

The RUC-02 offers a robust “Trigger” process whereby the RUC can automatically send out commands based on various triggers. Those triggers can be used to have the RUC send commands or take actions based on schedules, buttons, or by detecting UPB commands on the powerline.

However, there are situations where you might want to run some triggers when you’re home but a different set of triggers when you’re away from home. The RUC provides a way to do that called MODE. If you look on the Device Configuration Page from the RUC-02 menu, you will see this screen:

## Device Configuration

### General Configuration

Latitude:	<input type="text" value="39.6"/>	<input type="button" value="N"/>
Longitude:	<input type="text" value="104.8"/>	<input type="button" value="W"/>
Time Zone:	<input type="button" value="(GMT -7:00) Mountain Time (US &amp; Canada)"/>	
DST:	<input type="button" value="Enabled"/>	
Friday June 25, 2021 08:22 AM		
Sunrise: 05:34 AM Sunset: 08:30 PM		
Mode:	<input checked="" type="radio"/> Home <input type="radio"/> Vacation	

At the bottom of this section, you will see where you can select HOME or VACATION. By setting the MODE, you can tell the RUC-02 to run Schedule triggers that are intended for that particular mode. So, when you’re home, select the HOME option. That will cause the Schedule triggers identified as HOME triggers to run. However, when you know you’re going to be gone for a week on a wonderful Hawaii adventure, select Vacation and it will run the Schedule triggers programmed for the Vacation mode.

Recognize that the MODE function only impacts Schedule Triggers, not Button or Command triggers. What is a good reason to use the MODE function? One main reason—to make your home looked lived in while you’re away from home.

But not only can you assign a Scheduled trigger to be a home or vacation trigger, you can also use a MODE trigger to tell the RUC-02 what mode to go into, without having to open up the Device Configuration Page.



Let's first talk about how you setup Scheduled Triggers for Home or Vacation modes. Then, we'll get into how you can use Button or Command Triggers to put the RUC-02 into Home or Vacation mode.

In order to setup this control, we will use what we refer to as Triggers using an IF THIS THEN THAT procedure. From the Home Page, click on the Trigger item on the left hand menu. You'll get this screen:

Notice there are two sections—Receive and Send. The Receive section is where you will select the IF THEN part of the procedure while the Send section is where you will select the THEN THAT part. In this instance, we are concerned with a Receive Command type of Schedule, or Sched.



## Schedule Triggers

Modes only work on Schedule Triggers. That was an intentional design decision, as scheduled triggers have the most to gain from separating whether you're Home or on Vacation.

For a Scheduled Trigger, use the dropdown on the left side of the Receive block and select Sched (Sched is the default setting and will come up when the Trigger menu item is selected. Here is what the Receive block with Schedule selected looks like:

### Triggers

First, you must give the Trigger a name. Pick something descriptive so that you know what it means later. Then, you need to select the TIME you want the Trigger to activate. This is the IF THIS part of the equation. For example, IF it is SUNSET, THEN do something. Or IF IT IS 11:15 PM, THEN do something. NOTICE that the Hours (H) use a 24 hour clock. 11 PM would be 23:00. For SUNRISE, either pick Time Before Sunrise or Time After Sunrise. One you pick one of those, then the Hours / Minutes allow you to select the amount of time before sunrise or the amount of time after Sunrise that the trigger activates. For example, if you selected Time Before Sunrise and set Hours to 0 and Minutes to 15, the trigger would fire 15 minutes before sunrise. Same with SUNSET. You can select which days of the week the trigger will fire by checking or unchecking the days of the week.



There are two other options:

- You can decide to send the trigger command on Schedule, or Randomize the time (+ / - 30 minutes). When you send On Schedule, it will send out the command exactly at the time you selected, for example SUNSET or 11:15 PM. If you Randomize, then the command can be sent anytime within the range of + / - 30 minutes and it will be a different time each time it triggers.
- Then, here is the option we are concerned with for this App Note. You can also set up Triggers to only run in the HOME or the AWAY modes (or both). By default, the MODE is set on the Device Configuration page (with the default being HOME mode). If the system is in the HOME mode, then only Triggers set to run in the HOME mode or BOTH will run. VACATION mode triggers will not run in this mode.
- NOTICE that this example trigger has a name of Landscape Lights On and is set to run at SUNSET (since the Hours and Minutes are set to 0), every day of the week, ON SCHEDULE, and in BOTH Modes (Home and Vacation).
- Ok, now let's look at the SEND section. This section is the THEN DO THIS part of the IF THIS THEN THAT equation. In this instance, in the Command Type Dropdown on the left side, UPB Link is selected. Notice that the screen changes and only provides you with entry options applicable for sending a UPB Link or Scene command. You could select this to be a UPB Direct, UPB Link, Email, Ethernet, or GET /POST command. We'll talk about MODE later. Most of the time in dealing with the Mode, you will only send a UPB Direct or Link command, but you can do the others if so desired.

Send Command	
Command Type:	(L) UPB Link
NID:	1
LID:	1 Other
CMD	Activate
# of Transmissions	2
Com Port:	(1) COM1

Add Trigger

Once you are satisfied with your Trigger, click on Add Trigger. That will program the trigger into the RUC.



That’s all there is to setting up a scheduled trigger in the RUC-02.

Ok, now let’s verify that the Trigger was properly programmed into the RUC. Go to the Bottom of the Trigger page and you will see this:

### Trigger List

**Buttons - View Page(s)**  ▾

**Schedules - View**  ▾

**Commands - View**  ▾

When you click on the dropdown next to Schedules—View, you will get two options:

- View None
- View All

Select View all.

### Trigger List

**Buttons - View Page(s)**  ▾

**Schedules - View**  ▾

Landscape Lights On

Run at Time: Sunset | SMTWRFU | Send on Schedule

Link #1, Command: Activate

Unfortunately, the RUC does not show you what MODE the trigger acts on—to view that, you will need to click on the Edit button.



This section shows all of your triggers, in this case, all of your Schedule Triggers. Right now, since we have only added one trigger, there is only one shown. If you had 20 Schedule Triggers, of any Send type, they would all show up here. Notice that for each trigger, it shows you the Trigger Name, the time it is set to run, the days of the week when it will run and whether it is sent on Schedule or Randomized.

Also, there are three buttons where you can manually RUN the Trigger without having to wait for the Receive action (in this case, a scheduled time), EDIT the trigger (for example, changing the time from 11:00 PM to 11:15 PM), and you can DELETE the trigger.

When you are in the EDIT mode, you will see that the Receive dropdown (Sched) and Send Dropdown (UPB Link) are grayed out. You can not edit these two items. To change those, you will need to Delete the trigger and re-enter it.

**One word of caution with Schedule Triggers. At the current time, the RUC cannot reliably run two schedule triggers at the same time. If you want to send a command at a similar time to another action, setup two separate triggers spaced one minute apart.**

Let's reiterate the purpose of the MODE. The main reason for using MODEs is to make your home look lived in while you're away for an extended period of time. So, for instance, while you're at home, you might only have scheduled triggers that run your Landscape Lights to turn on at Sunset and off at 11 PM. You might also have your porch lights running on a similar schedule. You might also have a trigger that automatically turns off the basement lights and lowers level lights at 10:30 PM when you're going to bed.

But, during the evening, you were also manually turning on lights depending on what room you were in. Well, it would be nice to cause some lights to turn on automatically only when you're gone. For example, you might turn on your kitchen lights at 6:30 PM and then turn them off again at 7:30 PM (or apply the Random function to add a bit of randomness). Turn on your living room lights at 6 PM and off at 9:30. Turn on your kids bedroom lights at 8 PM and off again at 8:30. Or, turn on your Master Bedroom lights at 9 and then off again at 11. These are routines that would make a would be house thief believe that the home is occupied when it really isn't. That's the purpose of the Vacation mode—only run these scheduled triggers when I'm away for an extended period of time.

So you would go into the RUC user interface as you're walking out the door and set the Mode on the Device Configuration page to Vacation. Then, when you get back home, return the mode to Home.

However, that's a pain—having to go to the RUC User Interface to change the Mode. Good news! We give you a couple of other options that make it much easier to go between Home and Vacation Mode.



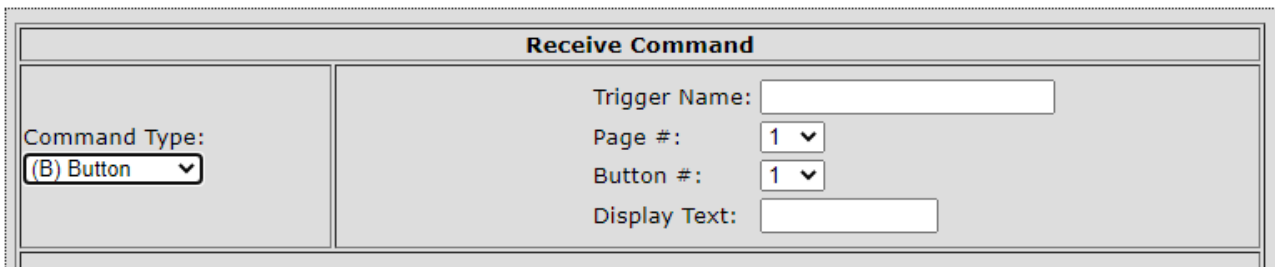
There are two really nice and easy options to allow the user to put the RUC in Home or Vacation mode. The first is by setting up a Button Trigger that would then show up on our mobile app on your smartphone. The second is by setting up a Command Trigger, so that you could go up to one of your UPB wall mount controllers and push a button.

Let's show you how to do this using a Button Trigger.

### Change Mode using a Button Trigger

For a Button Trigger, use the dropdown on the left side of the Receive block and select Button. Here is what the Receive block with Button selected looks like:

### Triggers



Receive Command	
Command Type: (B) Button	Trigger Name: <input type="text"/>
	Page #: 1
	Button #: 1
	Display Text: <input type="text"/>

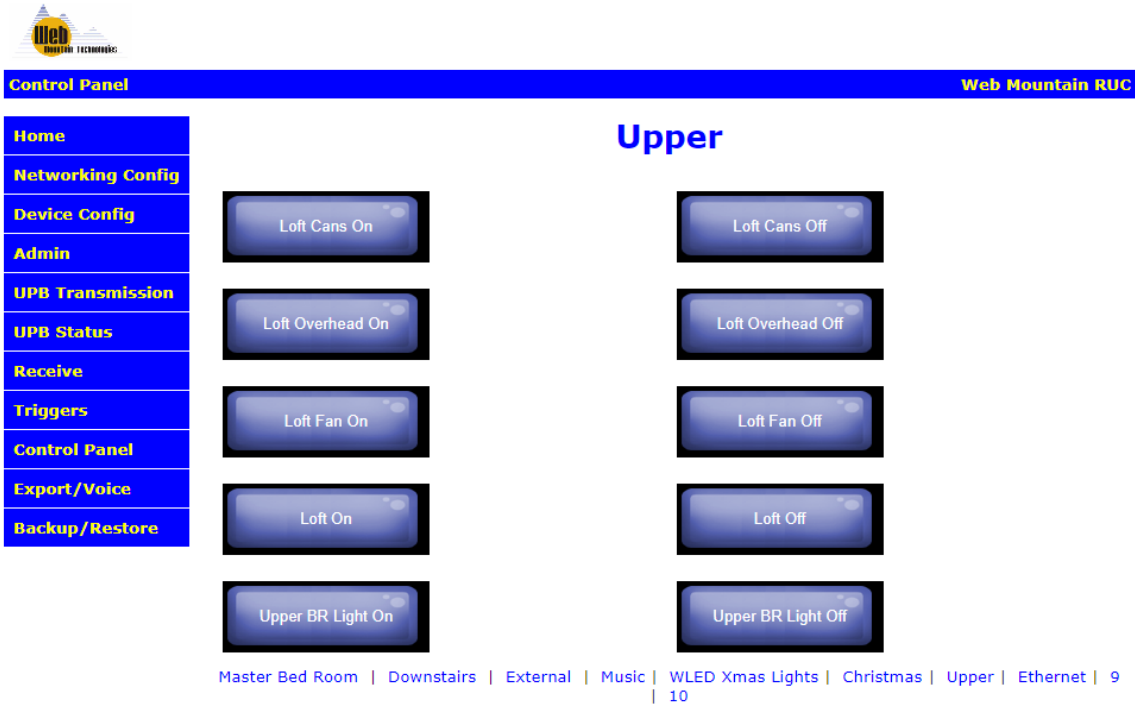
First, just like with a Schedule trigger, you must give the Trigger a name. Pick something descriptive so that you know what it means later. Now, we need to discuss what the Page #s and Button #s refer to.

When you enter a Button Trigger, you are creating a button that will show up on the Control Panel (on the left hand menu on the RUC User Interface (UI), right under Triggers). The Control Panel serves two purposes. First, the Control Panel gives you a simple user interface from any browser to quickly and manually control UPB devices and scenes. Second, the Control Panel is how our mobile app for the RUC is set-up—the buttons that show up on the Control Panel are the buttons you see on the app, albeit with a prettier interface. The Control Panel has 10 pages and you can have 10 buttons per page, for a total of 100 buttons. Just remember that in many cases, you will need an Activate (or ON) button and also a Deactivate (or OFF) button for each device and or Scene.

Buttons can be used to create Button triggers that send out any of the command types listed as Send Types (UPB Direct, UPB Link, Email, Ethernet, GET / POST, or MODE). As an example, you can easily setup a Button Trigger to change the mode from Home to Vacation and back again.



Here is screenshot showing the Control Panel with multiple trigger types:

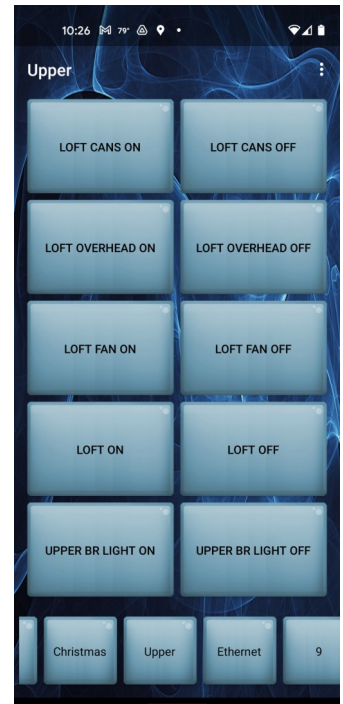


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Here is a screenshot of what the Control Panel looks when mirrored into our mobile app:

Notice that the buttons that were added to the Control Panel are identical to what shows up on the app. This is how you design the user interface on the mobile app.

Also, notice that the pages on the Control Panel are listed as 1—10, but you can relabel the numbers to names for greater clarity (in this case, we are calling the page Upper rather than the # 7).





At this point, you should give some thought as to how you want to layout the Control Panel User Interface. Consider making a page refer to devices or scenes in a room and then relabel that page to a room name, for example, Kitchen, or Master Bedroom, or Outside. Then, add Button triggers to that page that correspond to that room. However, you can organize them as you desire.

Next, the layout of the buttons on the pages are 1—5 in the first column, then 6—10 in the second column.

So, you've given some thought as to how you want the buttons laid out—now it's time to create the buttons. You've already given the Trigger a name, so now use the Page # dropdown and select the page where you want your new button to be located (pages will be shown as #s if you haven't labeled them or will show the label name if you did give the page a name). Then, use the Button # dropdown and select the button location where you want this button.

Now, you get to create the label or name that goes on the actual button. Normally, this will match the label you provided for the Trigger Name above, but it doesn't have to— just realize that long names will wrap on the button making it harder to read the button label—shorter and sweeter is better.

In our case, we'll need two buttons, one labeled HOME and one labeled VACATION.

Now, go the SEND section and select (MO) SET MODE (H/V). You only have one dropdown here—for the first trigger, select HOME. The screen will look like this:

### Triggers

Receive Command	
Command Type: (B) Button	Trigger Name: HOME Page #: 4 Button #: 1 Display Text: HOME
Send Command	
Command Type: (MO) SET MODE(H/V)	Set Mode to Home or Vacation. MODE TYPE: HOME
Add Trigger	



Once you've setup the Send section, click on Add Trigger. That's it—you've created a button trigger!

To verify the Trigger, go to the bottom of the page, under Trigger List, and use the dropdown next to **BUTTONS**—View Page(s). However, notice there's a difference with this View—you can Select View None, View All, or you can select a single page from the 10 pages of the Control Panel. In our case, I put the button on page 4, so I've selected to show only Page 4. Here's a screen shot:

## Trigger List

**Buttons - View Page(s)**

HOME  
Page: 4 Button: 1 Text: HOME  
Mode: HOME

**Run** **Edit**  
**Delete**

**Schedules - View**

**Commands - View**

This shows you the name of the Trigger, the page the button is on, the text for the button, and the selected MODE. Also, just like with any Trigger, you can Run, Edit, or Delete the Trigger.

Now, setup a second button trigger (I would place it on Button 6, Page 4, to select Vacation Mode). Now, you can either go to the Control Panel on the RUC, or open the mobile app on your Smartphone, go to Page 4, and click on HOME or VACATION to easily set the MODE without accessing the RUC's User Interface.

## Change Mode using a Command Trigger

Ok, now let's show you how to setup a Command Trigger to conveniently set the Mode. Again, referring to IF THIS, THEN DO THAT, a Command Trigger would be IF THIS UPB COMMAND IS RECEIVED ON THE AC POWERLINE then do some action (in this case, set the MODE to Home or Vacation).

While the RUC-02 is normally used as a Transmitter to send commands out to control devices and scenes, it can also monitor the powerline and detect any command that might be sent from another device on the UPB network. It can then use those commands to trigger setting the MODE.



**NOTE:** The RUC cannot trigger based on a Command it sends itself—it must be triggered by a command it detects on the powerline, meaning it had to come from another device.

Here is the Receive section for a Command Trigger:

## Triggers

The Command Trigger Receive section is very simple from a UI standpoint but more complicated from a user standpoint. As always, you first start by giving the Trigger a name that describes its function.

However, the next step is entering in the Regex. The Regex refers to the actual UPB command as denoted in its ASCII format. For example, a good example of a Regex is 87000101FF2058. A few words on the structure of a UPB command are called for now.

A very simple UPB command is built like follows (there are much more complicated options):

- A prequel (in most cases, a hex 0x14)
- 4 characters that describe some UPB options  
(starts with 0/1 for devices, 8/9 for links)
- 2 character (hex) NID
- 2 character Destination ID (hex) - who you're sending it to
- 2 character Source ID (hex) - who's sending the command
- 2 character checksum for error checking
- A suffix (normally a hex 0x0D, hex for a carriage return)

So, let's break down our sample Regex, 87000101FF2058.

We don't need to add the leading 0x14 or the trailing 0x0D. The RUC will add those automatically for you. So, just concentrate on the command in between those two.



The 8700 indicates it's a Scene command and it's only sent one time (other info that I won't go into)

The next 01 is the UPB NID

The next 01 is the Destination ID, in this case it refers to Scene 001, since it's a Scene command.

The FF is the source ID. FF normally indicates some kind of controller (like the RUC). If the command is sent from a UPB device, this will show the Device ID of that device.

The "20" indicates an Activate command. A "21" would be a Deactivate command.

The 58 is the checksum.

So, now you're asking yourself "How in the world would I figure out what command to use for the Regex?"

There are two ways. First, you can generate it yourself. We have a UPB command calculator we can provide that will allow you to generate the command. But, the second method is much easier.

Setup the device that you're going to use to generate the command. Then, create the conditions and send the command (press a button, cause a sensor to send the command, etc). Now, go to the RUC User Interface and select the left hand menu item Receive. Look at the last received command—that should be the command you're looking for. If you need help, email us at [sales@webmtn.com](mailto:sales@webmtn.com) and we'll help you out.

So, when would you use a Command Trigger? Here's an example:

You are using a UPB IO module, such as the Web Mtn CM-01, to detect when your garage door opens. When it opens, the CM-01 detects this and sends out a command (say 87000101FF2058) to turn on Scene 1 and turn on the hallway lights. However, you can also trigger a second trigger to send out an email telling you that the garage door has opened.

That brings us to the Delay part of the Receive section of a Command Trigger. Notice that you can add delay in hours, minutes and seconds. So, here is where you setup the delay. You can only have 23 hours, 59 minutes, or 59 seconds of delay. To set the MODE, the delay isn't important but you can add a small delay is you desire.

**NOTE:** Delays of less than 5 seconds or so won't be all that accurate, due to the processor timing.

Now, I'm sure you have another question. What happens if I want to have a command trigger that might come from many different devices? For example, I want to trigger on a UPB command, NID of 1, LID of 1, and an Activate command, but this command could come from more than one device?

That's where Wild Cards come in.....



## Wild Cards for use with Command Triggers

So, let's say that you have two UPB wall controllers located in different spots of your home. And, both are programmed with a button that will send the same command, let's say turn on outside spots lights. So, if you hear a noise outside, you can go to either of these wall controllers and turn on the outside spot lights. And, then after 10 minutes, you want the lights to turn off. Each of these controllers will send basically the same command, but their Source ID is going to be different. Rather than setting up two different command triggers, we can use Wild Cards and only make one Command Trigger. Let's take an example using our old favorite standby Regex, 87000101FF2058.

Wild cards use periods and asterisks to represent ignore characters. For example, you could represent the above string using wild cards like this:

PU8...0101..20.\*

The "." character means "don't care – it can be any character". The "\*" wild card means ignore any characters after the last one. Using wild cards, you can ignore some of the more esoteric functional characters (# of times to send, the source ID, etc) and make the capture command easier to determine. YOU DO NEED TO PUT the period (.) after the \*.

So, now the Command Trigger is going to trigger when it receives a link command from any source for a NID of one and a LID of one and an Activate command.

Another example using wild cards:

Original command                      A90401010220FFFF31

Using wild cards                        A...0101..20.\*

Now you know you're looking for a trigger command that is a link command, NID=1, LID=1, and command = Activate. We don't care about any of the other characters in the original command.



## Actual Trigger Example

Ok, now let's setup the actual trigger. You're probably going to want two separate triggers, one for HOME and one for VACATION. We'll setup HOME but VACATION will be basically identical.

First, in Upstart, program a UPB multi-button wall controller so that one button (say button 1) transmits an activate Command with a NID of 1 and a Link (scene) ID of 1 when pressed (87000101FF2058). If you can label the buttons, label it HOME. Then, you might as well go ahead and setup the Vacation button as well. Program a UPB multi-button wall controller so that one button (say button 5) transmits an Deactivate Command with a NID of 1 and a Link (scene) ID of 1 when pressed (87000101FF2157). If you can label the buttons, label it VACATION.

Next, go back to the RUC UI, Triggers, then select Command from the Command Type dropdown in the Receive section for a new trigger. Name the Trigger (HOME), then enter in the Regex command (87000101FF2058). Now, select SET MODE from the Command Type dropdown in the Send section, then select HOME from the MODE TYPE dropdown. The screen will look like this:

## Triggers

Receive Command	
Command Type: (C) Command ▾	Trigger Name: HOME Regex: 87000101FF205 Delay: H: 0 M: 0 S: 0
Send Command	
Command Type: (MO) SET MODE(H/V) ▾	Set Mode to Home or Vacation. MODE TYPE: HOME ▾
<input type="button" value="Add Trigger"/>	

Then, click on Add Trigger to program the trigger. Then, repeat the process to create the Vacation trigger.



Now, to verify the Trigger, drop down to the bottom of the page, and click on the dropdown next to Command Trigger and you'll see this:

## Trigger List

Buttons - View Page(s)

Schedules - View

Commands - View

HOME Pattern: 87000101FF2058 Mode: HOME	<input type="button" value="Run"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>
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This shows you the name of the Trigger, the pattern that triggers it, and the selected MODE. Also, just like with any Trigger, you can Run, Edit, or Delete the Trigger.

## Summary—Using the RUC-02 to Trigger UPB Commands

Well, there you have it. You now know how to create Home / Vacation scheduled triggers, plus how to set-up a Button or Command trigger to easily change the RUC's operating mode.

The RUC-02 is a powerful UPB controller and offers many other options for control. One of the most notable other options for UPB control is Voice Control using Amazon Alexa. But, that's the topic of another Web Mtn Application Note!

If you need any help or further assistance with your RUC-02, just contact us at 303-627-1856 or sales@webmtn.com, and be sure to read through our other RUC-02 Application Notes!

