

Overview

First read the paperwork that came with your remote.

Then read the on-line docs:

- <https://www.universalremote.com/product/mx-450/> (general info on the URC website)
- <https://www.universalremote.com/wp-content/uploads/2017/11/URC Complete Control 2.0 MX-450 OM 09282015 rev1.0.pdf> (official user's guide)
- <https://www.staub.ca%2Fpdf%2Fsku%2Furc-mx450-programming-manual.pdf&usg=AOvVaw315aOjDnl5o85N6OBfrO3n> (official programming guide)

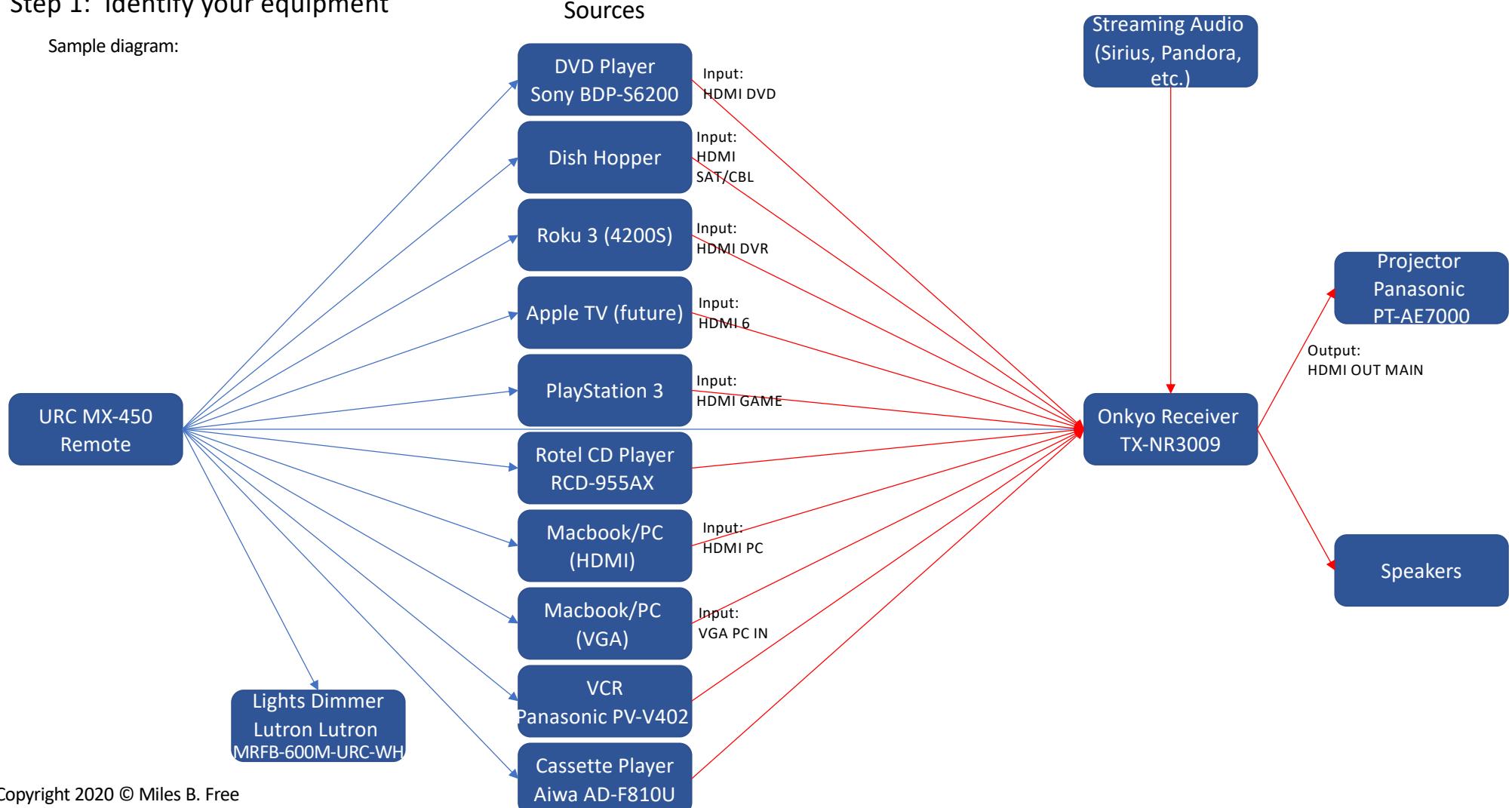
There are a few videos and other guides out there but the videos I found cover how to program a single particular use case and not the whole process. So I am documenting it here.

The sequence of major steps I took to program my URC MX-450 remote is:

1. Gather info about your equipment, connections, ports, etc.
 2. Plan your MX-450 LCD screen layout
 3. Set basic user settings like remote screen brightness and button backlighting
 4. Define activities such as "Watch a movie on DVD" or "watch satellite TV"
 5. Set up individual devices like DVD player, satellite/cable receiver, streaming device like a Roku, Amazon Fire Stick, or Apple TV
 6. Program macros to do a set of actions like turn on the DVD player, switch the receiver to use the HDMI input for the DVD player, and turn out the lights – this set of actions are all contained in the "Watch a movie on DVD" activity
 7. Add the groupings of hard buttons to each activity/macro, e.g., to make the Volume buttons work for "Watch a movie on DVD"
 8. Back up your configuration using URC's Archiver software
- Other tip and tricks:
9. Upgrade the firmware

Step 1: Identify your equipment

Sample diagram:



Step 2: Plan the layout on the MX-450's LCD screen

NOTE: you can not change the position of an activity or device on the MX-450's screen once you have entered it, so this is a critical step. If you create a device that is used in a macro, then decide to later delete the device and re-add it (i.e., to move the icon to a new position), the device will not work in the Macro any longer and you may need to re-do much of the setup in this guide just to get everything working again. This could be extremely painful so plan the positions carefully now.

I decided to break the programming of my MX-450 down into a set of activities plus a set of devices. For example, I have an activity for "Watch a DVD" that includes the "DVD player" device plus the "Projector" device plus the AV "Receiver" device. I have seen some people combine these under the DVD player device (no separate activity) but that can get confusing and/or may not work if you set up more complicated macros.

The activities I decided to add on Page 1 of the LCD screen are:

- Watch a movie on DVD (e.g., "Watch DVD")
- Watch satellite TV ("Watch TV")
- Watch a streamed movie ("Stream Video")
- Play a game ("Play Game")
- Play an audio CD ("Play CD")
- Stream music ("Stream Music")
- Turn on the home theater lights ("Lights On")
- Turn on the home theater lights ("Lights Off")



The devices I have in my home theater are shown on the diagram on the next page, and which I added to Page 2 on the LCD screen.

The MX-450 has at least 3 Pages of screens that can be configured.

I used the first Page on the MX-450's LCD screen for my Activities.

I used the second and third Pages for my Devices.



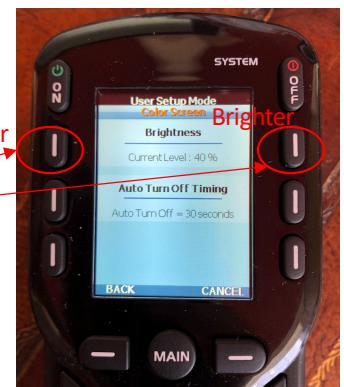
Note that you may want to add more Activities and Devices in the future so I would suggest leaving a position or two empty. Or add placeholders / empty Activities for them on the LCD screen. (As you can see in the screenshots above I am going to have to re-do mine to add the Lights On and Off activities – not looking forward to that.)

Step 3: Set basic user settings

These settings will make it a bit easier to program the rest of the remote control in a darker room, for instance. Plus, these are a simpler setup so this is a nice way to get your feet wet in programming the MX-450.

The ones I set were:

1. Press and hold the MAIN button on the MX-450 to enter programming mode
2. Go to User Settings
3. Go to Color Screen
4. Press SEL(ect)
5. Press the buttons to the left and right of the “Brightness” text displayed on the LCD screen to make it brighter or dimmer
6. Press the buttons to the left and right of the “Auto Turn Off Timing” text displayed on the screen to control for how long the screen stays on
7. Press Back (key to the left of the MAIN button) when you are done
8. Go to Button Lighting
9. Press SEL(ect)
10. Press the buttons to the left and right of the “Automatic On” text displayed on the screen to control if the screen comes on automatically
11. Press the buttons to the left and right of the “Auto Turn Off Timing” text displayed on the screen to control for how long the button backlighting stays on
12. Press Back (key to the left of the MAIN button) when you are done
13. Press BACK another time or two then EXIT (key to the right of the MAIN button) when you are all done



You may also want to turn off the Display Tips either now or once you have spent a bit of time clicking around; if so:

1. Press and hold the MAIN button on the MX-450 to enter programming mode
2. Go to Display Tips
3. Choose On or Off
4. Press Save (soft button to the left of the MAIN key)

Press EXIT once you are done (EXIT is the soft button to the right of the MAIN key)

Step 4: Define the activities

These are the common things you may want to do, like "watch a movie on DVD" or "watch satellite TV". These will contain the macros for major activities such as those listed below.

The ones I set up are:

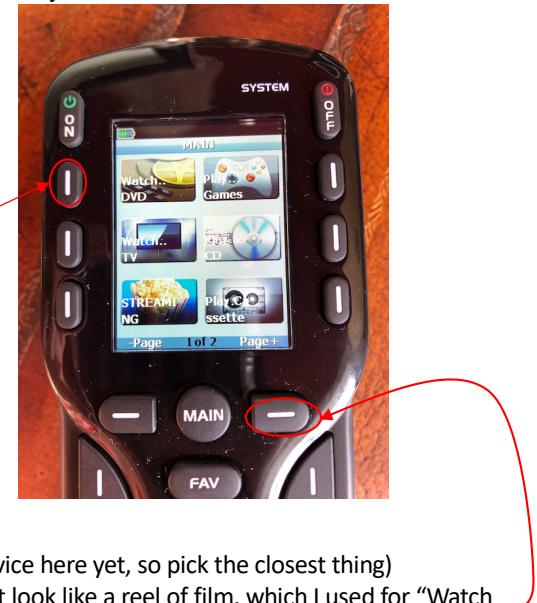
- Watch a movie on DVD (e.g., "Watch DVD")
- Watch satellite TV ("Watch TV")
- Watch a streamed movie ("Stream Video")
- Play a game ("Play Game")
- Play an audio CD ("Play CD")
- Stream music ("Stream Music")
- Turn on the home theater lights ("Lights On")
- Turn on the home theater lights ("Lights Off")

To define those:

1. Press and hold the MAIN button on the MX-450 to enter programming mode
2. Go to Basic Setup
3. Go to LEARN
4. Go to On the Main Menu
5. Choose a soft button to which to assign the activity, and press it
6. Select Right Now to edit the soft button
7. Select the type of device/activity (this is not really that relevant to setting up an activity since this method does not define a device here yet, so pick the closest thing)
8. Use the left and right buttons to cycle through the icon images and pick the one you like. The MX-450 has a couple of icons that look like a reel of film, which I used for "Watch DVD"
9. Enter the label, e.g., "Watch DVD"
10. The MX-450 will save that button and exit that setup
11. Rinse and repeat for the rest of your activities

That's it to create the buttons for your activities. However, that's also only the first step and those buttons do not actually do anything yet, so read on...

I did this step first before programming in my equipment, so the activity buttons will show up on the first page of my MX-450 remote. The next step is to set up the individual devices. Then program the macros.



Step 5: Set up individual devices

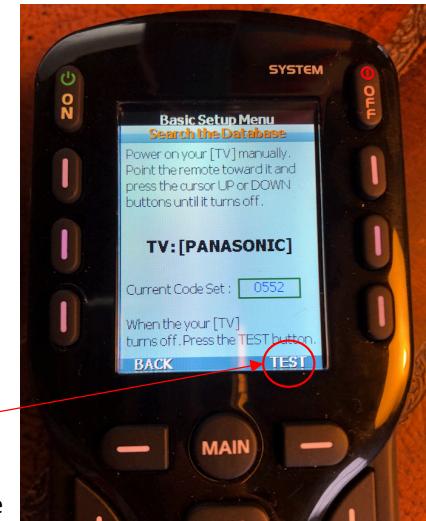
Individual devices are the components like your receiver or DVD player. To add those to your MX-450:

1. Turn on the devices you wish to program*
2. Check to see if anyone has already found good codesets that will work with your devices (link at bottom)
3. Press and hold the MAIN button on the MX-450 to enter programming mode
4. Go to Basic Setup
5. Go to Search the Database
6. Select the soft button to assign the device (use the button to the right of the MAIN one to go to another page of soft buttons)
7. Pick the type of device, e.g., I selected TV when I set up my Panasonic projector. (It DOES matter here which type of device, unlike in the activities set up, since this will get you to the list of codesets** which may work for your device.)
8. Use the left or right buttons to cycle through the icon images and pick ones you like. E.g., the MX-450 has 2 icons that look like projectors
9. Enter the label, e.g., "Projector"
10. Scroll down to the brand of your device, e.g., Panasonic
11. The remote will then go to the codeset selection screen. Use the up button to try the first codeset. If nothing happens up arrow again. Keep doing this until the remote turns off the device. Note this code number here: _____
12. Press the Test button (key to the right of the MAIN button). This allows you to test some commands to ensure all work _____
13. Try a few commands on the remote, like POWER ON (since the device will be off now), Channel + or -, Volume up or down, Play, etc.
14. That is a critical step since more than one codeset may work for your device, but not all of the buttons in that codeset might work. E.g., the device may power on and off, but the Play button might not work
15. If the codeset did not fully work, try another one by pressing the BACK button (to the left of the MAIN button), and use the up arrow to go to the next codeset. You may find that more than 1 or 2 codesets work, so note the likely suspects here so you can come back to them later once you identify all the candidates: _____
16. Once you have found the best codeset and TESTed it, press the PASS button
17. The MX-450 will save that device button and exit that device setup
18. Once done with the first device, select YES to do the rest and press the NEXT button (to the right of the MAIN button) to rinse and repeat

That's it to create the soft buttons for your devices. However, you still need to program the macros.

* The MX-450 sends a command to power off the device as you try each codeset**. That lets you know the codeset is one possibility (there may be more than one that works). Therefore the first step is to power on all the devices you wish to program.

** A codeset is a group of commands used by the remote and device so both agree on what a particular command like press of the Fast Forward key means, for example. Most devices like a receiver or DVD player use a different codeset depending on manufacturer and model number of the device.



Step 6: Program the macros

These are the groups of commands that do things when you press either the soft buttons for the activities, or the hard buttons like the ON or OFF ones at the top of the MX-450.

I first set up the ON and OFF buttons, since you may need to use those while you set other things up:

1. Turn on the devices you wish to program
2. Press and hold the MAIN button on the MX-450 to enter programming mode
3. Go to Advanced Setup
4. Go to Macros
5. Go to Setup a New Macro
6. Go to On the Main Menu, to begin entering the individual steps that the button should do
7. Press the ON Button to select it for programming – you will now enter the commands for the devices you wish to have come on when you press the ON button, e.g., projector and receiver (I turn on individual devices needed for specific activities separately, such as the DVD player in the “Watch DVD” activity)
8. Press the MAIN button to get back to the screens where you set up your individual devices
9. Press the PAGE+ button to the right of the MAIN button to go to the individual screen that has the devices
10. Press the Projector device button you set up
11. Press the ON button
12. Press the Receiver device button you set up
13. Press the ON button
14. Press the DONE button (to the left of the MAIN button)
15. The MX-450 will then save the macro to be executed when you press the ON button
16. Repeat for the OFF button macro, except with OFF for the individual devices

Step 6: Program the macros (continued)

I next set up the individual activity macros:

1. Turn on the devices you wish to program
2. Press and hold the MAIN button on the MX-450 to enter programming mode
3. Go to Advanced Setup
4. Go to Macros
5. Go to Setup a New Macro
6. Go to On the Main Menu, to begin entering the individual steps that the button should do
7. Press the activity button, e.g., “Watch DVD”, to select it for programming – you will now enter the commands for the devices you wish to have set up and ready to go for that activity
8. Press the MAIN button to get back to the screens where you set up your individual devices
9. Press the PAGE+ button to the right of the MAIN button to go to the individual screen that has the devices
10. Press the DVD player device button
11. Press the ON button (this turns the DVD player on since you inside the device; it does not execute the ON macro that turns the projector and receiver on)
12. Press the Receiver device button
13. Press the DVD input button on the Receiver menu (you may need to page between screens of soft buttons that come up for your receiver)
14. Press the MAIN button
15. Press the DVD button to switch to the screens of soft buttons for your DVD player (this tells the remote that you want to use the buttons like Play for your DVD player)
16. Press the DONE button (to the left of the MAIN button)
17. The MX-450 will then save the macro to be executed when you press the “Watch DVD” soft button
18. Repeat for the rest of your activities / macros

Note: I chose not to turn the lights off when I press an activity like “Watch DVD” since people might still be getting settled in while I am going setting the equipment up, so I would like to leave the lights on and do that with a separate activity button. But others may want to add that to the macro for the “Watch DVD” macro.

Step 6: Program the macros (continued)

Note that the steps above were for devices that accept IR commands. Here is how I programed an RF light switch:

1. (coming soon)

Caveat: the devices that accept RF commands from the URC MX-450 are ones that use the URC RF standard; you can't use the MX-450 with non-certified/non-conforming RF devices or WiFi devices. For example, you can't use a random ceiling fan controller that uses a different RF standard (which may use a different RF frequency or control codes).

One device I found that is supposed to work is the Lutron dimmer model # MRFB-600M-URC-WH. The "URC" in the model # indicates that Lutron and URC got together and worked this out.

I will update this once I get that dimmer set up.

Step 7: Add hard button groupings to the activities

An example of why this is needed is to make the Volume buttons on the MX-450 work in each activity, rather than only when you go to the Receiver soft button for that device. Once you are done setting up the activities and devices, do these steps next.

A. Do the following to configure the Volume controls:

1. Turn on the devices you wish to program
2. Press and hold the MAIN button on the MX-450 to enter programming mode
3. Go to Advanced Setup
4. Go to Copy & Paste
5. Select VOLUME Group
6. Select To All Devices
7. Navigate to the device you want to copy them FROM, e.g., Receiver if that is how you usually control the volume for your set up
8. The remote will then save the config and make the hard button Volume controls on the MX-450 control the volume on the Receiver no matter which activity you selected

B. Next, program the CHANNEL group. I only set this up to be used for Watching TV on my satellite receiver, so...

1. Select CHANNEL Group
2. Select To One Device
3. Navigate to the FROM device, e.g., "Satellite" and press its soft key
4. Navigate to the TO activity, e.g., "Watch TV" and press its soft key
5. The remote will then save the config and make the hard button channel and numeric keys on the MX-450 control the Satellite device when you are in the "Watch TV" activity

C. Next, program the PLAY group. I set this up separately for several activities and devices: PLAY controls on the DVD player in the "Watch DVD" activity, and the PLAY controls for the Satellite receiver in the "Watch TV" activity, etc. Here is the example for the DVD player

1. Select PLAY Group
2. Select To One Device
3. Navigate to the FROM device, e.g., "DVD" and press its soft key
4. Navigate to the TO activity, e.g., "Watch DVD" and press its soft key
5. The remote will then save the config and make the hard button Play, Rewind, Fast Forward, etc. keys on the MX-450 control the DVD player when you are in the "Watch DVD" activity
6. Repeat for the rest of your devices where you want to add hard keys to the activity

Step 7: Add hard button groupings to the activities (continued)

- D. Set up the MENU Group. This is similar to the PLAY group where you will probably want specific Menu keys from something like the DVD player to work only with the "Watch DVD" activity. And the Satellite Menu keys to work only with the "Watch TV" activity.
 1. Select MENU Group
 2. Select To One Device
 3. Navigate to the FROM device, e.g., "DVD" and press its soft key
 4. Navigate to the TO activity, e.g., "Watch DVD" and press its soft key
 5. The remote will then save the config and make the hard button MENU, GUIDE, INFO, EXIT, etc. keys on the MX-450 control the DVD player when you are in the "Watch DVD" activity
 6. Repeat for the rest of your devices where you want to add hard keys to the activity

- E. Add the OFF button to all activities and devices so that everything is powered off no matter where you are in any activity or device. Otherwise you need to go back to the MAIN menu to power everything off.
 1. Select POWER OFF Only
 2. Select To All Devices
 3. The remote will then save the config and make the hard button OFF work in all activities and devices

Note: I did not find a good use for me for the "Copy & Paste" POWER ON Only function. I will update this if I find a need to set that up.

Step 8: Back up your configuration

Option 1: Back up with the URC Archiver software (Windows only)

I have a Mac so I can't test this, but the Archiver software is available from a couple of sources:

<https://mx-450-archiver.software.informer.com/>

<http://www.universalremote.com/resources/software/MX450Setup.zip> (not working when I tried it)

Note from [dbochniak](#) on AVSforum.com (January, 2020): "remotes made before a couple years ago use a different backup file than the more recent ones. They work the same, but a backup file from an older one can't be restored on the newer ones (and vice versa). Just in case anyone runs into this."

Option 2: Manually note the configuration

At a minimum, write down or take photos of the codeset numbers you used for each device, plus the macros. You can see those by going to MAIN, then Basic Setup, then Review Code Set. This will show you the codesets for each device:



To see the macros, go to MAIN, Advanced Setup, Macros, then Test/Edit Existing Macros, then On the Main Menu, then click on each Activity to see the macro assigned to it.

Step 9: Tips and tricks

- Upgrade the firmware on the remote
 - This is done using the Archiver software (see previous page on using that SW), so I can not test it since I have a Mac
 - NOTE: The Archiver software may write over the config on your remote so back it up first to make sure you have all the latest settings you configured into the remote. Then install the latest firmware
- Battery info:
 - There is a menu item to see in percentage under the MAIN menu, then go to User Settings, then System & Battery Info
 - You also get a battery icon with 1 – 5 bars on the LCD screen, much like on a mobile phone
 - You can also set a low battery warning on the System and Battery menu screen – default is 20%
 - I found that rechargeable batteries like the Panasonic Eneloops work great in my remote
 - The URC manual suggests that turning the LCD screen to a brighter setting and having longer auto shut off times on the screen and the key backlighting will drain the batteries faster. I have not found those to be much impact – batteries last a good long time but then we only use the remote in our home theater a few times a week. Screen brightness of 40% is a nice level for a darkened theater, so that might help my batteries too.

Definitions

Soft Button: a button that has no physical label, like the ones to the left or right of the color LCD screen, or the ones left or right of the MAIN button

Hard Button: A button that is physically labeled, like the PLAY or MAIN buttons, or the numeric keys

