

> Quick Start Guide - 784 DVB-S/S2 LAN-Caster

The MediaStar Evolution 784 LAN-Caster allows DVB-S/S2 TV and Radio channels to be streamed onto an IP network. Connect a DVB-S/S2 Satellite dish LNB to the LAN-Caster and use the simple browser based control interface to stream up to 15 channels from a single RF multiplex onto the network. A networked MediaStar Digital Media Decoder display unit can then decode these streams and output the video and audio to an LCD or OLED display. The MediaStar 'Viewer' software application can decode the streams and provide live TV pictures and sound on a PC.

What's in the box

- 784 DVB-S/S2 blade
- CAT5 patch cable



Product Specification

Physical

129 x 41 x 230 mm, occupies 1 (of 9) 770 rack slot. 405g

Ambient operating temperature range

0° - 40° C, 770 rack ambient

Power supply

7 W (from 770 rack, excluding LNB load)

LAN

RJ45 802.3 10/100 Base-T Auto MDIX

Static or DHCP IP Address

DSCP stream tagging for QoS

Network protocols

UDP, TCP, ARP, DHCP, ICMP, IGMP V2, HTTP, Telnet, SNMP,

Syslog, SAP/SDP, SMTP, DSCP

RF Input

F type female connector (75 Ohms)

RF frequency range

950 to 2150 MHz

RF input level

-65 to -25 dBm

RF loop-through

F type female connector (75 Ohms)

0 dB (+/-5 dB) gain

RF signals on currently selected H/V, High/Low band

LNB Voltage

13/18 V, 22 KHz signalling

Max current drain 400 mA (short circuit protected)

Maximum 770 Rack LNB current 2350 mA

DiSEqC

1.0, 1.1

DVB-S Demodulation

Modulation: QPSK

Coding Rate: 1/2, 2/3, 3/4, 5/6, 6/7, 7/8

FEC: Reed Solomon/Viterbi error correction

DVB-S2 Demodulation

Modulation: QPSK, 8PSK

Coding Rate: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10

FEC: LDPC, BCH

Output Streams

15 Multicast or Unicast streams from a single RF DVB multiplex

Maximum 85 Mbps

Individual TV/radio channels or Entire multiplex

Elementary stream data type filtering

Upgradability

Enablement code to upgrade from non CAM to CAM support

(in situ, with no hardware change required)

CAM Support

CI CAM modules supported with all common decryption standards

(Irdeto, Viaccess, Conax, Nagravision etc.)

Single and professional multi-channel CAMs supported

PCMCIA connector 5V, 3V CAMs supported

USB Comms

USB 1.1 Serial Comms device for external configuration/control

Administration Interface

Web pages served from LAN-Caster

Infra-Red Blasters

2 off outputs supporting Sky, Sky+, SkyHD IR formats with web page

RS232 Port

Rx, Tx, CTS, RTS up to 115200 Baud Configured for SIPI external configuration/control OR

IP to RS232 bi-directional pass through for external device control

Temperature Monitoring

PCB operating temperature available remotely via web interface

External IP control interface

SCII Command/configuration via IP interface, USB comms and RS232 comms interfaces

Announcements

SAP (Session Announcement Protocol) notification of IP streams

Event Monitoring

SNMP or Syslog traps sent to third party SNMP manager

(MIB available on request).

Email Event Logs

Automatic email of Event log files via external SMTP server

Software

Fully upgradable with ONLY protected Cabletime software from an HTTP server

Approvals

FCC, CE, CB, TUV Approved

> Quick Start Guide - 784 DVB-S/S2 LAN-Caster

Installation

This LAN-Caster unit should only be used in a MediaStar Evolution 770 rack that has been fully installed in accordance with its safety instructions. Refer to the 'Connecting a Satellite dish' section for recommendations of the dish Lightning protection required for this equipment. There are no user serviceable parts within this module. Refer all servicing to qualified service personnel.

The 784 LAN-Caster module may be installed in the 770 rack with the power on or off. If the rack is powered, take care to ensure this module is engaged correctly in the plastic card guides and does not touch adjacent cards as it is slid into (or pulled out of) the rack. If the 770 rack is powered down to install a new module, please remember that all video/audio services being provided by the equipment in that rack will be lost while it is powered off. Electrical static discharge precautions should be taken when handling the module.

If you wish to use a CAM module with the LAN-Caster, this should be installed inside the module before it is inserted in the rack. Please see the CAM installation instructions later in this guide for further details.

To install the 784 module, do the following:

1. Remove the existing front panel blanking plate(s) on the 770 rack. This is done by unscrewing the finger-screw fasteners. Retain this blanking plate in case the LAN-Caster module is removed from the rack in the future.
2. Carefully locate the top and bottom edges of the blade's printed circuit board (PCB) into the plastic rack slides, and gently push it in. As the 'blade' reaches the back of the rack, a plastic aperture cover on the rear of the rack will be pushed off by the module's connectors. Collect the discarded aperture cover and dispose of it correctly. If the rack is powered up, the new module will automatically power up as it is pushed in and the BLUE POWER LED on the front of the LAN-Caster will be on. The LCD panel will show the boot progress of the unit, then its operational status.
3. Tighten the top and bottom finger screw fasteners to hold the module in the rack.
4. Connect the RF input cable to the rear of the LAN-Caster in accordance with the instructions in the 'Connecting a Satellite Dish' section below.
5. Set the unit's IP address, in accordance with the instructions shown below. Only use IP address details that have been supplied by your network administrator.
6. Plug the LAN-Caster into the LAN switch using the CAT5 patch cable supplied. It will Auto-negotiate a 100Mbps link with your network switch.
7. Connect to the LAN-Caster's configuration web pages using a PC and Web browser software (e.g. Internet Explorer, Chrome or Firefox), by entering the LAN-Caster's IP address into the browser's address bar. The LAN-Caster's specification page will then be shown.
8. Click on the Installation page link on the left hand side panel, select the Satellite your dish is pointing at from the Orbital Position pull down list, and then click on the SCAN button. This will initiate an RF frequency scan with a progress bar showing the scan progress (this will take several minutes). When the scan is complete, a list of detected RF multiplexes will be shown.
9. Click on the RF multiplex 'radio' button to show a list of the TV and Radio channels that are available from a particular multiplex at the bottom of the web page. Select the channels to stream on the network, by ticking the 'Enabled' tick-box and entering the stream details into the webpage. Up to 15 channels may be simultaneously transmitted, each on its own multicast or unicast address. Press the APPLY button at the bottom of the page to save these settings and start the stream transmission on the network. The channel stream parameters include the multicast (or unicast) stream address, port number, TTL, and the Differentiated Services Code Point (DSCP for QoS packet tagging). Channel settings may be stored for more than one RF multiplex at a time, but only the channels on the currently TUNED multiplex will be streamed on the network.

The rotating 'Tuned' icon on the list of multiplexes shows which multiplex is currently 'Tuned'. When a non 'Tuned' multiplex is selected, a tick-box will appear at the bottom of the webpage to allow this RF multiplex to be 'Tuned'. If you don't know the RF multiplex that contains your desired TV channel, click on the Channel List link on the left hand side and click on the letter of the channel name you wish to stream. An alphabetical list of the channels starting with the specified first letter will be shown. Click on the name of the channel you wish to stream – this will then take you back to the Channel Setup page with the appropriate RF multiplex selected. Scroll to the bottom of the page to see all the channels available from that multiplex.
10. In 'normal' operation when the RF feed is present and the LAN-Caster is streaming onto the network, the STATUS LED on the front panel will be constant GREEN. If the RF feed is missing or the streams have been turned off, the STATUS LED will flash GREEN. The LCD will show the 'normal' operating status or the highest priority error condition.

During boot, the STATUS LED will flash ORANGE. If the STATUS LED is flashing RED, a software upgrade is in progress, and if the STATUS LED shows constant RED, and internal error has occurred and the unit should be returned to Cabletime for repair.

> Quick Start Guide - 784 DVB-S/S2 LAN-Caster

Connecting a Satellite Dish

Connection of the MediaStar 784 LAN-Caster directly or indirectly to a satellite dish without suitable protection devices can leave the unit vulnerable to lightning strike/atmospheric electrical discharge that may result in damage and void the manufacturer's warranty.

To minimise the possibility of damage from atmospheric electricity always: -

Follow best practice as dictated by your local electrical code and/or trade association.

- Use coaxial over voltage protection units.
- Bond all masts and antennas to the building protective earth and where available, the lightning protection system.
- Ensure that the screens of all coaxial cables entering and leaving the headend and/or amplifiers are bonded to the protective earth.
- Unplug this apparatus during lightning storms or when unused for long periods of time

Note: Reliance upon the MediaStar 770 rack safety earth provided by the AC power cord alone is insufficient to protect the unit from atmospheric voltage discharges.

Connect the RF IN F-type connector on the rear of the module to either the LNB of a Satellite dish, or the output of a specialised satellite RF switching amplifier. The 784 module will provide up to 480mA of power to the LNB together with H/V and High/Low frequency band switching signals. Please ensure the maximum LNB current drain for the whole 770 rack is not exceeded.

The RF OUT F-type connector on the 784 only outputs the RF signals on the same H/V and High/Low frequency band as that currently selected on the LAN-Caster. It is therefore not suitable for daisy-chaining to other modules, if each LAN-Caster is required have access to the full range of satellite channels.

The Installation page (accessed through a web browser) provides automatic or manual RF scanning controls to detect the channels available from the satellite.



Configuring the LAN-Caster's IP Address

A suitable IP address should be selected before connection to a network. The LAN-Caster unit is preconfigured with a static IP address of 191.53.51.209. This will need to be reconfigured if it is not suitable for your network.

Use the front panel LCD and push buttons to set the IP address settings. Press the front panel < (LEFT) and > (RIGHT) buttons to move through the LCD menu options.

Press the OK button to select a menu or confirm a change. Press the < (LEFT) and > (RIGHT) buttons together to move back up a menu level.

1. Press the < (LEFT) to show the IP Settings menu and press OK to enter the menu.
2. Press < (LEFT) and OK to select the static IP address settings.
3. Press OK to edit the current static IP address; Use the < (LEFT) and > (RIGHT) buttons to select the appropriate digit and press OK to confirm it. The next digit can then be edited in the same way. Once the last digit is entered, the IP address is checked and then applied.
4. The IP netmask, gateway and DNS server can be set in the same way.

Note: The MAC address of the unit can be found under the Unit Details/MAC Address menu, or on the label on the bottom face of the unit.



> Quick Start Guide - 784 DVB-S/S2 LAN-Caster

DVB-S/S2 RF Multiplex Organisation

An 'RF Multiplex' is a group of digital TV and radio stations that are 'grouped' together in a single RF signal which is then 'bounced' off a geo-stationary satellite, down to a user's satellite dish.

There are a wide variety of satellite services available, and your choice depends upon your geographical location and which satellites are 'bouncing' signals to your area (the website www.lyngsat.com has a comprehensive list). A single satellite can 'bounce' over 100 RF multiplexes, each of which can contain 20 or more TV or radio stations, so there are hundreds of services available to satellite users. A scan of the Astra satellite showed 86 RF multiplexes transmitting 1086 TV/Radio channels.

The LAN-Caster is able to scan all the signals coming from the satellite dish, and automatically detect the DVB-S/S2 RF multiplexes that it can 'see'. When it detects a multiplex, it determines the TV and radio stations that are available and shows them on the channel setup menu.

Some TV/radio services are encrypted to prevent un-authorized viewing/listening. These are shown in the Channel Setup menu with a 'padlock' symbol. This stream can be passed onto the network, but IPTV decoders or PC software will have to decrypt the stream before it can be viewed. The LAN-Caster can be fitted with a plug-in CAM module to de-encrypt the streams before launching them on the network.

A single LAN-Caster unit can select ONE RF multiplex, then extract up to 15 TV or radio services that the user chooses from that multiplex and stream them onto the IP network. If a user wants to see more than 15 TV or radio services from a single multiplex, another LAN-Caster unit will be required. If a user wants to simultaneously access TV channels from two different RF multiplexes, then they require two LAN-Caster modules.

> Quick Start Guide - 784 DVB-S/S2 LAN-Caster

Installing a CAM module

The LAN-Caster can be enabled to work with a third party CI CAM module, so it can decrypt the stream before it is transmitted on the network. A CI CAM module with the appropriate decryption system will be required (Irdeto, Viaccess etc.), together with a valid subscription card. It is the responsibility of the user to ensure that they are entitled by the broadcaster to decrypt the stream and distribute it unprotected across an IP network to multiple viewing devices. Cabletime takes no responsibility whatsoever for any unauthorised or illegal use of this equipment.

To install the CAM module, do the following:

1. Ensure the LAN-Caster is enabled to use a CAM module. Check the unit's part number (shown on the LCD and on the browser Status page) contains a '-CAM' extension. If it doesn't, it can be upgraded 'in-situ' with a software enablement code. Contact Cabletime with the LAN-Caster's serial number for more details.
2. Disconnect the front and rear cables from the LAN-Caster module, and carefully remove it from the rack. Note: If the RF input signal is daisy-chained between modules, downstream LAN-Casters will lose their RF feed and will stop outputting TV streams.
3. Open the CAM module access lid by gently squeezing the retaining 'bumps' in the sides of the lid while lifting the rear edge.
4. Take care not to touch any of the electronics inside the module – a static electric 'zap' could damage the components and they may be hot!
5. Insert the subscriber viewing card (smartcard) into the CAM module, ensuring it is the right way up.
6. Take the CAM module and insert it (connector first) into the plastic card guides near the top of the module. As you press it home, you will notice the ejector button move outwards.
7. Close the access lid, ensuring that the metal tab on the rear edge of the lid is INSIDE the metal wall.
8. Ensure nothing is loose within the module and then carefully re-insert it back into the rack. Ensure the front panel fixing screws are secure then re-connect the cables.
9. Use the front panel buttons and LCD to check that the CAM module and subscriber card has been properly recognised by the LAN-Caster module.
10. Use a web browser to access the LAN-Caster's Status page, and check the CAM module is working OK. Go to the Channel Setup page and select the appropriate RF multiplex.
11. Enable an appropriate encrypted channel with an IP stream address etc., and press Apply. The video, audio and data within that stream will then be decrypted by the CAM module before it is launched onto the network. Any un-encrypted channels enabled will stream out normally.
12. If you have enabled more encrypted channels than the CAM can simultaneously decrypt, the extra channels will automatically be disabled. This will be shown on the Channel Setup page. If this happens, then you must use a 'Professional' CAM with a higher channel decryption capacity, and a suitably enabled subscriber viewing card.
13. If you select channels that use a different encryption standard to that supported by your CAM, or if your subscription service does not include a selected channel, the channel will be streamed onto the network, with the TV channel still encrypted.



> Quick Start Guide - 784 DVB-S/S2 LAN-Caster

Front panel operation

The front panel LCD can be used with the three adjacent push buttons to view status information and configure the operation of the unit.

The < (LEFT) and > (RIGHT) 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 < (LEFT) and > (RIGHT) buttons and releasing them together returns up a menu level, usually aborting a parameter change.

The upper line of the LCD display (right column) shows the setting name, and the lower line (left column) shows the parameter itself and any instructions on how to change the current setting.

Pressing the < (LEFT) and > (RIGHT) 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:

Part Number and Status

- View unit model number and current operational status

RF Input status

- View incoming RF details; (Signal level / S//N Ratio / Mux name / Mux frequency / Sat Polarity)

Output streams

- View stream details; (Channel No. / Channel name / Stream address / Port No.)

CAM Status

- CAM present / not present

IP address settings

- DHCP (activate/show allocated address)
- Static IP address (activate/show static IP address)
- View/Edit IP address
- View/Edit Netmask
- View/Edit Gateway address
- View/Edit DNS address
- Network Link

IR Blaster Repeat

- Turn on / off IR Blaster repeat function

Unit details

- MAC address
- Serial number
- Software version number

Locator LED

- Turn on unit locator front panel LED

Help

- Various help topics

Front panel LEDs

Status LED

- Green steady: Normal operation
- Green pulse: RF input fail or Streams turned off (see LCD for error condition)
- Green/Orange: Unit locator mode on
- Orange pulse: Unit booting up
- Red steady: Internal error / unit failure
- Red pulse: Software upgrade in progress

Power LED

- Blue steady: Unit Power on

> Quick Start Guide - 784 DVB-S/S2 LAN-Caster

Browser based configuration menus

The LAN-Caster's web page configuration menus allow the full range of operational parameters to be set. When using the web pages, full contextual help is provided on the right side of the screen. When changes have been made, press the APPLY button at the bottom of the page to ensure these take effect.

Specification

The specification page includes details of the capabilities of the product. Please note that this unit may not have all the options mentioned. The Status page shows all the optional features currently enabled.

Status

Shows the current status of the LAN-Caster, including the Part number, Device name (used as a DHCP identifier), Serial Number, RF source status, RF Level, RF S/N Ratio, Received Data Rate, Transmit Data Rate, Streaming services, Last Scan status, Channels Found, New Channels Available warning, CAM status, IP Address, Mac Address, Link Speed, Temperature, Software version, Command Set Version, and RS232 status.

Channel Setup

This shows the list of detected RF multiplexes and the channels in each multiplex. Setup the streamed channels here.

Channel List

Provides a search facility to find a channel by its name, and then takes you to the appropriate RF multiplex on the Channel Setup page.

Installation

Set-up how the RF scan is performed, the character sets used for channel names, the network link mode, enable SAP channel notifications and the elementary stream data types that are transmitted on the network.

RS232 Port

Configure the port settings for the IP to RS232 link or for the SIPI command interface.

IR Blaster 1/2

These are IR remote control simulators. Press the buttons on the remote control pictures to generate IR key presses from the blasters.

IR Blaster Repeat

This allows you to switch on the IR blaster repeat function. It is useful when locating the IR blaster module on the receiving equipment.

Network Setup

Allows specification of the Network Connection; Static or DHCP addressing, device Hostname, IP Address, Subnet Mask, and Default Gateway settings. Confirm these with the network administrator before configuring.

Update Locations

Specify the URL of the http server and folder that the Encoder will look at for software updates and a central configuration file. The LAN-Caster will only accept new software that has been produced by Cabletime.

Enablement Code

Enter enablement codes here to reconfigure or expand the capabilities of your unit. Details can be obtained from your reseller or Cabletime.

Set Password

A password may be set to prevent the unauthorised modification of the LAN-Caster configuration. A password consists of six digits from 0-9. If the password gets lost, contact Cabletime for assistance.

SNMP & Syslog

Configure whether to send SNMP or Syslog style 'event' warning messages, and set-up the servers to send the messages to.

Email Logs

Event logs can be periodically emailed to a recipient. Specify the email server and recipient email address here.

Event Log

This shows a full list of the 'events' that the LAN-Caster has experienced. These include notifications such as loss of RF lock and telnet connection. Each message will produce an SNMP or Syslog trap when enabled.

Locator LEDs

Allows the front and rear panel status LEDs to be flashed ORANGE/GREEN to help identify the physical encoder unit in a rack.

> Quick Start Guide - 784 DVB-S/S2 LAN-Caster

Regulatory Requirements Notices

EUROPE

Cabletime Limited declare that the products described in this manual conform to the requirements of the following Directives:



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

THE STANDARDS APPLIED ARE:

EN55022:2006+A1:2007	Information Technology Equipment - Radio Disturbance Characteristics
EN61000-3-2:2006	Harmonic current emissions
EN61000-3-3:2008	Voltage fluctuations and flicker
EN61000-6-1:2001	Electromagnetic compatibility (EMC) Part 6-1 Immunity
EN60950-1:2006+A11:2009	Information Technology Equipment. Safety, General Requirements
IEC60950-1:2005	Specification for safety of information technology equipment, including electrical business equipment, with CB variations for US, Canada, Japan, and Australia

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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