

## MediaCento RF Quick Start Guide

# Convert any HD video source, Component or RGB (VGA) 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 •  
Web site: [www.blackbox.com](http://www.blackbox.com) • E-mail: [info@blackbox.com](mailto:info@blackbox.com)

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## Important Safety Instructions Pertaining to a Risk of Fire, Electric Shock, or Injury to Persons

1. Keep these instructions.
2. Heed all warnings.
3. Follow all instructions.
4. Do not use this apparatus near water.
5. Clean only with dry cloth.
6. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. 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 is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
9. Power cord must be accessible to allow for the removal of power from the unit.
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. 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 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.

We're here to help! If you have any questions about your application or our products, contact Black Box Tech Support at **724-746-5500** or go to **blackbox.com** and click on "Talk to Black Box." You'll be live with one of our technical experts in less than 20 seconds.

### Federal Communications Commission and Industry Canada Radio Frequency Interference Statements

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

## 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.

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# MediaCento RF Quick Start Guide

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## 1. Specifications

### 1.1 General

**Compliance:** UL® 60065, FCC Class B

**Component Video (Y, Pr, Pb) Resolutions Supported:** 1080i, 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 1920 x 1080 or 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 and looped;

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

Audio Input: SPDIF digital audio; TOSLINK® optical, buffered and looped; RCA 75 ohm, buffered and looped; USB as PCM audio device; Formats: 48 k bit PCM, AC-3 pass-through; Analog: R/L via RCA, buffered and looped; 16-bit 48 k bit sampling;

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 (1920 x 1080 or 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,  $\pm 30$  ppm accuracy,  $\pm 35$  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:**  $\pm 1$  dB over 6 MHz typical

**I/Q Amplitude Imbalance:** <1% typical

### 1.6 Control/Setup

**Command Line Interface:** RS-232 or USB

**Input Switching:** IR, RS-232, USB or front panel

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

**RS-232 Port:** 9600 baud, 8 bits, 1 stop bit, no parity, hardware/software flow control supported

## 2. Getting Started

### 2.1 Overview

The MediaCentro™ RF is a 1U combination HD MPEG 2 encoder and frequency-agile QAM modulator. It enables you to convert any HD video source, or 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 Front Panel

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

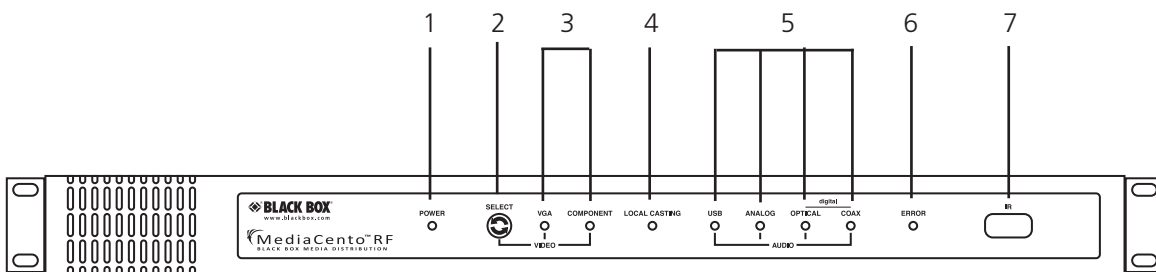


Figure 2-1. MediaCentro RF front panel.

Table 2-1. Front-panel components.

Number	Component	Description
1	Power indicator	Indicates whether unit is powered
2	Input switch	Switches between Component video and VGA inputs
3	Active video source indicator	Indicates which video input is currently selected
4	Broadcast status indicator	Indicates if video source is being sent to coax output
5	Active audio source indicator	Indicates which audio input is currently selected
6	Error indicator	Indicates that system is booting or system error
7	IR input window	Receives IR commands



2.3 Back Panel

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

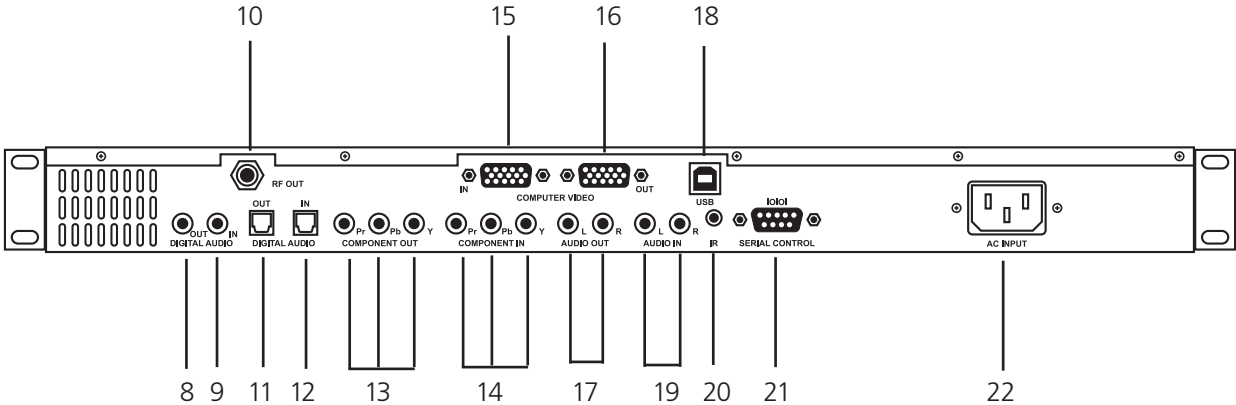


Figure 2-2. Media Cento RF back panel.

Table 2-2. Back panel components.

Number	Component	Description
8	RCA connector	SPDIF digital audio output
9	RCA connector	SPDIF digital audio input
10	Coax output	Outputs encoded video as QAM 256 channel
11	SPDIF digital audio output, TOSLINK connector	Looped output from SPDIF digital audio input, TOSLINK connector
12	SPDIF digital audio input, TOSLINK connector	Accepts digital audio input audio input (48 kHz PCM or AC3)
13	Component Video output, RCA connectors, 75 ohm	Looped output for video received at Component Video input, RCA connectors, 75 ohm
14	Component Video input, RCA connectors, 75 ohm	Accepts Component Video input
15	VGA (RGB) input; HD15 connector	Accepts standard VGA input
16	VGA (RGB) output; HD15 connector	Looped output from VGA (RGB) input
17	Analog audio output, R/L RCA connectors	Looped output for analog L/R audio input, RCA connectors
18	USB Type B	USB audio device or GUI configuration port
19	Analog audio input, R/L RCA connectors	Input for analog L/R audio
20	IR port	IR repeater output port
21	DB9 connector	RS-232 serial control
22	3-prong AC power connector	Plug in the power cord here

### 2.4 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](mailto:info@blackbox.com).

- MediaCentro RF unit
- Power cord
- (4) adhesive rubber non-slip feet
- This printed Quick Start Guide
- Rackmount kit (attached to unit)
- USB cable

### 3. Basic Installation

Follow these steps to install the MediaCentro RF:

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

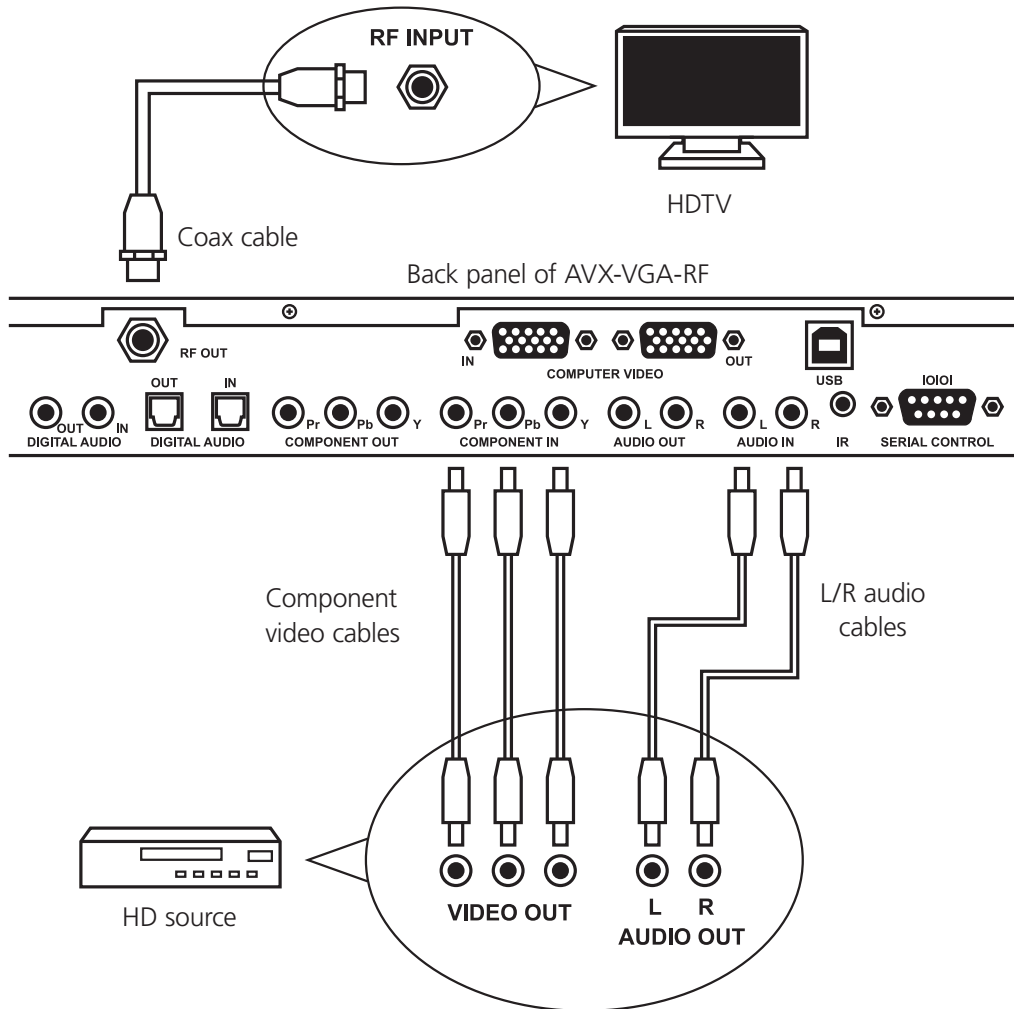


Figure 3-1. Typical installation.

1. Plug the 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 L/R analog audio output of the HD source to the L/R analog audio input of the MediaCentro RF.
4. Connect the coaxial output of the MediaCentro RF to the HDTV RF input.
5. Tune the HDTV to channel 2.1 to view the MediaCentro RF channel.

NOTE: The default audio input is L/R analog.

## 4. Configuration and Support for MediaCentro RF

**IMPORTANT:** To configure the MediaCentro 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 MediaCentro 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 MediaCentro RF.

To get the Black Box Modular Configuration Tool:

1. Visit <ftp://ftp.blackbox.com/anonymous/communications>
2. Download the Black Box Modular Configuration Tool (setup.exe).

Always check for updated firmware first:

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

### Configuration

Factory default settings allow MediaCentro RF to broadcast a Component video HD source with SPDIF-coax analog 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 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 "analog audio output" of the HD source to the "analog audio input" of the MediaCentro RF.
4. Connect the "coaxial output" of the MediaCentro RF to the on-premise coax network that feeds HDTVs.
5. Tune HDTV to Channel 2.1 to view the MediaCentro RF and the connected HD source.

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

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 for configuration.

### 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](mailto:info@blackbox.com).







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