



Xtender

Installation & Usage Manual



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Important Safety Instructions:

- 1) Read these instructions
- 2) Keep these instructions
- 3) Heed all warnings
- 4) Follow all instructions
- 5) Do not use this apparatus near water
- 6) Clean only with dry cloth
- 7) Do not block and ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13) Unplug this apparatus during lightening storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING – To reduce the risk of electric shock, do not expose this apparatus to rain or moisture.

WARNING – Batteries shall not be exposed to excessive heat such as sunshine, fire, or the like.

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

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

Three fast flashes of the 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 the wireless remotes.

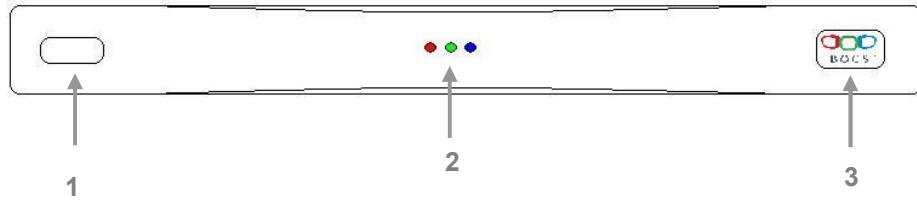
What's on the Remote?



What's on the Remote (*continued*)

1. Xtender Channel 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. Three fast flashes of all the Xtender Channel lights (Red/Green/Blue) means the remote is out of range.
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 <i>shift</i> then <i>info</i> 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	Pushing <i>shift</i> then <i>1</i> 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"

What's on the Front Panel?



1. Learning Window

Xtender has the ability to learn new codes to work the devices attached (if the standard codes don't work properly). 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.

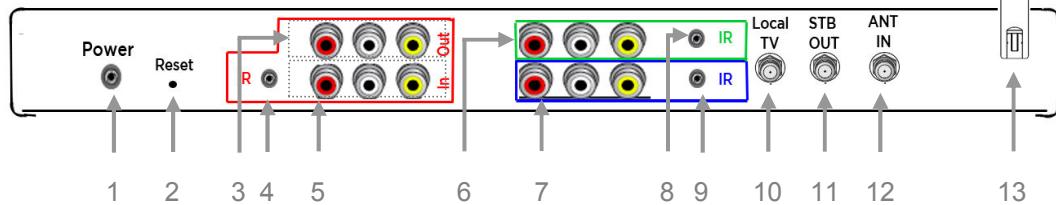
2. Xtender Activity Lights

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 powered on. All of the lights 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.

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.

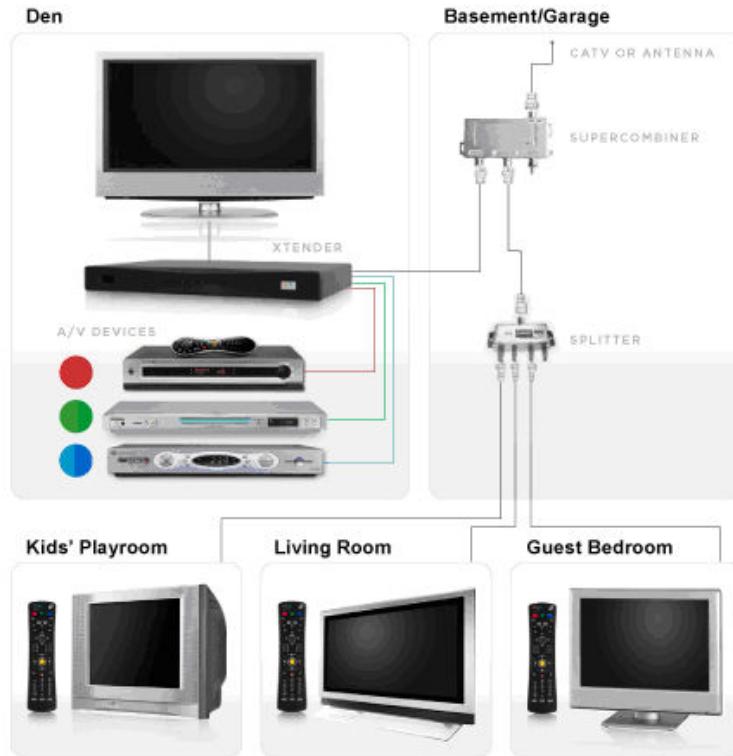
Xtender is connected to power and the Coax wall jack.

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.



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.

Parts Needed
COAX Power Adaptor
Xtender Power Supply

Power the Coax Wire

You will be installing the SuperCombiner, but the Xtender unit requires that the Xtender have its 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 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, you will apply power to the coax wire near Xtender so you can use a little lightbulb (in the cable-finder tool) to test the different wires in your cable splitter box – watching for wire that lights up the light.

Go to the nearest 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 it into the coax wall outlet near Xtender – 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:



Note 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.

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



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

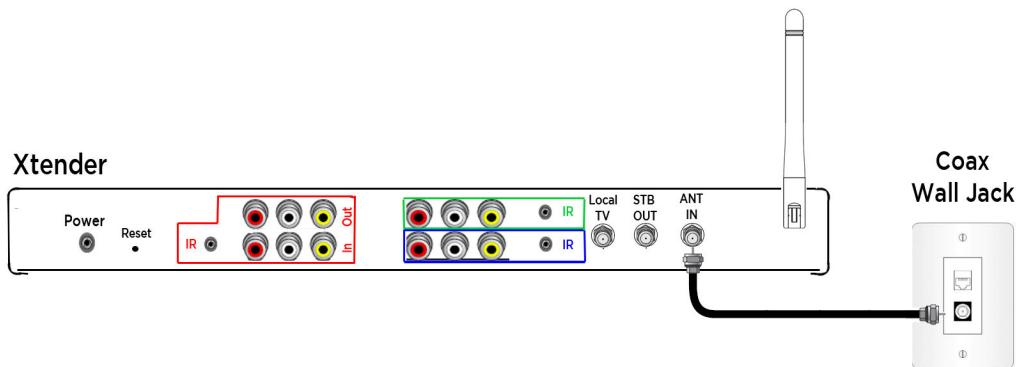
Important When you are *finished with the system installation*, make sure to *close the box back up* – especially if it is outside the home – you need to put everything back as it was to reduce water/weather exposure to those connections.

Step 2 Installing the Xtender

Connect Xtender to Power

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.



Red, Green & Blue Channel Set-up – 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.

Choose the devices

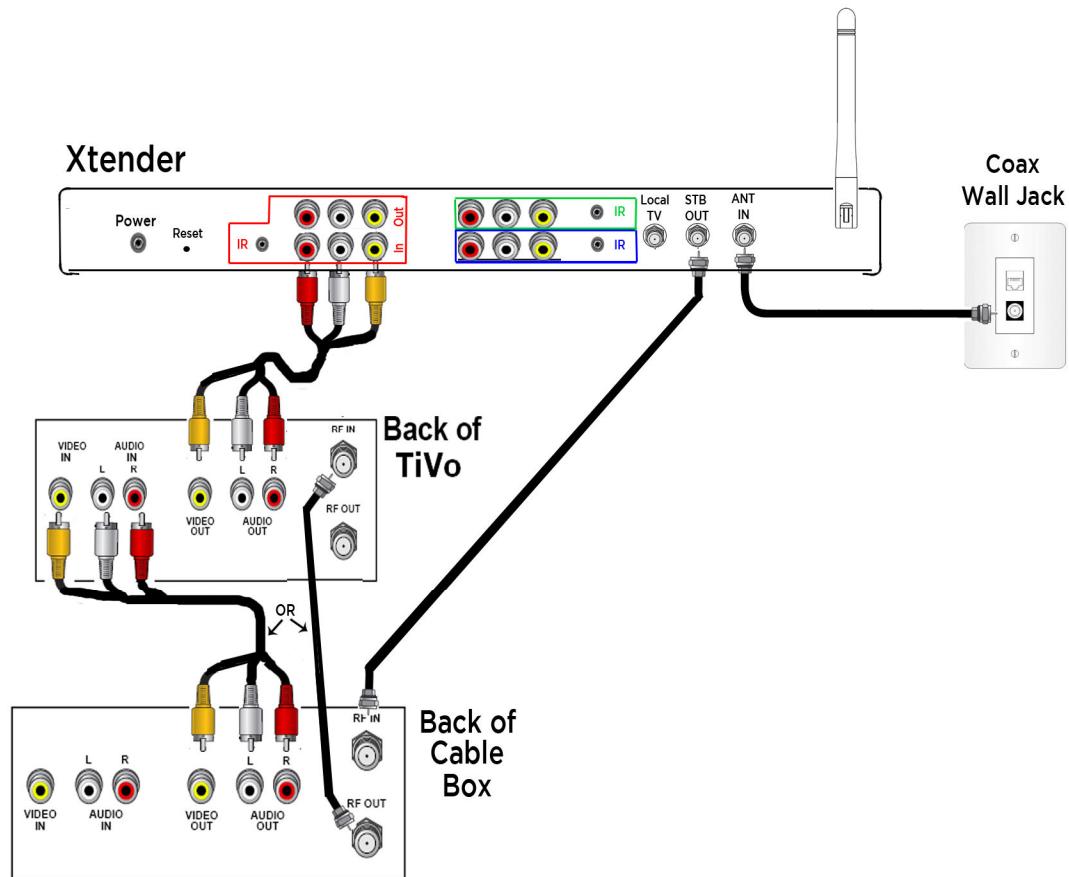
Typical choices are: Tivo, DVD jukebox, Cable Set-Top-Box, Windows Media Center, VCR, VOD box, or anything else with composite audio/video output.

Red Channel Set Up

- (Example) 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.



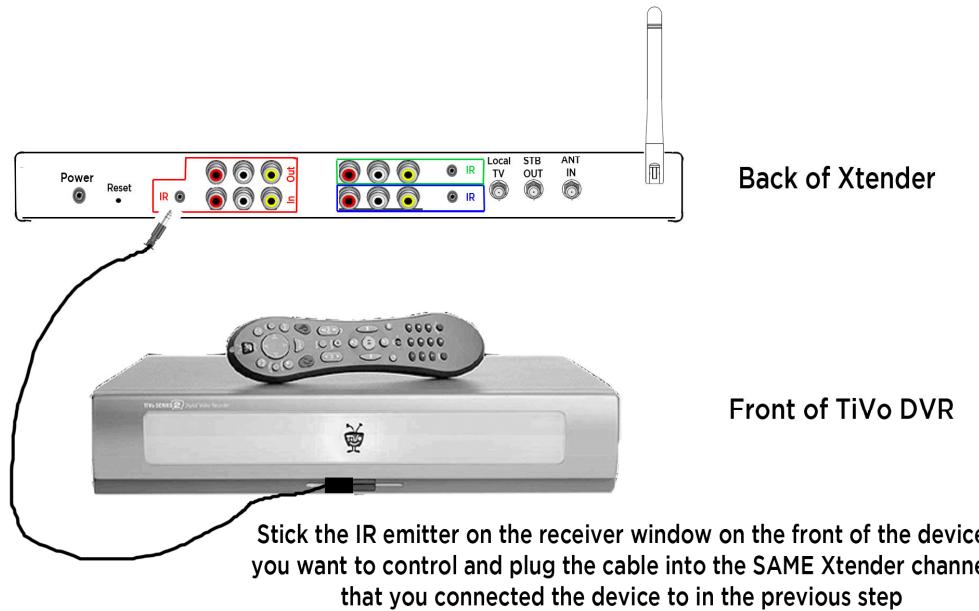
Note If any of your devices need a cable TV connection (TiVo, set-top-box etc), connect a coax cable from the "STB OUT" jack on Xtender to that Device. If more than one device needs a cable connection you will have to use a splitter to provide each device a signal connection from the "STB OUT" jack on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

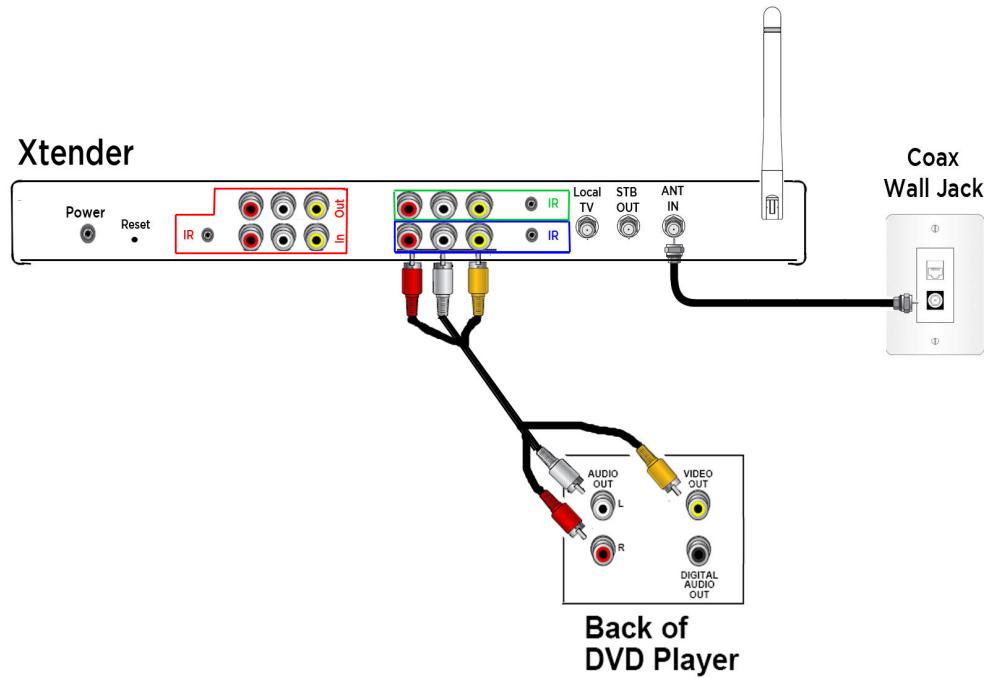
Blue Channel Set Up

- Example - 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

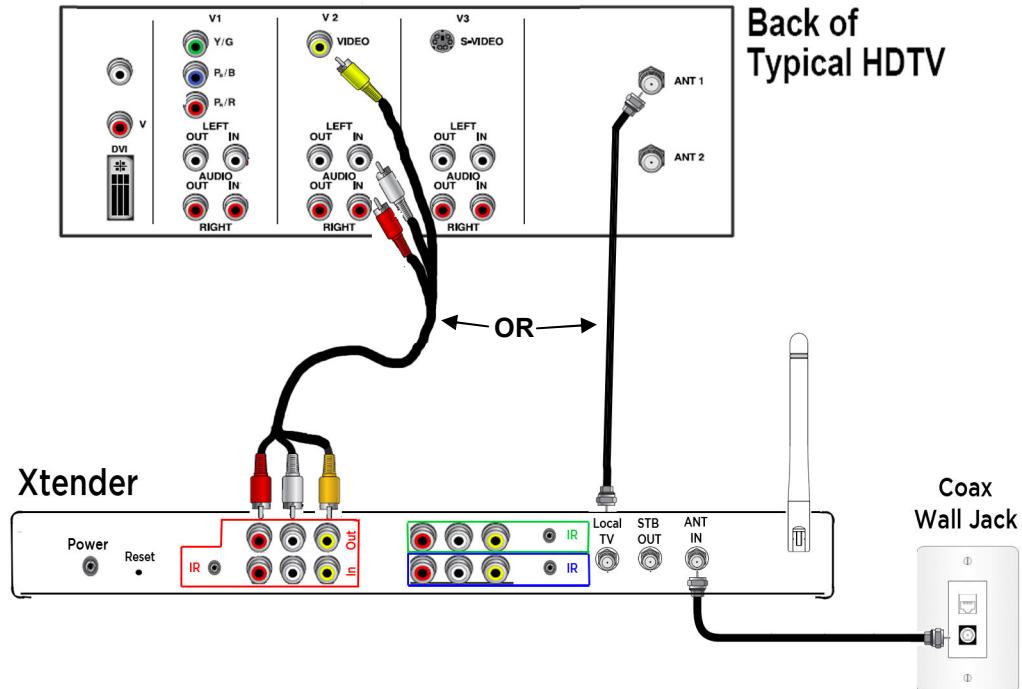
Locate the power supply that came with Xtender. Plug power supply into "Power" on the back panel of Xtender. Plug the power supply into a wall outlet or plug strip.

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.



You can connect your TV to Xtender using the Local-TV coax 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. The “Local TV” output on Xtender will pass cable TV, satellite, and Over the Air (whatever you have hooked up to your in-home COAX system) to the local TV as well as provide the three (Red, Green, Blue) BOCS channels to the local TV.

NOTE: If you use the LOCAL-TV output on Xtender you must set the remote for that room as the “Local Master” – see below

If you would like to have even better video on the local TV, Xtender has a pass through port on the Red channel – if you connect a composite A/V cable from this output to your TV’s Video-1 input you will be able to switch inputs on your TV (to Video-1) to get the best possible video from whatever is plugged into the Xtender Red channel.

Remote Control Setup for Local TV - Set Local Master remote

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 there will be three fast flashes of the red/green/blue lights on the remote (because it thinks it is simply out of range from the Xtender it is paired with).

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.

Programming a remote by using the code-scan feature

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 that it knows to see if one of them will work.

1. Turn on the TV you would like to pair with the remote. Press and hold “Local TV” and “Guide” for at least two seconds – until the power light on the remote stays on (this tells the remote you want to program a code for the “Local TV” button)
2. Press the TV button – power light should stay lit
3. Point the remote at the TV
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 TV you are trying to program turns on or 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 to go back through the codes until you find the code that the TV turns on/off again.
6. 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

In this step you will program the Xtender unit with the codes it needs to control the A/V devices (Tivo, DVD, etc) plugged into Xtender.

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.

Programming Xtender using the code-scan feature

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 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 to go back through the codes until you find the code that the TV turns on/off again.
6. Press the Select/OK button to accept the new code. Power button will double flash to indicate success.

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*

Important *Only one remote per home should be set as local master.*

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 channel. 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 & mute buttons to the AUX device, or
 - “TV” and “VOL +” - to direct volume & mute 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.

Important to learn IR codes for a TV or other "local device" you must purchase an upgrade for your remote to make it a 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 an OEM Remote

You “Learn a code” directly into the remote control only for devices in the same room as the remote (TV, local DVD etc). To “Learn a code” for a device plugged into the Xtender unit see the section below titled “Have the Xtender Learn IR Codes”

Note that a learning remote must be purchased for this to work.

OEM = Original Equipment Manufacturer – i.e. the remote that came with your TV or DVD player.

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 button the learned codes will be associated with:
 - "Local TV" and "Enter/#" for the local TV button,
 - "CBL" and "Enter/#" for the local CBL button,
 - "DVD" and "Enter/#" for the local DVD button, or
 - "AUX" and "Enter/#" for the local AUX button.
3. The power LED will turn on and remain on (Times out after 10 seconds)
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 OEM remote. **NOTE that you should press firmly but quickly on the OEM remote – do not hold down the button.**
6. The power LED flashes twice if the key was successfully learned, or flashes rapidly after waiting 5 seconds if learning failed. If neither of these signals occurs, repeat from step 4.
7. To learn another button (or to learn the same button again if the previous try failed), go back to step 4.
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.

Example – you have a TV that none of the built in codes work for:

1. Place the OEM remote and the Learning BOCS remote 2" apart nose to nose.
2. Hold “Local-TV” and “Enter/#” on the BOCS remote until the power light comes on
3. Press “1” on BOCS remote, then press “1” on OEM remote – watch for a double blink on BOCS remote power button (If error fast flash repeat this step)
4. Press “2” on BOCS remote, then press “2” on OEM remote – watch for a double blink on BOCS remote power button (If error fast flash repeat this step)
5. Continue and learn every button on the OEM remote into the BOCS remote that you will use
6. Wait 10 seconds for the learning process to time out and the BOCS remote power light to go out.

Have the Xtender Learn IR Codes from Another Remote

To Control Devices Plugged into the Red, Green, or Blue channel – this is done at the Xtender unit

1. Place the OEM remote so that it points at the IR window on the front of the Xtender – it must be within 1 foot of the window and pointed directly at the window level with the window. Note that the remote must remain very still and at the same distance from the Xtender IR window – it is easiest if you place the remote on something solid so it remains still.
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. The power LED will turn on and remain on (Times out after 10 seconds)
4. Using any Paired BOCS remote control, 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 OEM remote (still pointed at Xtender). **NOTE that you should press firmly but quickly on the OEM remote – do not hold down the button, a half second firm push is the best.**
6. The power LED flashes twice if the key was successfully learned, or flashes rapidly after waiting 5 seconds if learning failed. If neither of these signals occurs, repeat from step 4.
7. To learn another button (or to learn the same button again if the previous try failed), go back to step 4.
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.

Example – you have an iPod dock plugged into the RED channel that none of the built in codes work for:

1. Point the OEM remote at the Xtender IR window no more than 1 foot away and on a steady surface.
2. Hold “BOCS-RED” and “Enter/#” on a paired BOCS remote until the power light comes on
3. Press “Play” on BOCS remote, then press “Play” on OEM remote – watch for a double blink on BOCS remote power button (If error fast flash repeat this step)
4. Press “Up” on BOCS remote, then press “Up” on OEM remote – watch for a double blink on BOCS remote power button (If error fast flash repeat this step)
5. Continue and learn every button on the OEM remote into the BOCS remote that you will use
6. Wait 10 seconds for the learning process to time out and the BOCS remote power light to go out.

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.

Show the IR codes programmed into the remote and Xtender

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 $\frac{1}{2}$ second and off for $\frac{1}{2}$ second.
- Digit 0 is indicated by a rapidly flashing LED for 1 second.
- The LED is off for two seconds between digits.

Procedure:

- Press and hold "MENU" and "2" on the remote for at least 2 seconds.
- The power LED will turn on.
- Press Select/OK to confirm.
- The red LED will flash the device type for the red channel device.
- The green LED will flash the device type for the green channel device.
- The blue LED will flash the device type for the blue channel device.
- The Local TV LED will flash the device type for the local TV device.
- The AUX LED will flash the device type for the local AUX device.
- The DVD LED will flash the device type for the local DVD device.
- The CBL LED will flash the device type for the local CBL device.
- The power LED will turn off.

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)

Repeater Installation and Use

How do I know if I need a repeater?

If you have a larger home and you find that some rooms have poor BOCS Remote Control coverage (If controlling a device through Xtender and you notice slow response time to button pushes or you see a triple flash of all three BOCS LEDs – Red, Green, Blue – then the remote is having difficulty communicating with Xtender.

You should first try reorienting the antenna on Xtender – make sure it is pointed straight up.

What does the repeater do?

The BOCS repeater extends the range of the wireless remote controls used with an Xtender, but it only works if you put it in the right place.

Your repeater should be located:

- In a good coverage area – use a remote to find where there is good signal and where it starts to drop off. Press any BOCS button (Red, Green, or Blue), if the corresponding Light flashes briefly you are in good coverage, if all three button (Red, Green, or Blue) flash together three times, the remote is out of coverage area. The repeater should be placed in a solid coverage area and not right on the edge of coverage.
- In the direction of the poor coverage area – If Xtender is in the basement, and the poor coverage area is a bedroom on the third floor, the repeater should be placed between the Xtender and the poor coverage area.
- At an A/C outlet away from metal or large furniture
- In a location that solves all the poor coverage areas in a home since only one repeater can be used per home.

Programming the Repeater:

The BOCS repeater must be “paired” with an Xtender – just like adding a new BOCS remote control to the home.

- Press the “pair” button on the front of the Xtender – all three lights (R/G/B) on the front of Xtender will begin flashing
- Within 10 seconds, plug the repeater into an A/C outlet within 15 feet of the Xtender
- Wait at least 10 seconds for the repeater to synchronize (Lights on Xtender will stop flashing and light on repeater will flash 2-3 times)
- Move the repeater to the chosen location (see above for instructions) and plug into an A/C outlet



Testing and use of the Repeater:

A properly programmed and located repeater will extend the range of remotes up to two times their original range – results may vary due to type of construction, local interference, and location of the repeater. Each time a BOCS button is pressed, the light on the repeater will flash briefly.

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	<p>The video quality of Xtender channels is not as good as my Cable TV channels</p>	<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 is not as good as my Cable TV channels on the TV connected to the LOCAL-TV output on Xtender	The Local-TV output on Xtender puts out either Cable TV stations or Xtender 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
	My cable TV is not as good now that I have installed Xtender	When the cable company installs cable TV in your home, sometimes they only give you enough signal for your TVs to work “OK” – and inserting Xtender could take cable signals down just enough for you to notice. The simplest answer is to add an amplifier right where the

		cable TV line comes into your home. Usually it is best to insert it after any VOIP or Cable modems tapp off from the line.
	Sometimes, when watching BOCS channels on the TV connected to the Local-TV output on Xtender, the quality of the video suddenly goes bad	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 -
Remote control	Sometimes pressing a button does not result in anything happening on an Xtender channel	<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>
	I've tried all the codes for my TV and none of them work	<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>
	I found a code for my TV or A/V device and some buttons work but others do not	<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)

		<p>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”</p> <ol style="list-style-type: none"> 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 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" ...</p>

		<p>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 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>

Television Device Codes

Television

Admiral	00093	00463		Dwin	00720	00774	Kenwood	00030	
Advent	00761	00783	00815	Electroband	00000	00185	KLH	00765	00767
	00817	00842	01933	Electrograph	01755		Konka	00628	00632 00638
	25592			Electrohome	00463			00703	00707 25295
Aiko	00092			Emerson	00030	00154 00171		25296	
Akai	00812	00702	00030		00177	00178 00180	Kost	01262	
	00672	01675	01676		00185	00236 00282	KTV	00180	00030 00185
	01903	01935	25271		00463	00623 01394	LG	00178	00700 00829
	25475				01911	01928 01929		00856	01265 01178
Albatron	00700	00843			01944	16863 16386		01265	01758 17421
Ambassador	00177				16977	17662 17863	Lloyd's	01904	16384
America Action	00180	16662			25251	25397 25844	LXI	00047	00054 00154
Ampro	00751			Envision	00813	01365		00156	00178
Anam National	00055	00180		Epson	00833	00840	MAG	01498	
AOC	00030	00185	01365	ESA	00812	00171 01944	Magnasonic	01928	16977 17662
Apex Digital	00748	00879	00765		25397	25844	Magnavox	00030	00054 00186
	00767	00890	01217	Fisher	00154	00159		00706	00802 01198
	01943	25406		Fujitsu	00186	00683 00809		01254	01365 01454
Audiovox	00451	00180	00092	Fujitsu	00853			01525	01904 01931
	00623	00802	00875	Funai	00180	00171 01271		01944	16384 16977
	01937	01951	01952		01904	16384 25844		18165	25844 25397
	16662	25647	25697		25910		Magnin	16624	
	25698			Futuretech	00180		Marantz	00030	00054 00704
Aventura	00171			Gateway	01755	01756		00854	00855 01154
Axion	25647	01937		GE	00047	00051 00055	Matsushita	00250	00650
Bell & Howell	00154				00135	00178 00282	Maxent	01755	
BenQ	01032				00451	01347 01447	Megapower	00700	
Bradford	00180				01917	01919 01922	Megatron	00178	00145
Broksonic	00236	00463	01911		16624	17191 17419	MEI	00185	
	01929	01935	01938	Gibralter	00017	00030	Memorex	00154	00150 00178
	16386	16863	17863	Go Video	00886	25647		00463	01911 01926
	25271	25444		GoldStar	00178	00030 01926		16546	17421 17546
Candle	00030	00186			17621		MGA	17621	17646
Carnivale	00030			Grunpy	00180			00150	00178 00030
Carver	00054			Haier	01034	00768	Midland	16624	
Celebrity	00000			Hallmark	00178			00047	00017 00051
Celera	00765			Hannspree	01348		Mitsubishi	00135	
Changhong	00765			Harley Davidson	01904	16384		00093	00150 00178
Citizen	00060	00030	00092	Harman/Kardon	00054			00836	00868 01250
	00186	01928	01935	Harvard	00180		Monivision	01917	17191
	17662	25271		Havermey	00093		Motorola	00700	00843
Clairtone	00185			Helios	00865		MTC	00093	00055
Clarion	00180			Hello Kitty	00451		Multitech	00060	00030 00185
Colt	16456			Hewlett Packard	01088	01089 01494	NAD	00180	
Commercial Sol.	01447	00047			01502		NEC	00156	00178 00866
Contec	00180	00185		Hisense	00748			00030	00497 00882
Craig	00180			Hitachi	01145	00145 00151		01704	
Crosley	00054				00797	01904 01960	NetTV	01755	
Crown	00180				16384	25823	Nikko	00178	00030 00092
Curtis Mathes	00047	00054	00154	HP	01088	01089 01494	Norcent	00748	00824 01089
	00451	00093	00060		01502			01365	
	00702	00030	00145	Hyundai	00849		NTC	00092	
	00166	00466	01147		00054		Olevia	01144	01240 01331
	01347	01919	17419	Insignia	00171	01204 01326	Onwa	01610	
CXC	00180				01517	25844 00463	Optimus	00180	
Cytron	01326			Inteq	00017			00154	00250 00166
Daewoo	00451	00092	01661	JBL	00054			00650	16546 16977
	00623	00661	00672	JCB	00000		Optoma	17546	17646
	01928	17662		Jensen	00761	00815 00817	Optonica	00887	
Dell	01080	01178			01933	25592	Orion	00093	00165
Denon	00145	00511		JVC	00053	00731 01253		00236	00463 01463
Denstar	00628			KDS	01923			01911	01929 16386
Dumont	00017			KEC	01498			16863	17863
Durabrand	00463	00180	00178		00180		Panasonic	00051	00055 00250
	00171	01034						00650	01291 01410

	01480	01919	01941		00603			01944	16384	16977
	01946	01947	16546	Sampo	00030	01755		25397		
	17419	17546	17646	Samsung	00030	00060	00178	01144	01240	01331
	25938	26038	26066		00702	00766	00812	Tandy	00093	
Penney	00030	00047	00051		00814	01060	01312	Tatung	00055	01756
	00060	00135	00156		01903	01959	17398	Technics	00250	00051
	00178	01347	01919	Sansui	25475			Techview	00847	
	01926	16624	17419		00463	01904	01911	Techwood	00051	
	17621				01929	01935	16384	Teknika	00054	00180 00150
Petters	01523			Sanyo	16863	17863	25271	Telefunken	00060	00092 00186
Philco	00054	00030			00088	00154	00159	Thomas	01904	16384
Philips	01454	00054	00690		00799	00893	01142	TMK	00178	00177
	01154	01961	25430		16624			TNCi	00017	
Pilot	25836			Sceptre	00878	01217		Toshiba	00060	00154 00156
Pioneer	00030			Scotch	00178				00650	00832 00845
	00166	00679	00866	Scott	00236	00180	00178		01156	01256 01265
	01260			Sears	00047	00054	00154		01343	01356 01524
Polaroid	00765	00865	01262		00156	00159	00171		01656	01704 01918
	01276	01314	01316		00178	01904	01926		01935	01936 01945
	01326	01327	01328	Sharp	16384	17621			17229	17529 25271
	01341	01498	01523		00093	00165	00491		25621	
Portland	00092				00688	00689	00818	Tosonic	00185	
Prima	00761	00783	00815		00851	01393	01602	TVS	00463	
Prima	00817	01933	25592		01917	17191	25206	Vector Research	00030	
Princeton	00700	00717		Sheng Chia	00093			Victor	00053	
Prism	00051			Signet	01262			Vidikron	00054	
Proscan	01447	00047	01347	Simpson	00186			Vidtech	00178	
	01922			Sony	00000	01100	00080	Viewsonic	00797	00857 00864
Proton	00178	00466			00810	00834	01317		00885	01330 01578
Proview	01498				01685	01904	01925		01627	01755
Pulsar	00017				16384	17616		Vizio	00864	00885 01499
Quasar	00250	00051	00055	Soundesign	00180	00178	00186		01756	01758
	00165	00650	01919	Sova	01952	25698		Wards	00054	00178 00030
	16546	17419	17546		01498				00080	00165 00866
RadioShack	00030	00047	00154	Spectroniq	00171				01156	
	00165	00178	00180	Squareview	00180			Waycon	00156	
	01904	16384	17421	SSS	00180			Westinghouse	00885	00889 00890
RCA	00047	00090	00135	Starlite	00180				01282	01577
	00679	01047	01147	Studio Exp.	00843			White WH	00463	00623
	01247	01347	01547	Superscan	00093	00864	25397	Wyse	01365	
	01917	01919	01922	Supreme	00000			Yamaha	00030	00769 00797
	01948	01953	01958	SVA	00748	00587	00768		00833	00839
	16624	17191	17419		00865	00870	00871	Zenith	00017	00092 00178
	17444	25598	25708		00872				00463	01265 01904
Realistic	00030	00154	00165	Sylvania	00054	00030	00171		01911	01929 16384
	00178	00180			01271	01314	01394		16863	17863
Rhapsody	00185				01931	01944	18165			
Runco	00017	00030	00497	Symphonic	25251	25397	25844			
					00180	00171	01904			

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

Yamaha 00797

Zenith 00178

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

ABC	04099	04104	04110		04099	04108	04110		Runco	04096
	04113			Memorex	04096			Samsung	04240	
Americast	04995			Motorola	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		Toshiba	13037	14037	13078
Dish Network	13063	13293	13458	Magnavox	13012	13010			13573		
	13459	13793	14063	Memorex	13012			UltimateTV	13680	13928	
Dishpro	13793	13293	13063	Mitsubishi	13037			Uniden	13012	13010	
	14063			Motorola	13157			US Digital	13823		
Echostar	13793	13293	13063	Next Level	13157			USDTV	13823		
	13458	13459	14063	Panasonic	12535	12989		Voom	13157		
Expressvu	13063	14063		Paysat	13012			Zenith	14144	13144	
GE	12854			Philips	12387	13010	13012				
General Inst.	13157				13037	13144	13364				

Appendix C | Video Device Codes

DVD Player

Accurian	25648	25992	GoldStar	25317	Pioneer	25101	25147	25207
Advent	25592		Greenhill	25293	Polaroid	25596	25637	25662
Aiwa	25217		Harman/Kardon	25158	25278	25115		
Akai	25271	25346	Hitachi	25149	25240	25346		
	25665		Hiteker	25248	25823	25251	25648	
Alco	25366		Humax	26164	Prima	25592		
Allegro	25445		iLo	25924	Proscan	25098		
Amphion M.W.	25448		Initial	25293	ProVision	25354		
AMW	25448		Insignia	25844	Qwestar	25227		
Apex Digital	25248	25293	Integra	25203	RCA	25098	25147	25293
	25370	25372	JBL	25278		25366	25398	25598
	25406	25580	Jensen	25592		25708	26345	
	25632	25637	JSI	25999	Rio	25445		
Argro	25599		JVC	25134	Rotel	25199		
Aspire Digital	25744	25983		25199	Rowa	25399		
Audiovox	25366	25647	jWin	25740	Sampo	25274	25328	
	25697	25698	Kawasaki	25625	Samsung	25066	25149	24775
Axion	25647	25648	Kenwood	25366		25396	25475	25620
Blaupunkt	25293		KLH	25066	Sansui	25651		
Blue Parade	25147		Konka	25110	Sanyo	25271		
Broksonic	25271	25444	Koss	25295	Sensory Science	25246	25271	25449
Cinea	25407		Landel	25472	Sharp	25734	25206	25251
CineVision	25452	25409	Lasonic	25999		25328		
Citizen	25271	25853	Lenoxx	25749	Sharper Image	25832		
Coby	25354	25428	LG	25703	Sherwood	25693		
	25683	25741		25167		25209	25346	25619
Craig	25407			25317		25653		
Curtis Mathes	25663			25377				
CyberHome	25392	25450	LiteOn	25445	Shin sonic	25109	25415	
	25600	25693		25634	Sonic Blue	25445	25675	
	26078		Loewe	25734	Sony	25109	26109	25440
Daewoo	25360	25281	Magnavox	25992		25609	25646	26007
	25445	25745		26016	Sova	25698		
	25810	25818		26087	Superscan	25397		
Denon	25066	25210		25461	SVA	25436	25681	
Desay	25983			25079	Sylvania	25251	25397	25844
Disney	25251	25846		25115	Symphonic	25251	25397	
Dual	25644	25661		25222	Teac	25366		
Durabrand	25703		Malata	25251	Technics	25066	25279	
DVD2000	25097		Marantz	25735	Technosonic	25306		
Emerson	25167	25251	Memorex	25115	Theta Digital	25147		
	25844		Microsoft	25407	Toshiba	30460	25079	25271
Enterprise	25167		Mintek	25846		25621	25730	26164
ESA	25397	25844	Mitsubishi	25846		26345		
Fisher	25246		Momitsu	26097	Tredex	25376		
Funai	25251	25844	NAD	25097	Urban Concepts	25079		
Gateway	25649	25653	NEC	25317	US Logic	25415		
	25770		Nesa	25361	Venturer	25366		
GE	25098	25391	Next Base	25293	Vizio	25640	25802	
Go Video	25320	25291	NexxTech	25402	Xbox	25098	26284	
	25359	25409	Norcent	25978	Yamaha	25066	25115	25121
	25620	25651	Onkyo	25448	Zenith	25079	25167	25317
	25734	25880	OptoMedia Elec.	25683		25445		
Go Vision	25647	25648	Oritron	25841	Zoece	25841		
			Panasonic	25227				
			Philips	25066				
				25279				
				26038				
				26066				
				26338				
				25079				
				25115				
				25222				
				25251				
				25430				
				25836				
				25843				
				25930				

DVD-R

Accurian	25992		iLo	25924	RCA	25098		
Apex Digital	25632		JVC	25740	Samsung	25066		
Aspire Digital	25744		LG	25317	Sensory Science	25734		
Coby	25662		LiteOn	25734	Sharp	25251		
CyberHome	25705	26078	Magnavox	25992	Sony	25609	25646	26007
Funai	25251	25910	Panasonic	26016	Sylvania	25251		
Gateway	25649	25734	25728	16384	Zenith	25317		
Go Video	25317	25734	Philips	25066				
	25880	26306	Pioneer	25222				
			Polaroid	25207				
				25662				

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		Howard Comp.	16473		Penney	16419 16421 16624
Admiral	16432	16593	HP	18356		16426 16422 17419	
Adventura	16384		Hughes Network	16426	17123 17124	17621	
Aiko	16662		Humax	17123		Pentax	16426
Aiwa	16421	16384 16508	Hush	18356		Philco	16419
Akai	16425		iBUYPOWER	18356		Philips	16419 16465 17002
Alienware	18356		Jensen	16425		17123 17465 17565	
America Action	16662		JVC	16451	16425	Pilot	16421
American High	16419		KEC	16421	16662	Pioneer	16451
Asha	16624		Kenwood	16451	16425 16422	Polk Audio	16465
Audiovox	16421	16662	KLH	16456		Presidian	17977
Beaumark	16624		Kodak	16419	16421	Profitronic	16624
Bell & Howell	16488		LG	17421		Proscan	16444 17444
Broksonic	16568	16505 16593	Linksys	18356		Protec	16456
	16386	16863 17863	Lloyd's	16384		Pulsar	16423
Calix	16421		Logik	16456		Quasar	16419 16546 17419
Canon	16419		LXI	16421		17546	
Carver	16465		Magnasonic	16977	17662	RadioShack	16384 17421
CCE	16456	16662	Magnavox	16419	16423 16465	Radix	16421
Citizen	16421	16662 17662		16384	16533 16947	Randex	16421
Colt	16456			16977	17977 18165	RCA	16444 16624 16426
Craig	16421	16431 16624	Magnin	16624		16533 17191 17264	
	16456		Marantz	16419	16465	17419 17444	
Curtis Mathes	16444	16419 16546	Marta	16421		Realistic	16419 16421 16432
	16425	17419	Matsushita	16419	16546 17546	16431 16384 16488	
Cybernex	16624		Media Center PC	18356		ReplayTV	16998 17000 17999
CyberPower	18356		MEI	16419		18000	
Daewoo	16429	16662 17662	Memorex	16419	16546 16421	Ricavision	18356
Dell	18356			16432	16423 16431	Runco	16423
Denon	16426			16624	16384 16488	Samsung	16624 16429 17123
DirecTV	17123	17124 17129		16593	16863 17421	Sankyo	16432 16423
	17623	17624	MGA	16624	16427	Sansui	16384 16451 16593
Durabrand	16423	16422	MGN Tech.	16624		16425 16863 17863	
Dynatech	16384		Microsoft	18356		Sanyo	16431 16624 16488
Electrohome	16421		Mind	18356		Scott	16568 16429 16505
Electrophonic	16421		Minolta	16426		16427	
Emerex	16416		Mitsubishi	16451	16427 17191	Sears	16419 16421 16431
Emerson	16421	16568 16384	Motorola	16419	16432	16384 16426 16488	
	16505	16427 16593	MTC	16624	16384	17621	
	16386	16662 16863	Multitech	16384	16456	Sharp	16432 17191 17232
	16977	17662 17863	NEC	16488	16451 16425	Shintom	16456
	17977			16422		Shogun	16624
Fisher	16431	16488	Nikko	16421		Singer	16456
Fuji	16419	16417	Niveus Media	18356		Sonic Blue	16998 17000 17999
Funai	16384	16977 17977	Noblex	16624		18000	
Garrard	16384		Northgate	18356		Sony	16419 16416 16417
Gateway	18356		Olympus	16419		16384 17020 17416	
GE	16444	16419 16624	Optimus	17446	16546 16421	17616 18356	
	17191	17419 17444		16432	16488 16816	Stack 9	18356
Go Video	16816	16998		16977	17546 17646	STS	16426
GoldStar	16421	16422 17621	Orion	16568	16593 16386	Sylvania	16419 16465 16384
Gradiente	16384			16863	17863	16427 16977 17977	
Harley Davidson	16384		Panasonic	17446	16419 16546	18165	
Harman/Kardon	16465	16422		16609	16998 17000	Symphonic	16384 16977 17977
Harwood	16456			17419	17546 17646	Systemax	18356
Hewlett Packard	18356					Tagar Systems	18356
HI-Q	16431					Tatung	16425
Hitachi	16384	16426 16425					

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	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	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					

Appendix D | Auxiliary Device Codes

Audio Amplifier

Adcom	33345	Left Coast	33660	RCA	33068
Bose	33442	Lenox	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	NaviPod	34412	Sony	32927
Apple	33883	Netgear	34553	Yamaha	34577
Cambridge SW	34298	Omnifi	34373		34578
Creative	33640	Roku	34596		

Audio CD

Aiwa	37021	MCS	36893	Realistic	37332
Burnester	37284	Miro	36864	Rotel	37043
CA Audio Labs	36893	Mission	37021	SAE	37284
Carver	37021	MTC	37284	Sansui	37021
Denon	37737	NSM	37021	Sanyo	37169
DKK	36864	Onkyo	37732	Scott	37043
DMX Electronics	37021	Optimus	36965	Sears	37169
Emerson	37169		37927	Sharp	37169
Fisher	37043		36864	Sherwood	3725
Garrard	37284		36951	Sonic Frontiers	36901
Genexxa	36896		37009	Sony	37169
Harman/Kardon	37021		37043	Soundesign	37021
Hitachi	36896		37169	Symphonic	37021
Integra	36965		37284	TAG McLaren	37284
JVC	36936		37138	Tascam	37009
Kenwood	37545	Pioneer	37927	Teac	37169
	36892		37926	Technics	37284
	36901		36896	Victor	37169
KLH	38182	Polk Audio	37951	Wards	36893
	38236	Proton	37169	Yamaha	3725
	38237	QED	37332		36936
Krell	38575	Quad	37021		37021
Linn	37021	Quasar	37021		36917
LXI	37169	RadioShack	36893		37354
Magnavox	37021	RCA	37939		37752
Marantz	37490		36896		36900
	36893		36917		38156
	37021		37284		

Audio Receiver

ADC	29203	Cambridge SW	30042	Hitachi	29945
Aiwa	30077	Capetronic	29203	Insignia	30473
	28830	Carver	29861	Integra	29702
	28861	Classic	28861	JBL	28807
Akai	28793	Coby	30024	JVC	29970
Alco	30184	Daewoo	29935	Kenwood	29992
Amphion M.W.	30062	Dell	30061		28782
AMW	30235	Delphi	29922		29978
Anam	30235	Denon	30055		28746
Apex Digital	30281	Fisher	30086		29935
AudioTronic	29929	Gateway	30032		30046
Audiovox	30102	Glory Horse	29814		30167
B & K	30446	Harman/Kardon	30473		30483
BK	29373	Hewlett Packard	30189		29985
Bose	29492		29935		30242
	29512		28861		30241
	29901		29782		30062
	29925		28861		30084
	30513		29976		30100
	30605		29978		30169
			29853		30169
					30169
					29941
					28861
					29203
					30186

Marantz	29861	29941	28711		29203	29302	30056		30431	30294	28830
	28861	29961		Polaroid	30180				29146	30078	30230
MCS	28711			Polk Audio	28861	29961	30086		30330	30430	30530
Mitsubishi	30065			Proscan	29926			Soundesign	29342		
NAD	28992			Quasar	28711			Stereophonics	29695		
Norcent	30061			RadioShack	29935			Sunfire	29985		
Nova	30061			RCA	29695	30281	29926	Teac	29746	30062	30200
Onkyo	28807	29514	29970		29203	29746	30062	Technics	29980	30190	28711
	29992	30203			30183				28981		
Optimus	29695	28858	29203	Rio	30055	30541		Thorens	29861		
	29342	29746		Samsung	29967	30172		Toshiba	30460		
Oritron	30038	30169		Sansui	28861			Venturer	30062		
Panasonic	29980	30190	28711	Sanyo	30141	30473		Victor	28746		
	28981	29960	29988	Sharp	28858			Wards	28830	28861	28686
	30220	30305	30435	Sharper Image	29935	30228		XM	30078	30086	
	30436			Sherwood	29749	30189	30325	Yamaha	28848	28858	29848
Philips	29861	29941	28861	Sirius	30299	30483	30659		29948	30003	30047
	29938			Sonic Blue	30055	30541			30148		
Pioneer	29695	28686	28822	Sony	29730	30113	29930	Zenith	29965		

Digital Video Recorder (DVR)

ABS	18356		Hush	18356		Sonic Blue	16998	17000	17999
Alienware	18356		iBUYPOWER	18356		Sony	18000		
Amino	09865		Linksys	18356		Stack 9	17020	18356	
CyberPower	18356		Media Center PC	18356		Systemax	18356		
Dell	18356		Microsoft	18356		Tagar Systems	18356		
DirecTV	17123		Mind	18356		Tivo	17002	17020	17123
Gateway	18356		Niveus Media	18356			17124	17129	17623
Go Video	16998		Northgate	18356				17624	
Hewlett Packard	18356		Panasonic	16998	17000	Toshiba	17392	18356	18380
Howard Comp.	18356		Philips	17002	17123	Touch	18356		
HP	18356		RCA	17264		Viewsonic	18356		
Hughes Network	17123	17124	ReplayTV	16998	17000	Voodoo	18356		
	17623	17624		18000		ZT Group	18356		
Humax	17123		Samsung	17123					

Home Automation

Accutek	42175		Lasko	41806		Security System	41127	
Amana	42676		LG	42497		Sharper Image	41806	
Audio Access	41114		Lightolier	41144		SmartLinc	41144	
Bionaire	41806	42175	LiteTouch	41044		Somfy	41740	
Comfortex	41360		Lutron	41557	41278	Universal X10	41127	
Da-Lite	41740			42557		Whirlpool	42292	
Frigidaire	42293	42805	One For All	41127		Windmere	42175	
GE	41200		PCS	41144		X10	41127	
GoldStar	42497		RadioShack	41200				
Holmes	42175		Royal Sovereign	42611				
Hunter Douglas	41393							

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

FCC ID: WAR-XTEND-SD

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna, Increase the separation between the equipment and receiver, Connect the equipment into an outlet on a circuit different from that to which the receiver is connected, Consult the dealer or an experienced radio/TV technician for help.