCO on the security system

Common design of the Security Mode is as follows:

- **Inside lights set to Full On or 100%** – alert the intruder that his presence is known
- **Outside lights set to Flash** – alert neighbors and easily identify the property to emergency personnel
- **Shades set to Open** – reveal the intruder to the outside world for neighbors or those passing by to see

When Security Mode is triggered, all local functionality will be locked out so that the intruder cannot override any of the Security Mode settings.

Another security function driven via contact closure or an integration string could be for a fire emergency. In these cases, the programming is usually the bedrooms and path out of the house set to a lower light level (50% or less depending on the fixtures in the path). The lower light level helps to illuminate a path to safety while not blinding the homeowner with too much light. Too much light in smoke is similar to high beams on a car in dense fog; the smoke will spread the light out and presents an unsafe environment for the homeowner.

## Glossary of Common Scenes

### Whole house scene

**Away** – Allows the homeowner to turn off all of the interior and/or exterior lighting. This is triggered from a car, foyer, or common area.

**Entertain** – Turns on lights to a comfortable level in specific areas. The homeowner would use this scene when having guests over, to light a pathway into the areas the guests are welcome to occupy.

**Family** – Usually a brightly lit environment, used for family time, such as playing games, or doing other family activities.

**Goodnight (Night)** – Turns most lights off and closes all shades, leaving hallway lighting on at a low level for safety while maximizing privacy and energy savings.

**Morning** – Lights a pathway from the master bedroom into the master bathroom and into the kitchen for breakfast. Lights fade on to brighter levels slowly to allow eyes to adjust. Could be a timeclock event that raises shades or turns lights on to assist in waking the homeowner while also setting the morning scene in the bath and kitchen.

**Vacation** – This button toggles between Normal Timeclock Mode and Away Timeclock Mode when the homeowner goes on vacation or a business trip. Uses pre-scripted events and +/- 30 minute randomization to simulate a lived-in appearance for the residence, providing security while saving energy.

**Welcome (Home)** – Allows the homeowner to light up the common areas of the home, interior and/or landscape, typically from the car, for convenient entry into a safe, well-lit home.

### Path of light

**Bath** – Keeps the homeowner from dealing with harsh lighting in the middle of the night, lighting a pathway from the master bedroom to the master bathroom.

**Kitchen** – Lights a pathway from the master bedroom into the kitchen for those late night snacks.

**Nursery** – Lights a soft pathway into the nursery so the baby isn't startled and the homeowner is not blinded in the middle of the night.

**Pathway** – Turns lights on to a higher level, creating an obvious pathway. (Example: master bedroom to master bathroom, or master bedroom to kitchen.)

**Walkway** – Lights a walkway from one area of the home to another. (Example: a detached garage into the home.)

### Room or zone control

**Breakfast** – Creates a comfortable lighting environment at breakfast time.

**Cleanup** – Controls task lighting in the areas of the kitchen and dining room commonly used during cleanup. Light levels are typically high. This scene is also sometimes attributed to the theater as well, for post-movie cleanup.

**Dinner (Dining)** – Creates a comfortable lighting environment at dinnertime, setting an intimate light level at the dining area, while reducing the light levels in neighboring zones.

**Landscape (Exterior)** – Controls all of the exterior/landscape lighting around the property.

**Movie** – Lights dim to very low levels in the theater and blackout shades close over the windows to prevent glare. The A/V system can trigger the PLAY action by monitoring the button press of the RadioRA 2 keypad through integration for a seamless, connected one-button experience.

**Prepare** – Used for cooking or food preparation in the kitchen, as well as dining room preparation. Light levels are typically high.

**Reading** – Leaves task specific lights on at reading level. Often controls a lamp dimmer or plug-in dimmer.

**Relax** – Dims light to create a relaxing environment.

**TV** – Creates a medium light level for watching television.

## Additional Resources

**Application Notes** (log in to your myLutron account at [lutron.com](http://lutron.com) to access)

- Residential Systems Networking Guide
- Choosing the Right Lutron Thermostat
- Residential Systems Control of LED Lighting
- Lutron Connect Mobile App Guide and FAQs

### Online Software Tutorials

- Log in to your myLutron account and go to the RadioRA 2 Software Tutorials link from the Learning Hub section.
- LCI Online Courses (Log in to your account on [lutron.com/lcionline](http://lutron.com/lcionline))
  - Learning Plan 620 – RadioRA 2 Level 1 Qualification