



## BOCS Installation & Usage Manual



**24/7 Technical Support available at  
(877) 465-6451. Please have your  
BOCS serial number available when  
calling.**

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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 system will allow you and your family to Extend 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?

### *BOCS Media Hub*

BOCS Unit

SuperCombiner

Power Supply for BOCS

Universal BOCS Remote Control

### *BOCS 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 BOCS to watch throughout your home

### ***BOCS Media Hub***

The main BOCS 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 BOCS 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 BOCS 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 BOCS Channel lights (Red/Green/Blue) – this occurs if the remote is too far from the BOCS – either move closer to the BOCS or purchase a BOCS Repeater to Xtend the range of the wireless remotes.

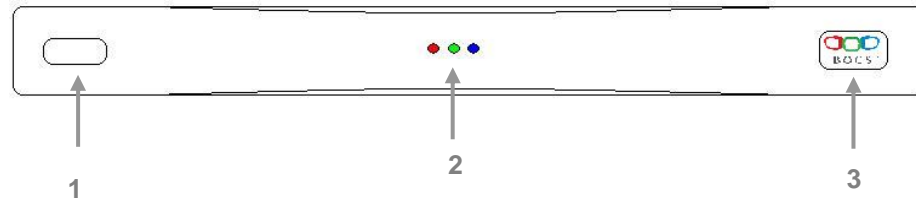
## What's on the Remote?



## What's on the Remote (*continued*)

1. **BOCS Channel Lights**      Blink when you send a command to one of the devices connected to the BOCS Media Hub. 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 BOCS Channel lights (Red/Green/Blue) means the remote is out of range.
2. **BOCS Channel Buttons**      The three new channels in your home – press RED to watch and control whatever is plugged into the Red input on the BOCS Media Hub (same for GREEN & BLUE)
3. **Menu**      The DVD, DVR, or TiVo menu command, depending on what you are controlling
4. **Info/ "A"**      Push *shift then 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**      Pushing *shift then 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 BOCS 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 BOCS system (so any Cable or Antenna channels that you cannot watch when BOCS is on are now visible). A double flash indicates programming success, a fast flash indicates programming error, and an alternating Power and BOCS Channel lights (Red/Green/Blue) indicates remote is out of range of BOCS.
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 of the Media Hub?



### 1. Learning Window

The BOCS Media Hub 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 BOCS to learn to control things that are plugged into it.

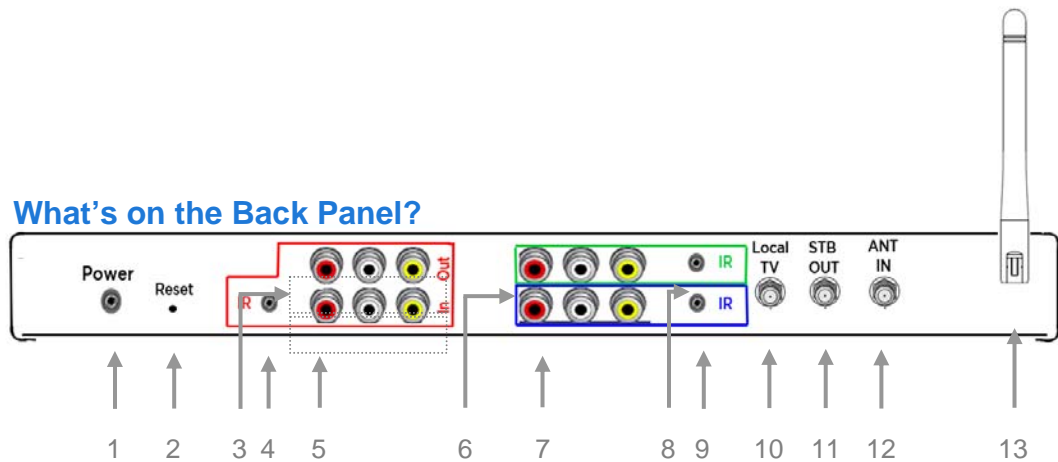
### 2. BOCS Activity Lights

These lights flash when anyone in the home is controlling an BOCS 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 the BOCS Media Hub is powered on. All of the lights flash together when you are pairing a remote to BOCS.

### 3. Remote "Pair" Button

Each BOCS remote control must be paired to a BOCS Media Hub – this prevents your remotes from controlling your neighbor's BOCS 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 your BOCS!
2. **Reset Button** Pushing this button resets BOCS to its factory default settings
3. **Red Channel Input** Composite Video (Yellow) and Stereo Audio (Red/White) input to BOCS – 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 BOCS 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 BOCS 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 BOCS 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 BOCS channels on a TV located near the BOCS Media Hub. Note that if this output is used then one BOCS remote must be dedicated to this TV – see programming the remote.
11. **Antenna Out/STB outt** Coax cable output used for connecting DVR, TiVo, Cable Box or anything else that needs Cable/Antenna input. Note that BOCS 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 BOCS 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 BOCS Media Hub.

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 the BOCS Media Hub.

Install the SuperCombiner.

#### **Step 2 – Install the BOCS Media Hub**

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

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

BOCS is connected to power and the Coax wall jack.

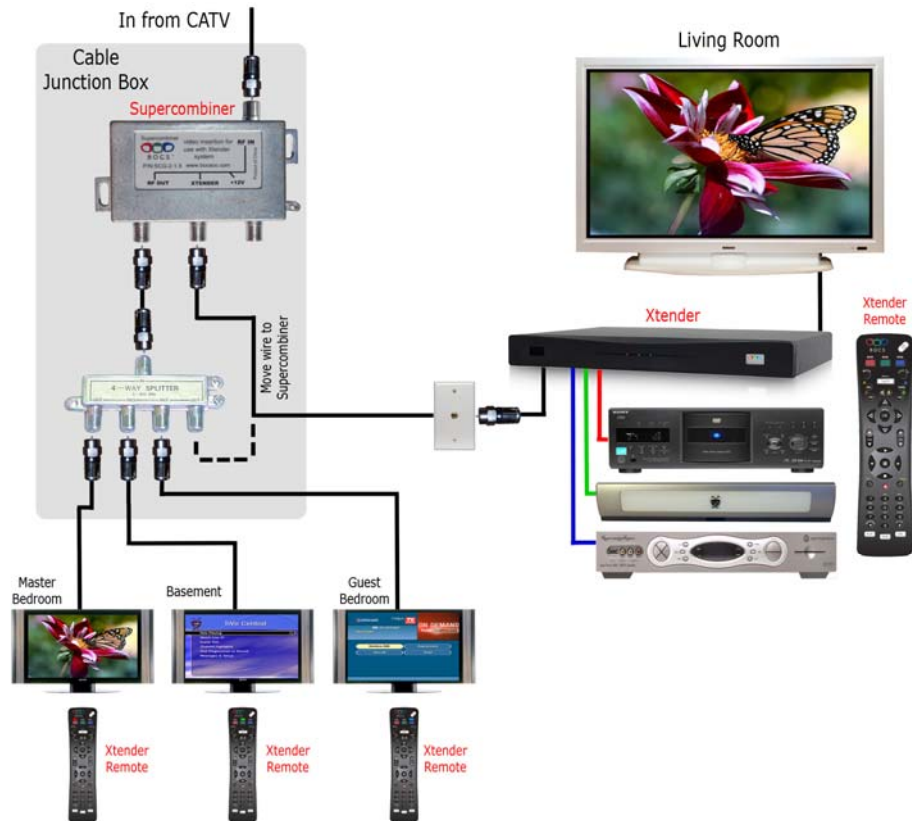
#### **Step 3 – Program the Remote Controls**

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 BOCS.

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

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

# Step 1 Installing the SuperCombiner



## Select Location for the BOCS Media Hub

### 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 BOCS 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 BOCS Media Hub requires 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 Media Hub. 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 BOCS 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 BOCS Media Hub 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 BOCS system into the cable finder adapter, and plug it into the coax wall outlet near the Media Hub – 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 BOCS.



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.



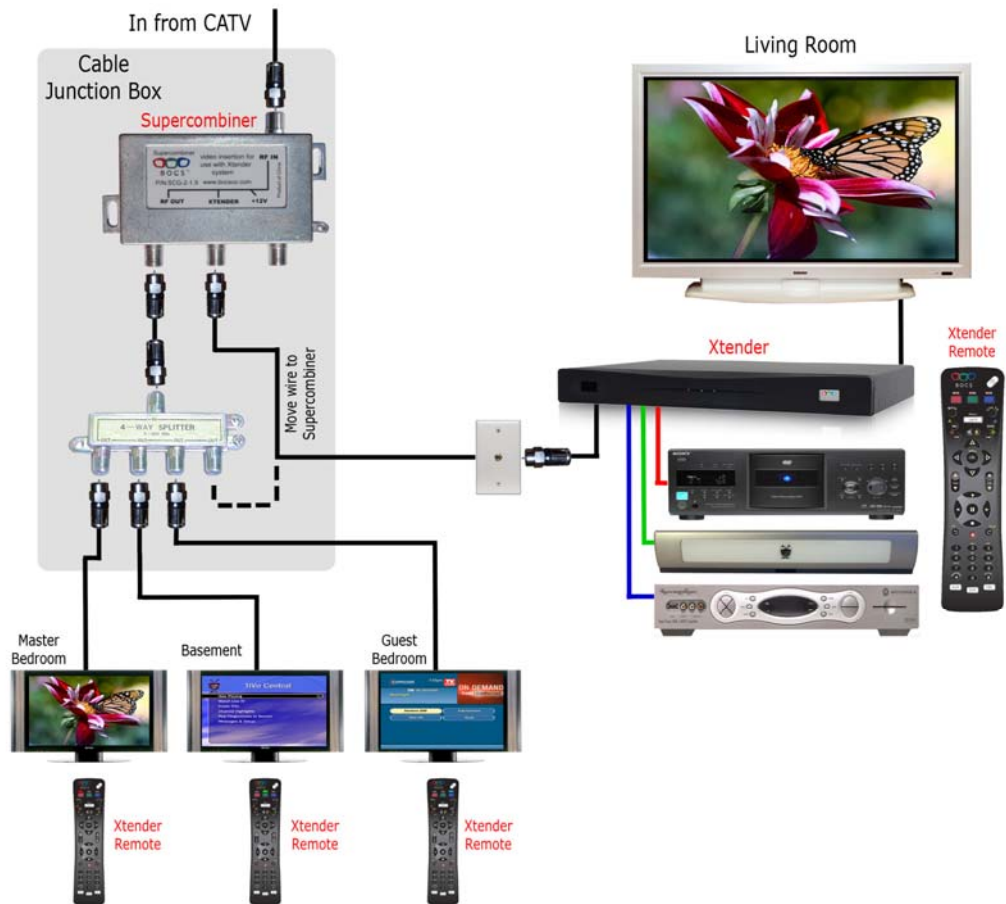
**Wrong Cable!!**



**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 *BOCS/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.

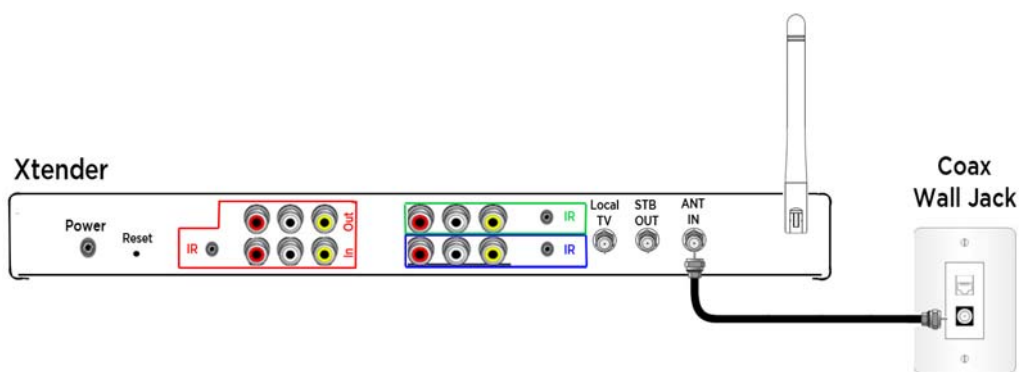
**Important** When you are finished with the system installation, make sure to close the box back up – especially if it is outside the home – you need to put everything back as it was to reduce water/weather exposure to those connections.

## Step 2 Installing the BOCS Media Hub

### Connect BOCS Media Hub 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 the Media Hub.

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 Media Hub

**Important** Place the Media Hub on the top of your equipment stack, because any equipment placed on top of the device can impede performance.

#### Chose the devices

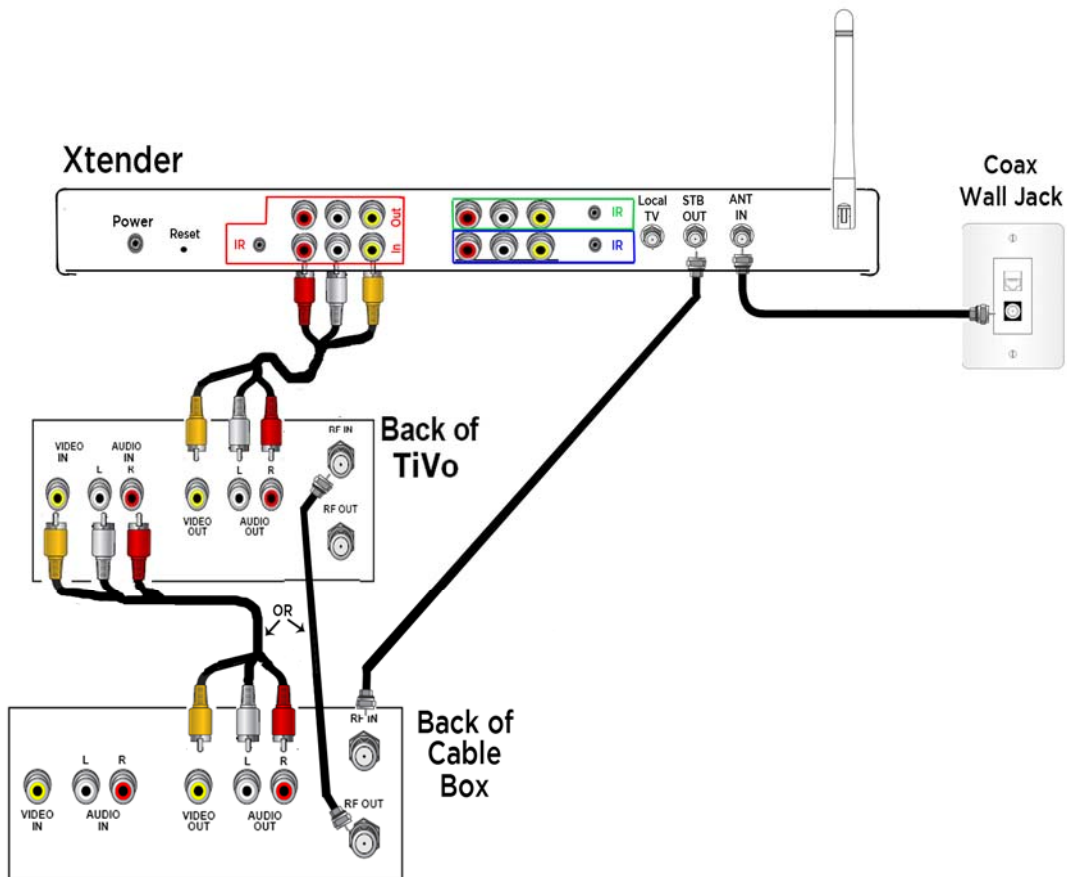
Typical choices are: Tivo, DVD jukebox, Cable Set-Top-Box, Windows Media Center, VCR, VOD box, or anything else with composite audio/video output.

## Red Channel Set Up

- (Example) TiVo DVR with a cable box that it controls

### Connect the Device to the BOCS Media Hub

Connect the Audio/Video output of the device to the inputs on the Red channel of the Media Hub. (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 Media Hub's "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 BOCS red channel (notice in the "Connecting Your TV to the Media Hub" section, the red channel can pass its signal through to a TV directly using the Red Channel Out connectors).



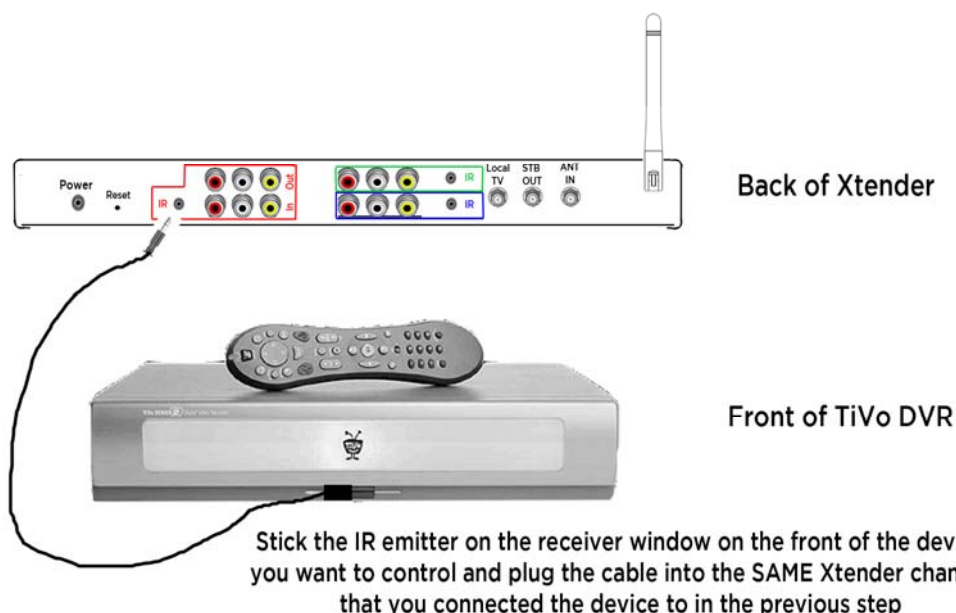
**Note** If any of your devices need a cable TV connection (TiVo, set-top-box etc), connect a coax cable from the "ANT OUT" jack on BOCS to that Device. If more than one device needs a cable connection you will have to use a splitter to provide each device a signal connection from the "ANT OUT" jack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

## Connect the “IR Blaster”

*This cable lets the BOCS Media Hub control the A/V device – IR Cables come in the optional wiring pack.*

Locate an *IR cable* in your *BOCS Installation Kit* (sold separately). Plug the connector of the IR cable into the “IR Out” on the BOCS 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 a BOCS 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 Media Hub**

Repeat the same steps as the Red Channel. That is, connect your TiVo device to the Media Hub by plugging the Audio/Video connectors from the audio/video outputs on the Tivo (or other A/V device) to the inputs on BOCS’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.

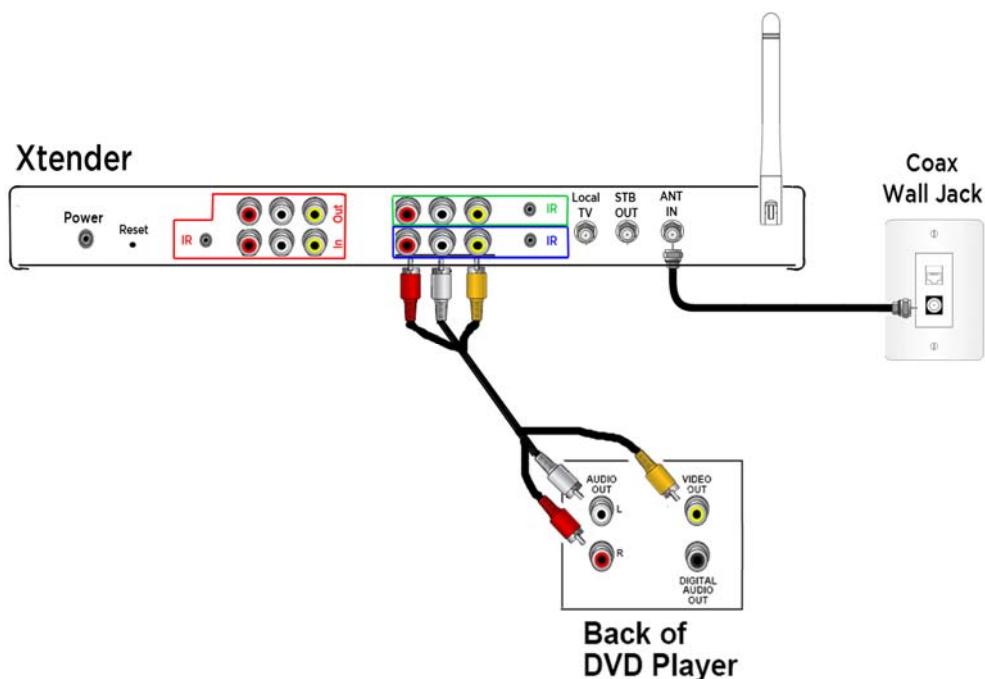
## Blue Channel Set Up

- Example - DVD Player/Changer

### *Connect the Device to the Media Hub*

*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 the Media Hub by plugging the Audio/Video connectors from the audio/video outputs on the DVD player to the inputs on BOCS'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 Media Hub's Power Supply

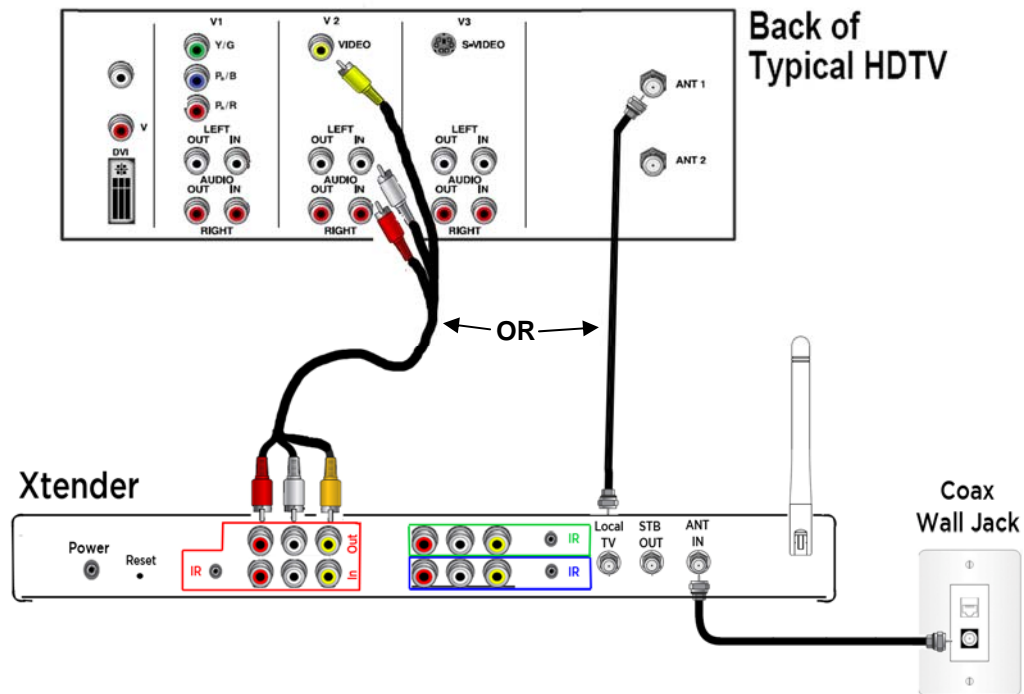
Locate the power supply that came with your BOCS system. Plug the power supply into "Power" on the back panel of the Media Hub. Plug the power supply into a wall outlet or plug strip.

### *Checking Power Supply*

- Check that the BOCS power lights are *on*

## Optional – Connect to the local TV

BOCS'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 Media Hub is now sitting next to a TV, that TV needs to get connected.



You can connect your TV to the Media Hub using the Local-TV coax output – now this TV will function just like all the rest of the TVs in your home and have full access to all the BOCS channels. The “Local TV” output on the Media Hub 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 the Media Hub 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, there is 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 BOCS 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 BOCS. Make sure the remote is paired to the BOCS Media Hub (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* BOCS Media Hub.
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 BOCS and not your neighbor's. This step "pairs" your remotes to your Media Hub.*

- Press the *BOCS Logo* button on the front of the Media Hub. *The Red/Green/Blue lights on the front 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 BOCS channel button – if the red light on the front of the Media Hub 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/BOCS 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 the Media Hub stop blinking immediately upon release of the pair button, the maximum number of remotes have already been bound to this BOCS system(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 your Media Hub – just go stand in front of the Media Hub and press the "BOCS-Red" channel button on the remote. If the red light on the remote blinks once and the red light on BOCS blink once, it is paired. If it is not paired, the BOCS 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 BOCS 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 BOCS or the closest TV to BOCS
- 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 Programming Procedure - Scanning

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 Media Hub to Control the A/V Devices

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

**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 Programming Procedure – Scanning for a code on the Media Hub

**Important** Many devices that you might plug into BOCS 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 BOCS, 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 BOCS

**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 BOCS. This remote must identify itself to the BOCS so that the BOCS 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 BOCS switches BOCS channels onto the "local TV" coax output. When you press the "Local TV" button, the BOCS 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 BOCS system. Enjoy**

## More Programming Options

### Control Other Devices in the Same Room as the Remote

The BOCS 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 BOCS Media Hub to output IR codes that are identical to those output by another remote. Note that all Media Hubs 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 BOCS unit see the section below titled “Have the BOCS 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.**
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 [BOCS Media Hub Learn IR Codes](#) from Another Remote

To Control Devices Plugged into the Red, Green, or Blue channel – this is done at the BOCS Media Hub

1. Place the OEM remote so that it points at the IR window on the front of the Media Hub – 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 BOCS 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 BOCS). **NOTE that you should press firmly but quickly on the OEM remote – 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 BOCS 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 Codes

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 BOCS.

**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 BOCS Media Hub 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 1/10<sup>th</sup> of a second
  - 2 sets delay to 1/5<sup>th</sup> of a second (default factory setting)
  - 3 sets delay to 1/2<sup>th</sup> 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, +100 key, OK, or Enter)

**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. The best way to determine that is to use the remote that came with the TV and determine what button presses are required to get to the channels where Red, Green, and Blue are located. You need to determine if you need to push 2 or three digits and if pressing OK or enter afterwards is required or speeds up the channel change.

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 = Same as 1 but adds enter afterward (The # button)
  - 4 = Same as 2 but adds enter afterward (The # button)
  - 5 = Same as 1 but adds OK afterward
  - 6 = Same as 2 but adds OK afterward
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.

**Advanced** If your TV needs some other button than either enter or OK to properly tune, just learn that button into the enter key and then choose option 3 or 4 above.

## Adjust the Video quality of BOCS channels

**Important** The BOCS can be adjusted to output different levels of video to the home, this provides the ability to make Cable-TV channels and BOCS 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 BOCS 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 BOCS channels look good on all your TVs.

## Show the IR codes programmed into the remote and BOCS

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:**

- 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.

## Adjust BOCS to use Over-The-Air frequencies instead of Cable TV frequencies

There are three basic systems used for video in the US – Cable TV, Analog Over the Air and Digital over the air.

**Cable TV** uses a specific set of frequencies that maximize the number of TV signals that can be sent over a COAX cable – so, with a few exceptions, Channel 2 starts at 55.25Mhz and usually goes up to channel 125 at 799.25Mhz. In most cities, the cable companies still broadcast normal analog NTSC signals from channel 2 through about channel 64, but above that, they are beginning to fill all the rest of the channels with digital signals. With digital broadcast techniques, cable companies can squeeze in many more channels into the same frequency band, but every TV needs a cable box to receive those digital channels. If your TV tunes from 2 through channel 125, it is probably set up to receive Cable TV channels (note that this is a setting in almost all TVs and the user can select from standard cable, Air, and sometimes other receiving options)

**Analog “Over-The-Air” [OTA]** is the original broadcast method in the USA and is split into two distinct bands: channels 2-13 in the VHF band range from 54-216Mhz, channels 14-83 range from 470-884Mhz. If you use an antenna to watch TV,

you are likely using these frequencies. Note that Channel 14 OTA is NOT the same as channel 14 Cable TV – although there is some overlap, you need to decide up front which type of tuning you want your TV to do.

**Digital Over the Air** is available primarily in the larger cities today but will completely take over as the only Over the Air standard for the USA early in 2009. You must have a TV with a digital tuner or you must purchase a converter box to be able to receive these channels.

BOCS is able to transmit the Red, Green, and Blue channels on either CABLE TV or Analog OTA frequencies.

By default, BOCS comes setup to broadcast Red on CABLE-TV channel 14, Green on CABLE-TV channel 98, and Blue on CABLE-TV channel 96. The

Supercombiner also has a filter that removes these channels from the normal Cable TV channel lineup.

If you choose to use channels other than CABLE-TV 14, 98, 96 you will need to purchase the Supercombiner WITHOUT the filter AND setup BOCS to the new channels you have chosen.

Your Choices are as follows:

1. Default Channel set – Red=CATV14, Green=CATV98, Blue=CATV96
2. Custom CATV channels:
  - a. You can only use channels over CATV channel 70
  - b. You must use channels that are spaced at least 2 channels apart (for example channels Red=70, Green=72, Blue=74 is acceptable but Red=70, Green=71, Blue=72 is not)
  - c. You will need to test appropriate channels to be sure that the location you choose to put your custom channels does not interfere with other channels you want to watch in your home – since digital channels are typically broadcast over CATV channel 64, you could cause a digital channel to stop working depending on where you place your custom BOCS channel.
3. Custom Over-The-Air channels:
  - a. You can only use OTA channels over channel 14
  - b. You must use channels that are spaced at least 2 channels apart

Note that with option 2 or 3 above, you might need to purchase and install a filter that removes channels and noise from the location of your custom channels. These barrel filters are readily available online to filter out one or a group of channels and would be installed on the RF-In input of Supercombiner.

## Adjust BOCS to broadcast on Custom Frequencies

To Set BOCS to broadcast on the default frequencies: Red=CATV14, Green=CATV98, Blue=CATV96:

- Press and hold Red and CH+ for at least 2 seconds

- The power LED will turn on.
- Press Select/OK to confirm.

#### To set BOCS to broadcast on Custom Channels

- Press and hold Red and CH- for at least 2 seconds
- The Power LED will turn on.
- Enter the three channels (three digits each) using the number pad and press Select/OK to confirm.
  - For example – to use Channels 70, 72, 74 enter 070072074, to use channels 120, 122, 124 enter 120122124
  - Note that valid CATV channels are 70-125 and valid OTA channels are 14-83

#### To switch between CABLE-TV and OTA modes

- Press and hold Menu and “6” for at least 2 seconds
- The Power LED will turn on.
- Press a number to choose the mode:
  - Press “1” to set OTA mode
  - Press “2” to set CATV mode
- Press Select/OK to confirm and save

A fast flash on the power light when changing modes or entering custom channels indicates you have entered an invalid or not-allowed channel – note that allowed CATV frequencies are 70-125 and OTA frequencies are 14-83. You CANNOT use CATV 14, 96, or 98 except in the BOCS default mode.

# 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 BOCS Media Hub 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 BOCS.

## Controlling the Blue Channel

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

**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 BOCS 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.

## Page Up/Dn mode

Note that some devices, Cable TV boxes in particular, need Page up and Page down to navigate while in the guide. If you need Page Up/Dn then simply press Shift and the remote will substitute Page Up and Page Down for Channel Up/Channel down as long as you are in the guide. Think of this as a “shift-lock” for the Page up/Dn function – remote exits this mode when buttons other than ch+/- or arrow keys are pressed.

## 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 BOCS 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 BOCS.

You should first try reorienting the antenna on BOCS – 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 BOCS, 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 BOCS is in the basement, and the poor coverage area is a bedroom on the third floor, the repeater should be placed between the BOCS 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 BOCS – just like adding a new BOCS remote control to the home.

- Press the “pair” button on the front of the BOCS – all three lights (R/G/B) on the front of BOCS will begin flashing
- Within 10 seconds, plug the repeater into an A/C outlet within 15 feet of the BOCS
- Wait at least 10 seconds for the repeater to synchronize (Lights on BOCS 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

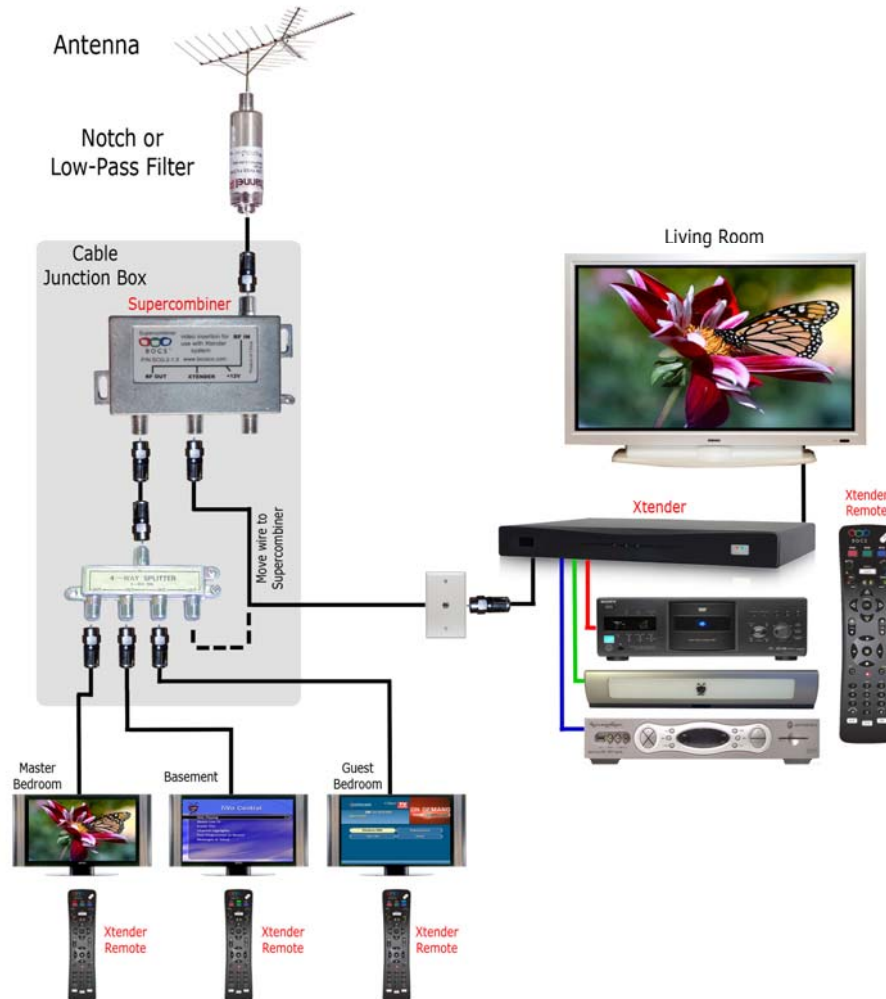


## Testing and use of the Repeater:

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.

## What about the whole digital transition in Feb 2009?

Until February 2009, you can still receive standard analog TV broadcasts through a TV antenna on your roof or in your attic. After February 2009, you will still be able to receive over-the-air broadcasts, but they will be in digital format and you will need a decoder device to translate those signals to something your analog TV can understand. Newer TVs have digital tuners built in and do not require the decoder device. In either case, BOCS can be set to work seamlessly with your over-the-air system.



All you have to do is set up BOCS exactly the same way as with a Cable-TV installation, but then change the channels and the broadcast type to Over-The-Air.

First, determine what Over-The-Air [OTA] channels you receive – You will need to find a space 6 channels wide where there is no TV station to put the BOCS channels. The easiest installation is if there is room between the highest channel you receive and the highest channel your TV will tune to (usually 69 or 86) to put the BOCS channels. In most cases, you will need to insert a filter between your antenna and the Supercombiner even if you find an open area (6 channels wide) where the BOCS channels can be located since there is a lot of RF noise that an antenna picks up – and that noise can interfere with your new channels.

There are two filter options:

- 1) If you can fit the BOCS channels above your currently received channels, you can purchase a low pass filter commonly available in 250Mhz and 750Mhz varieties. This chart provides options for you to purchase from [www.partsexpress.com](http://www.partsexpress.com)

Filter Part Number	Allows TV stations	BOCS can be put on these channels
180-776	2-13	20-83
180-150	2-16	20-83
180-152	2-30	35-83
180-780	2-34	40-83
180-154	2-59	62-83

- 2) If you want to put BOCS channels in between broadcast TV channels, you will need to install a notch filter – a good example from the same supplier is 180-773 which removes UHF channels 14-19 (BOCS channels would then be 14, 16, 18) Other notch filters can be ordered from [partsexpress.com](http://partsexpress.com), [eagle.comtronics](http://eagle.comtronics.com), and many other online sources.

To change the BOCS channels and switch to OTA mode, see the last section of Chapter 4 – Adjusting BOCS to use Over The Air frequencies instead of CATV frequencies. Everything is adjusted from the remote control.

If you are using a digital decoder device (for receiving digital TV broadcasts), installation is the same, but we recommend making the decoder device an input to BOCS (for instance on the Red channel) so that you can enjoy digital TV from every room in the home.

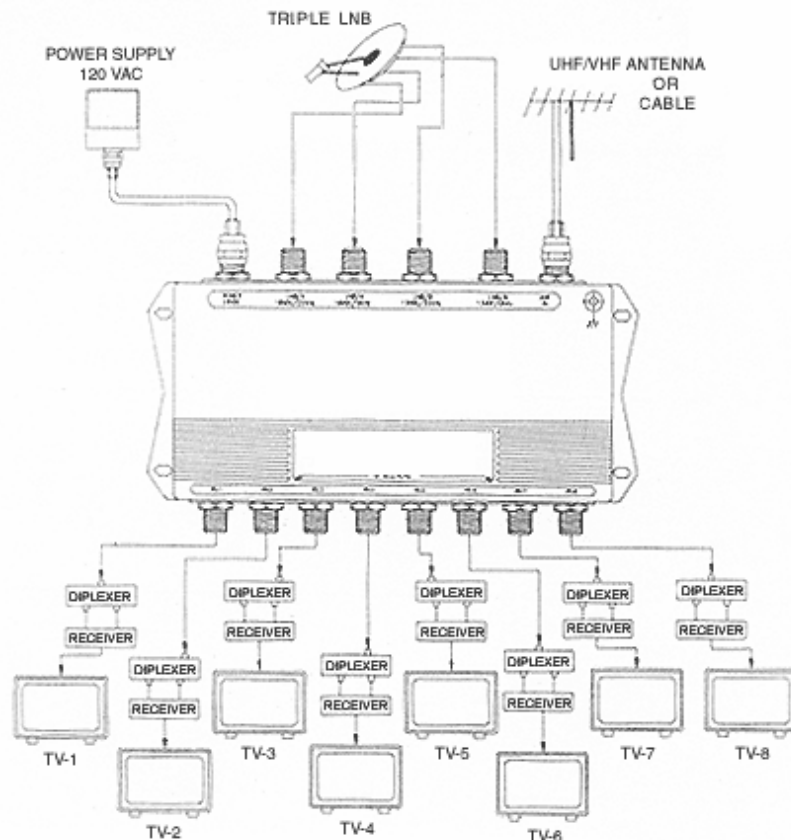
## General Installation practices

All of the satellite vendors use similar technology and installation techniques are similar from brand to brand – however, the complexities of individual systems require professional installation of BOCS if the home uses satellite TV and improper installation can damage the satellite system and require costly repairs.

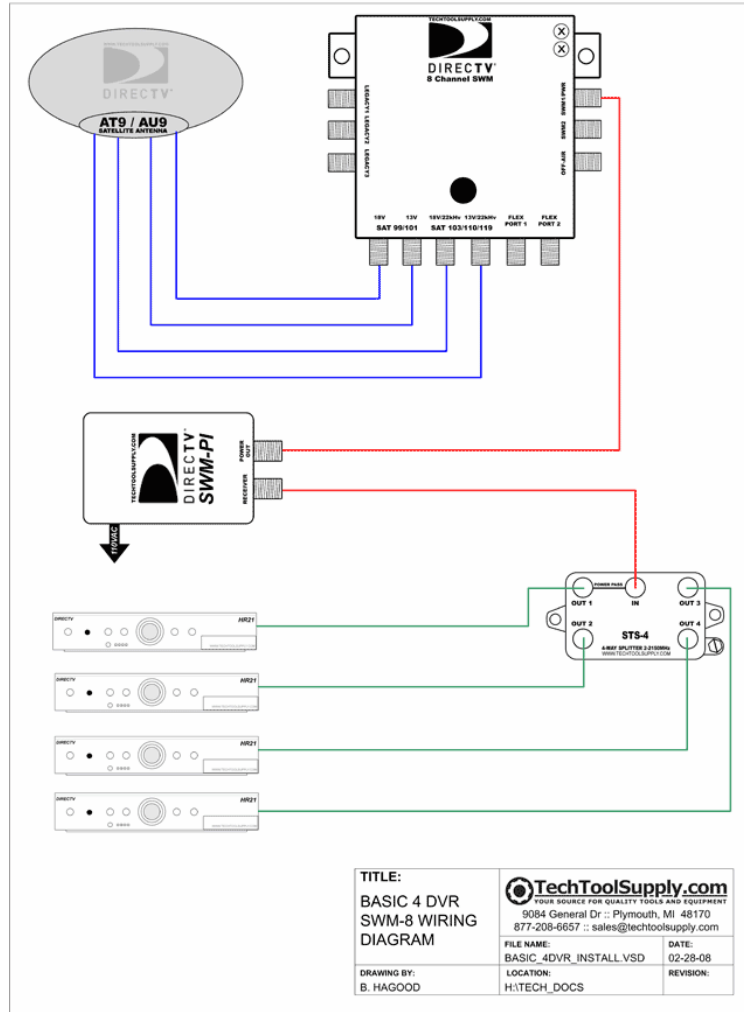
## Two systems in use

Generally, Satellite systems use one of two methods to get signals to your Satellite boxes [STB] throughout your home

- 1) A “Multiswitch” – typically 4-6 inputs and 8-16 outputs. These devices allow each STB to independently choose which satellite they need to tune the channel you asked for while not interfering with other STBs in the home. You need a unique COAX wire from the Multiswitch to each tuner in the home (a standard STB needs one wire unless it is a DVR with two tuners in which case it needs two wires). Each STB uses a special set of signals to tell the Multiswitch which of the inputs it wants switched to its wire – specifically, it puts either 13V, 18V, 13V and 22Khz, or 18V and 22Khz on its wire to indicate one of the four inputs.



- 2) A “SWM” system – these can be either built into the dish or a standalone switch with 4-6 inputs and one output. The SWM (usually pronounced Swim) allows the home to be wired much like a CATV system with splitters, and only one wire to each STB regardless of how many tuners it has inside. SWM systems are appended with a number that designates how many STBs they can handle – SWM-5 and SWM-8 systems are most common.



### SD vs HD systems

Since October of 2007, DirecTV High-Definition systems use frequencies all the way down to 250MHz (250-750MHz consisting mostly of HD channels). HD STBs require a small adapter on the COAX input commonly referred to as a “B band converter” to be able to receive HD. This makes traditional diplexers unusable in these high def systems.

While typical modulators cannot be used in satellite systems since they interfere with the satellite frequencies, BOCS in “default mode” on channels 14, 98, 96 can usually be used if properly installed. In any installation, the standard Supercombiner cannot be used as it is not rated for the frequencies used in satellite installations.

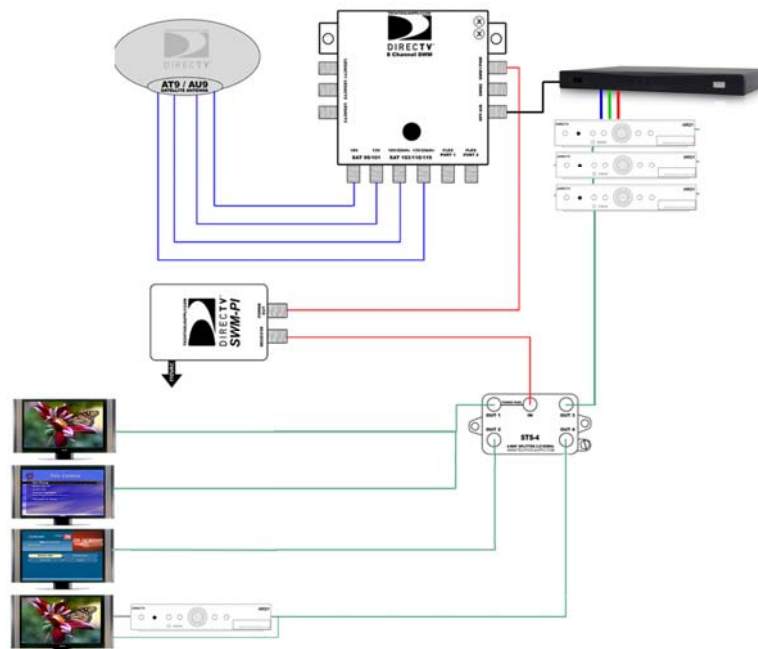
## Basic Rules for Satellite installations

Unless you purchase a Satellite-Supercombiner (available Q1 2009), a few basic rules streamline installation.

1. In a multiswitch system, only one COAX line can be shared between Satellite and BOCS systems
2. For Directv HD systems, you must use splitters/combiners and NOT diplexers
3. If possible, use existing CATV coax wiring for BOCS signals and keep it separate from the Satellite system until you reach the TV.
4. In a SWM system, use the CATV coax system to get the BOCS signals back up to the SWM switch and then feed that signal into the ANT-in connector on the switch.
5. If any STB you are using does not have an NTSC tuner built in
  - a. Use a DC-Block F barrel and connect the diplexed or split BOCS signal into the ANT-IN connector on the STB. When the STB is switched off, it will pass the BOCS signals through to the ANT-OUT connector that goes to the TV.
  - b. Use a diplexer or splitter as described above to feed the sat signal to the STB, and the BOCS signal directly to the TV ANT-IN (STB would be connected to TV via composite or component or HDMI cables)
  - c. Some STB manufacturers provide an external tuner device that attaches to the STB via a USB connection and allows cable and OTA channels to be integrated into the Guide on the STB – contact your satellite provider for more information
6. In most cases, one of the primary objectives of installing BOCS in a satellite environment is to allow the homeowner to rent fewer boxes. This also simplifies installation in many cases as standard definition boxes can be moved to a central location – near the Multiswitch or SWM – Satellite and BOCS signals would then not need to be shared.

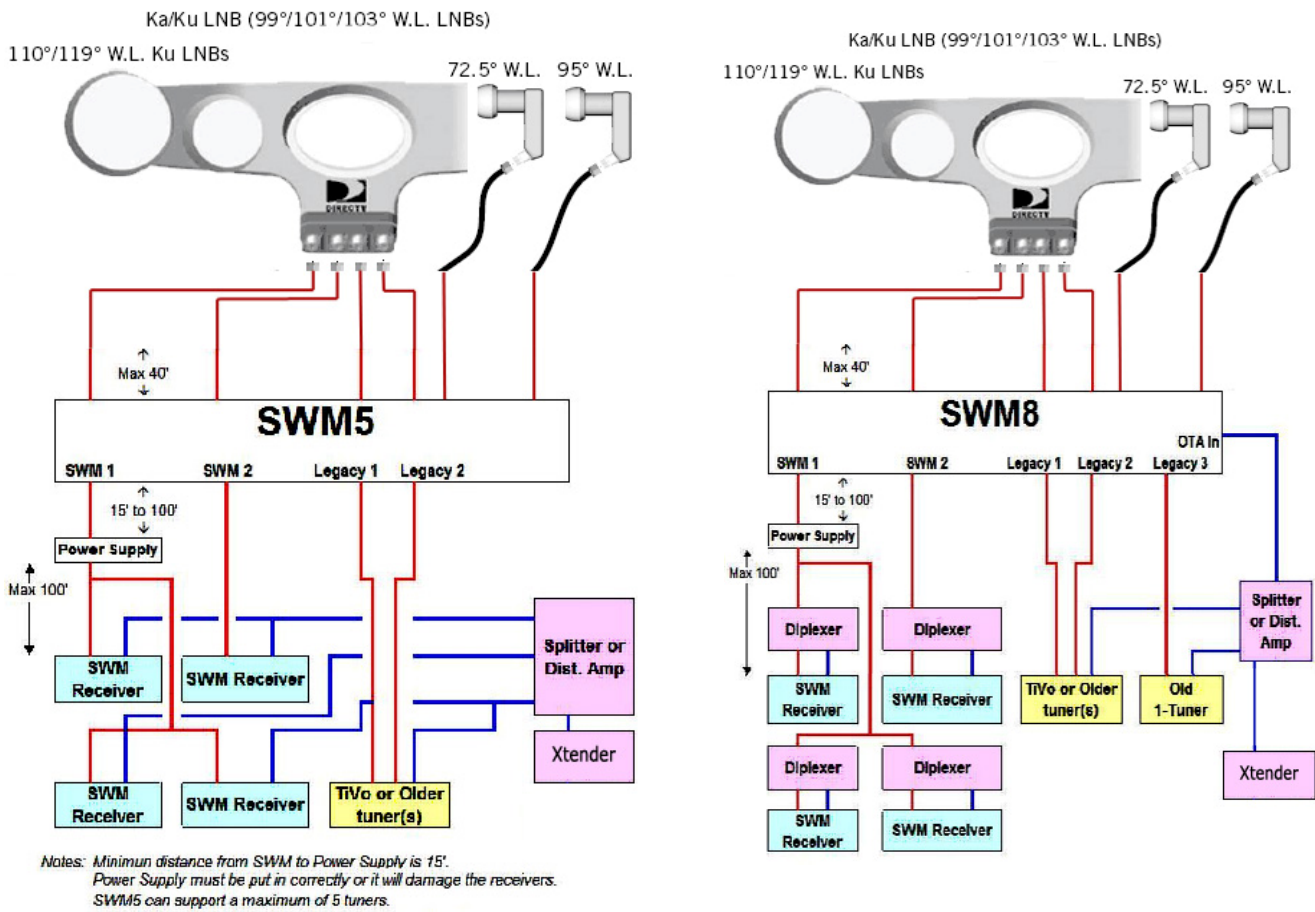
### Examples:

SWM system – hide the boxes in a central location. In this example, the simplest method is to move the SD boxes, or some set of them, to a central location with the SWM switch, then use BOCS to push the new channels into the ANT-IN connection on the SWM.



Note that if there is a location that still has a Satellite box, then a splitter must be installed so that the TV can access BOCS channels via COAX and Satellite signals via a direct connection (component, composite, HDMI etc). The BOCS can have anything as an input – in this example, three satellite boxes are shown, but normally the homeowner will only put 1 or 2 through BOCS and send some boxes back to the satellite operator – then a DVD changer, iPod dock or any other A/V device can be added to the system.

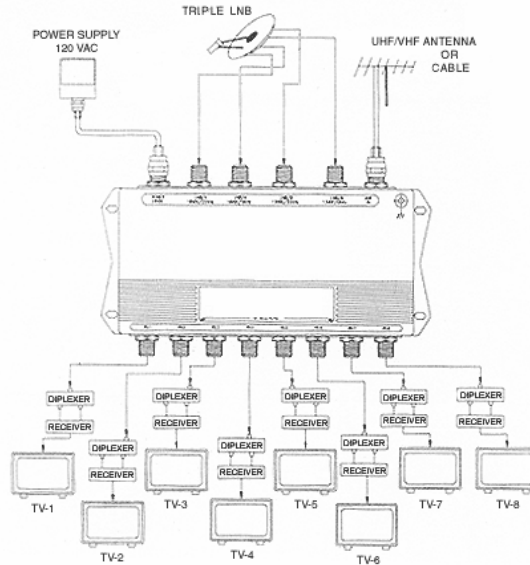
Two other SWM options (note that the SWM 5 typically does not have an OTA connection). Note that in the example on the left, the Blue wires represent the CATV coax system already in the home – since satellite installers usually choose to drop their own wires for their satellite dishes, the catv system is usually left intact.



If this scares you in any way – call a professional for installation.

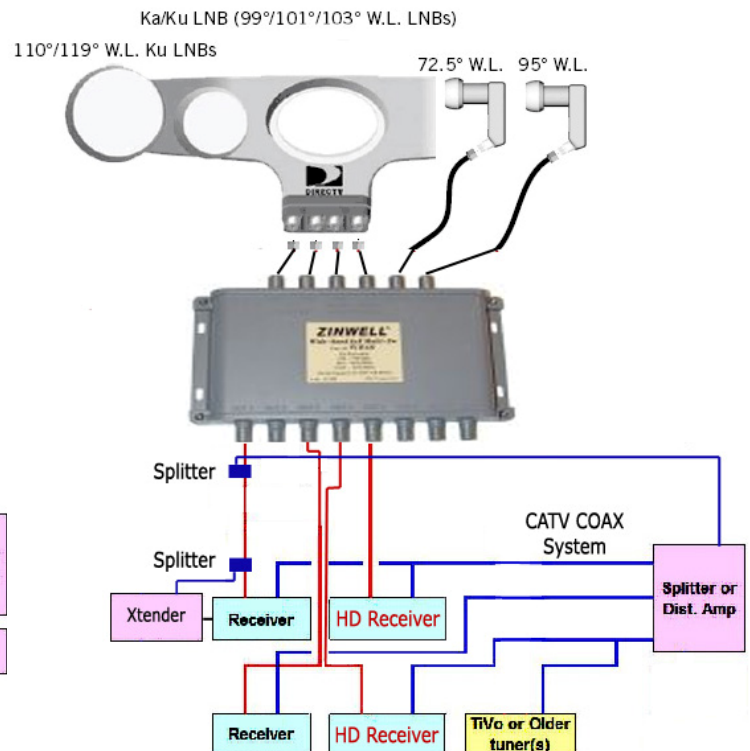
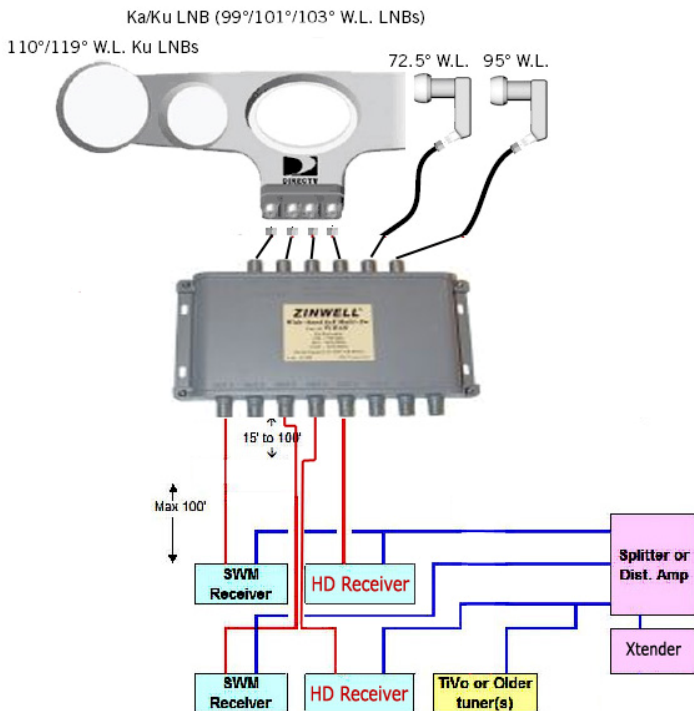
A multiswitch example is shown below – Same basic concepts, except that each tuner needs its own homerun feed back to the multiswitch. Also, with Directv HD, only the 50-250Mhz band is available so standard diplexers cannot be used.

So a STANDARD DEFINITION setup can be wired as follows, with the antenna replaced with an BOCS set to use channels 14, 98, 96



At any TV where the Satellite box is not capable of tuning the BOCS channels, then the TV side of the diplexer needs to go directly to the TV.

For a DirecTV HD installation, we recommend the diagram on the left – where the COAX in the walls are used to carry BOCS Signals. The figure on the right shows a hookup where one leg of a multiswitch can be used to carry BOCS channels back up to the multiswitch area.



## **Troubleshooting:**

<p><b>General</b></p>	<p>Sometimes while I'm watching an BOCS channel, the channel or program changes</p>	<p>It's possible someone else in the house has pressed the same BOCS channel button and has taken control. Consider splitting the programs – perhaps Blue for kids and Green for adults.</p>
	<p>I lost all Cable TV as well as the BOCS channels – everything was working before</p>	<p>Don't forget that the Supercombiner needs power – it gets it from the BOCS over the COAX cable plugged into the ANT-IN connector on BOCS. If BOCS loses power (Red, Green, Blue lights on the front will be off) or the COAX is unplugged anywhere between the BOCS and the Supercombiner, the Supercombiner will no longer be able to pass Cable TV signals. Check to see if Supercombiner has power by unplugging the "RF-IN" COAX from Supercombiner and seeing if the green light shines through the connector. If not, check BOCS power and the COAX lines running back to Supercombiner – if necessary, you can obtain a 12VDC center positive power supply and apply power directly to the Supercombiner +12V input to verify that Supercombiner is working properly.</p>
<p><b>Video Quality</b></p>	<p>The video quality of BOCS channels is not as good as my Cable TV channels</p>	<p>If you had an installer come out and put in your BOCS system, they should have already adjusted everything, but just in case, BOCS allows you to adjust the quality of your BOCS channels just by using the remote control:</p> <p>Make sure the remote knows how to talk to BOCS - press the Red BOCS channel button on the remote and make sure the red light on the front of BOCS 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 BOCS channels are the weakest) - with the BOCS 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</p>

		not just for the TV you are observing so be careful.
	<b>MORE:</b>  The video quality of BOCS channels is not as good as my Cable TV channels	If you are using either the pass through connection on the Red channel OR RCA Y cables to split the audio/video out of a source (like a cable box) to go to both the Media Hub and another device (like an A/V receiver), the source device (Cable Box) might not be capable of driving two inputs at the same time – or the other device (Like the A/V receiver) might be loading down the video.  Try disconnecting the Y cable and have the source device run straight into the Media Hub (no pass through or Y cables) – if the video is improved, you need to purchase an active RCA distribution amplifier to “actively” split the signal instead of just using a Y cable or pass through. These are readily available on the internet for between \$20 and \$50.
	The video quality of the BOCS channels is not as good as my Cable TV channels on the TV connected to the LOCAL-TV output on BOCS	The Local-TV output on BOCS puts out either Cable TV stations or BOCS channels depending on what you want to watch – but BOCS 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 BOCS channel button, the Local-TV output puts out a good quality BOCS 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 BOCS	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 BOCS 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 tap off from the line.
	Sometimes, when watching BOCS channels on the TV connected to the Local-TV output on BOCS, 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 BOCS stops putting out good quality BOCS channels to the TV connected to BOCS. Simply go to all the other remotes in the home and hold down Menu and VOL- then press Select/OK -
	Ghosts in the picture	Terminate all unused ports anywhere in the system with 75 ohm termination caps  Check for a low quality splitter or combiner in the system and replace.  Check for bad coax in the system – damaged coax can cause ghosting.
	Horizontal bars rolling through TV picture	Check for a component of the system to introduce DC power into the system. Disconnect that component and check the TV – if the hm bars go away, use a DC blocker down stream from that component to block power from other TVs.  If the rolling bars are only on the BOCS channels, adjust

		the video modulation level of BOCS channels.
	Herringbone in picture on BOCS channel	Turn up the BOCS channel modulation – If modulation is already at maximum, it is most likely that an FM radio station is leaking into your cable system – new F connectors, replacement of damaged cables, and proper grounding techniques minimizes leakage.
Remote control	Trying to pair a new remote but the lights on BOCS do not blink when I press the pair button.	The BOCS allows up to 12 total remotes – if it does not blink, it is full. If you do not have 12 remotes in the home, you can clear the list by holding down the pair button on BOCS for 20 seconds. You will then need to re-pair every remote in the home again.
	Sometimes pressing a button does not result in anything happening on an BOCS channel	Make sure the remote is paired with the BOCS – you can tell this by going to BOCS with the remote in question, pressing an BOCS channel button and seeing if the corresponding color light on BOCS flashes – if not pair the remote.
		Look at the BOCS Channel light on the remote – when you press the BOCS channel button, if the light sometimes flashes and sometimes stays on for a few seconds, the remote is having trouble communicating with BOCS. Try the following:  Make sure the antenna on the BOCS is pointed straight up.  Try moving closer to BOCS and see if the problem goes away.  Consider buying a repeater to Xtend the range of your remotes
	I've tried all the codes for my TV and none of them work	Try a TV code scan – see the procedure in the “programming the remote section.”  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.  Consider purchasing a learning remote so you can suck the codes from the remote that originally came with your TV into an BOCS remote.
I found a code for my TV or A/V device and some buttons work but others do not	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:  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,	

		<p>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”</p> <p>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...</p> <p>5) Buy a learning remote and learn the codes for the buttons that do not work</p>
	<p>When I press an BOCS 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 BOCS remote is that it usually has to tell your TV two things to get to an BOCS 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 BOCS 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 BOCS channel button on the remote it only sends one digit".</p>
	<p>When I push an BOCS 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 BOCS 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</p>

		<p>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.</p>
	<p>The Power light on the remote flashes quickly when I press some buttons and the remote is not acting quite right</p>	<p>The batteries need to be changed.</p>
<p>Missing Channels</p>	<p>I've installed BOCS but I cannot see the Red, Green, or Blue Channels</p>	<p>Check to make sure that your TV is set to receive on CABLE-TV frequencies and not Air. This can usually be set up through the menu on your TV. You can verify this by trying to manually tune your TV to channel 125 – if it will not change to that channel</p> <p>Check to make sure the Supercombiner has power (if you disconnect the RF-IN coax from supercombiner and look inside, a green light will glow if it has power. If it does not, check your installation or apply a local 12V power supply to the Supercombiner +12V port.</p>

**24/7 Technical Support available at (877) 465-6451. Please have your BOCS serial number available when calling.**

# 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		17444			Memorex	00154	00150	00178
	16386	16863	17863	Gibraltar	00017	00030			00463	01911	01926
	25271	25444		Go Video	00886	25647			16546	17421	17546
Candle	00030	00186		GoldStar	00178	00030	01926		17621	17646	
Carnivale	00030				17621			MGA	00150	00178	00030
Carver	00054				00180				16624		
Celebrity	00000			Grunpy	00180			Midland	00047	00017	00051
Celera	00765			Haier	01034	00768			00135		
Changhong	00765			Hallmark	00178			Mitsubishi	00093	00150	00178
Citizen	00060	00030	00092	Hannspree	01348				00836	00868	01250
	00186	01928	01935	Harley Davidson	01904	16384			01917	17191	
	17662	25271		Harman/Kardon	00054				00700	00843	
Clairtone	00185			Harvard	00180			Monivision	00093	00055	
Clarion	00180			Havermy	00093			Motorola	00060	00030	00185
Colt	16456			Helios	00865			MTC	00180		
Commercial Sol.	01447	00047		Hello Kitty	00451			Multitech	00156	00178	00866
Contec	00180	00185		Hewlett Packard	01088	01089	01494	NAD	00030	00497	00882
Craig	00180				01502			NEC	01704		
Crosley	00054			Hisense	00748				01755		
Crown	00180			Hitachi	01145	00145	00151	NetTV	00178	00030	00092
Curtis Mathes	00047	00054	00154		00797	01904	01960	Nikko	00748	00824	01089
	00451	00093	00060		16384	25823		Norcent	01365		
	00702	00030	00145	HP	01088	01089	01494		00092		
	00166	00466	01147		01502			NTC	00092		
	01347	01919	17419	Hyundai	00849			Olevia	01144	01240	01331
CXC	00180			Infinity	00054				01610		
Cytron	01326			Insignia	00171	01204	01326	Onwa	00180		
Daewoo	00451	00092	01661		01517	25844	00463	Optimus	00154	00250	00166
	00623	00661	00672	Inteq	00017				00650	16546	16977
	01928	17662		JBL	00054				17546	17646	
	01080	01178		JCB	00000			Optoma	00887		
Dell	00145	00511		Jensen	00761	00815	00817	Optonica	00093	00165	
Denon	00628				01933	25592		Orion	00236	00463	01463
Denstar	00017			JVC	00053	00731	01253		01911	01929	16386
Dumont	00463	00180	00178		01923				16863	17863	
Durabrand	00171	01034		KDS	01498			Panasonic	00051	00055	00250
				KEC	00180				00650	01291	01410

	01480	01919	01941		00603				01944	16384	16977
	01946	01947	16546	Sampo	00030	01755			25397		
	17419	17546	17646	Samsung	00030	00060	00178	Syntax	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		25475			Techview	00847		
	01926	16624	17419	Sansui	00463	01904	01911	Techwood	00051		
	17621				01929	01935	16384	Teknika	00054	00180	00150
Petters	01523				16863	17863	25271		00060	00092	00186
Philco	00054	00030		Sanyo	00088	00154	00159	Telefunken	00702		
Philips	01454	00054	00690		00799	00893	01142	Thomas	01904	16384	
	01154	01961	25430		16624			TMK	00178	00177	
	25836			Sceptre	00878	01217		TNCi	00017		
Pilot	00030			Scotch	00178			Toshiba	00060	00154	00156
Pioneer	00166	00679	00866	Scott	00236	00180	00178		00650	00832	00845
	01260			Sears	00047	00054	00154		01156	01256	01265
Polaroid	00765	00865	01262		00156	00159	00171		01343	01356	01524
	01276	01314	01316		00178	01904	01926		01656	01704	01918
	01326	01327	01328		16384	17621			01935	01936	01945
	01341	01498	01523	Sharp	00093	00165	00491		17229	17529	25271
Portland	00092				00688	00689	00818		25621		
Prima	00761	00783	00815		00851	01393	01602	Tosonic	00185		
Prima	00817	01933	25592	Sheng Chia	01917	17191	25206	TVS	00463		
Princeton	00700	00717		Signet	00093			Vector Research	00030		
Prism	00051			Simpson	01262			Victor	00053		
Proscan	01447	00047	01347	Sony	00186			Vidikron	00054		
	01922				00000	01100	00080	Vidtech	00178		
Proton	00178	00466			00810	00834	01317	Viewsonic	00797	00857	00864
Proview	01498				01685	01904	01925		00885	01330	01578
Pulsar	00017				16384	17616			01627	01755	
Quasar	00250	00051	00055	Soundesign	00180	00178	00186	Vizio	00864	00885	01499
	00165	00650	01919	Sova	01952	25698			01756	01758	
	16546	17419	17546	Spectroniq	01498			Wards	00054	00178	00030
RadioShack	00030	00047	00154	Squareview	00171				00080	00165	00866
	00165	00178	00180	SSS	00180				01156		
	01904	16384	17421	Starlite	00180			Waycon	00156		
RCA	00047	00090	00135	Studio Exp.	00843			Westinghouse	00885	00889	00890
	00679	01047	01147	Superscan	00093	00864	25397		01282	01577	
	01247	01347	01547	Supreme	00000			White WH	00463	00623	
	01917	01919	01922	SVA	00748	00587	00768	Wyse	01365		
	01948	01953	01958		00865	00870	00871	Yamaha	00030	00769	00797
	16624	17191	17419		00872				00833	00839	
	17444	25598	25708	Sylvania	00054	00030	00171	Zenith	00017	00092	00178
Realistic	00030	00154	00165		01271	01314	01394		00463	01265	01904
	00178	00180			01931	01944	18165		01911	01929	16384
Rhapsody	00185				25251	25397	25844		16863	17863	
Runco	00017	00030	00497	Symphonic	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			SVA	00865		
Funai	01271			NEC	01704			Sylvania	01271	01394	
Gateway	01755	01756		NetTV	01755			Tatung	01756		
Helios	00865			Norcent	00824	01089		Toshiba	00650	01704	
Hewlett Packard	01089	01502		Panasonic	00250	00650	01480	Viewsonic	00797	01755	
Hitachi	00797			Philips	00690			Vizio	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		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	Optimus	16546	16977	17546		Sony	01904	01925	16384
		16977	17662			17646				17616		
Funai	01904	16384		Orion	01911	01929	16386		Sylvania	01931	18165	
GE	01917	01919	01922		16863	17863			Symphonic	01904	16384	16977
		16624	17191	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 16508		17129	17623 17624	Philco	16419		
Akai	16425		Humax	17123		Philips	16419	16465	17002
Alienware	18356		Hush	18356			17123	17465	17565
America Action	16662		iBUYPOWER	18356		Pilot	16421		
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 16593	Kodak	16419	16421	Protec	16456		
	16386	16863 17863	LG	17421		Pulsar	16423		
Calix	16421		Linksys	18356		Quasar	16419	16546	17419
Canon	16419		Lloyd's	16384			17546		
Carver	16465		Logik	16456		RadioShack	16384	17421	
CCE	16456	16662	LXI	16421		Radix	16421		
Citizen	16421	16662 17662	Magnasonic	16977	17662	Randex	16421		
Colt	16456		Magnavox	16419	16423 16465	RCA	16444	16624 16426	
Craig	16421	16431 16624		16384	16533 16947		16533	17191 17264	
	16456			16977	17977 18165		17419	17444	
Curtis Mathes	16444	16419 16546	Magnin	16624		Realistic	16419	16421 16432	
	16425	17419	Marantz	16419	16465		16431	16384 16488	
Cybernex	16624		Marta	16421		ReplayTV	16998	17000 17999	
CyberPower	18356		Matsushita	16419	16546 17546		18000		
Daewoo	16429	16662 17662	Media Center PC	18356		Ricavision	18356		
Dell	18356		MEI	16419		Runco	16423		
Denon	16426		Memorex	16419	16546 16421	Samsung	16624	16429 17123	
DirecTV	17123	17124 17129		16432	16423 16431		17398		
	17623	17624		16624	16384 16488	Sanky	16432	16423	
Durabrand	16423	16422		16593	16863 17421	Sansui	16384	16451 16593	
Dynatech	16384			17546	17621 17646		16425	16863 17863	
Electrohome	16421		MGA	16624	16427	Sanyo	16431	16624 16488	
Electrohome	16421		MGN Tech.	16624		Scott	16568	16429 16505	
Electrohome	16421		Microsoft	18356			16427		
Emerex	16416		Mind	18356		Sears	16419	16421 16431	
Emerson	16421	16568 16384	Minolta	16426			16384	16426 16488	
	16505	16427 16593	Mitsubishi	16451	16427 17191		17621		
	16386	16662 16863	Motorola	16419	16432	Sharp	16432	17191 17232	
	16977	17662 17863	MTC	16624	16384	Shintom	16456		
	17977		MultiTech	16384	16456	Shogun	16624		
Fisher	16431	16488	NEC	16488	16451 16425	Singer	16456		
Fuji	16419	16417		16422		Sonic Blue	16998	17000 17999	
Funai	16384	16977 17977	Nikko	16421			18000		
Garrard	16384		Niveus Media	18356		Sony	16419	16416 16417	
Gateway	18356		Noblex	16624			16384	17020 17416	
GE	16444	16419 16624	Northgate	18356			17616	18356	
	17191	17419 17444	Olympus	16419		Stack 9	18356		
Go Video	16816	16998	Optimus	17446	16546 16421	STS	16426		
GoldStar	16421	16422 17621		16432	16488 16816	Sylvania	16419	16465 16384	
Gradiente	16384			16977	17546 17646		16427	16977 17977	
Harley Davidson	16384		Orion	16568	16593 16386		18165		
Harman/Kardon	16465	16422		16863	17863	Symphonic	16384	16977 17977	
Harwood	16456		Panasonic	17446	16419 16546	Systemax	18356		
Hewlett Packard	18356			16609	16998 17000	Tagar Systems	18356		
HI-Q	16431			17419	17546 17646	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	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					

# Appendix D | 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
		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



## **Remote Control Special Function Quick Reference**

<b>Function:</b>	<b>Key Combination(s)</b>	<b>Setting Options</b>	<b>Confirm</b>
Pair a remote to an BOCS	MENU + CH_UP		-
Set IR device type	TV + INFO	5 digit number	OK
	DVD + INFO	5 digit number	OK
	CBL + INFO	5 digit number	OK
	AUX + INFO	5 digit number	OK
	RED + INFO	5 digit number	OK
	GREEN + INFO	5 digit number	OK
	BLUE + INFO	5 digit number	OK
Scan IR device type	TV + GUIDE	Device then Up/dn arrows	OK
	DVD + GUIDE	Device then Up/dn arrows	OK
	CBL + GUIDE	Device then Up/dn arrows	OK
	AUX + GUIDE	Device then Up/dn arrows	OK
	RED + GUIDE	Device then Up/dn arrows	OK
	GREEN + GUIDE	Device then Up/dn arrows	OK
	BLUE + GUIDE	Device then Up/dn arrows	OK
Learn IR pattern for key and device	TV + ENTER		OK
	DVD + ENTER		OK
	CBL + ENTER		OK
	AUX + ENTER		OK
	RED + ENTER		OK
	GREEN + ENTER		OK
	BLUE + ENTER		OK
Unlearn IR pattern for key and device	TV + DEL/CLEAR		OK
	DVD + DEL/CLEAR		OK
	CBL + DEL/CLEAR		OK
	AUX + DEL/CLEAR		OK
	RED + DEL/CLEAR		OK
	GREEN + DEL/CLEAR		OK
	BLUE + DEL/CLEAR		OK
Set Default Broadcast channels	RED + CH+		OK
Set Custom Channels 9 digits, 3 per channel	RED + CH-	9 digits, 3 per channel	OK
Enable volume punch-through to AUX device	AUX + VOL_UP		OK
Disable volume punch-through to AUX device	TV + VOL_UP		OK
Enable INPUT punch-through to AUX device	AUX + Live-TV /Input		OK
Disable INPUT punch-through to AUX device	TV + Live-TV /Input		OK
Set local master remote	MENU + VOL UP		OK
Clear local master remote	MENU + VOL DN		OK
Program TV signal gain	MENU + 1	16 steps up/dn arrows	OK
Show IR device types	MENU + 2		OK
Set inter-digit delay	MENU + 4	1-4 1 fastest, 4 slowest	OK
Select TV tuning mode	MENU + 5	1=+100, 2=3 digits, 3,4 OK same but adds enter, 5,6 same but adds OK	
Set CATV or OTA mode 1=OTA, 2=CATV	MENU + 6	Channels must already be OK in valid range	
Enable power to SuperCombiner	Press Red, Green, or Blue		
Disable power to SuperCombiner	Shift then Power		

## FCC Notices

### 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.