

# QUICK START GUIDE

## MediaStar 785 HD Encoder



The MediaStar Evolution 785 encoder allows a video and audio signal to be streamed to an unlimited number of users across an IP network in real-time. The remote users can use software or hardware based decoders to watch the live video and audio. This Encoder is a standalone unit that has a variety of standard video and audio inputs.

Basic configuration/control can be made using an on-board display and selection buttons, while the full range of controls can be accessed via simple-to-use web pages.

The encoder has a variety of other features that make it an essential part of any sophisticated AV switching system.

### What's in the box:

- 785 Encoder
- CAT5 patch cable
- HDMI lead
- 3 phono video lead
- 3.5mm plug to 2 phono audio lead
- RS232 lead

These include IP/RS232 control commands, network sourced IR blasting, and an IP to RS232 pass-through comms link. It is powered from a mains-DC plug-in power supply or via 802.3af Power-over-Ethernet (PoE).

There are no moving parts within the encoder, and it can operate reliably in all dry environments from 0-45°C (32-113°F).

### Important Safety Instructions

1. Read and keep these instructions.
2. Follow the instructions and heed all warnings.
3. Do not use this apparatus near water.
4. Clean only with a dry cloth.
5. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
6. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
7. Do not defeat the safety purpose of the polarised or ground-ing-type plug. A polarised 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.
8. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
9. Only use attachments/accessories specified by the manufacturer.
10. 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.
11. Unplug this apparatus during lightning storms or when unused for long periods of time.
12. 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: THERE ARE NO USER SERVICEABLE PARTS WITHIN A MEDIASTAR 785 UNIT.**

# Installation

1. When locating the 785 Encoder, ensure that a clearance distance of 25mm (1") is maintained around the unit to provide sufficient ventilation airflow. Items that could accidentally block the ventilation grills or impede the cooling airflow must not be located near the unit. The 785 must not be installed where there is a possibility of exposure to condensation, dripping or splashing liquids. Containers filled with fluid should not be located in the vicinity of this unit. Do not fix the Encoder to any surface which is a heat source that may cause the unit to over-heat.
2. Connect the video source to the Encoder using the cables supplied. If analogue audio is being used, connect the audio source to the 3.5mm audio input socket.
3. Power on the encoder using the external mains-DC Power supply or via the CAT5 network cable if using Power-over-Ethernet (PoE).

## When powering with the mains/DC power supply:

The external mains/DC power supply input rating must meet the specifications of the mains supply at the installation location. Only the LPS (Limited Power Source) power supply provided with this equipment should be used. This device must be installed using a mains (AC supply) plug and socket that is located near the equipment, that remains operable and be easily accessible to disconnect the unit in the case of an emergency. Insert the DC jack plug of the mains/DC power supply unit into the jack socket on the Encoder. Plug in the mains/DC power supply unit, switch on and check that the status indicator LED by the DC jack socket is lit.

## When powering using PoE:

Connect the encoder to the network using the CAT5 cable supplied or another equivalent cable of appropriate length. The Encoder will then negotiate a class 3 power supply connection with the PoE PS equipment. Check the status LED by the DC jack socket is lit. If a mains/DC power supply and PoE are used simultaneously, most power will be taken from the DC supply and a small amount of power will be taken from the PoE source so the link remains active.

4. The status LED (by the DC jack connector) will initially be orange, then orange flashing as the encoder boots up. When the LED goes green or flashing green, the encoder is ready for use.

The status LED shows the following states:

<b>Orange</b>	Reset
<b>Flashing Orange</b>	Booting or stream disabled (via browser page settings)
<b>Green</b>	Streaming video
<b>Green flashing</b>	Awaiting a valid video source
<b>Red</b>	Updating software
<b>Red flashing</b>	Error condition (service required)

The LEDs on the network connector should illuminate to indicate there is a valid network connection. The left-hand green LED indicates a network link has been established, and the right-hand orange LED is illuminated to indicate a 100Mbps connection. If the right-hand LED remains off, then only a 10Mbps link has been established which may not be adequate for successful video streaming.

5. The encoder is supplied in the following default state:

**IP Address:** 191.53.51.208

**Multicast Video/Audio stream:** 239.192.11.12

**Video acquisition:** Search mode

**Encoding:** MPEG2, VBR, 10Mbps for SD input, 15Mbps for HD input.

This means that as soon as a valid video signal is input on to any one of the video inputs, a video/audio stream will automatically be generated on multicast stream address 239.192.11.12. This stream can now be viewed using a suitable software or hardware decoder. If the Encoder does not see a valid video input, it will still output a default colour picture.

6. It is important to now change the IP address of the Encoder, and its multicast output stream. If two encoders are on the network at the same time and have the same IP address, then accessing the browser based Encoder controls will become impossible. If two encoders are on the network at the same time and have the same video stream IP address, then the picture on this stream will become un-watchable.

To change the IP address of the encoder, it is recommended that you use the built in display and selection buttons. However, you can also use an RS232, USB or IP serial link, or connect to the Encoder via the network using a browser with the Encoder's default IP address.

Before setting the IP address of your encoder, contact your network administrator to ensure any settings made are appropriate for your network.

### Built in Display Operation

The OLED display can be used with the three adjacent push buttons to view status information and configure the Encoder. The Up and Down buttons scroll up and down the menus and change parameter values. The OK button selects the currently displayed menu item or confirms a parameter change. Pressing the Up and Down buttons and releasing them together returns up a menu level, aborting a parameter change in progress. Pressing the Up, Down and OK buttons for 5 seconds and releasing them together will present a unit RESET option. Pressing the OK button to confirm will then reboot the encoder.

The structure of the menus presented on the LCD are as follows:

- Encoder Part number and current operating status
- Stream Information
- Video Input selection (Composite, S-Video, YPbPr, Component (SCART), Component (SOG), HDMI1, HDMI2, Colour Bars, Search mode)
- Picture adjustments (Brightness, Contrast, Hue, Saturation)
- IP address settings (DNS/Static, IP Address, Netmask etc., Network Link)
- Unit details (MAC address, Serial Number, software version)
- Help

**Note:** The on-board display will go blank 30 minutes after it was last used, but the encoder will continue to operate normally. Press any button to bring the display on again.

### IP Address setting using on-board display

Scroll to the IP address settings menu using the Up and Down buttons. Press OK to enter the IP address setting menu. Press DOWN to move to the static IP address setting range and then OK to edit the current setting. Select the IP address parameter to change then press OK.

Use the Up and Down buttons to change each digit of an IP address number and press OK to move on to the next digit. Press the Up and Down buttons together to abort a change and move back up a menu level. When completed, the IP address entered will be set on the network interface. You can then access the full Encoder configuration web-pages via a standard web-browser over the network.

### IP Address setting using an RS232 or USB Serial Link

Connect the Encoder to your computer using either an RS232 cable or USB cable. If using a USB cable, you might have to load appropriate comms drivers which can be downloaded from here: [www.cabletime.com/dl/USB\\_drivers/usb\\_driver\\_sw.zip](http://www.cabletime.com/dl/USB_drivers/usb_driver_sw.zip). Start up a terminal emulator program (such as Hyperterminal or Putty) and connect to the appropriate comms port with the following settings:

**115200 Baud**  
**8 bits data**  
**No parity**  
**1 stop bit**

**Type:** help <CR> and you should see a list of the serial commands supported scroll past.

**Type:** setipconf, dhcp="false", dnsaddr="", gatewayaddr="", localaddr="xxx.xxx.xxx.xxx", localnetmask="255.255.0.0" <CR>where: xxx.xxx.xxx.xxx is the desired IP address of the encoder.

This will then set the new IP address into the encoder, which will then reboot and start using that IP address. Once rebooted, you can then access the full Encoder configuration web-pages via a standard web-browser over the network.

## IP Address setting using an IP Serial Link

To get a serial IP link to the encoder, you must configure your PC/Laptop so that it can reach the Encoder at its default IP address of 191.53.51.208. To do this set a static IP address on your device of 191.53.51.207 with a netmask of 255.255.0.0. Leave the dns server and gateway blank. Connect your PC/Laptop to the Encoder with a standard CAT5 cable (no crossover required). Start-up a telnet program (such as Putty) and create a Telnet session onto port 2026 of the encoder.

**Type:** help <CR> and you should see a list of the serial commands supported scroll past.

Set the IP address of the encoder using the setipconf command as described above.

## IP Address setting using a Web Browser

To get web-access to the encoder, you must first configure your PC/Laptop so that it can reach the Encoder at its default IP address of 191.53.51.208. To do this set a static IP address on your device of 191.53.51.207 with a netmask of 255.255.0.0. Leave the dns server and gateway blank. Connect your PC/Laptop to the Encoder with a standard CAT5 cable (no crossover required).

Start-up your web browser (typically Internet Explorer, Firefox, Chrome or Safari) and enter the IP address of the encoder into the address box. The browser will then show the configuration web pages of the encoder. Select the Network settings page from the left hand side. You can then fill in all the encoder network settings on that page and then press the APPLY button. The Encoder will then change its IP address so no further IP communications will be possible before you configure your PC Laptop back to its 'normal' settings. Re-start your browser and enter the new IP address of the encoder to see the configuration web pages.

7. Use a web-browser on a PC/Laptop to fully configure the Encoder's settings. Start up a standard web-browser and enter the IP address (or hostname, if configured) of the Encoder. The Encoder's specification page will then be shown, with a list of all the configuration menus shown down the left hand side. It is suggested that at least the Encoding standard and the video inputs are properly configured as required.

Other options such as the emailing of event logs are disabled by default, but can be enabled if required. Full help for each of the menus is shown on-screen if required.

# Video/Audio input indicator LEDs

There are green LEDs situated by most of the video and audio input connectors. These indicate the current video and audio input in use, or whether the internal colour bar generator or search mode is operating.

The Encoder's active video input is shown by the following LED combinations:

Active Video Input	LED indicators ON
Composite (NTSC or PAL) with analogue audio	Yellow phono, 3.5mm Jack
S-Video (NTSC or PAL) with analogue audio	Green phono, Blue phono, 3.5mm Jack
YPbPr or Component (SOG) with analogue audio	Green phono, 3.5mm Jack
Component (SCART) with analogue audio	Yellow phono, Green phono, 3.5mm Jack
HDMI 1 or 2 (with HDMI digital audio)	HDMI 1 or 2
HDMI 1 or 2 (with analogue audio - DVI)	HDMI 1 or 2, 3.5mm Jack
Internal colour bar generator	All OFF
Search Mode (No input yet found)	All ON

# Web-page configuration menus

The main configuration of the encoder is carried out using web-pages served by the encoder. Start by entering the IP address (or hostname) of your encoder into the address bar in your browser. This will show the specification page of the encoder and a list of all the configuration pages is shown down the left hand side. Click on the configuration page name to open it. The settings will then be shown with help on the right hand side of the screen (this can be switched off if not required). Make any setting changes you require and then press the APPLY button at the bottom of the screen to actually apply the changes. All settings will be retained through power-offs and reboots. Please note that if accurate times are required in the event logs, the encoder should be configured to use an external NTP time server.

A summary of the configuration pages is listed below:

## Status

Shows the current status of the encoder, including: Part number, Mac address, IP Settings, Software Version, Serial Number, Temperature, Encoder name, Video/Audio encoding standards, Video source, Stream address and bandwidth, RS232 port status, PoE status. Please note the temperature show is the internal temperature and anything up to 70°C (158°F) should be regarded as normal.

## Video/Audio Input

Specify the video and audio inputs to use here. The indicator LEDs by the Encoder's input connectors also indicate the video input in use

The Colour Bar generator setting will show a set of colours bars that is internally generated and so is independent of any video input source. When this is selected, audio from the analogue audio input is streamed along with the colour bar video. Search Mode will look at each of the video inputs in turn and use the first valid video input signal it finds. This helps facilitate easy setup and is the default selection. When searching is selected this screen allows the user to specify various detection preferences.

**Note:** When a fixed video input is being used and no valid video is detected the encoder will stream a solid colour picture and muted audio. When searching, no stream is produced.

## Encoding standard

Provides the stream disable control and the ability to specify how the video and audio is encoded and streamed. Controls include: Encoding standard, bit rate control strategy, video and audio data rates, video and audio encapsulation, stream unicast/multicast IP address, TTL, and QoS stream tagging. Stream access URLs are also provided here.

## Picture Adjustment

Adjustments can be made here to the brightness, contrast, hue and saturation of the input video signal.

## Date/Time

Set the time here that is used for event logging. If good accuracy is required, then synchronisation with an external NTP time server should be used.

## RS232 Port

The RS232 port can be configured for use as either a SIPI command interface or as an IP to RS232 pass through interface.

SIPI allows third party control systems to control the encoder using a simple text based command protocol. Note the same command protocol can be used with IP commands on IP port 2026 or on the USB comms link. IP Pass through mode allows remote third part control systems bi-directional communications with other equipment local to the encoder, via the encoder's RS232 port.

## USB Comms Port

The USB comms port is used as a SIPI command interface only. Connect to the port and type help to see all the commands supported.

## IR Blaster 1 & 2

These pages provide a Sky IR remote control simulator. Select the desired Sky handset and press the appropriate button on the remote control. The on-board IR blaster circuit generates that IR keypress from the corresponding IR blaster cable plugged into the encoder. This allows remote (network based) control of a local Sky Set-top box.

**Note:** Other remote control codes can also be simulated via an IP command. Also, MediaStar 780 units will read IR from 3rd party remote controls in real time and transfer that signal across the IP network to the encoder for local re-generation and control of third party A/V devices.

### **IR Blaster Repeat**

This is an IR blaster setup aid. It allows the last transmitted IR code to be repeated every half second for 15 minutes so the optimum position of the IR blaster can be found on the front of the IR receiver (Set-top box) with a single person setup.

### **Network Setup**

This is where the IP network address settings of the unit can be setup.

### **Update Locations**

The Encoder will periodically check for software upgrades or new setup configuration files from a specific location on an HTTP server. This menu is where the file locations are specified.

### **Enablement Code**

New functionality can be enabled on the Encoder using a 15 digit enablement code. These codes are unit specific and you must provide the unit's serial number when applying for an upgrade code. Contact your supplier for more details. This menu also contains controls to reset the Encoder's settings back to defaults or reboot the encoder remotely.

### **Set Password**

The configuration webpages can be protected from unauthorised tampering by setting a password here. If your password becomes lost, contact your supplier with the Encoder's serial number and they can then provide you with an enablement code to clear the password.

### **SAP**

The Encoder can be enabled to periodically produce Session Announcement Protocol messages on the network. These messages allow suitably enabled client software or hardware devices to become aware of the video/audio stream, and then automatically make them available to their users.

### **SNMP**

The Encoder can produce SNMP Trap events when a significant 'event' occurs, for example an over temperature warning. These events are also copied to the on-board event log. The trap destinations and community classification are specified here.

### **Email Logs**

Any new entries in the Event logs can be periodically emailed to a specified recipient. This is to facilitate remote, non-volatile storage of the logs where required, and simple remote problem notification. The Encoder can work with a with a standard SMTP email server.

### **Event Log**

The Event log shows all significant 'events' that the Encoder has seen, this includes stream starting, changes to the encoder configuration etc. The Event log can be downloaded using the on-page URL link.

### **Locator LEDs**

Turning the Locator LED function on, makes the encoder's status led flash between orange and green. This allows a particular physical unit to be located easily, and is especially useful when a number of Encoders are situated together.



# Technical Specifications

<b>DIMENSIONS</b>	215 x 133 x 35 mm (8.5 x 5.3 x 1.4")
<b>WEIGHT</b>	500g
<b>AMBIENT OPERATING TEMPERATURE</b>	0 - 45°C (32 - 113°F) non-condensing, in-door use only
<b>POWER SUPPLY</b>	7W +5V DC, 2A via an external mains/DC power adapter 802.3af Power over Ethernet (PoE) PD class 3
<b>VIDEO INPUTS</b>	CVBS – PAL, NTSC S-Video – PAL, NTSC (via phono connectors) Component RGB (SCART) – 480i, 576i Component YPbPr, Component RGB (Sync-on-Green) – 480i, 480p60, 576i, 576p50, 720p50/60, 1080i50/60, 1080p50/60 (streamed as 1080p25/30) HDMI 1.4 - 480i, 480p60, 576i, 576p50, 720p50/60, 1080i50/60, 1080p50/60 (streamed as 1080p25/30) De-Interlacing - 480i and 576i inputs can be de-interlaced to 480p30 and 576p25 output streams. An SD resolution internally generated colour bar stream is also available. All video inputs are streamed out with the same video resolution, unless otherwise specified.
<b>AUDIO INPUTS</b>	HDMI – PCM digital stereo 32, 44, 48 kHz sampling Analogue – 2.2V pk-pk into 10K Ohms 48 kHz sampling
<b>VIDEO ENCODING</b>	MPEG 4-10/H.264 MP@L4, CBR/VBR encoding, 1.5 Mbps to 12 Mbps MPEG-2 MP@ HL, CBR/VBR encoding, 1.5 Mbps to 15 Mbps
<b>AUDIO ENCODING</b>	MPEG-1 Layer 2 encoding - 64 - 384 Kbps Stereo AAC LC encoding - 40 - 576 Kbps Stereo
<b>OUTPUT STREAMS</b>	Multicast/Unicast UDP MPEG2-TS Multicast RTP video and audio streams (for use with QuickTime© via on-board RTSP server)
<b>LAN</b>	RJ45 802.3 10/100 Base-T Auto MDIX Optional 802.3af Power over Ethernet (Class 3) Static or DHCP IP Address DSCP stream tagging for QoS

<b>NETWORK PROTOCOLS</b>	UDP, TCP, ARP, DHCP, ICMP, IGMP V3, HTTP, Telnet, SNMP, SAP/SDP, SMTP, DSCP.
<b>USB COMMS</b>	USB 2 type A host port for software upgrades USB 1.1 type B port for Serial Comms for external configuration and/or control
<b>RS232 PORT</b>	Rx, Tx, CTS, RTS up to 115,200 Baud, Configured for SIPI external configuration/control OR IP to RS232 bi-directional pass through for external device control Device connected status monitoring
<b>CONFIGURATION</b>	Configuration via on-board display and buttons or via Encoder hosted web pages to a PC/Laptop/Tablet
<b>CONTROL INTERFACES</b>	SIPI textual based control commands send from 3rd party control systems to the Encoder via RS232, USB comms or IP interface
<b>MONITORING</b>	SNMP traps for significant events such a loss of video input or changes in configuration On-board Event log with web page download and remote emailing capability On-board temperature sensor with over temperature SNMP trap RS232 device connected status PoE in use status Front panel LED indicators and on-board display
<b>SOFTWARE UPGRADABILITY</b>	Fully software upgradeable in the field, from digitally signed files only Upgrade via USB key in USB host port, or from a remote HTTP server Product features are upgradable via unit-specific enablement codes
<b>IR BLASTING</b>	Two IR blasters with a network control interface for remote control of local IR controlled devices Generation of IR commands with 30, 33, 36, 38, 40, 56 kHz IR modulation frequencies On-board emulation of Sky IR Handsets IP control interface and text based commands for third party systems
<b>SAP ANNOUNCEMENTS</b>	Generation of Session Announcement Protocol (SAP) media announcements Support of custom announcement parameters









# Declaration of Conformity



Cabletime Limited declares that the products listed below, when installed and operated as described here, conform to the requirements of the directives shown:

## Directives:

2004/108/EC EMC Directive  
2006/95/EC Low Voltage Directive

## The standards applied are:

EN55022:2010	Incorporating corrigendum October 2011: Information Technology Equipment – Radio Disturbance Characteristics.
EN55024:2010	Incorporating corrigendum October 2011: Information Technology Equipment – Immunity Characteristics.
EN61000-3-2+A1:2008 +A2:2009	Harmonic current emissions.
EN61000-3-3:2008:	Voltage fluctuations and flicker.
EN60950-1:2006+A11:2009 +A1:2010+A12:2011	Information technology equipment. Safety, General requirements.
IEC60950-1:2005+ A1:2009	Specification for safety of information technology equipment, including electrical business equipment, with CB variations for US, Canada, Japan, and Australia.

Also: UL60950-1:R:2011-2012, CAN/CSA C22.2 No 60950-1/A1:2011-12

## CB Certification

All EU countries, Switzerland, US, Canada, Australia, New Zealand, Japan, Thailand, Singapore, Brazil, Argentina, UAE, South Africa, India, Russian Federation, Turkey

I hereby declare that the products listed here conform to the directives shown above when installed and used according to their respective manuals.

**Keith Watts**  
**Technical Director**

September 2016

# United States of America

Cabletime Limited declares this equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules Subpart B (15.107, 15.109). These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules.

### Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

## Correct Disposal of this Product

This marking on the product, accessories or literature, indicates that the product and its electronic accessories should not be disposed with other household waste at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.



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