



MediaCento™ RF 720p

Convert any Component or RGB (VGA) HD video source into an HDTV channel.

Leverages existing coax infrastructure.
Delivers crystal-clear HD video and audio.



Customer Support Information

Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500)
FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746
Mailing address: Black Box Corporation, 1000 Park Drive, Lawrence, PA 15055-1018
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9. Power cord must be accessible to allow for the removal of power from the unit.
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11. Unplug the apparatus during lightning storms or when unused for long periods of time.
12. Only use attachments/accessories specified by the manufacturer.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the 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.
14. **WARNING:** To reduce the risk of fire or electric shock, do not place this apparatus in a position where it is exposed to dripping or splashing liquids, rain, moisture, or excessively high humidity. Do not place objects containing liquid close to the unit where they might cause spillage onto the apparatus.

Instrucciones de Seguridad (Normas Oficiales Mexicanas Electrical Safety Statement)

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico debe ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

Chapter	Page
1. Specifications	6
1.1 General	6
1.2 Video Encoder	6
1.3 Audio Encoder	7
1.4 RF Spectrum Analysis	7
1.5 Modulator/Upconverter	7
1.6 Control/Setup	7
2. Getting Started	8
2.1 Overview	8
2.2 User Controls	8
2.2.1 Front Panel	8
2.2.2 Back Panel	9
2.3 What's Included	9
3. Basic Installation	10
4. Configuration from the Front Panel	11
5. Basic Firmware Configuration and Support for MediaCento RF	12
6. Advanced Configuration	13
6.1 Compensating for Cropped Video from VGA Sources	13
6.2 Front-Panel Dashboard	14
6.3 Front-Panel Setup	15
6.3.1 Basic Menu	16
6.3.2 Advanced Menu	17
6.4 RF, Cable, and Broadcast Commands	17
6.4.1 Set Channel	17
6.4.2 Set Channel Name	18
6.4.3 Set RF Output Power	18
6.4.4 Set the Cable Plan	18
6.4.5 Cable Scan	18
6.4.6 Show Last Cable Scan Results	19
6.5 Audio Input Command	19
6.6 Video Input Commands	19
6.6.1 Select Active Video Source	19
6.6.2 Select Underscan Resolutions to Present in VGA EDID	20
6.7 MPEG2 Encoding Control	20
6.7.1 Set Encoding Bit Rate	20
6.7.2 Visual Watermark	20
6.8 Miscellaneous Commands	21
6.8.1 Reset to Factory Defaults	21
6.8.2 Front Panel Lockout	21
6.8.3 Set Language	21
6.8.4 Show Operating Status	21
6.9 Show Status Display Description	22

Chapter 1: Specifications

1. Specifications

1.1 General

Compliance: UL® 60065, FCC Class B

Component Video (Y, Pr, Pb) Resolutions Supported: 720p, 480p, 480i, 59.94 frames/fields per second

Computer VGA (Analog) Resolutions Supported: 640 x 480, 720 x 480, 800 x 600, 1024 x 768, 1152 x 864, 1176 x 664, 1280 x 720, 1280 x 768, 1280 x 800, 1280 x 960, 1280 x 1024, 1360 x 768, 1440 x 900 at 60, 70, 72, 75, 85 Hz; 1680 x 1050, 1920 x 1080 at 60 Hz

NOTE: VGA resolutions are broadcast centered in the best vertical fit into 1280 x 720 at 59.94 frames per second.

Cooling: Internal fan, front/back flow

Enclosure Type: Metal

Mounting: Detachable rackmounting ears; rubber feet for counter or shelf

MTBF: 30,000 hours

Use: North America only

Connectors: Video input: Component video: RCA connectors, 75 ohm, 0 to 0.7 V; buffered;

Computer VGA (analog): HD15, 75-ohm RGB, 0 to 0.7 V; separate H and V sync; buffered and looped;

Audio input: SPDIF digital audio; TOSLINK® optical, buffered; USB as PCM audio device; Formats: 48 k bit PCM, AC-3 passthrough;

Assignment: Audio inputs can be assigned to either video input

Temperature Tolerance: Operating: 32 to 113° F (0 to 45° C)

Humidity Tolerance: 10 to 80%, noncondensing

Power: 100 to 240 VAC, 50/60 Hz, 25 watts

Size: 1.72"H x 17"W x 5.75"D (4.37 x 43.18 x 14.61 cm)

Weight (Shipping): 5.5 lb. (12.1 kg)

1.2 Video Encoder

Encoder Video Profile: MPEG2 HD Profile 2: ISO13818-2 MP @ HL (1280 x 720)

Traffic Shaping: Variable bit rate

Video Transport Bit Rate: 38.78 Mbps

Video Encoding Data Rates: Variable, 7 to 30 Mbps

Average Encoding Data Rate: 25 Mbps

Encoding Latency: Programmable 70 to 400 msec

Color Profile: 4:2:0

GOP Size: 16

Intra DC Precision: 8 to 11 bit, programmable

Video, Audio PID: Programmable

Program Information: Programmable

Content Watermarking: Digital and visual

1.3 Audio Encoder

Encoder Audio Profile: ATSC A/52

Digital Passthrough: Dolby Digital® (AC-3) 1-5.1 channel, linear PCM

1.4 RF Spectrum Analysis

Automated spectrum scanning and reporting across all channels: Analog, digital, or empty channel; relative channel power; STD, HRC, IRC detection

1.5 Modulator/Upconverter

Modulation Types: QAM 256 (ITU-T J83 Annex B); Interleaving modes: (64, 2 only)

Cable Standard: HRC, IRC, or STD

Frequency Range: 50–900 MHz (channels 2–141); 2 kHz resolution, ± 30 ppm accuracy, ± 35 ppm stability

Output Power: +25 dBmV typical

Output Level Adjust: 0–20 dB of attenuation in 5-dB steps

MER: 34 dB typical

I/O Amplitude Flatness: ± 1 dB over 6 MHz typical

I/Q Amplitude Imbalance: <1% typical

1.6 Control/Setup

Graphical User Interface: USB

Input Switching: USB or front panel

Origin: Designed and manufactured in the U.S.A.

Chapter 2: Getting Started

2. Getting Started

2.1 Overview

The MediaCento™ RF is a 1U combination HD MPEG 2 encoder and frequency-agile QAM modulator. It enables you to convert any HD video source (Component or RGB [VGA]) signal in real time and in very high quality into an HDTV cable channel. This channel works with standard coax wiring, where it can be combined with up to 134 other HDTV channels and distributed over an entire premise.

This guide will take you through a typical installation procedure and will have you broadcasting your own HDTV channel in less than ten minutes. For additional assistance or more complex installations, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

2.2 User Controls

2.2.1 Front Panel

Figure 2-1 shows the front panel of the MediaCento RF. Table 2-1 describes its components.

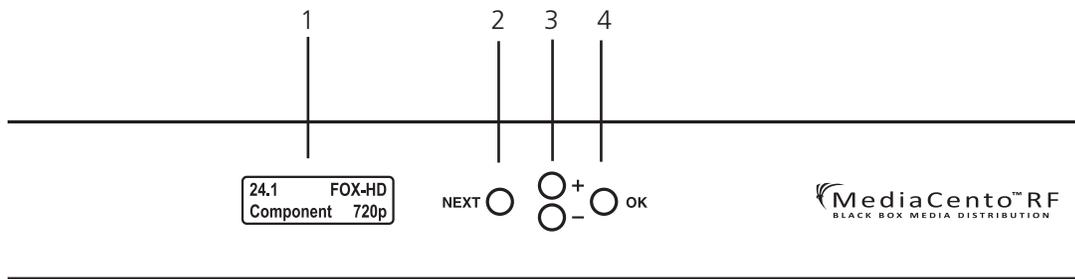


Figure 2-1. MediaCento RF front panel.

Table 2-1. Front-panel components.

Number	Component	Description
1	Status display	High-visibility character display for setting and displaying configuration including channel, power, and label configuration; input selection; video output parameters, and scanning/system status.
2	Next button	Use to scroll between functions.
3	+/- buttons	Use to scroll between options within a function.
4	OK button	Press to select functions and options.

2.2.2 Back Panel

Figure 2-2 shows the back panel of the MediaCento RF. Table 2-2 describes its components.

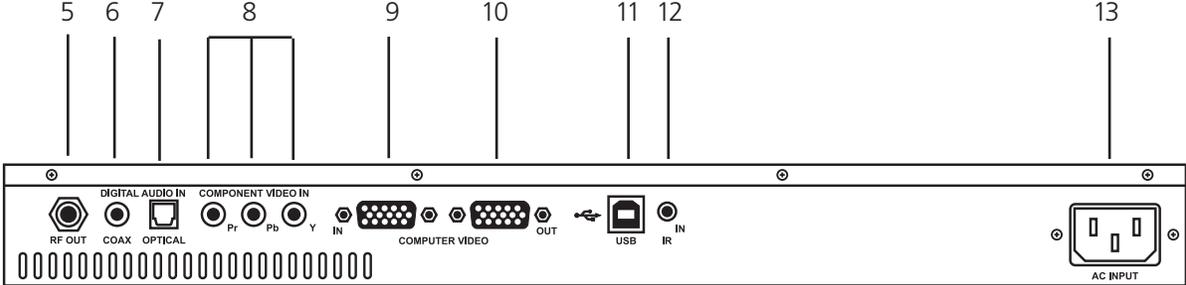


Figure 2-2. Media Cento RF back panel.

Table 2-2. Back-panel components.

Number	Component	Description
5	Coax output	Outputs encoded video as QAM 256 channel.
6	RCA connector	Digital audio input.
7	TOSLINK connector	Accepts digital audio input (48 kHz PCM or AC3).
8	Component video input, RCA connectors, 75 ohm	Accepts Component video input.
9	VGA (RGB) input; HD15 connector	Accepts standard VGA input.
10	VGA (RGB) output; HD15 connector	Looped output from VGA (RGB) input.
11	USB Type B	USB audio device or GUI configuration port.
12	IR port	IR repeater output port.
13	3-prong AC power connector	Plug in the power cord here.

2.3 What's Included

Your box should contain the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

- MediaCento RF unit
- Power cord
- (4) adhesive rubber non-slip feet
- This user's manual
- Rackmount kit
- USB cable

Chapter 3: Basic Installation

3. Basic Installation

Follow these steps to install the MediaCentro RF:

NOTE: Factory default settings enable the MediaCentro RF to broadcast a Component video HD source with SPDIF-coax audio on Channel 2.1, over coax cabling, for reception at connected HDTVs.

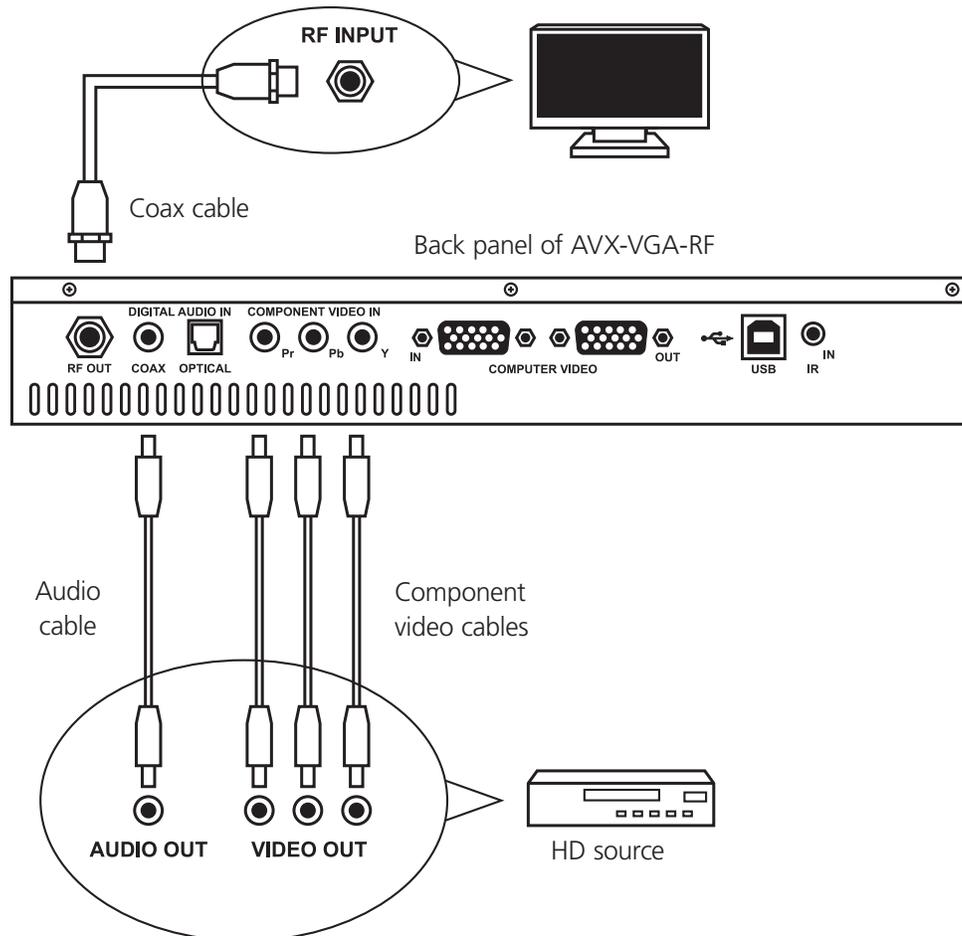


Figure 3-1. Typical installation.

1. Plug the MediaCentro RF power cord into an AC outlet.
2. Connect the Component video output of the HD source to the Component video input of the MediaCentro RF.
3. Connect the digital audio output of the HD source to the digital audio input of the MediaCentro RF.
4. Connect the coaxial output of the MediaCentro RF to the on-premise coax network that feeds HDTVs (the HDTV input).
5. Tune HDTV to Channel 2.1 to view the MediaCentro RF and the connected HD source.

NOTE: The default audio input is SPDIF-coax.

4. Configuration from the Front Panel

In most cases, you can configure the MediaCentro RF using the front-panel buttons. Configuration is simple: usually, you only need to set the RF channel that you want the MediaCentro RF to broadcast. The unit stores the settings, and you don't lose them when you power off the unit.

An example for changing the RF broadcast channel is shown below.

NOTE: Make sure that the HDTV connected to the MediaCentro RF is set to cable mode (not antenna mode or over-the-air mode). The unit broadcasts using QAM—the same standard used by cable companies.

To change the broadcast channel:

1. Press the "Next" button until SET CHANNEL appears in the display.
2. Press the "+" or "-" key until you see the channel you want to use—for example, 7.
3. Press the "OK" button.

That's all you need to do. In this example, the MediaCentro RF will broadcast on channel 7. To tune it in at your HDTV, enter 7.1.

NOTE: Sometimes a channel scan is required at the HDTV before the HDTV recognizes the new MediaCentro RF channel.

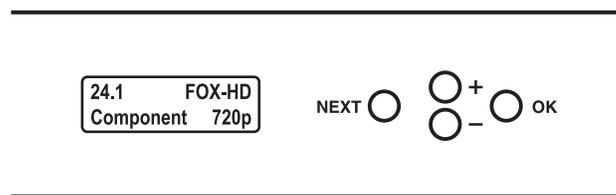


Figure 4-1. Front-panel controls.

5. Firmware Configuration and Support for MediaCento RF

IMPORTANT: To configure the MediaCento RF for everyday use and to check for updated firmware, you need to download the Black Box Modular Configuration Tool, a powerful graphical user interface, onto your laptop or PC and connect to the MediaCento RF via an open USB port. An Internet connection on your PC is required to download the Black Box Modular Configuration Tool from our server and to update the firmware on the MediaCento RF.

To get the Black Box Modulator Configuration Tool:

1. Visit <ftp://ftp.blackbox.com/anonymous/communications>
2. Download the Black Box Modulator Configuration Tool (AVX-VGA-RF Configuration Tool.zip).

Always check for updated firmware first:

1. Launch setup.exe.
2. Connect your PC to the MediaCento RF via USB Type B to USB Type A cable.
3. Power up the MediaCento RF.
4. Install new firmware if prompted. If there is new firmware available, follow the directions for downloading firmware.

Configuration

NOTE: This is the same information that's presented in Chapter 3 for basic installation. To make ANY changes to the default settings (including setting alternative audio inputs, changing the RF output channel, re-naming the HDTV channel etc.), use the Black Box Modular Configuration Tool or front-panel buttons and LCD for configuration (see Chapters 4 and 6).

Factory default settings enable MediaCento RF to broadcast a Component video HD source with SPDIF-coax audio on HD Channel 2.1, over coax cabling, for reception at connected HDTVs.

To use the factory default settings for a connected Component video HD source:

1. Plug the MediaCento RF power cord into an AC outlet.
2. Connect the Component video output of the HD source to the Component video input of the MediaCento RF.
3. Connect the digital audio output of the HD source to the digital audio input of the MediaCento RF.
4. Connect the coaxial output of the MediaCento RF to the on-premise coax network that feeds HDTVs (the HDTV input).
5. Tune HDTV to Channel 2.1 to view the MediaCento RF and the connected HD source.

You might need to perform a digital cable channel scan on the HDTV first to receive the new MediaCento RF channel.

Bit Rate Adjustment

NOTE: There is a way to adjust for bit rate. The default setting is "high." The higher the bit rate generally means the higher the video quality but there are some HDTVs that will not accept a high bit rate on certain scenes. We chose a setting (high) that is compatible with most TVs. If you encounter any issues with our default setting, you can adjust the bit rate by going to the Configuration tab and MPEG encoding section.

Frame Rate Adjustment

You can change the default setting for 720p resolution from the default of 60 fps down to 30 fps. To adjust frame rate, go to the Configuration tab and MPEG encoding section, then check the "Show Advanced Options" checkbox.

If you have any questions or problems, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

6. Advanced Configuration

In most cases, the MediaCentro RF can be configured using the front-panel buttons. Configuration is simple and usually just involves setting the RF channel on which the MediaCentro RF will broadcast. Settings are stored in MediaCentro RF and not lost on power-down.

Component video sources connected to the MediaCentro RF should be set for 720p output, and VGA sources should be set for 1280 x 720 output. If the MediaCentro RF receives a 1080 signal, it will display a warning message and the picture will appear at a very low frame rate.

NOTE: Many additional configuration settings can be accessed by connecting a PC to the MediaCentro RF (via USB), and running the Black Box Modulator Configuration Tool software. The same USB connection can also be used to update the unit's firmware.

NOTE: Chapter 4 describes how to configure the MediaCentro RF from the front panel for a simple application. This chapter contains more advanced configuration information.

6.1 Compensating for Cropped Video from VGA Sources

Most digital televisions crop off some portion of the picture at the outside edges; the phenomenon is known as overscan. For example, even if they receive an image that's "exactly" 1280 x 720 pixels, TVs may crop off up to 15% of the image before displaying it. Some TVs allow you to control this (look for a setting like "Unscaled" or "Native" in the Picture menu settings). Most do not let you override it.

Component Video sources aren't terribly affected; they've always been designed to be displayed on TVs that might crop off a portion of the picture. Content is specially designed to keep important information inside of a "safe area." There is no need (and no ability) to adjust the source to better fit the TV—you'll simply see a little more picture on one TV vs. another.

VGA sources are quite a different matter. These are usually computer images that have important information at the edges of the screen:

- Windows® has a Start button and the task bar right on the edge.
- Apple® has a dock on the edge.
- Digital signage applications typically put a text crawl on the edge.

Any cropping of the image may cause important information to be lost. The MediaCentro RF has a patent-pending mechanism to help compensate for this behavior. By changing the information presented to the computer via EDID on the VGA connection, it can give the computer an alternate "underscan" resolution that's a little smaller than the default. Although MediaCentro RF ships with a default underscan resolution, it also enables you to optimize the settings to match the exact behavior of your TV.

To change the settings:

1. Broadcast a VGA source to your HDTV(s). Note which TV crops off the most.
2. Press the "Next" button until the display reads "SET VIDEO-SOURCE"
3. Press the "+" or "-" button until "Test-Image-1" appears on-screen, then press OK.

4. On the TV that crops the most, note the largest resolution that is visible. It will look like the screen in Figure 6-1:

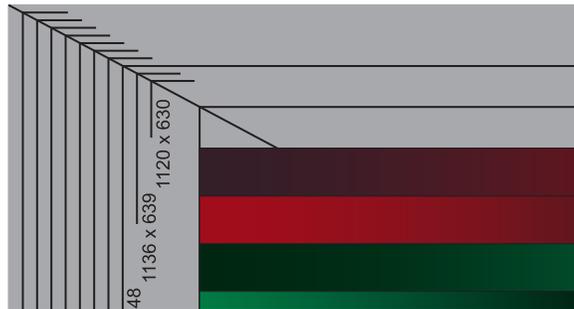


Figure 6-1. Largest available resolution.

5. Press the “Next” button until the SET VGA-RES command appears in the window.
6. Press the “+” or “-” buttons to select a resolution that is closest to, but not larger than, the one you saw on the HDTV (that will ensure that the entire picture fits on-screen).
7. Press “OK” to apply that resolution.
8. Unplug the VGA cable from your computer, wait a few seconds, and reconnect it. There should now be a new resolution available in your computer’s “display properties” that matches your setting. Select it. Your VGA source’s picture should now perfectly fit on your HDTV.

6.2 Front-Panel Dashboard

In normal operation, the display panel on the MediaCento RF is in “Dashboard” mode, giving you at-a-glance information about the operation of the unit, as follows:



Figure 6-2. Front-panel dashboard mode display.

In addition, status messages may scroll across the bottom line of the display in lieu of the Input Video Source and Output Resolution indicators. These status messages are described in Table 6-1.

Table 6-1. Status messages.

Status message	Notes
RF power off	Turn RF power on to begin broadcasting.
Scanning cable	MediaCento RF is scanning cabling for open and occupied RF channels. Wait for completion.
VGA: no video input or Component: no video	No video input is detected at the designated connector. Check the source connection.
VGA: resolution unsupported or Component: resolution unsupported	Input video resolution not supported by MediaCento RF. Change to a supported resolution.
Temperature critical or Temperature warning	MediaCento RF is in danger of overheating; make sure all air inlets and outlets are clear, and that nothing is stacked on top of the unit.
DSP error, reboot	The digital signal processor (DSP) is not functioning correctly. Try rebooting the unit, or contact Technical Support at 724-746-5500 or info@blackbox.com.

6.3 Front-Panel Setup



Figure 6-3. Front-panel buttons.

The front-panel buttons operate as described in Table 6-2.

Table 6-2. Front-panel buttons.

Button	Description
Next	Scrolls through available settings.
+ and - buttons	Scroll through possible values for a setting and multiple status lines.
OK	Saves the selected value.

Chapter 6: Advanced Configuration

6.3.1 Basic Menu

Table 6-3. Basic menu.

Settings	Description	Possible Values
SET CHANNEL	Sets RF broadcast channel to X and HDTV channel to 1.	2–135
SET CHANNEL-NAME	Sets channel name displayed on-screen.	Any name, 7 characters or fewer
SET VIDEO-SOURCE	Select Test Image 1 before setting "VGA-RES" parameter.	Component VGA Test-image-1 Test-image-2 None
SET AUDIO-SOURCE	Sets audio source for current video source. If video source is not VGA or Component, sets both.	Dig-optical Dig-coax USB None
SET LANG/IDIOMA	Sets the language that is used at the Front Panel Display.	English Espanol
SHOW STATUS	<i>NOTE: Scrolling through the SHOW STATUS section does not enable you to change settings—it simply gives you information about the operating status of your MediaCento RF.</i>	Transmit (whether transmitting) V-in (Video input resolution) V-out (Video output resolution) A-in (Audio input type) A-out (Audio output type) SN (Serial number) HW Rev (Hardware version) SW (Software version) Temp (Temperature) Up (Indicates continuous run time) CC (Closed caption status)
ADVANCED MENU	Enter the advanced menu.	
LOCK FRONT PANEL	Lock	<i>NOTE: To unlock the front panel, press all four front-panel buttons simultaneously (Next, +, -, OK).</i>

6.3.2 Advanced Menu

Table 6-4. Advanced menu.

Settings	Description	Possible Values
SET DATA-RATE	Helps increase or decrease picture detail. Some HDTVs can't handle high settings without picture breakup.	Low Normal High
SET RF-POWER	Sets broadcast power.	Off 5 dBmV 10 dBmV 15 dBmV 20 dBmV 25 dBmV
SET CABLE-PLAN	If sharing cross cabling with cable company feed, set to same cable plan as cable company; normally Standard.	Standard HRC IRC
SET WATERMARK	Enables/disables on-screen watermark.	On Off
SET VGA-RES	Used to shrink 1280 x 720 VGA source picture to better fit an HDTV screen.	Varies from 1120 x 630 to 1264 x 711
START CABLE-SCAN	Scans the cabling to see which channels are currently unoccupied on the coax system.	Start
SHOW SCAN RESULT	Displays unoccupied channels on coax cabling that can be used to broadcast the MediaCentro RF channel.	<i>NOTE: RF channel scan results are displayed; information includes channel plan, open and occupied channels.</i>
RESET DEFAULTS	Restores MediaCentro RF to factory defaults.	

6.4 RF, Cable, and Broadcast Commands

These commands are used for settings related to the local cable plant, and how MediaCentro RF will broadcast.

6.4.1 Set Channel

The MediaCentro RF is frequency agile, so it's possible to use any RF channel for broadcast.

Syntax

SET CHANNEL <2..135> factory default: 2

Sets the RF channel frequency used for broadcast, as well as the HDTV channel used to tune the channel at the TV. The exact frequency follows standard channel placement, and is also a function of the cable channel plan (Standard, HRC, IRC). MediaCentro RF creates a well-formed cable channel, and may be placed next to existing channels without interference.

Chapter 6: Advanced Configuration

6.4.2 Set Channel Name

The MediaCento RF channel name appears on HDTV screens when tuned in. Technically there are three names that could appear: the short channel name, long channel name, and EIT (or program) name. The name may be customized—seven character spaces are available. If customized, all three possible names are changed to the new customized name.

Syntax

SET CHANNEL NAME<A...Z> factory default: MYTV-HD

Sets the name that will appear on HDTVs when the MediaCento RF channel is tuned in. When the name is customized, all three channel names adopt the customized name.

6.4.3 Set RF Output Power

Sets the power level that MediaCento RF will use when broadcasting.

Syntax

SET RF-POWER {Off | 5 dBmV | 10 dBmV | 15 dBmV | 20 dBmV | 25 dBmV}

The MediaCento RF has a maximum output power of +25 dBmV, matching the highest power levels typically entering a building from providers such as FIOS® and Comcast®. When using a MediaCento RF to add a channel to an existing lineup, it is important to match the power of existing channels, otherwise adjacent lower-powered channels can be difficult to tune with some televisions. There are five power levels available, each dropping the output power approximately 5 dBmV, plus “off.”

6.4.4 Set the Cable Plan

MediaCento RF's built-in spectrum analyzer can identify the cable plan (channel alignment) the cable company is using for its channel lineup; options are Standard, HRC, and IRC. Once the cable plan is detected, the MediaCento RF can be set to use the same plan. Matching the MediaCento RF to the cable company cable plan allows the HDTVs to tune both the MediaCento RF channel and the cable company channels reliably.

Syntax

SET CABLE PLAN {standard | HRC | IRC}

You can set the cable plan (Standard, HRC or IRC) to be used. For best results during the scan, connect MediaCento RF to the cable plant using the same coax cabling connection that you would use to connect an HDTV.

6.4.5 Cable Scan

MediaCento RF products contain a very powerful feature to aid the installer—a built-in cable spectrum analyzer.

When asked, MediaCento RF will stop transmitting, analyze every RF channel on the cable and report the result. The report shows if a channel is open or occupied, and if occupied, if the channel is analog or digital.

Syntax

START CABLE-SCAN

RF frequencies on the coax cabling are scanned from lowest number to highest. The scan cannot be interrupted once started.

Example: (some results omitted to save space)

START CABLE-SCAN

Determining cable plan

RF 2: Open

RF 3: Digital

RF 4: Analog

...

RF 135: Open

SCAN COMPLETED—Hit NEXT

6.4.6 Show Last Cable Scan Results

MediaCentro RF remembers the results of the last cable scan performed. This command shows the results. The first line shows the cable-plan type that was determined (standard, HRC, or IRC).

Syntax

SHOW SCAN RESULTS

Example:

SHOW SCAN RESULTS

Hit +- to scroll

Cable-plan STD

Open 2 3 4 5 6 7

Open 8 9 10 11

...

Digital 12 13 14 15

...

Analog 16 17 18 19

6.5 Audio Input Command

These commands are used to associate an audio input to the currently selected video input. You can use the same audio input for both video inputs, but that may not make the most sense.

Associate Audio Input for VGA and Component Inputs

Syntax

SET AUDIO-SOURCE {Dig-optical | Dig-coax | USB | None}

This command sets the audio input that is associated with the currently selected video input. If the video input is neither VGA nor Component, then the selected audio source is associated with both VGA and Component inputs.

The Dig-optical input is a TOSLINK connection that delivers digital audio. The Dig-coax input carries the same information in a different physical form. If the received audio is PCM, it is encoded into a Dolby® Digital 2.0 stream. All other Dolby encodings, including 5.1, are directly passed through as is to the video stream. Note that DTS® encoding is not supported.

If USB is selected, the USB port will present itself as a standard USB audio device to whatever device it is connected. No special software is required to use this connection.

If None is selected, no audio will be passed with the video stream.

6.6 Video Input Commands

These commands are used to select which video source to broadcast and set some parameters for how to process that video.

6.6.1 Select Active Video Source

Selects the video input that will be encoded and broadcast. Audio will be processed based on the audio port associated with the selected video input.

Syntax

SET VIDEO-SOURCE {Component | VGA | Test-image-1 | Test-image-2 | None}

factory default: component

If idle-screen is selected (“None”), the animated MediaCentro RF logo is played. If a test image is selected, a fixed test image is displayed. These are designed to help you calibrate your HDTVs—test images are broadcast in 720p.

On very rare occasions, the audio and video processing may need to be restarted. To do so, change the video-source to “None” and then back to the previous setting.

6.6.2 Select Underscan Resolutions to Present in VGA EDID

When MediaCento RF is connected to a computer via the VGA connector, the unit presents to the computer's graphics card a set of resolutions that are supported by MediaCento RF, including the 1280 x 720 resolution used by HDTVs. These resolutions are presented in a structure called EDID (Extended Display Identification Data). If MediaCento RF is broadcasting a full 1280 x 720 resolution to an HDTV that "overscans" (crops off the edges of the picture), important information may be lost, for example, a PC taskbar or a scrolling ticker at the bottom of the screen. In that case it's possible to choose a MediaCento RF supported "underscan" resolution at the PC, generating a slightly smaller picture that will remain within the viewable area of the HDTV screen.

The following command enables you to set an underscan resolution for 720, which will be communicated to your PC via EDID. Once an underscan resolution has been selected, you may set your PC's output resolution to that resolution.

NOTE: Each TV will perform a different amount of overscan, so keep this in mind when selecting an underscan resolution. It can be useful to have the MediaCento RF output test-image-1 (that is, "set video-source test-mage 1") when determining the correct underscan resolution.

Syntax

```
SET VGA-RES {1264x711 | 1248x702 | 1232x693 | 1216x684 | 1200x675 |  
1184x666 | 1168x657 | 1152x648 | 1136x639 | 1120x630}
```

6.7 MPEG2 Encoding Control

This group of commands can be used to fine-tune the characteristics of the MPEG2 encoder. The factory defaults have been set to values that produce the best picture, while also maximizing the chance that all HDTVs will correctly display the encoded video. We have found that some HDTVs are sensitive to certain things like total bit rate or number of bits of DC coefficients. The picture may sometimes break up, or in some cases not display at all.

Experimenting with these settings can improve the quality of the encoded video, but we strongly advise you to test any changes on *each* type of HDTV that may receive the signal.

6.7.1 Set Encoding Bit Rate

A digital cable (QAM) RF channel allows for a data rate up to 38.78 Mbps. Usually, that stream is divided into multiple digital channels, each having a lower effective data rate. Since MediaCento RF is placing a single digital channel in the stream, it can send more data during complex scenes, up to the 38.78-Mbps limit.

This can result in significant improvements in video quality for certain very complex scenes. However, some HDTVs will experience some picture breakup if the data rate ever exceeds 19.4 Mbps for a single digital channel. We have observed that this is true of some Sharp HDTVs, and may be true of others.

"Normal" will keep the encoder's output data rate to 19.4 Mbps. High will allow the encoder to operate up to 38.78 Mbps. At this time, Low and Normal have the same effect.

Syntax

```
SET DATA-RATE {low | normal | high} factory default: high
```

6.7.2 Visual Watermark

MediaCento RF overlays a logo in the lower right corner of the broadcast stream. The logo has a "heartbeat," slowly appearing and disappearing. This is used to identify a MediaCento RF as being the source of video. This visual mark can be disabled, however, every encoded video stream also has an embedded digital watermark containing information about the MediaCento RF and the system that created it, that cannot be removed. This is added to help trace the source of potentially pirated video and does not affect visual quality in any way.

Syntax

```
SET WATERMARK {off | on } factory default: on
```

6.8 Miscellaneous Commands

6.8.1 Reset to Factory Defaults

This command resets all settings to their original factory defaults. It is especially useful when some prior configuration change causes the system to malfunction. Defaults are listed in this document in the command summary, and with each command description. The unit will reboot after it has reset to factory defaults.

Syntax

RESET DEFAULTS

6.8.2 Front-Panel Lockout

To prevent accidental changes to MediaCentro RF settings, the front-panel buttons can be locked.

Syntax

LOCK FRONT PANEL

NOTE: The panel can be unlocked by simultaneously pressing all four buttons: Next, +, -, and OK.

6.8.3 Set Language

The MediaCentro RF 170 supports both English and Spanish languages at the front-panel display.

Syntax

SET LANG/IDIOMA {English | Español} factory default: English

Sets the language that is displayed on the Front Panel Display.

6.8.4 Show Operating Status

The system and operating status for MediaCentro RF can be reviewed using the Show Status display, which is useful for optimization and troubleshooting purposes. This display is only for review; actual configuration setting changes must be done in the Basic or Advanced menus.

Chapter 6: Advanced Configuration

6.9 Show Status Display Description

Table 6-5. Status display,

Display Lines	Descriptions of Possible Readouts
Hit + - to scroll	Operating instructions
Transmitting	<p>Transmitting status:</p> <ul style="list-style-type: none"> • Transmitting = broadcasting normally • RF-power off = RF output power has been turned off • Scanning cable = currently scanning for open and occupied channels • Channel conflict = set to broadcast on an occupied RF channel
V-in	<p>Video input:</p> <ul style="list-style-type: none"> • Not cfg = no video source detected • Test-image 1 = showing internally generated test image 1 • Test-image 2 = showing internally generated test image 2 • 1280 x 720 (or other resolution) = resolution of input source • Undetected = no incoming video detected • Unsupported = unsupported video resolution from input source
V-out	<p>Video output:</p> <ul style="list-style-type: none"> • Power off = RF output is turned off • 720p (or other resolution) = video resolution currently output from input source
A-in	<p>Audio input:</p> <ul style="list-style-type: none"> • Not cfg = no audio source detected (or no video source detected) • PCM = audio source is USB, and/or audio input is PCM • Undetected = no audio source detected • AC3 = audio input is AC3 format • DTS = audio input is DTS format, this is not supported • Unknown = unknown audio format
A-out	<p>Audio output:</p> <ul style="list-style-type: none"> • Power off = RF output is turned off • AC3 = an audio source is detected, MediaCento RF is outputting AC3 audio • No output = either no output detected, or unknown audio format from input source
SN	Shows serial number of MediaCento RF
HW	Shows hardware version of MediaCento RF
SW	Shows firmware version of MediaCento RF
Temp	<p>Temperature status:</p> <ul style="list-style-type: none"> • Okay = normal operating temperature • Warning = hotter than normal operation temperature • Critical = unit about to shut down automatically
Up	Uptime = shows how long MediaCento RF has been running since power on or reboot
CC	<p>Closed captioning adapter status:</p> <ul style="list-style-type: none"> • Connected = closed captioning adapter connected • Not connected = no closed captioning adapter connected

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