CHANNELPLUS®

HD Encoder / Modulator
Installation Manual

CHANNELPLUS®

model 5415HD digital encoder modulator

status

program

Frequency-Agile
Digital HD Video Modulator

Model 5415HD

This device complies with the FCC's Part 15 Rules for TV interface devices. Any change or modification to this device without the permission of Linear LLC, may void the user's authority to operate this equipment.
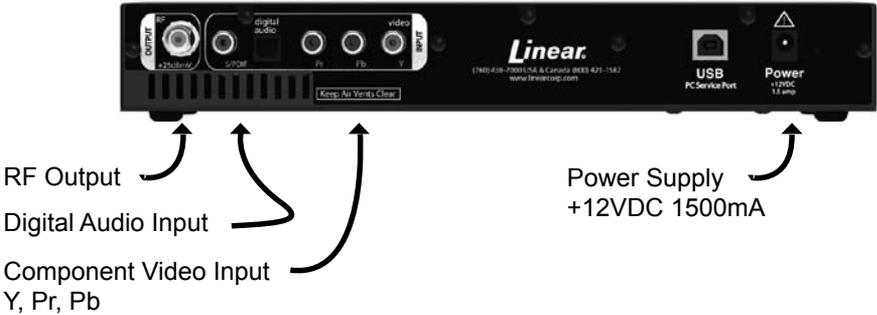
Linear®

Controls and Connections

The ChannelPlus 5400 Series are digitally-tuned video modulators that convert video and audio signals into a user-selected cable television channel. The 5415HD is the first family member that is capable of broadcasting HD video using the digital HD cable broadcast standard known as QAM. The user selects the output frequency (channel) using the "program" button to enter the number of the desired channel.   Any HDTV connected to the output via coax can receive the signals, when the HDTV is tuned to the proper channel.

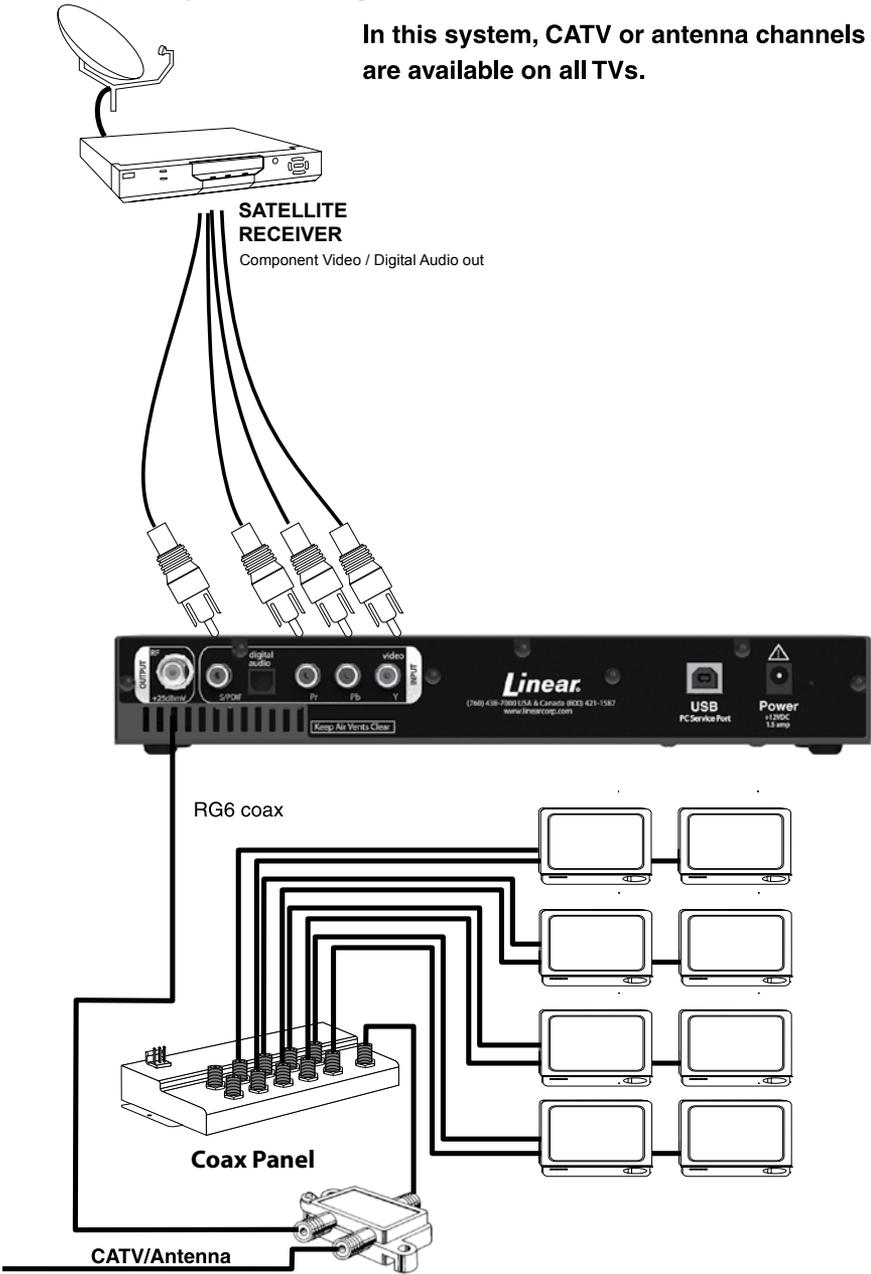**Model 5415HD - Single channel agile HD encoder / modulator**

Program button to enter
the channel number

RF Output

Digital Audio Input

Component Video Input
Y, Pr, Pb

Power Supply
+12VDC 1500mA

Sample System Diagram

In this system, CATV or antenna channels are available on all TVs.

SATELLITE RECEIVER
Component Video / Digital Audio out

RG6 coax

Coax Panel

CATV/Antenna

Programming Examples:

To program modulator to channel _**67**_

Press **program** button
_**6**_ times

Status LED will flash
Yellow with each press

Wait for **Status** LED to flash
Green Once indicating Ready
for next digit.

Press **program** button
_**7**_ more times
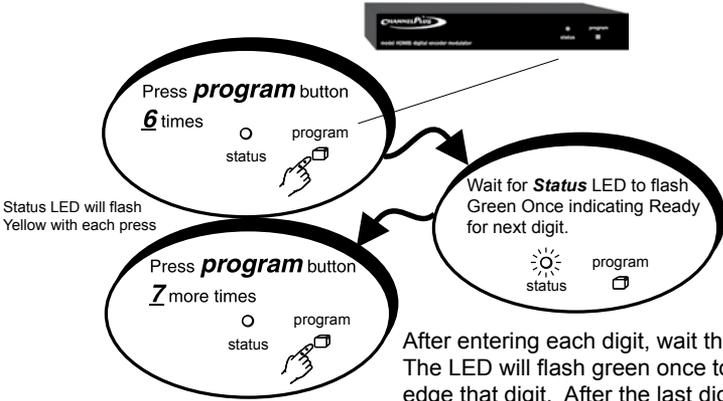
After entering each digit, wait three seconds.
The LED will flash green once to acknowl-
edge that digit. After the last digit is entered,
wait 6 more seconds and the unit will play
back the programmed channel. In this
example, The LED will flash 6 times, pause,
then another 7 times to confirm programming
to channel 67. If the entered channel is
invalid, the status LED will flash Red three
times and keep the previous setting.

To program modulator to channel _**120**_

Press **program** button
_**1**_ time

Wait for **Status** LED to flash
Green Once indicating Ready
for next digit.

Press **program** button
_**2**_ more times

Wait for **Status** LED to flash
Green Once indicating Ready
for next digit.

Press **program** button
_**10**_ more times

(press 10 to
enter a 'zero')

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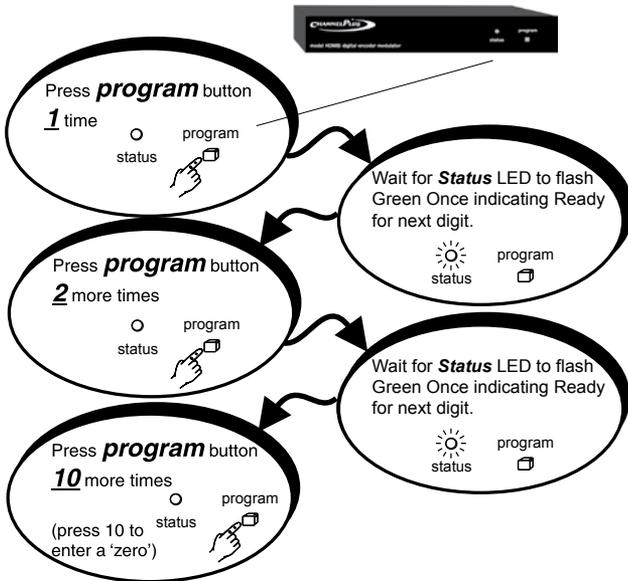
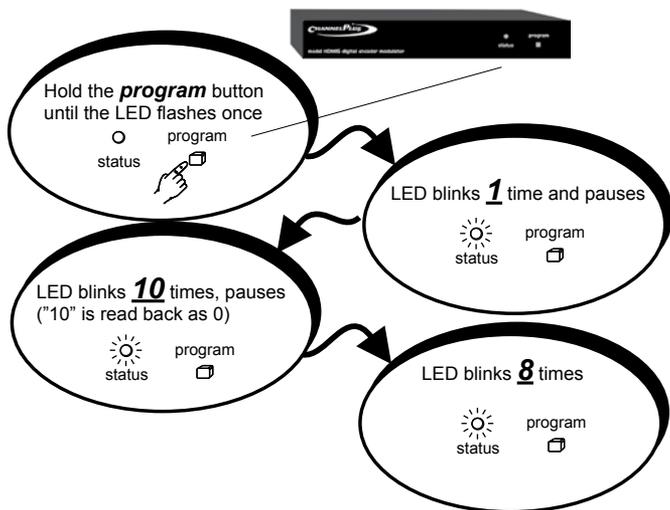|	
Valid Channels:	CATV 2-135. Channel 2.1 is the factory setting.
Channel Spacing:	None required. Can sit directly adjacent to any well-formed channel.
Error Indication:	If an error has occurred or an incorrect channel is entered, the LED will blink Red three times and return to previous settings.
Channel Number Readback:	A readback mode will display the current channel assignments.
Tuning your channel at the HDTV:	Typically just enter the channel number at the HDTV. Tuning may take a few seconds. If that does not work try entering your channel number followed by a "-1" or ".1". You may need to perform a channel scan. If performing a scan, make sure the scan is run in Cable mode (not Antenna mode).

To readback modulator channel assignment
(example: modulator is programmed to channel *108*)

Hold the *program* button until the LED flashes once

status   program

LED blinks *1* time and pauses

status   program

LED blinks *10* times, pauses ("10" is read back as 0)

status   program

LED blinks *8* times

status   program

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Things to watch for:

No picture… Verify that the video source is on and is producing a video signal. Verify the HDTV has a QAM (digital cable) tuner. Verify that you have performed a full channel scan on the HDTV with "cable mode" selected. Verify that the modulator is not conflicting with any other channel.

Idle Screen (bouncing logo)… This happens because the modulator cannot detect the video source. Verify the source is on and producing a video signal. Verify that the component cable is connected to the source and modulator correctly.   Specifically verify that the green connector is in the green port, blue connector in the blue port and red connector in red port.

Image breakup… You may have chosen a channel number that is not completely vacant. Some analog modulators may spill over to adjacent channels and cause interference. Also, cable companies somtimes have extra signals where there should be none. Try moving the 5415HD channel to another location. You may also be experiencing an RF power balance issue. Verify that the RF power of the modulator is balanced with signals from other modulators and from the cable company.

1080 video input is not supported on this product… This message is displayed on the screen when the video source resolution is set for 1080. Set the video source for a maximum resolution of 720p.

No audio… Verify that the audio is connected to the source via the S/PDIF connector or the digital audio connector on the modulator. Verify that the source audio output is set to PCM or AC-3.

Changing Modulation Standards

Cable STD, HRC and IRC channel plan considerations
Most cable services program their channel placements using a Standard (STD) channel lineup.   In increasingly rare cases, HRC or IRC channel placements are occationally used.   The modulator can be reprogrammed to use these standards by entering the following channel numbers using the channel programming procedure:

STD	Channel 205
HRC	Channel 206
IRC	Channel 207

Specifications: 5415HD Encoder / Modulator

Inputs	Component Video (Y, Pb, Pr) RCA connectors	Resolutions Supported • 720p, 480p, 480i • 59.94 frames/fields per second
	S/PDIF Digital Audio RCA connector Optical connector	Formats • 48K, 44.1k, 32k bit PCM • AC-3 Pass-through
Video Encoder	Encoder Video Profile	MPEG2 HD Profile 2: ISO13818-2 MP@HL (1280x720)
	Video Transport Bit Rate	38.78 Mbps maximum
	Avg Encoding Data Rate	28 Mbps
Audio	PCM encoding	AC-3, ATSC A/52
	Digital Pass-through	Dolby Digital© (AC-3) 1 to 5.1 channel
RF Output	Modulation Type	QAM 256, (ITU-T J83 Annex B) (Americas)
	Cable Standards	HRC, IRC, or STD (default)
	Frequency Range	50-900 MHz (channels 2-135)
	Output Power	+25dBmV typical
Power Supply	AC Input	100-240 V, 50/60Hz, 0.7A
	DC Output	+12V, 1.5A
	Efficiency Level	IV
	Radio Emmissions	FCC Home or Office (B)
Physical	Width	10.5 Inches
	Height	1.7 Inches
	Depth	4.75 Inches
	Product Weight	0.95 Kg (33.5 Oz.)
	Temperature/Humidity	Operating +32F to +95F (0C to +35C) / 20% to 80%, non-condensing

LIMITED WARRANTY STATEMENT

Linear LLC warrants this product to be free from defects in material and workmanship for 2 years. The time period will be measured using the date code labeled on the product. Linear LLC is not responsible for damage to the product resulting from the buyer's improper handling, stocking or warehousing of the product. Any implied warranty arising from the sale of the product including implied warranties of merchantability and fitness for purpose are limited. Linear LLC shall not be responsible for any losses, damages or expenses, whether direct, consequential, or incidental arising from the use or the inability to use the product. Some states and countries do not allow limitations or how long an implied warranty lasts or the exclusion or limitation or incidental or consequential damages, so the above exclusions may not apply. The Linear LLC warranty gives specific legal rights in addition to other rights, which may exist and vary from state to state and country to country.

The warranty is limited to repair or replacement of products returned, freight prepaid, to Linear LLC, there is NO PROVISION FOR LABOR COST OR OTHER REIMBURSEMENTS OF ANY KIND.

1. Failures due to product abuse, such as negligence, improper use, and electrical surge including damage from lightning, water damage or other damage due to natural disasters are not covered by the warranty. The most common form of product abuse is surge damage caused by lightning.

2. The warranty shall also be voided by any tampering with the date code, labels or other markings on the product.

3. Products that are damaged in transit to Linear LLC due to improper packaging or by the carrier (shipping company) will not be covered under the warranty. If the product was damaged or lost by the carrier, it is the sender's responsibility to create a claim against the carrier.

4. The user is responsible for all labor costs associated with removing, reinstalling and returning the product to Linear LLC.

Linear LLC, at its option, will repair or replace the defective product. Replacements will be made from B-Stock, if an exact replacement is not available, Linear LLC, at its option, will select the nearest equivalent product. The user is responsible for freight charges to Linear LLC. Linear LLC will return warranted repaired or replacements by UPS Ground or an equivalent service. A customer may pay the additional costs for second-day or next-day service.

All products returned for warranty service require a Return Product Authorization Number (RPA#). Contact Linear Technical Services at 1-800-421-1587 for an RPA# and other important details.