



Xtender Installation Manual



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Welcome to the World of Whole-Home Entertainment Choices

The BOCS Xtender will allow you and your family to Xtend the entertainment options from your main system to all the TVs in your home. This sounds like a simple proposition, but until now you could only do this by adding redundant equipment or have a very expensive and complicated audio/video distribution system installed in your home.

Now You Can...

- Reduce the number of boxes in your home – instead of a full stack under each TV, one stack supplies the entire home
- Watch any TiVo DVR from any TV
- Pause a program in one room, continue watching in another
- Play a DVD on all the TVs in the house simultaneously
- Hook up an iPod for whole-home music
- See what your kids are watching in the basement
- Continue to view your movies or programs uninterrupted even if you need to change locations in your home
- And much, much, more...

Without...

- Purchasing additional Cable/Satellite Boxes
- Purchasing additional DVRs
- Purchasing additional DVD Players
- Purchasing costly and complicated universal remote control systems - all you have to remember is *RED – GREEN – BLUE*

What You Need

Tools

Small pair of pliers
Flat-blade screwdriver

What's in the Box?

Xtender

Xtender Unit
SuperCombiner
Power Supply for Xtender
Universal BOCS Remote Control

Xtender Installation Kit

Coax Power Adaptor
Cable Finder
Color Coded Combination Audio/Video Cables (3)
IR Blaster Cables (3)

Basic Terms used in this manual

- A/V Device*** – Anything like a DVD player, VCR, TiVo DVR, Cable box or other device that you plug into Xtender to watch throughout your home
- Xtender*** – The main Xtender device – looks like a small A/V device with Red, Green, and Blue lights on the front
- Wireless Remote*** – The wireless remote control that came with your Xtender system
- Wiring Pack*** - An accessory (purchased separately) that includes all the cables used in a typical installation plus a cable finder tool
- SuperCombiner*** - The cable splitter/insertion device that came with your Xtender system

Remote Control Lights -

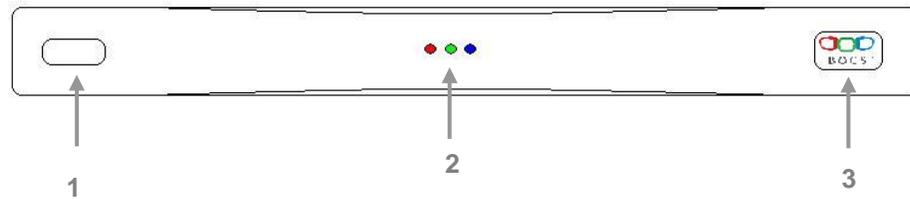
When in Programming Mode – The power light comes on and stays on. Generally you have 10 seconds to enter a command or the remote will exit Programming Mode.

Programming Success – The remote flashes the power button light two times

Programming Error – The remote fast flashes the power button light for one second

Remote Out-Of-Range – Alternating flash of power button light and Xtender Channel lights (Red/Green/Blue) – this occurs if the remote is too far from the Xtender – either move closer to the Xtender or purchase a BOCS Repeater to Xtend the range of your wireless remotes.

What's on the Front Panel?



1. Learning Window

Xtender has the ability to learn remote control codes just in case you can't find one in our remotes that works. There is a simple procedure to follow in the "Programming the Remote" section. This window is where you point your remote control during that process to allow Xtender to learn to control things that are plugged into it.

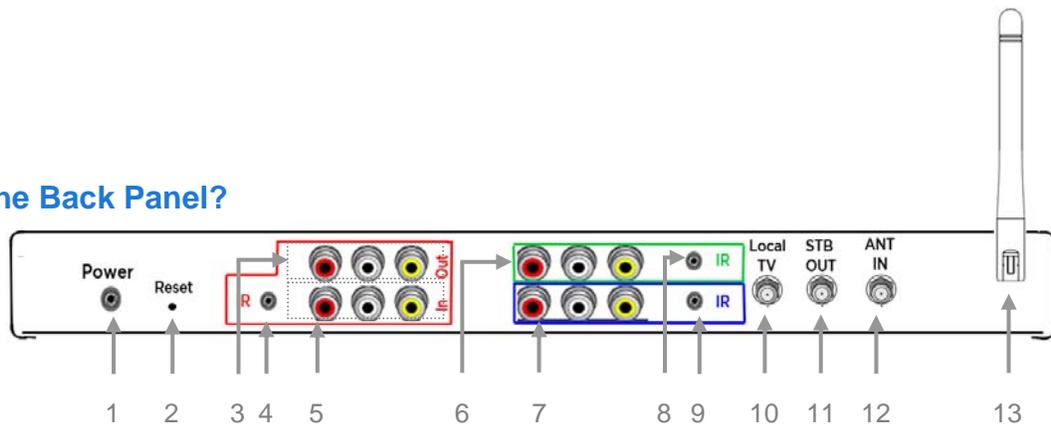
2. Xtender Activity Lights

These lights flash when anyone in the home is controlling an Xtender channel with a wireless remote control. The Red light flashes when using the Red channel, Green for green channel, and Blue for blue channel. All of the lights glow when Xtender is on, and they all flash together when you are pairing a remote to Xtender.

3. Remote "Pair" Button

Each Xtender remote control must be paired to an Xtender – this prevents your remotes from controlling your neighbor's Xtender as well as the other way around. If you buy an extra remote or one of your remotes needs to be re-paired, just press this button then hold down the "Menu" and "Channel +" buttons on the remote you would like to pair.

What's on the Back Panel?



1. **Power** The AC adapter plugs in here – only use the adapter that came with Xtender!
2. **Reset Button** Pushing this button resets Xtender to its factory default settings
3. **Red Channel Input** Composite Video (Yellow) and Stereo Audio (Red/White) input to Xtender – whatever you plug in here will appear on the Red channel throughout the house
4. **Red Channel IR Output** A cable with a stick-on infrared emitter on the end is plugged in here and the IR emitter is stuck onto the front of your a/v device so Xtender can send it commands from your wireless remotes – Cables available in the optional wiring pack.
5. **Red Channel Video Output** This is used to pass a composite video/stereo audio signal from your A/V device to a local TV
6. **Green Channel Input** Whatever you plug in here will appear on the Green channel throughout the house.
7. **Blue Channel Input** Whatever you plug in here will appear on the Blue channel throughout the house.
8. **Green Channel IR Output** A cable with a stick-on infrared emitter on the end is plugged in here and the IR emitter is stuck onto the front of your A/V device so Xtender can send it commands from your wireless remotes – cables are available in the optional wiring pack.
9. **Blue Channel IR Output** A cable with a stick-on infrared emitter on the end is plugged in here and the IR emitter is stuck onto the front of your A/V device so Xtender can send it commands from your wireless remotes – cables are available in the optional wiring pack.
10. **Local TV Out** Coax cable output used for watching Cable/Antenna programs or Xtender channels on a TV located near Xtender. Note that if this output is used then one Xtender remote must be dedicated to this TV – see programming the remote.
11. **Antenna Out** Coax cable output used for connecting DVR, TiVo, Cable Box or anything else that needs Cable/Antenna input. Note that Xtender channels are not available on this output.
12. **Antenna IN** Coax cable input – this must be connected directly to the Coax wall outlet or run directly to the SuperCombiner.
13. **Antenna** Swivel antenna allows Xtender to communicate with remote.

What's on the Remote?



Those Needing a Little Explanation

1. **Xtender Channel Activity Lights** – blink when you send a command to one of the devices connected to Xtender. For instance if you press the Red BOCS channel button, then push play the red light flashes letting you know that the play command went to the Red channel.
2. **Xtender Channel Buttons** – The three new channels in your home – press RED to watch and control whatever is plugged into the Red input on Xtender (same for GREEN & BLUE)
3. **Menu** – the DVD, DVR, or TiVo menu command, depending on what you are controlling
4. **Info/ "A"** –push shift/info for "A", a button common for cable boxes
13. **Stop/Slow** – For most DVD players this is "Stop", but many DVRs (Like TiVo DVRs) do not commonly have a Stop button so in those cases, this becomes the "Slow Play" button
14. **Replay** – typically makes a DVR go back about 15 seconds and play a clip again. For DVD it skips backward and if you push Shift first it is the "PIP" or Picture-in-Picture button
15. **+100** – Shift-1 gives the +100 command, sometimes used to get to channels that are >100
18. **Power** – In general, this button turns your TV on and off. If this is pressed within 10 seconds of pressing a BOCS channel button, it powers on/off the device plugged into that Xtender channel (if the DVD player on the Red channel is off – just press Red and Power within 10 seconds). Press Shift-Power to power-down the Xtender system (so any Cable or Antenna channels that you cannot watch when Xtender is on are now visible). A double flash indicates programming success, a fast flash indicates programming error, and an alternating Power and Xtender Channel lights (Red/Green/Blue) indicates remote is out of range of Xtender.
19. **Local TV** – After watching a BOCS channel, pressing this button returns you to watching normal Cable/Antenna through your local TV. So you know you are back to local control, the remote automatically tunes to the "Favorite TV channel" (see programming your remote).
34. **AUX** – Any set of codes can be programmed into this mode button but it is most commonly used for an audio receiver. Note that if you use a separate receiver to listen to your TV you can make the VOL+/- button always send volume commands to the AUX device instead of directly to the TV by following the "Punch Through" procedure in "Setting Up the Remote"

Installation Overview

Easy as 1-2-3

Step 1 – Install SuperCombiner

The SuperCombiner is a device that is installed just before your main home “root splitter” to distribute your new BOCS channels all over your home. In this step you will:

Decide where to put your Xtender.

Plug a special Cable-Finder into the nearest CATV outlet.

Find and open your cable splitter box.

Find the coaxial wire that goes to the room where you put Xtender.

Install the SuperCombiner.

Step 2 – Install the Xtender Unit

Xtender is connected to the three devices you want to control (just like hooking up a new DVD player).

Xtender is connected (using stick-on IR emitter cables) to each of those same three devices so Xtender can control them.

Xtender is connected to power and the Coax wall jack.

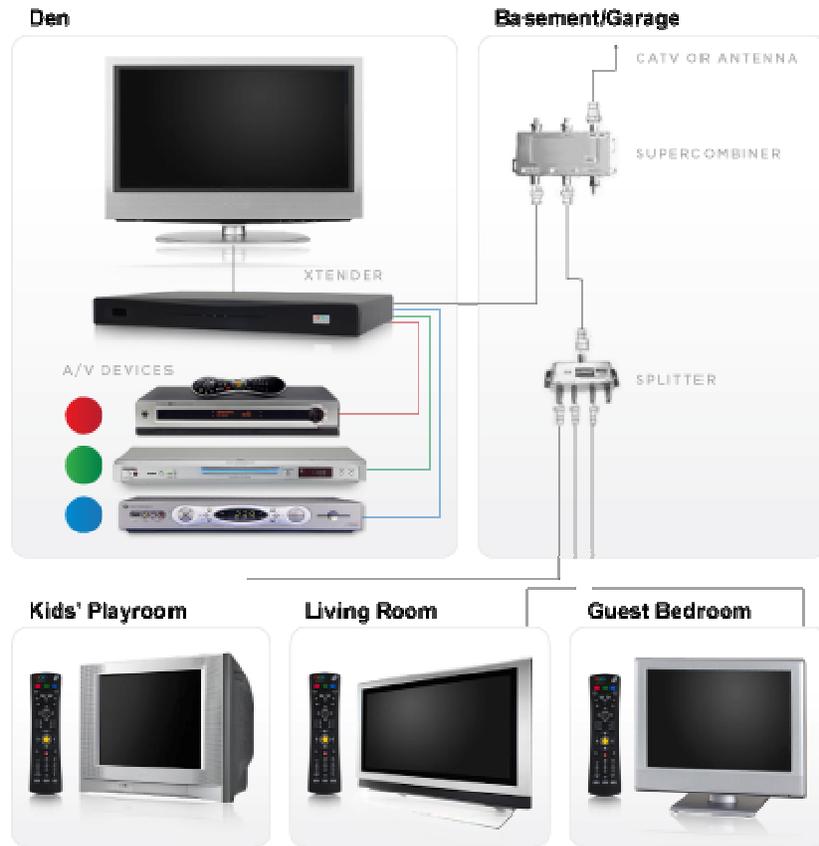
Step 3 – Program the Remote Controls

By punching in a few codes, the remote controls are programmed so they know how to control both local TVs as well as the devices plugged into Xtender.

Setup should take no more than 20 minutes for a typical home

A Quick Start Guide is provided in the Xtender package with large pictures of the entire installation.

Step 1 Installing the SuperCombiner



Select Location for the Xtender

Minimum Location Requirements

- Coaxial cable outlet nearby
- AC power nearby

Likely Locations – Choose One:

- If you already have a stack of A/V equipment in one place (TiVo DVR, cable box, satellite box, DVR, DVD jukebox etc.), you can put Xtender on top of that stack of equipment.
- Or – you can move all that equipment to an out-of-the-way location (e.g. basement, closet, or an office) as long as you have power and a coax cable jack there.

Power the Coax Wire

You will be installing the SuperCombiner, but the Xtender requires that the Xtender have it's own special connection to the SuperCombiner so the first step is to determine which coax wire runs to the room where you decided to put the Xtender. If you are in a new home and are really lucky, that wire will be labeled with the

Parts Needed
COAX Power Adaptor
Xtender Power Supply

room name in your cable splitter box. If not, we provide a tool in the installation kit so you can find the right wire.

To find the right wire, we apply power to that coax wire so that an indicator light on the other end can identify when the correct wire is found.

At the closest coax wire jack to the desired Xtender location, and unplug any cable attached to it.



You are looking for the adapter that looks like this – it comes with the optional installation kit.

Now, plug the power adapter that came with your Xtender into the cable finder adapter, and plug the adapter into the wall outlet with a piece of coax – you should now have something that looks like this...



Warning – do not plug the coax adapter into a satellite TV outlet or you may damage your satellite TV system!!

Parts Needed
SuperCombiner
Cable Finder Tool
Short COAX Cable

Locate your cable box

This is usually found in the basement, garage or on the outside of your home and will most likely look like one of the photos below:

Note that you might have both a telephone and a Cable-TV box and they sometimes look alike.



Locate the Splitter

It will be in your cable box and will likely look like one of the following.



And it will have wires hooked into most or all of its connectors, so it might be behind a cluttered mess.

Find the Powered Cable

The cable that was powered in the previous step should be connected to one of the outputs of the splitter. To determine which cable has been powered, unplug the cables one at a time and connect the *Cable Finder Tool*. If the red light doesn't illuminate plug it back into the splitter. When you find the cable that illuminates the red light, you have found the cable running to Xtender.



The Cable Finder is a small light attached to a coax connector – it comes with the optional installation kit.

You simply disconnect the cables one at a time and plug them into the cable-finder tool – when you find the one that illuminates the light, you found the correct cable.



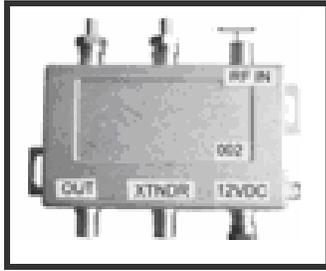
Wrong Cable!!



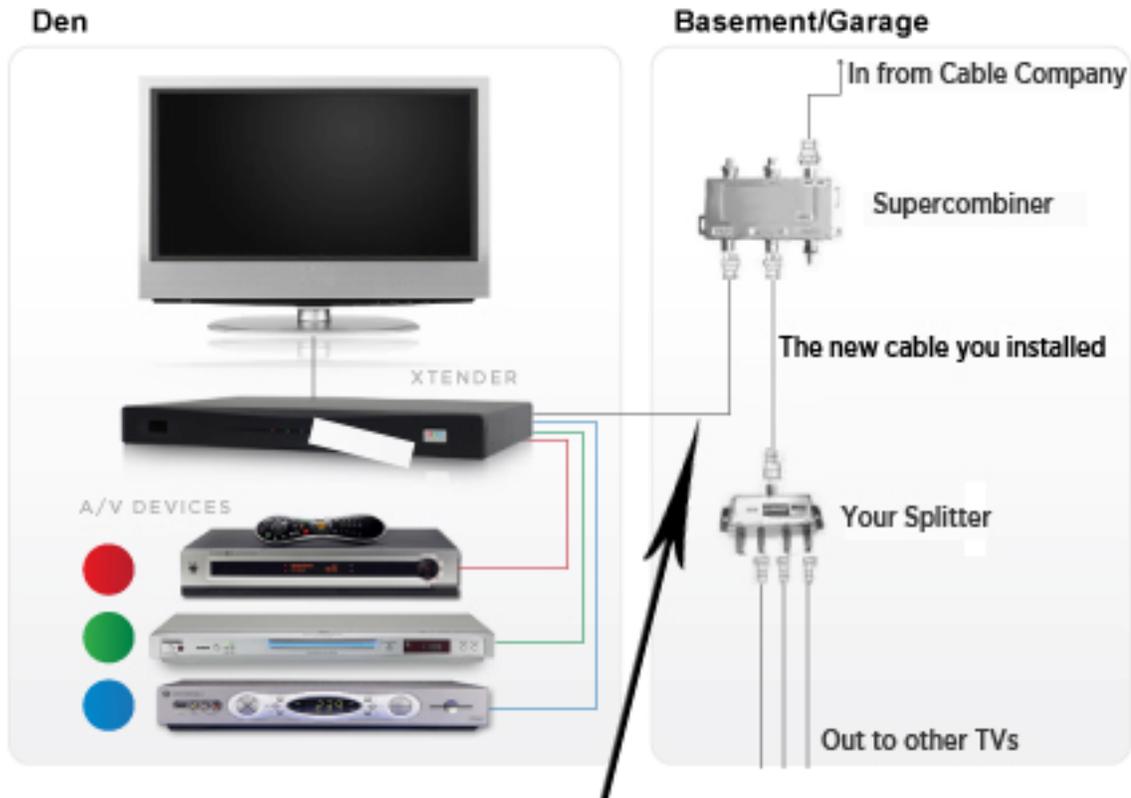
Correct Cable!!

Note If you check all the cables connected to your splitter and none illuminates the Cable-Finder light, see the troubleshooting guide.

Connecting the SuperCombiner



- Plug the cable you located with the *Cable Finder Tool* in the step above into the Xtender port of the SuperCombiner.
- Unplug the IN cable from your current splitter and connect it to the RF IN on the *SuperCombiner*.
- Connect a short coax wire between the OUT of the SuperCombiner and the IN of your splitter.



This wire previously hooked up to your splitter - you found the right one and hooked it up to the Xtender input on the Supercombiner

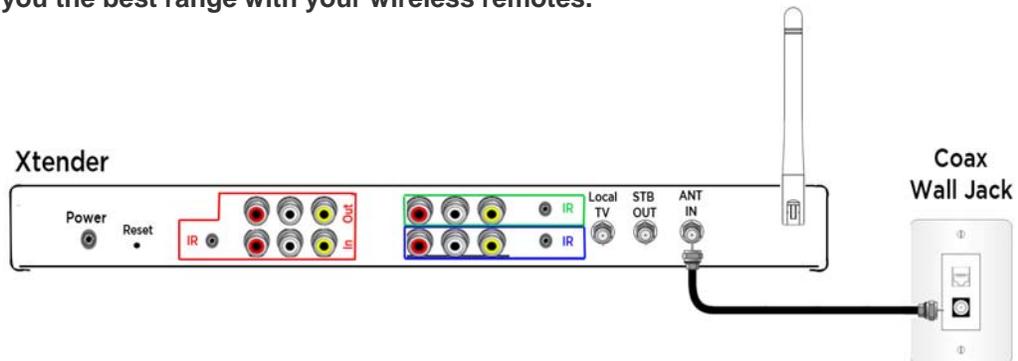
Important When you are finished with the system installation, make sure to close the box back up – especially if it is outside the home – you need to put everything back as it was to reduce water/weather exposure to those connections.

Step 2 Installing the Xtender

Connect Xtender

Remove the coax adapter and connect a coax cable from the nearby coaxial wire wall jack (usually located on a plastic plate mounted on a wall) to the “ANT IN” jack on Xtender.

Make sure that you rotate the antenna so that it points straight up – this will give you the best range with your wireless remotes.



Connect the Audio/Video devices to the Xtender

Important Place Xtender on the top of your equipment stack, because any equipment placed on top of the Xtender can impede performance.

Chose the devices

Typical choices are: Tivo, DVD jukebox, Cable Set-Top-Box, Windows Media Center, VCR, VOD box, or anything else with composite audio/video output.

Default settings on your Xtender are:

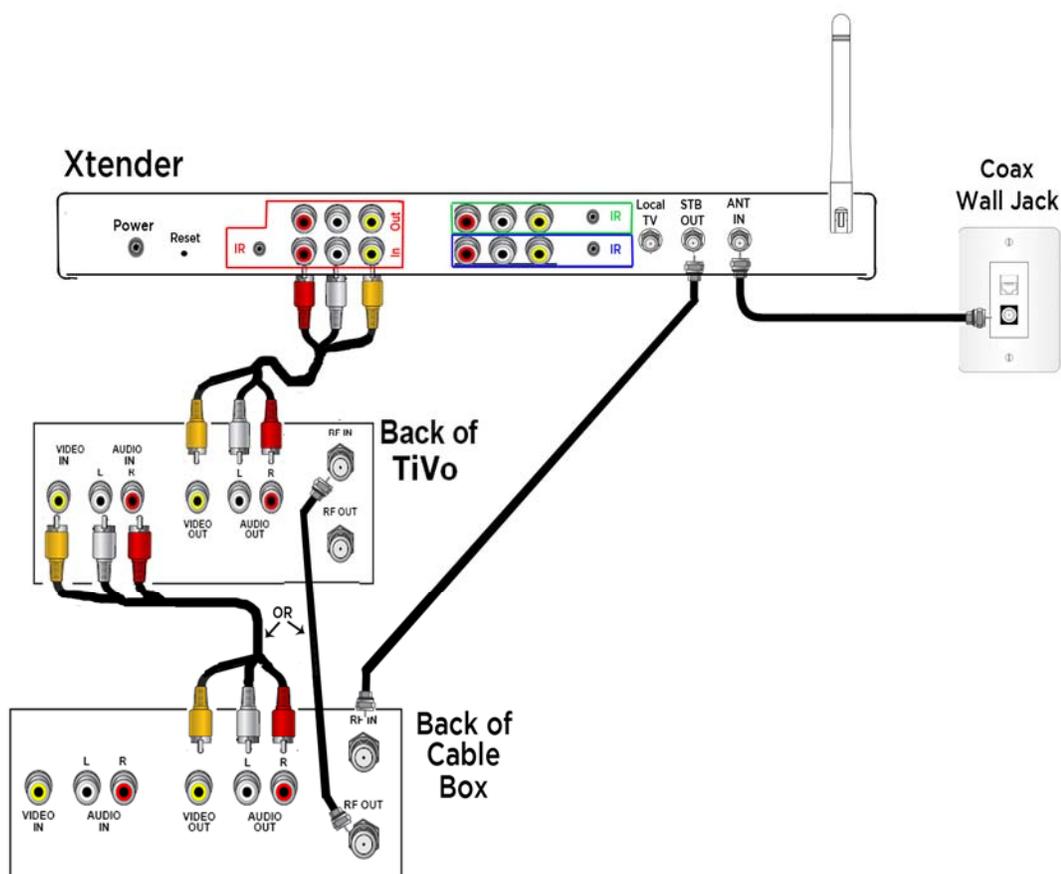
- Red Channel – Tivo with a cable box
- Green Channel – TiVo DVR
- Blue Channel – DVD player or DVD changer

Red Channel Set Up

- TiVo DVR with a cable box that it controls

Connect the Device to the Xtender

Connect the Audio/Video output of the device to the inputs on the Red channel of the Xtender. (white and red are audio Left and Right, yellow is composite video) Let's start with a more difficult one – a TiVo DVR that uses a digital cable box to change channels and receive digital cable channels. The cable box gets its input from the Xtender "Antenna Out" connector, it passes channels to the TiVo DVR either using an A/V (R/W/Y) cable or another coax and the TiVo output goes into the Xtender red channel (notice in the "Connecting Your TV to Xtender" section, the red channel can pass its signal through to a TV directly using the Red Channel Out connectors).



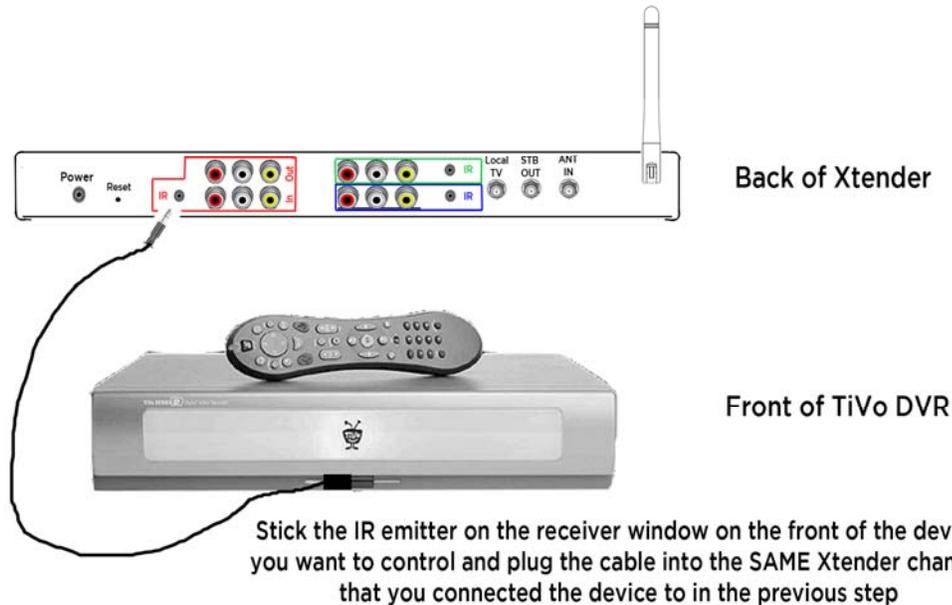
Note If any of your devices need a cable TV connection (TiVo, set-top-box etc), connect a coax cable from the "STB OUT" jack on Xtender to that Device. If more than one device needs a cable connection you will have to use a splitter to provide each device a signal connection from the "STB OUT" jack on Xtender.

Connect the “IR Blaster”

This cable lets Xtender control the A/V device – IR Cables come in the optional wiring pack.

Locate an *IR cable* in your *Xtender Installation Kit* (sold separately). Plug the connector of the IR cable into the “IR Out” on the Xtender Red Channel.

Locate the *IR window* on the device that you have plugged into the Red Channel. Peel the back off of the tape on the other end and stick it over the IR window of the audio/video device you previously plugged into the Red channel input.



Important *Make sure that if you plug a device into an Xtender channel that the IR emitter for that device is plugged into the SAME COLOR as the A/V cables to that device.*

Help *If you are unsure of where the IR receiver is on your Audio/Video device, it usually is a small red-tinted plastic “window” on the front panel. You can also hold the remote (that originally came with that device) very close to the Audio/Video device press one or more buttons on the remote while moving it slowly over different areas of the Audio/Video device front panel and determine the location (of the remote) where the device responds to the button presses.*

Green Channel Set Up

- Example - Tivo

Connect the A/V Device to the Xtender

Repeat the same steps as the Red Channel. That is, connect your TiVo device to Xtender by plugging the Audio/Video connectors from the audio/video outputs on the DVD player to the inputs on Xtender’s Green Channel.

Connect the “IR Blaster”

Repeat the same steps as the Red Channel by connecting the IR blaster to the IR window on the device you are plugging into the Green Channel.

Locate the *IR window* on the device that you have plugged into the Green Channel. Peel the back off of the tape on the other end and stick it over the IR window of the audio/video device you previously plugged into the Green Channel input.

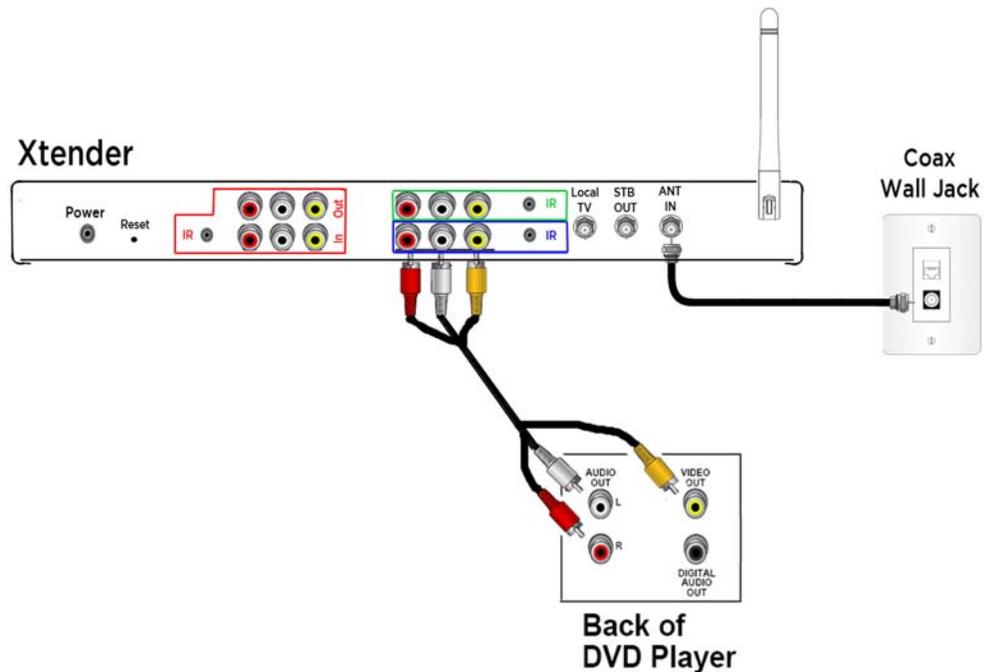
Blue Channel Set Up

- Default DVD Player/Changer

Connect the Device to the Xtender

As an example, we will connect a DVD player to the Blue Channel.

Repeat the same steps as the Red Channel. That is, connect your DVD device to Xtender by plugging the Audio/Video connectors from the audio/video outputs on the DVD player to the inputs on Xtender's Blue Channel.



Connect the “IR Blaster”.

Repeat the same steps as the red channel by connecting the IR blaster to the IR window on the device you are plugging into the Blue Channel

Connecting Xtender's Power Supply

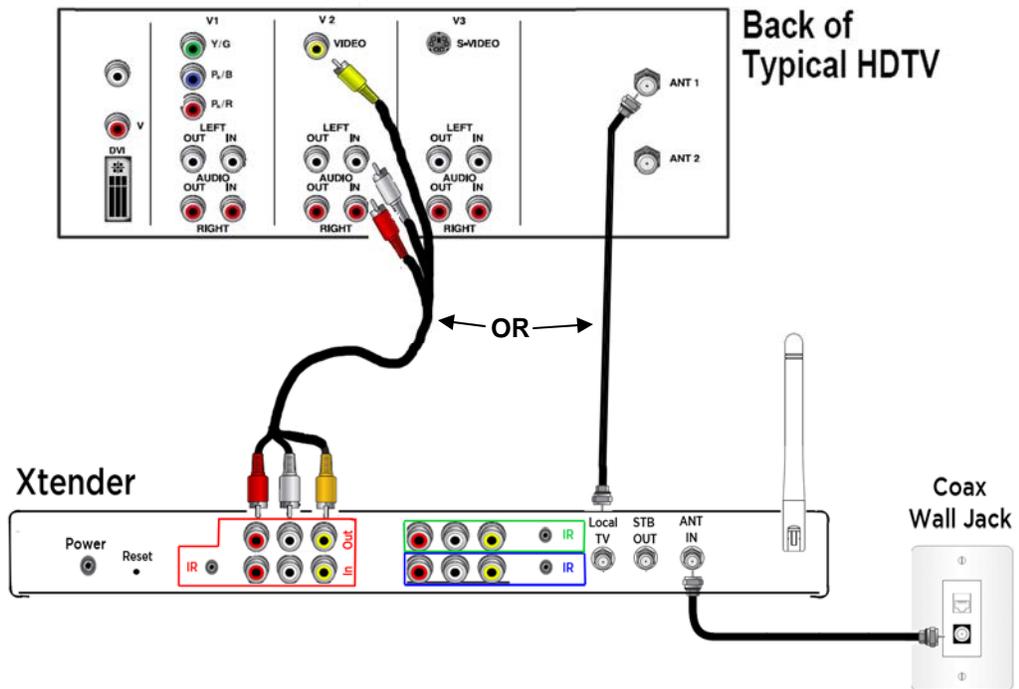
Locate the power supply that came with Xtender. Plug power supply into “Power” on the back panel of Xtender. Plug the power supply into a wall outlet or plug strip.

Checking Power Supply

- Check that the Xtender power lights are *on*

Optional – Connect to the local TV

Xtender's job is to connect the rest of the TVs in your home to your stack of A/V equipment, and as previously described, you might very well have moved your equipment to some out-of-the-way location. If, however, your Xtender is now sitting next to a TV, that TV needs to get connected.



Using the RED Channel Out A/V cable connection allows you to pass the A/V device through to your TV for the best possible picture – many people connect their cable DVR box to the Red channel and when watching cable on the TV next to Xtender use the “Video” input on their TV. You can also simply connect your TV to Xtender using the Local-TV output from Xtender – now this TV will function just like all the rest of the TVs in your home and have full access to all the Xtender channels.

Remote Control Setup for Local TV

If you are using the coax connection to the local TV, then the remote you intend to leave in that room to work that TV needs to be uniquely identified to the Xtender. Make sure the remote is paired to the Xtender unit (see instructions in the “Remote” section), Hold down Menu and Vol+ until the power light comes on and stays on – press select/OK to confirm.

Step 3 Programming the Remotes

Three Steps to Programming the Remotes

1. Pair remotes with *your* Xtender
2. Pick a room, program a remote to work the TV in that room.
3. Program red, green and blue channels
4. Program the rest of the remotes for each room

Step 1 – Pair Remotes

Why am I doing this? Just like you only want your cordless phone talking to your own base station/phone line, you only want your remotes controlling your Xtender and not your neighbor's. This step "pairs" your remotes to your Xtender.

- Press the **BOCS Logo** button on the front of the Xtender unit. *The Red/Green/Blue lights on the front of Xtender will begin blinking*
- Simultaneously press the **"Menu"** and **"Ch+"** buttons and hold for 2 seconds. The red power light on the remote will flash twice
- Check to make sure the pairing worked by pressing the Red Xtender channel button – if the red light on the front of Xtender flashes, pairing was successful. If it does not (the remote will also give you an error code of either a fast flash power light indicating the remote is not paired to anything or an out of range indication – alternating power/Xtender channel lights on the remote) – If you get an error try binding again.
- Repeat for each remote



Note In step 1, if the LEDs on Xtender stop blinking immediately upon release of the pair button, the maximum number of remotes have already been bound to this Xtender (12 are allowed). To un-pair all remotes and start over, press and hold the **BOCS Logo** button for 10 seconds.

Check You can check to see if a remote is bound to Xtender – just go stand in front of the Xtender and press the **"BOCS-Red"** channel button on the remote. If the red light on the remote blinks once and the red light on Xtender blink once, it is paired. If it is not paired, the Xtender light will not blink and the remote will also give you an error code of either a fast flash power light indicating the remote is not paired to anything or an out of range indication – alternating power/Xtender channel lights on the remote.

Step 2 – Pick a room, program a remote to work the TV in that room

- Start with either the TV in the same room as Xtender or the closest TV to Xtender
- Find your TV brand in the code list for your TV type (Appendix A)
- Press and hold the **TV** and **INFO** buttons until the remote power light turns on

- Enter the device code while pointing the remote at the TV – the power light should blink twice indicating a successful code was selected and a power command was sent to the TV. If you get a fast flash, there was an error – we suggest you exit program mode (press remote power button) and start over.
- If the TV turns off or on press Select/OK to confirm you found the right code – the power light should blink twice to indicate that the code was saved successfully.
- If the TV does not turn off or on enter the next five digit code – keep trying codes until you find the one that works best with your TV

Important you will repeat these steps for each room/TV where you want a BOCS remote control, but for now go to step 3.

Important We highly recommend that you try out all the buttons you think you will use and make sure that the code you chose works for all those buttons. Keep in mind that many TVs have “similar” IR codes, and sometimes you can choose a code that works the power button but some of the other buttons do not work correctly. In that case, just pick up where you left off and try other codes in that group.

Alternate Remote programming procedure for TV: Auto-Scan

Huh? If you try all the codes for your brand of TV (make sure if you have a combo TV/DVD or TV/VCR you find that group in the code list as well) and you have not found one that works, you can have the remote automatically scan through all the codes the remote has stored in it to see if one of them might work.

1. Turn on the TV you would like to program into the remote. Press and hold “Local-TV” and “Guide” for at least two seconds –until the power light on the remote stays on
2. Press the TV button – power light should stay lit
3. Press and hold the Up Arrow button: the remote will scan through all the codes transmitting a “power off” for each one. The indicator light will flash during the scan. The full scan may take up to several minutes.
4. As soon as the TV you are trying to program turns off, release the UP Arrow button **note you must do this quickly**. Pressing the up and down arrows momentarily steps through the code list – so you may want to press the down arrow a few times and then go back forward through the codes by pressing the up arrow until the TV turns on again.
5. Press the Select/OK button to accept the new code. The power light should flash twice indicating a successful code save.

Step 3 – Program the Xtender to Control the A/V Devices

Important: only program the channels one time, with one remote control. The system will automatically program all the rest of the remotes in the home.

Red Channel

- Identify the device code from the list (Appendix A)
- Simultaneously press the BOCS-Red and Info buttons until the power button lights
- Enter the device code – press “Select/OK” to confirm
- Remote power light should flash twice indicating success

Green Channel

- Identify the device code from the list (Appendix A)
- Simultaneously press the *Green* and *Info* buttons until the power button lights
- Enter the device code – press “*Select/OK*” to confirm Remote power light should flash twice indicating success

Blue Channel

- Identify the device code from the list (Appendix A)
- Simultaneously press the *Blue* and *Info* buttons until the power button lights
- Enter the device code – press “*Select/OK*” to confirm
- Remote power light should flash twice indicating success

Example:

You plugged a TiVo DVR into the BOCS-Red channel:

- Look up the code for a TiVo (from the list that is one of the following: 17002 17020 17123 17124 17129 17623 17624) *note they all might work, so try each one to find the one that works best for your TiVo*
- Hold down “Info” and “BOCS-Red” and the power light will come on
- Punch in 17002
- Press “Select/OK” to confirm
- Press the Red Channel button and try it out – press menu, navigate the Tivo menu – if it does not work well try one of the other codes.

Alternate Remote programming procedure for Red/Green/Blue Channels: Auto-Scan

Important: Many devices that you might plug into Xtender do not respond well to a “power command” – for instance a TiVo DVR does not really have an off switch. Before you do a scan for IR codes using this method, you should use the remote that came with you’re A/V device, press power and see what happens so you know what you are looking for.

1. Turn on the TV and press the *Red*, *Green*, or *Blue* button corresponding to the device you wish to program.
2. Press and hold *Red* (or *Green* or *Blue*) and *Guide* for at least two seconds –until the power light on the remote stays on
3. Press the device type button corresponding to the type of device you are programming:
 - If programming a TV – Press the *TV* button – power light should stay lit
 - If programming a DVD player – Press the *DVD* button – power light should stay lit
 - If programming a Cable Set Top Box – Press the *CBL* button – power light should stay lit
 - If programming a VCR – Press the *VCR* button – power light should stay lit
4. Press and hold the Up Arrow button: the remote will scan through all the codes transmitting a “power off” for each one. The indicator light will flash during the scan. The full scan may take up to several minutes.
5. As soon as the device you are trying to program turns off, release the UP Arrow button – note that you must do this quickly. Pressing the up and down arrows momentarily steps through the code list – so you may want to press the down arrow a few times and then go back forward through the codes by pressing the up arrow until the device turns on again.

6. Press the Select/OK button to accept the new code.

Step 4: Program the rest of your remotes for each room

This is exactly like step 2 – just grab a new remote, make sure it is Paired to your Xtender, and program it for the TV in the room where you intend to leave that remote.

Step 5: Set the master remote

Note you only need to perform this step if you have connected a TV to the “Local TV” coax connector on the Xtender

The "Local Master" remote is defined as the remote that controls the TV that is connected to the "local TV" coax output from the Xtender. This remote must identify itself to the Xtender so that the Xtender can switch the correct output signal onto the "local TV" output, depending on whether the TV is tuned to a TV channel or a BOCS channels. This switching allows you to watch TV channels that would otherwise be replaced by the BOCS channels. When you press the red, green, or blue button on the "Local Master" remote, the Xtender switches BOCS channels onto the "local TV" coax output. When you press the "Local TV" button, the Xtender changes the switch to output CATV signals to the "local TV" coax output.

To set or remove the remote as a "Local Master"

1. Press and hold one of the following combinations for at least 2 seconds:
 - "Menu" and "Vol +" to set the remote as local master.
 - "Menu" and "Vol -" to remove the remote as local master.
2. The Power LED will turn on.
3. Press Select/OK to confirm.
4. If successful, the power LED will pulse twice and turn off. If the function failed, the power LED will pulse rapidly for one second, and then turn off.

That's it! You are ready to begin using your Xtender system. Enjoy

More Programming Options

Control other devices in the same room as the remote

The Xtender remote is a full universal remote and can control other devices that are in the same room as the remote – the three buttons on the bottom of the remote (Aux, CBL, and DVD) can each hold the codes for a device of your choice

- Decide on which device you would like to control with which button – for example we will program a JBL DVD player to be controlled by the DVD button
- Find the JBL DVD codes in the code list (Appendix A) and write down those codes – in this case 25278
- Hold down “Info” and “DVD” for about two seconds until the power light comes on and stays on
- Punch in the code “25278”
- Press select/OK to confirm
- If there are multiple codes, try them one at a time until you find the one that works for your device.
- Repeat for each of the other local control buttons

Punch-Through

Why might I want to do this? If you use something other than the built in speakers in your TV to listen a show, you have an external receiver or video switch to control what you are watching on your TV, or you change channels on something other than your TV – like a Cable or Satellite Box.

Volume Punch-Through

By default, volume buttons always control the local TV, regardless of mode. To redirect volume buttons ("Vol +", "Vol -", and "Mute") to the AUX device (an audio receiver, external amp or anything else), or return these controls to the local TV, use this procedure:

1. Make sure you have programmed the remote to control your external audio device by using the AUX button – see “Control other devices in the same room as the remote:” above
2. Press and hold one of the following combinations for at least 2 seconds:
 - "AUX" and "VOL +" - to direct volume buttons to the AUX device, or
 - "TV" and "VOL +" - to direct volume buttons to the local TV.
3. The power LED will turn on.
4. Press Select/OK to confirm.
5. If successful, the power LED will pulse twice and turn off. If the function failed, the power LED will pulse rapidly for one second, and then turn off.

Input Punch-Through:

By default, the remote sends the TV-Input button to the currently selected local or BOCS device. To redirect the TV-Input button to the AUX device (when the remote is in any local mode), or return it to its default behavior, use this procedure:

1. Press and hold one of the following combinations for at least 2 seconds:
 - "AUX" and "Live TV" - to direct the TV-Input button to the AUX device, or

- "TV" and "Live TV" - to restore the TV-Input button to its default behavior.
2. The power LED will turn on.
 3. Press Select/OK to confirm.
 4. If successful, the power LED will pulse twice and turn off. If the function failed, the power LED will pulse rapidly for one second, and then turn off.

Channel Punch-Through:

By default, the remote sends channel tuning buttons to the Local TV device when in local TV Mode. To redirect channel tuning buttons (digits "0" - "9", "CH +", "CH -", "#/Enter", and "*/Delete" to the CBL device when in local TV mode, or to return these controls to the local TV, use this procedure:

1. Press and hold one of the following combinations for at least 2 seconds:
 - "CBL" and "CH +" - to direct channel tuning buttons to the CBL device, or
 - "TV" and "CH +" - to restore channel tuning buttons to the TV.
2. The power LED will turn on.
3. Press Select/OK to confirm.
4. If successful, the power LED will pulse twice and turn off. If the function failed, the power LED will pulse rapidly for one second, and then turn off.

Learn IR Code(s)

Learning allows the BOCS remote or the Xtender to output IR codes that are identical to those output by another remote. Note that all Xtenders can learn IR codes to control devices plugged directly into them, but to learn IR codes for a TV or other "local device" you must purchase separately Learning remote.

- Learning associates a learned IR code with a specific button on the BOCS remote for a specific device. For example, if you learn the "Menu" button for the CBL device, the remote will output that code when you press "Menu" and the remote is in CBL mode.
- Learning a button for a device overrides the IR code that the remote would output for that device based on the device type set by the "Scan Local Device Type or BOCS Device Type" or "Set Local Device Type or BOCS Device Type" procedures. This makes it possible to first set a device type that is "close", and then learn only the buttons that do not work as desired. *Note the "Scan Local Device Type or BOCS Device Type" and "Set Local Device Type or BOCS Device Type" procedures erase any learned IR codes for the device whose type is set.*

Have the BOCS Remote Learn IR Codes from Another Remote

To control the Local TV, CBL, DVD, or AUX devices, follow this procedure:

1. Place the two remotes pointing at each other, about 2" apart and directly "nose-to-nose" in line with each other. Note that remotes must remain very still during this process.

2. Press and hold simultaneously for at least 2 seconds one of these combinations on the BOCS remote, to select which local device the learned codes will be associated with:
 - "Local TV" and "Enter/#" for the local TV,
 - "CBL" and "Enter/#" for the local CBL device,
 - "DVD" and "Enter/#" for the local DVD device, or
 - "AUX" and "Enter/#" for the local AUX device.
3. The power LED will turn on.
4. Press the button that the learned code will be assigned to on the BOCS remote (the receiving button).
5. Within 5 seconds, press the button to teach on the existing remote.
6. The power LED flashes twice if the key was successfully learned, or flashes rapidly if learning failed. If neither of these signals occurs, press the button to teach on the existing remote again.
7. To learn another button (or to learn the same button again if the previous try failed), go back to step 3.
8. When you are done with all the buttons to be learned for this device, just do nothing. The remote will exit learn mode after 10 seconds of inactivity, and the power LED will turn off.

Have the Xtender Learn IR Codes from Another Remote To Control Devices Plugged into the Red, Green, or Blue channel

1. Place the other remote control so that it points at the IR receive window on the front of the Xtender – it must be within 2" of the window and pointed directly at the window from the front. Note that the remote must remain very still and at the same distance from the Xtender IR window.
2. Press and hold simultaneously for at least 2 seconds one of these combinations on the BOCS remote, to select which BOCS device the learned codes will be associated with:
 - "RED" and "Enter/#" for the BOCS RED channel,
 - "GREEN" and "Enter/#" for the BOCS GREEN channel, or
 - "BLUE" and "Enter/#" for the BOCS BLUE channel.
3. Continue with step 3 from the procedure above.

Unlearn IR Code(s)

You may need to unlearn previously learned IR codes if there is an error during the learning process, or to free up "learning memory" on the remote or the Xtender.

Note: the "Scan Local Device Type or BOCS Device Type" and "Set Local Device Type or BOCS Device Type" procedures automatically unlearn all learned IR codes for the device whose type is set.

For BOCS Remote or Xtender to Unlearn IR Codes

1. Press and hold simultaneously for at least 2 seconds one of these combinations on the BOCS remote, to select which device to unlearn:
 - "Local TV" and "Delete/*" for the local TV,
 - "CBL" and "Delete/*" for the local CBL device,

- "DVD" and "Delete/*" for the local DVD device,
 - "AUX" and "Delete/*" for the local AUX device,
 - "RED" and "Delete/*" for the BOCS RED channel,
 - "GREEN" and "Delete/*" for the BOCS GREEN channel, or
 - "BLUE" and "Delete/*" for the BOCS BLUE channel.
2. The power LED will turn on.
 3. Press the button to be unlearned.
 4. The power LED flashes twice if the key was successfully unlearned, or flashes rapidly if unlearning failed.
 5. To unlearn another button, go back to step 3.
 6. When you are done with all the buttons to be unlearned for this device, just do nothing. The remote will exit unlearn mode after 10 seconds of inactivity, and the power LED will turn off.

Channel Tuning Delay

Important *when the Red, Green, or Blue button is pressed, the remote control attempts to tune the TV channel. Some TVs require longer delays between channel digits transmitted by the remote. Follow this procedure to set longer delays if your TV is having trouble tuning to the correct channel number for Red, Green, or Blue channel.*

1. Press and hold TV and CH+ for at least two seconds – until the power light on the remote stays on
2. Press a number button corresponding to the desired channel tuning delay:
 - 1 sets delay to 1/10th of a second
 - 2 sets delay to 1/5th of a second (default factory setting)
 - 3 sets delay to 1/2th of a second
 - 4 sets delay to 3/4 of a second
 - 5 sets delay to 1 second
 - 6 sets delay to 2 seconds
3. If a valid value was entered, the red power light on the remote will flash twice indicating success.
4. If the value entered is not recognized, the red power light on the remote will blink rapidly, in this case repeat the programming procedure.

Channel Tuning Mode (2 or 3 digits or use the +100 key)

Important When you press one of the red, green, or blue BOCS buttons, the remote sends two or more IR digits to the local TV to tune it to the channel for the red, green, or blue device. Some TVs require different digit sequences to tune correctly, especially for channels above 99. Use this function to set the method your TV requires.

1. Press and hold "MENU" & "5" for at least 2 seconds. The power LED will light.
2. Press "1" or "2" to select the tuning mode:

- 1 = send two digits for channel 99 or lower; send "+100" followed by two digits for channel 100 and above. This is the default.
 - 2 = always send three digits.
3. Press Select/OK to confirm.
 4. If successful, the power LED will pulse twice and turn off. If error, the power LED will pulse rapidly for a second, then turn off.

Adjust the Video quality of Xtender channels

Important *The Xtender can be adjusted to output different levels of video to the home, this provides the ability to make Cable-TV channels and Xtender channels look the same.*

1. Set up the desired television to view the CATV signal, and make a note of its signal quality.
2. Switch the television to view a BOCS channel.
3. Press and hold the "Menu" and "1" for at least 2 seconds.
4. The power LED will turn on.
5. While observing the BOCS signal on the television, press the up arrow or down arrow as appropriate to optimize the signal.
6. When you have found the best gain setting, press Select/OK to confirm. To exit without changing the gain, press any other button, or just wait 10 seconds for the function to time out.

Note *when either the maximum or minimum range of the attenuator is reached, the power LED will flash rapidly for one second, then revert to full on. The full range of the attenuator can be spanned in about 8 seconds.*

Note *that sometimes the problem is an Xtender channel that has "too much signal," so if the picture does not look good, also try turning the level down. You should find a level that makes Xtender channels look good on all your TVs.*

Using the Remotes

Controlling the TV

Press the *Local TV* button, the remote will now control the TV. The remote automatically tunes the TV in front of you to your *favorite* TV channel.

To set your *favorite* TV channel:

- Press "Local TV" (to control the TV in front of you).
- Enter a two digit channel number (which the remote will send to the TV as usual, tuning it to your favorite channel).
- Press "Local TV". The remote will remember the favorite channel and will tune the TV to that channel anytime you press "Local TV".

Controlling the Red Channel

Press the *Red* button, the remote will now control the device connected to the Red channel of the Xtender and command the TV in front of you to change to the channel that Red is on – Red might be on any channel that you or your installer set – so make sure you keep the remote pointed at the TV until it gets to the new channel.

Controlling the Green Channel

Press the *Green* button, the remote will now control the device connected to the Green channel of the Xtender.

Controlling the Blue Channel

Press the *Blue* button, the remote will now control the device connected to the Blue channel of the Xtender.

Note: When controlling one of the Red/Green/Blue channels, the *Vol+/-* and *Mute* buttons still control the TV.

Using the Power button

Normally, the *Power* button always controls the TV. However the power on a device connected to the Red, Green, or Blue channel of the Xtender can be controlled by following this procedure:

- Press the *Red*, *Green*, or *Blue* button corresponding to the device you want to power on or off.
- Within 10 seconds after pressing the *Red*, *Green*, or *Blue* button, press the *Power* button.

Controlling the Local Devices

If you want to use the remote to control one of the other devices in front of you, press "CBL", "AUX", or "DVD". Once you press one of these buttons, the remote will continue to control the device you selected until you press Local TV, Red, Green, or Blue again.

Buttons will Illuminate

When you press a button, one of the following buttons on the remote will light up briefly, indicating which device the remote is transmitting the button press to:

- Red (button sent to the red channel device)
- Green (button sent to the green channel device)
- Blue (button sent to the blue channel device)
- Local TV (button sent to the TV in front of you)
- DVD (button sent to the DVD device in front of you)
- CBL (button sent to the CBL device in front of you)
- AUX (button sent to the AUX device in front of you)

Troubleshooting:

General	Sometimes while I'm watching an Xtender channel, the channel or program changes	It's possible someone else in the house has pressed the same Xtender channel button and has taken control. Consider splitting the programs – perhaps Blue for kids and Green for adults.
Video Quality	The video quality of Xtender channels is not as good as my Cable TV channels	<p>If you had an installer come out and put in your Xtender system, they should have already adjusted everything, but just in case, Xtender allows you to adjust the quality of your Xtender channels just by using the remote control:</p> <p>Make sure the remote knows how to talk to Xtender - press the Red Xtender channel button on the remote and make sure the red light on the front of Xtender blinks.</p> <p>Now - go to the furthest TV from where your Cable comes into your home - (if you don't know where that is then just go to the TV where you think the Xtender channels are the weakest) - with the Xtender remote for that room/TV- hold down "MENU" and "1" until the power light on the remote comes on. Now (as long as you don't ever pause for more than 10 seconds and the remote comes out of program mode) you can press the up arrow to make the signal stronger and the down arrow to make it weaker - there are about 16 different choices - once you find one that looks good press the select/OK button to save that setting.</p> <p>We recommend you set the signal as low as you can and get a good picture - just setting it to its highest level could interfere with other TV stations you receive.</p> <p>Now - you should go around to all the other TVs and make sure they all look good as well - you can up the signal again to try to get the best picture everywhere.</p> <p>Keep in mind you are adjusting the signal level for the whole house every time you make this adjustment and not just for the TV you are observing so be careful.</p>
	The video quality of the Xtender channels	The Local-TV output on Xtender puts out either Cable TV stations or Xtender

	<p>is not as good as my Cable TV channels on the TV connected to the LOCAL-TV output on Xtender</p>	<p>channels depending on what you want to watch – but Xtender needs to know which remote control you are using with this “Local-TV” so it can switch those signals to the TV properly – simply hold down Menu and VOL+ then press select/OK – Now when you press an Xtender channel button, the Local-TV output puts out a good quality Xtender channel signal, and when you press Local-TV it switches back to putting out good quality Cable TV signals</p>
	<p>Sometimes, when watching BOCS channels on the TV connected to the Local-TV output on Xtender, the quality of the video suddenly goes bad</p>	<p>One of the other remotes in the home has also been set as the “local master remote” – and when someone pushes the local-TV button, the Xtender stops putting out good quality Xtender channels to the TV connected to Xtender. Simply go to all the other remotes in the home and hold down Menu and VOL- then press Select/OK -</p>
Remote control	<p>Sometimes pressing a button does not result in anything happening on an Xtender channel</p>	<p>Make sure the remote is paired with the Xtender – you can tell this by going to Xtender with the remote in question, pressing an Xtender channel button and seeing if the corresponding color light on Xtender flashes – if not pair the remote.</p>
		<p>Look at the Xtender Channel light on the remote – when you press the Xtender channel button, if the light sometimes flashes and sometimes stays on for a few seconds, the remote is having trouble communicating with Xtender. Try the following:</p> <p>Make sure the antenna on the Xtender is pointed straight up.</p> <p>Try moving closer to Xtender and see if the problem goes away.</p> <p>Consider buying a repeater to Xtend the range of your remotes</p>
	<p>I’ve tried all the codes for my TV and none of them work</p>	<p>Try a TV code scan – see the procedure in the “programming the remote section.”</p> <p>Try a FULL code scan – use the same procedure but omit pressing the “Local-TV button” after entering scan mode – this will scan through all 2000 codes in the remote – it might take a while.</p> <p>Consider purchasing a learning remote so you can suck the codes from the remote that originally came with your TV into an Xtender remote.</p>

	<p>I found a code for my TV or A/V device and some buttons work but others do not</p>	<p>This is fairly common because many manufacturers use a slightly different code for each product they put on the market. So – you might have found a code that worked the power button and a few others but might not work the menu, or other buttons do not work – the simple solution is try other codes... Try them in this order:</p> <ol style="list-style-type: none"> 2) Try all the codes in the category you are looking for (i.e. if you are looking for a TV code, try all the TV codes one at a time for the brand of TV you are using) 3) Do a category code scan – hold down Guide and the device you are trying to program (Local[-TV for TV, BOCS Red, Green or Blue, or DVD, AUX, or CBL) then press the kind of device you are trying to program (Local TV for a TV, CBL for cable or sat box, DVD for a DVD VCR or Laserdisc, or Aux for anything else) then hold the up arrow until your device turns off/on – then press select to save that code... If you have trouble see the more detailed instructions in the “programming the remote session” 4) Do a full scan (get something to drink before you do, this takes a while) – same steps as #3 above, just skip the “press the kind of device you are trying to program” step... 5) Buy a learning remote and learn the codes for the buttons that do not work
	<p>When I press an Xtender channel button, the TV doesn't change to a channel where I can see my Xtend-ed device</p>	<p>Don't forget that even though we tried to make this as simple as possible, the remote still has to be able to tell your TV where it wants to go - with a standard installation we put the Red channel on 14, Green on 98 and Blue on 96... One thing that is a little different about an Xtender remote is that it usually has to tell your TV two things to get to an Xtender channel - '1' and '4'... The most common problem is that you don't keep the remote pointing at the TV long enough and the TV only sees the '1', it happily goes to channel 1, you realize that is not where you wanted to be and quickly push the Red button again - only to take you to channel '11'</p> <p>The solution is simple - make sure you point the remote at the TV and keep it</p>

		<p>pointed there until the TV goes where you want - some TVs take a while to respond. if the TV only sees one digit, wait until that clears before you try pushing the Xtender channel button again.</p> <p>One other thing to watch for, some TVs need a long time in between pressing buttons - if you press the Red button (and have the default configuration where red is on channel 14) and you see the 1 on the TV but the 4 never shows up, see the next FAQ item "When I push an Xtender channel button on the remote it only sends one digit".</p>
	<p>When I push an Xtender channel button on the remote it only sends one digit</p>	<p>Some TVs need a long time in between pressing buttons - if you press the Red button (and have the default configuration where red is on channel 14) and you see the 1 on the TV but the 4 never shows up (and you were a good user and kept the remote pointed right at the TV), it is likely that the remote is sending the channel commands too quickly. We have noticed some Insignia TVs and a few others have this problem.</p> <p>The tradeoff is that it will take longer to change between Xtender channels, but since the alternative is not ever getting there, we suggest the following:</p> <p>Quick - pre-explanation first...</p> <p>What actually happens when you push the Red button is the remote sends a "1" then pauses then sends a "4" ... Depending on the TV, a different "pause time" is required - for now you will have to play with it a little to get it just right (as we get more feedback from users we will publish a detailed pause-time list for various TV models - so if you don't mind let us know what works for you if you have to adjust this in your house)...</p> <p>To set the pause time,</p> <p>Hold down the MENU button and the "4" key: The power light should come on and stay on</p> <p>press one of the following and then</p>

		<p>press Select/OK to confirm</p> <p>1 for a pause time of 1/10th of a second (fastest channel changing)</p> <p>2 for a pause time of 1/5th of a second (a little slower...)</p> <p>3 for a pause time of 1/2 of a second</p> <p>4 for a pause time of 3/4 of a second</p> <p>5 for a pause time of 1 second</p> <p>6 for a pause time of 2 seconds</p>
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	00178	01347	01919		00814	01060	01312	Syntax	01144	01240	01331
	01926	16624	17419		01903	01959	17398	Tandy	00093		
	17621				25475			Tatung	00055	01756	
Petters	01523			Sansui	00463	01904	01911	Technics	00250	00051	
Philco	00054	00030			01929	01935	16384	Techview	00847		
Philips	01454	00054	00690		16863	17863	25271	Techwood	00051		
	01154	01961	25430	Sanyo	00088	00154	00159	Teknika	00054	00180	00150
	25836				00799	00893	01142		00060	00092	00186
Pilot	00030				16624			Telefunken	00702		
Pioneer	00166	00679	00866	Sceptre	00878	01217		Thomas	01904	16384	
	01260			Scotch	00178			TMK	00178	00177	
Polaroid	00765	00865	01262	Scott	00236	00180	00178	TNCi	00017		
	01276	01314	01316	Sears	00047	00054	00154	Toshiba	00060	00154	00156
	01326	01327	01328		00156	00159	00171		00650	00832	00845
	01341	01498	01523		00178	01904	01926		01156	01256	01265
Portland	00092				16384	17621			01343	01356	01524
Prima	00761	00783	00815	Sharp	00093	00165	00491		01656	01704	01918
Prima	00817	01933	25592		00688	00689	00818		01935	01936	01945
Princeton	00700	00717			00851	01393	01602		17229	17529	25271
Prism	00051				01917	17191	25206		25621		
Proscan	01447	00047	01347	Sheng Chia	00093			Tosonic	00185		
	01922			Signet	01262			TVS	00463		
Proton	00178	00466		Simpson	00186			Vector Research	00030		
Proview	01498			Sony	00000	01100	00080	Victor	00053		
Pulsar	00017				00810	00834	01317	Vidikron	00054		
Quasar	00250	00051	00055		01685	01904	01925	Vidtech	00178		
	00165	00650	01919		16384	17616		Viewsonic	00797	00857	00864
	16546	17419	17546	Soundesign	00180	00178	00186		00885	01330	01578
RadioShack	00030	00047	00154	Sova	01952	25698			01627	01755	
	00165	00178	00180	Spectroniq	01498			Vizio	00864	00885	01499
	01904	16384	17421	Squareview	00171				01756	01758	
RCA	00047	00090	00135	SSS	00180			Wards	00054	00178	00030
	00679	01047	01147	Starlite	00180				00080	00165	00866
	01247	01347	01547	Studio Exp.	00843				01156		
	01917	01919	01922	Superscan	00093	00864	25397	Waycon	00156		
	01948	01953	01958	Supreme	00000			Westinghouse	00885	00889	00890
	16624	17191	17419	SVA	00748	00587	00768		01282	01577	
	17444	25598	25708		00865	00870	00871	White WH	00463	00623	
Realistic	00030	00154	00165		00872			Wyse	01365		
	00178	00180		Sylvania	00054	00030	00171	Yamaha	00030	00769	00797
Rhapsody	00185				01271	01314	01394		00833	00839	
Runco	00017	00030	00497		01931	01944	18165	Zenith	00017	00092	00178
	00603				25251	25397	25844		00463	01265	01904
Sampo	00030	01755		Symphonic	00180	00171	01904		01911	01929	16384
Samsung	00030	00060	00178		01944	16384	16977		16863	17863	
	00702	00766	00812		25397						

DLP TV

Hewlett Packard	01494			Mitsubishi	01250			Samsung	00812	01060	01312
HP	01494			Optoma	00887			SVA	00872		
LG	01265			Panasonic	01291			Toshiba	01265		
Magnavox	01525			RCA	01447			Vizio	01499		

Plasma TV

Akai	00812	01675		JVC	00731				01328		
Albatron	00843			LG	00178	00829	00856	Sampo	01755		
BenQ	01032				01758			Samsung	00812	01312	
Daewoo	00661			Marantz	00704			Sony	00000	00810	01317
Electrograph	01755			Maxent	01755			Studio Exp.	00843		
ESA	00812			Mitsubishi	00836			SVA	00865		
Fujitsu	00186	00683	00809	Monivision	00843			Sylvania	01271	01394	
	00853			NEC	01704			Tatung	01756		
Funai	01271			NetTV	01755			Toshiba	00650	01704	
Gateway	01755	01756		Norcent	00824	01089		Viewsonic	00797	01755	
Helios	00865			Panasonic	00250	00650	01480	Vizio	01756	01758	
Hewlett Packard	01089	01502		Philips	00690			Yamaha	00797		
Hitachi	00797			Pioneer	00679	01260		Zenith	00178		
HP	01089	01502		Polaroid	00865	01276	01327				

TV/DVD Combination

Advent	01933	25592		ESA	25844			Philips	01961	25430	25836
Akai	01675	01935	25271	Funai	25844			Prima	01933	25592	
Apex Digital	01943	25406		Go Vision	25647			RCA	01948	01958	25598
Audiovox	01937	01951	01952	Hitachi	01960	25823		Samsung	01903	25475	
Audiovox	25647	25697	25698	Insignia	25844			Sansui	01935	25271	
Axion	01937	25647		Jensen	01933	25592		Sova	01952	25698	
Broksonic	01935	25271		Konka	25295	25296		Sylvania	01394	25251	25844
Citizen	01935	25271		Magnavox	25844			Toshiba	01935	25271	
Emerson	01394	25251	25844	Panasonic	01941	26066					

TV/VCR Combination

America Action	00180	16662		Lloyd's	01904	16384		RCA	01917	01919	01922	
Audiovox	00180	16662		Magnasonic	01928	16977	17662			16624	17191	17419
Broksonic	01911	01929	16386	Magnavox	01904	01931	16384			17444		
		16863	17863			16977	18165		Samsung	01959	17398	
Citizen	01928	17662		Magnin	16624				Sansui	01904	01911	01929
Colt	16456			Memorex	01926	16546	17421			16384	16863	17863
Curtis Mathes	01919	17419			17546	17621	17646		Sanyo	16624		
Daewoo	01928	17662		MGA	16624				Sears	01904	01926	16384
Emerson	00236	01911	01928	Mitsubishi	01917	17191				17621		
	01929	16386	16863	Optimus	16546	16977	17546		Sony	01904	01925	16384
	16977	17662	17863		17646					17616		
Funai	01904	16384		Orion	01911	01929	16386		Sylvania	01931	18165	
GE	01917	01919	01922		16863	17863			Symphonic	01904	16384	16977
	16624	17191	17419	Panasonic	01919	16546	17419		Thomas	01904	16384	
	17444				17546	17646			Toshiba	01918	01936	17229
GoldStar	01926	17621		Penney	01919	01926	16624			17529		
Harley Davidson	01904	16384			17419	17621			Zenith	01904	01911	01929
Hitachi	01904	16384		Quasar	01919	16546	17419			16384	16863	17863
JVC	01923				17546							
LG	17421			RadioShack	01904	16384	17421					

TV/VCR/DVD Combination

Akai	01903	25475		Magnavox	01944	25397		Superscan	25397		
Broksonic	01938	25444		Panasonic	01946	01947	25938		Sylvania	01944	25397
Emerson	01944	25397			26038				Symphonic	01944	25397
ESA	01944	25397		RCA	01953	25708			Toshiba	01945	25621
Funai	25910			Sharp	01917	17191	25206				

Cable & Satellite Box Device Codes

Cable Box

ABC	04099	04104	04110	Memorex	04099	04108	04110	Runco	04096		
	04113			Motorola	04096			Samsung	04240		
Americast	04995				05472	04572	04906	Scientific Atlanta	05973	04973	04573
Amino	05698	05918			04372	05283	05350		04104	04113	
Bell & Howell	04110				05202			Sejin	05698		
Bell South	04995			Multitech	04979			Sony	05102		
Clearmaster	04979			Myrio	05698	05918		Starcom	04099		
ClearMax	04979			Pace	05973	04333	04104	Supercable	04372		
Coolmax	04979			Panasonic	04096	04203		Supermax	04979		
Digeo	05283			Panther	04733			Thomson	05352		
Digi	04733			Paragon	04096			Tocom	04108		
Director	04572			Philips	05401	04413		Torx	04099		
Dumont	04733			Pioneer	05973	04973	04240	Toshiba	04096		
Gen.I Instrument	04572	04906	04372		04629			Tristar	04979		
	04099			Pulsar	04096			V2	04979		
GoldStar	04240			Quasar	04096			Viewmaster	04979		
Hamlin	04105	04369		RadioShack	04979			Vision	04979		
i3 Micro	05698			RCA	05352			Vortex View	04979		
Jerrold	04572	04906	04372	Regal	04375	04369		Zenith	04096	04621	04995

Satellite Box

AlphaStar	13060			GOI	13063	14063			13430	13730	14037
Amino	09807			Gradiente	13144				17123		
Century	13144			Hisense	13823			Proscan	12680	12854	
Chaparral	12504			Hitachi	13107	13538		Proton	13823		
Crossdigital	13397			HTS	13063	14063		RadioShack	13157		
DirecTV	13665	12680	12854	Hughes Network	13430	13037	13730	RCA	12854	13143	12431
	12927	13012	13037		13731	13732	13826		13680		
	13107	13396	13397		13827	14037	17123	Samsung	13396	13564	13665
	13430	13364	12387		17124	17129	17623		13397	13730	13897
	12535	13680	13702		17624				17123		
	13730	13731	13732	Humax	14078			Sony	12927	13927	13928
	13826	13827	13897	iLo	13823			Star Choice	13157		
	13927	13928	14037	JVC	13063	13458	14063	Tivo	13430	13730	13731
	14144	12387		LG	13514	13702			13732	13826	13827
Dish Network	13063	13293	13458	Magnavox	13012	13010		Toshiba	13037	14037	13078
	13459	13793	14063	Memorex	13012				13573		
Dishpro	13793	13293	13063	Mitsubishi	13037			UltimateTV	13680	13928	
	14063			Motorola	13157			Uniden	13012	13010	
Echostar	13793	13293	13063	Next Level	13157			US Digital	13823		
	13458	13459	14063	Panasonic	12535	12989		USDTV	13823		
Expressvu	13063	14063		Paysat	13012			Voom	13157		
GE	12854			Philips	12387	13010	13012	Zenith	14144	13144	
General Inst.	13157				13037	13144	13364				

DVD Player

Accurian	25648	25992		
Advent	25592			
Aiwa	25217			
Akai	25271	25346	25475	
	25665			
Alco	25366			
Allegro	25445			
Amphion M.W.	25448			
AMW	25448			
Apex Digital	25248	25293	25331	
	25370	25372	25373	
	25406	25580	25596	
	25632	25637	25676	
Arrgo	25599			
Aspire Digital	25744	25983		
Audiovox	25366	25647	25648	
	25697	25698		
Axion	25647	25648		
Blaupunkt	25293			
Blue Parade	25147			
Broksonic	25271	25444		
Cinea	25407			
CineVision	25452	25409	25445	
Citizen	25271	25853		
Coby	25354	25428	25662	
	25683	25741	25753	
Craig	25407			
Curtis Mathes	25663			
CyberHome	25392	25450	25599	
	25600	25693	25705	
	26078			
Daewoo	25360	25281	25409	
	25445	25745	25748	
	25810	25818	26017	
Denon	25066	25210		
Desay	25983			
Disney	25251	25846		
Dual	25644	25661		
Durabrand	25703			
DVD2000	25097			
Emerson	25167	25251	25397	
	25844			
Enterprise	25167			
ESA	25397	25844		
Fisher	25246			
Funai	25251	25844	25910	
Gateway	25649	25653	25734	
	25770			
GE	25098	25391	25293	
Go Video	25320	25291	25317	
	25359	25409	25445	
	25620	25651	25675	
	25734	25880	26306	
Go Vision	25647	25648		
GoldStar	25317			
Greenhill	25293			
Harman/Kardon	25158	25278		
Hitachi	25149	25240	25823	
Hiteker	25248			
Humax	26164			
iLo	25924			
Initial	25293			
Insignia	25844			
Integra	25203			
JBL	25278			
Jensen	25592			
JSI	25999			
JVC	25134	25199	25443	
	25740			
jWin	25625			
Kawasaki	25366			
Kenwood	25066	25110		
KLH	25293	25366	25596	
	25725			
Konka	25287	25295	25296	
Koss	25227	25472	25999	
Landel	25402			
Lasonic	25374	25749		
Lenoxx	25703			
LG	25167	25317	25377	
	25445			
LiteOn	25634	25734	25992	
	26016			
Loewe	25087	25461		
Magnavox	25079	25115	25222	
	25251	25397	25844	
Malata	25358	25735		
Marantz	25115			
Memorex	25271	25407	25846	
Microsoft	25098	26284		
Mintek	25415	25293		
Mitsubishi	26097	25097		
Momitsu	25658			
NAD	25317			
NEC	25361			
Nesa	25293			
Next Base	25402			
NexxTech	25978			
Norcent	25579	25448	25683	
	25841			
Onkyo	25079	25203	25368	
OptoMedia Elec.	25472			
Oritron	25227			
Panasonic	25066	25279	25938	
	26038	26066	26338	
Philips	25079	25115	25222	
	25251	25430	25836	
	25843	25930		
Pioneer	25101	25147	25207	
Polaroid	25596	25637	25662	
Polk Audio	25115			
Portland	25346			
Presidian	25251	25648		
Prima	25592			
Proscan	25098			
ProVision	25354			
Qwestar	25227			
RCA	25098	25147	25293	
	25366	25398	25598	
	25708	26345		
Rio	25445			
Rotel	25199			
Rowa	25399			
Sampo	25274	25328		
Samsung	25066	25149	24775	
	25396	25475	25620	
	25651			
Sansui	25271			
Sanyo	25246	25271	25449	
Sensory Science	25734			
Sharp	25206	25251	25328	
	25832			
Sharper Image	25693			
Sherwood	25209	25346	25619	
	25653			
Shinsonic	25109	25415		
Sonic Blue	25445	25675		
Sony	25109	26109	25440	
	25609	25646	26007	
Sova	25698			
Superscan	25397			
SVA	25436	25681		
Sylvania	25251	25397	25844	
Symphonic	25251	25397		
Teac	25366			
Technics	25066	25279		
Technosonic	25306			
Theta Digital	25147			
Toshiba	30460	25079	25271	
	25621	25730	26164	
	26345			
Tredex	25376			
Urban Concepts	25079			
US Logic	25415			
Venturer	25366			
Vizio	25640	25802		
Xbox	25098	26284		
Yamaha	25066	25115	25121	
Zenith	25079	25167	25317	
	25445			
Zoece	25841			

DVD-R

Accurian	25992			
Apex Digital	25632			
Aspire Digital	25744			
Coby	25662			
CyberHome	25705	26078		
Funai	25251	25910		
Gateway	25649	25734	25770	
Go Video	25317	25734	25880	
	26306			
iLo	25924			
JVC	25740			
LG	25317			
LiteOn	25734	25992	26016	
Magnavox	25222	25251	16384	
Panasonic	25066			
Philips	25222			
Pioneer	25207			
Polaroid	25662			
RCA	25098			
Samsung	25066			
Sensory Science	25734			
Sharp	25251			
Sony	25609	25646	26007	
Sylvania	25251			
Zenith	25317			

Laser Disk Player

Carver	20674		Mitsubishi	20539		Quasar	20684
Denon	20539	20652	NAD	20539		Sega	20503
Disco Vision	20503		Optimus	20539		Sony	20673 20681
Harman/Kardon	20674		Panasonic	20684		Technics	20684
Hitachi	20503		Philips	20674		Theta Digital	20674
Magnavox	20674	20697	Pioneer	20539	20503	Yamaha	20697
Marantz	20674		Polk Audio	20674			

VCR

ABS	18356			16473		Penney	16419	16421	16624
Admiral	16432	16593	Howard Comp.	18356			16426	16422	17419
Adventura	16384		HP	18356			17621		
Aiko	16662		Hughes Network	16426	17123	17124	Pentax	16426	
Aiwa	16421	16384	17129	17129	17623	17624	Philco	16419	
Akai	16425		Humax	17123			Philips	16419	16465
Alienware	18356		Hush	18356				17123	17465
America Action	16662		iBUYPOWER	18356			Pilot	16421	17002
American High	16419		Jensen	16425			Pioneer	16451	
Asha	16624		JVC	16451	16425		Polk Audio	16465	
Audiovox	16421	16662	KEC	16421	16662		Presidian	17977	
Beaumark	16624		Kenwood	16451	16425	16422	Profitronic	16624	
Bell & Howell	16488		KLH	16456			Proscan	16444	17444
Broksonic	16568	16505	Kodak	16419	16421		Protec	16456	
	16386	16863	LG	17421			Pulsar	16423	
	16421		Linksys	18356			Quasar	16419	16546
Calix	16419		Lloyd's	16384				17546	17419
Canon	16465		Logik	16456			RadioShack	16384	17421
Carver	16456	16662	LXI	16421			Radix	16421	
CCE	16421	16662	Magnasonic	16977	17662		Randex	16421	
Citizen	16456		Magnavox	16419	16423	16465	RCA	16444	16624
Colt	16421	16431		16384	16533	16947		16533	17191
Craig	16456			16977	17977	18165		17419	17444
	16444	16419	Magnin	16624			Realistic	16419	16421
	16425	17419	Marantz	16419	16465			16431	16384
Cybernex	16624		Marta	16421			ReplayTV	16998	17000
CyberPower	18356		Matsushita	16419	16546	17546		18000	17999
Daewoo	16429	16662	Media Center PC	18356			Ricavision	18356	
Dell	18356		MEI	16419			Runco	16423	
Denon	16426		Memorex	16419	16546	16421	Samsung	16624	16429
DirecTV	17123	17124		16432	16423	16431		17398	17123
	17623	17624		16624	16384	16488	Sanky	16432	16423
	16423	16422		16593	16863	17421	Sansui	16384	16451
Durabrand	16384			17546	17621	17646		16425	16863
Dynatech	16421		MGA	16624	16427		Sanyo	16431	16624
Electrohome	16421		MGN Tech.	16624			Scott	16568	16429
Electrohome	16421		Microsoft	18356				16427	16505
Emerex	16416		Mind	18356			Sears	16419	16421
Emerson	16421	16568	Minolta	16426				16384	16426
	16505	16427	Mitsubishi	16451	16427	17191		17621	16488
	16386	16662	Motorola	16419	16432		Sharp	16432	17191
	16977	17662	MTC	16624	16384		Shintom	16456	17232
	17977		Multitech	16384	16456		Shogun	16624	
Fisher	16431	16488	NEC	16488	16451	16425	Singer	16456	
Fuji	16419	16417		16422			Sonic Blue	16998	17000
Funai	16384	16977	Nikko	16421				18000	17999
Garrard	16384		Niveus Media	18356			Sony	16419	16416
Gateway	18356		Noblex	16624				16384	17020
GE	16444	16419	Northgate	18356				17616	18356
	17191	17419	Olympus	16419			Stack 9	18356	
	16444	17444	Optimus	17446	16546	16421	STS	16426	
Go Video	16816	16998		16432	16488	16816	Sylvania	16419	16465
GoldStar	16421	16422		16977	17546	17646		16427	16977
Gradiente	16384		Orion	16568	16593	16386		18165	
Harley Davidson	16384			16863	17863		Symphonic	16384	16977
Harman/Kardon	16465	16422	Panasonic	17446	16419	16546	Systemax	18356	
Harwood	16456			16609	16998	17000	Tagar Systems	18356	
Hewlett Packard	18356			17419	17546	17646	Tatung	16425	
HI-Q	16431								
Hitachi	16384	16426							

Teac	16384	16425		Totevision	16421	16624		Wards	16444	16419	16432
Technics	16419	16546		Touch	18356				16431	16465	16624
Teknika	16419	16421	16384	Unitech	16624				16384	16426	16456
Thomas	16384			Vector	16429				16533		
Tivo	17002	17020	17123	Vector Research	16422			White WH	16593	16456	
	17124	17129	17623	Video Concepts	16429			XR-1000	16419	16384	16456
	17624	18380	17887	Videomagic	16421			Yamaha	16422		
TMK	16624			Videosonic	16624			Zenith	16423	16417	16384
Toshiba	16429	16427	17229	Viewsonic	18356				16593	16863	17863
	17392	17529	17887	Villain	16384			ZT Group	18356		
	18356	18380		Voodoo	18356						

Digital Video Recorder (DVR)

ABS	18356			Hughes Network	13430	13730	13731	ReplayTV	16998	17000	17999
Alienware	18356				13732	13826	13827		18000		
Amino	09807	09865			17123	17124	17129	Samsung	13730	17123	
CyberPower	18356				17623	17624		Sonic Blue	16998	17000	17999
Dell	18356			Humax	17123				18000		
DirecTV	12387	12680	12927	Hush	18356			Sony	12927	13928	17020
	13430	13364	13665	iBUYPOWER	18356				18356		
	13680	13730	13731	JVC	13458			Stack 9	18356		
	13732	13826	13827	Linksys	18356			Star Choice	13157		
	13928	17123		Media Center PC	18356			Systemax	18356		
Dish Network	13793	13063		Microsoft	18356			Tagar Systems	18356		
Dishpro	13793	13063		Mind	18356			Tivo	17002	17020	17123
Echostar	13793	13063	13458	Motorola	13157				17124	17129	17623
	13459			Niveus Media	18356				17624		
Expressvu	13063			Northgate	18356			Toshiba	17392	18356	18380
Gateway	18356			Panasonic	16998	17000		Touch	18356		
Go Video	16998			Philips	13430	13730	17002	Viewsonic	18356		
Hewlett Packard	18356				17123			Voodoo	18356		
Howard Comp.	18356			Proscan	12680			ZT Group	18356		
HP	18356			RCA	13680	17264					

Auxiliary Device Codes

Audio Amplifier

Adcom	33345	Left Coast	33660	RCA	33068
Bose	33442	Lenoxx	34329	Realistic	33163
Curtis Mathes	33068	Marantz	33660	Sony	33583
Durabrand	34329	McIntosh	33019	Soundesign	32846
Elan	33415	Optimus	33163	Victor	33099
GE	32846	Philips	33660	Wards	32846
Harman/Kardon	33660	Pioneer	32781	Yamaha	33122
JVC	33099	Polk Audio	33660		

Audio Accessory

Accurian	33874	Marantz	34259	Russound	34070
Aiwa	32927	Motorola	34232	Slim Devices	34612
Altec Lansing	33824 34253	NaviPod	34412	Sony	32927
Apple	33883 34412	Netgear	34553	Yamaha	34577 34578
Cambridge SW	34298	Omnifi	34373		
Creative	33640	Roku	34596		

Audio CD

Aiwa	37021	MCS	36893		37332
Burmester	37284	Miro	36864	Realistic	37043 37284
CA Audio Labs	36893 37167	Mission	37021	Rotel	37021 37284
Carver	37021 37043	MTC	37284	SAE	37021
Denon	37737 36867 36898	NSM	37021	Sansui	37021 37169
DKK	36864	Onkyo	37732 36965	Sanyo	36951 37043
DMX Electronics	37021	Optimus	37927 36864 36896	Scott	37169
Emerson	37169		36901 36951 37009	Sears	37169
Fisher	37043		37043 37169 37284	Sharp	37725 36901
Garrard	37284		37332 37939	Sherwood	37931
Genexxa	36896 37169	Panasonic	36893 37167 37252	Sonic Frontiers	37021
Harman/Kardon	37021 37037		37616	Sony	37354 36864 36964
Hitachi	36896	Parasound	37284		38228 37049
Integra	36965	Philips	37490 37021 37138	Soundesign	37009
JVC	36936	Pioneer	37927 37926 36896	Symphonic	37169
Kenwood	37545 37490 36892		37951 37169 37332	TAG McLaren	37021
	36901 37054	Polk Audio	37021	Tascam	37284
KLH	38182 38236 38237	Proton	37021	Teac	37284
	38575	QED	37021	Technics	36893 37167
Krell	37021	Quad	37021	Victor	36936
Linn	37021	Quasar	36893	Wards	37021 36917
LXI	37169	RadioShack	37939	Yamaha	37354 37752 36900
Magnavox	37021 37169	RCA	37926 36896 36917		38156
Marantz	37490 36893 37021		37043 37169 37284		

Audio Receiver

ADC	29203	Cambridge SW	30042	Hitachi	29945 30473
Aiwa	30077 28830 28861	Capetronic	29203	Insignia	29702
	28793 30060 30313	Carver	29861 28861	Integra	28807 29970 29992
Akai	30184	Classic	30024	JBL	28782 29978
Alco	30062	Coby	29935 30061	JVC	28746 29935 30046
Amphion M.W.	30235 30287	Daewoo	29922		30167 30483
AMW	30235 30287	Dell	30055	Kenwood	29985 30242 30241
Anam	30281 29746	Delphi	30086		28699 28858
Apex Digital	29929 30102 30446	Denon	30032 29814	KLH	30062 30084 30100
Audiotronic	29861	Fisher	30473	Koss	30038 30169
Audiovox	30062 30299	Gateway	30189	LG	29965
B & K	29373 29492 29512	Glory Horse	29935	Linn	28861
BK	29374	Harman/Kardon	28782 28861 29563	Liquid Video	30169
Bose	29901 29311 29925		29976 29978	Magnavox	29861 29941 28861
	30513 30605	Hewlett Packard	29853		29203 30186

Show Current IR Codes programmed into the remotes

This function outputs an indication of the IR codes currently set for all the local IR devices and the devices attached to the BOCS red, green, and blue channels, by flashing the corresponding LEDs on the remote. Once you get your system up and running well, it is a good idea to record all the codes you are using in case you ever need to reprogram the system.

The device types are displayed using the following code:

- Each device type is flashed as five digits.
- Digits 1 through 9 are indicated by one through nine LED flashes, respectively. For each flash the LED is on for ½ second and off for ½ second.
- Digit 0 is indicated by a rapidly flashing LED for 1 second.
- The LED is off for two seconds between digits.

Procedure:

1. Press and hold "MENU" and "2" on the remote for at least 2 seconds.
2. The power LED will turn on.
3. Press Select/OK to confirm.
4. The red LED will flash the device type for the red channel device.
5. The green LED will flash the device type for the green channel device.
6. The blue LED will flash the device type for the blue channel device.
7. The Local TV LED will flash the device type for the local TV device.
8. The AUX LED will flash the device type for the local AUX device.
9. The DVD LED will flash the device type for the local DVD device.
10. The CBL LED will flash the device type for the local CBL device.
11. The power LED will turn off.

Remote Control Special Function Quick Reference

Function:	Key Combination(s)
Pair a remote to an Xtender	MENU + CH_UP
Set IR device type	TV + INFO DVD + INFO CBL + INFO AUX + INFO RED + INFO GREEN + INFO BLUE + INFO
Scan IR device type	TV + GUIDE DVD + GUIDE CBL + GUIDE AUX + GUIDE RED + GUIDE GREEN + GUIDE BLUE + GUIDE
Learn IR pattern for key and device	TV + ENTER DVD + ENTER CBL + ENTER AUX + ENTER RED + ENTER GREEN + ENTER BLUE + ENTER
Unlearn IR pattern for key and device	TV + DEL/CLEAR DVD + DEL/CLEAR CBL + DEL/CLEAR AUX + DEL/CLEAR RED + DEL/CLEAR GREEN + DEL/CLEAR BLUE + DEL/CLEAR
Enable volume punch-through to AUX device	AUX + VOL_UP
Disable volume punch-through to AUX device	TV + VOL_UP
Enable INPUT punch-through to AUX device	AUX + Live-TV
Disable INPUT punch-through to AUX device	TV + Live-TV
Enable channel tuning punch-through to CBL device	CBL + CH_UP
Disable channel tuning punch-through to CBL device	TV + CH_UP
Set local master remote	MENU + VOL UP
Clear local master remote	MENU + VOL DN
Program TV signal gain	MENU + 1
Show IR device types	MENU + 2
Set inter-digit delay	MENU + 4
Select TV tuning mode	MENU + 5
Enable power to SuperCombiner	Press Red, Green, or Blue
Disable power to SuperCombiner	Press/Release Shift, then Power