CHANNELPLUS™

PERFORMANCE MULTI-ROOM VIDEO

Modulator Installation Manual

Frequency-Agile MTS Stereo Multi-channel Modulators with S-Video Inputs

Models SVM-24 / SVM-22

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.

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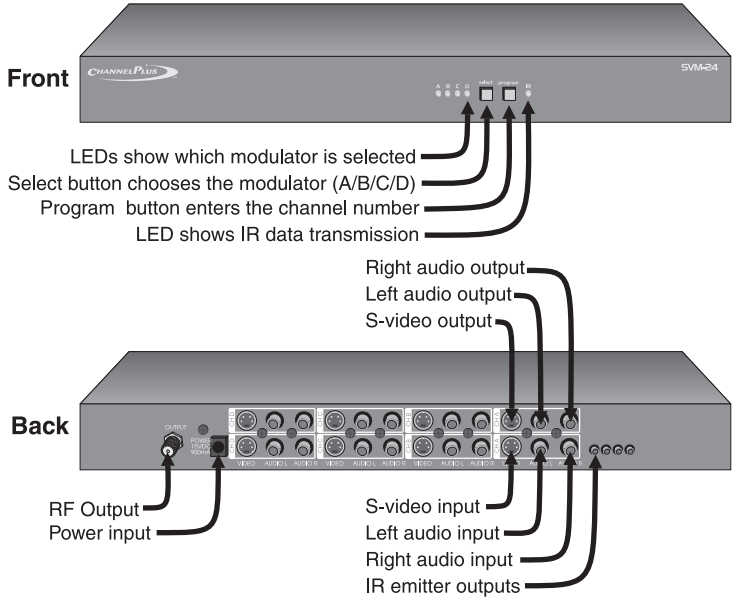
The ChannelPlus SVM Series are digitally-tuned video modulators that convert any baseband video and audio signal to a user-selected UHF, or Ultraband CATV. An internal quartz crystal reference oscillator and PLL circuitry ensure drift-free performance. The user selects the output frequency (channel) using the "select" button to choose which modulator and the "program" button to enter the number of the desired channel. Any TV connected to the output via coax can receive the signals, when the TV is tuned to the proper channel. In addition, the SVM series encodes each channel using the MTS stereo standard. Stereo sound and surround sound information will be received by any MTS compatible television receiver.

Models available:
SVM-24 4 channel modulator
SVM-22 2 channel modulator

Controls and Connections - Model SVM-24 shown

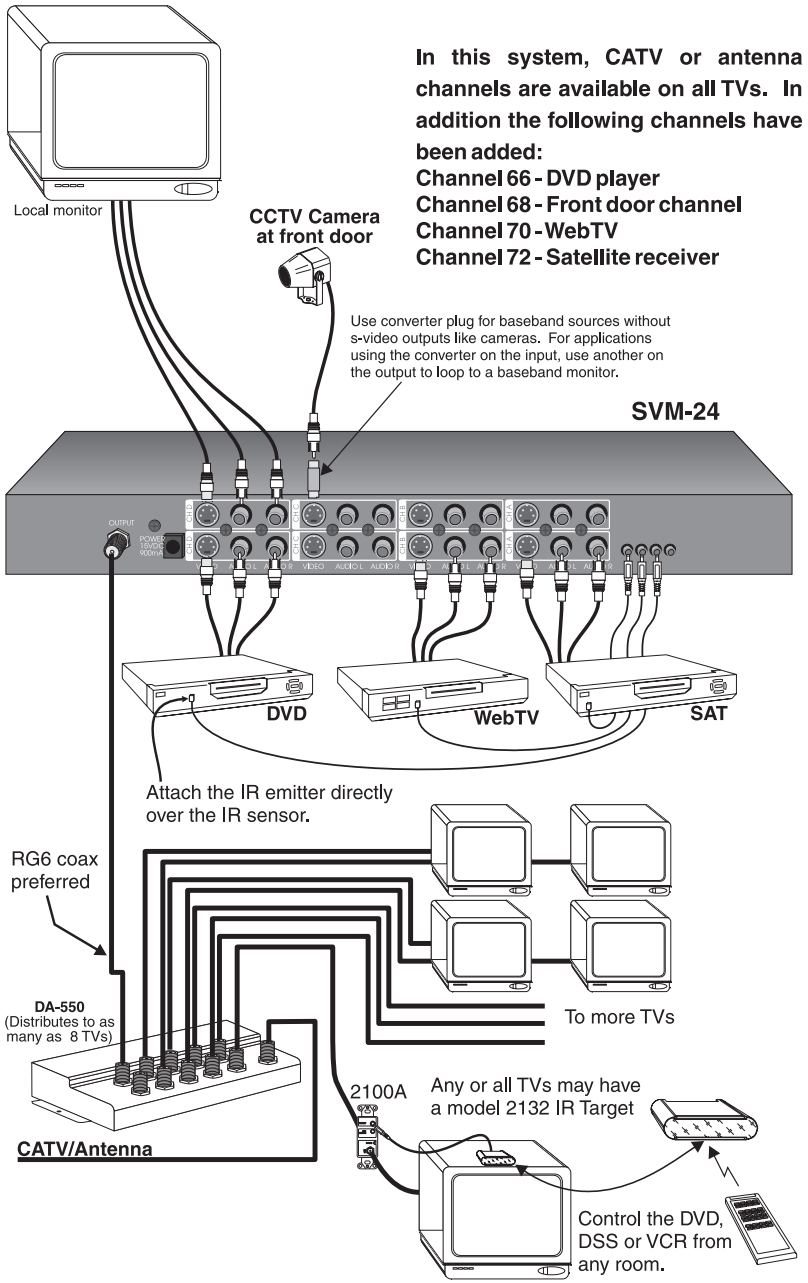


AUTO TERMINATE FEATURE
All SVM modulators have built in loop through connectors so the user can connect video to a second device. SVM modulators terminate the inputs into a 75 ohm load. When a second cable is connected to the output, the SVM automatically disconnects this termination to allow the second device to terminate.

BASEBAND VIDEO
The SVM modulators come with converter plugs for regular baseband video sources. These can be used on inputs or outputs.

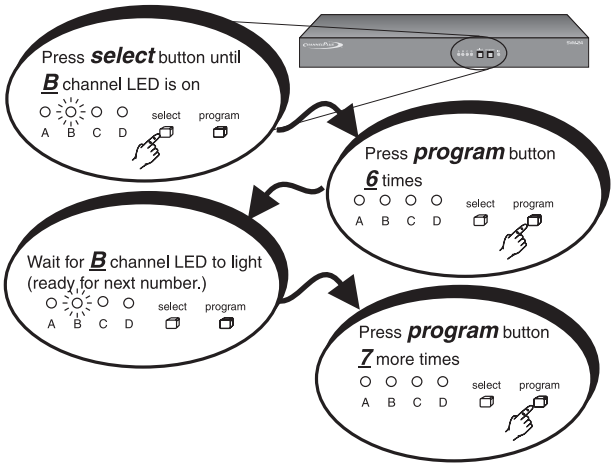
MOUNTING
The SVM modulators can be mounted in standard 19" racks by attaching the included mounting ears. Remove the rubber feet on the bottom of the unit to ensure clearance when inserted into a rack.

Sample System Diagram

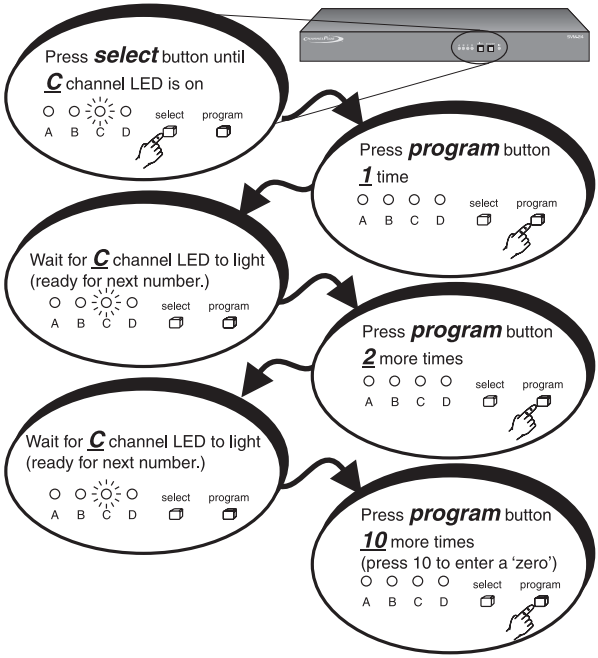


Programming Examples:

To program modulator ***B*** to channel ***67***



To program modulator ***C*** to channel ***120***



Valid Channels:

14-64: UHF channels
65-125: CATV channels
95-99: not valid

Channel Spacing:

Skip at least one number between channels.
Channels 14 and 16: OK.
Channels 14 and 15: Illegal.

Error indication:

If an error has occurred or an incorrect channel is entered, the LED will flash quickly for a second and return to the previous settings.

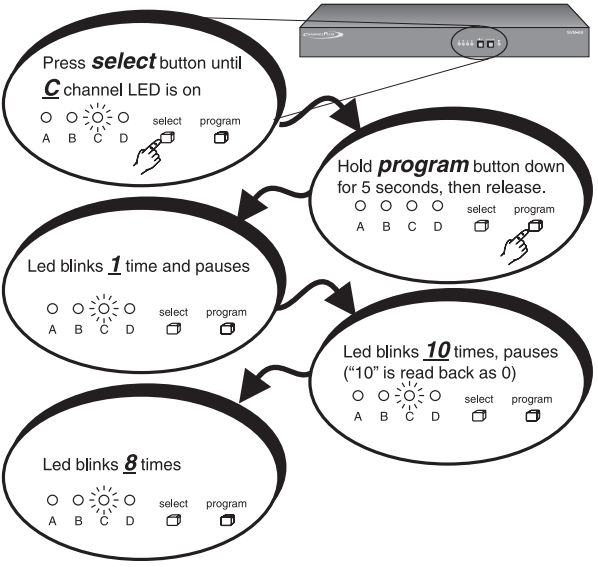
If two adjacent channels are selected, the unit will accept the entry but will blink the LEDs of channels that are too close. If this happens, re-program one of the channels to move it away from the other.

Channel number readback:

A readback mode will display the current channel assignments.

To readback modulator ***C*** channel assignment

(example: C has been programmed to channel ***108***)



Things to watch for:

No picture … Verify that the video source is on and is producing a video signal. Check that the TV and the modulator are tuned to the same channel. For example, if the modulator is broadcasting on UHF channel 16, make sure the TV is on UHF 16 rather than CATV 16. UHF 16 and CATV 16 are at different frequencies.

Weak ChannelPlus UHF channel … If the TV has a separate UHF input, be sure that it is connected.

LEDs blink ... You need to have one unused channel space between channels. The display will blink if you have made an 'illegal' choice. See the section on programming.

Herringbone interference on ChannelPlus channel (diagonal lines) ... You may have chosen a channel number that is not completely vacant. Distant UHF stations may be un-watchable, but will cause interference if you try to create a new channel at the same frequency. Also, cable companies often have extra signals where there should be none. Try moving the ChannelPlus channel to another number. You may have to add a low pass filter to remove cable company noise.

Herringbone interference on many channels (disappears when you remove the modulator) … The high output of the ChannelPlus modulator can overdrive many RF amplifiers. Reduce the RF output using an attenuator. (ChannelPlus coax panels are designed to take the full output of these modulators.)

- **Audio volume seems low compared to broadcast** … There may be little you can do here, other than turn up the volume. Here is what is happening:
- In broadcast television, the audio is compressed: The soft sounds are amplified to be almost as loud as the loud sounds. The technical measure of this is dynamic range, the ratio of loudest to softest sounds. The dynamic range of video devices such as DVD and LV players is very great. Since most of a typical movie consists of 'soft' sounds, the audio will seem quieter than normal television channels. (This is also why commercials, which are the most compressed, seem louder than the program they accompany.)
- To appear to be at the same volume as broadcast channels, the audio level in a modulator is carefully increased. In the modulator, too high of signal level can overdrive the MTS circuits and audio performance will suffer.

No Stereo … When using the TV outputs to send audio to a home theater system, be sure the TV is in the stereo mode for external speakers. Consult the TV manual, this is often confusing and is different for different TV brands.

No color on ChannelPlus channels … You may have chosen the incorrect cable standard. Not all televisions can accommodate the 1.25MHz frequency difference between the H and I cable standards. See the section on programming.

Changing modulation standards

Cable HRC and IRC considerations

Most cable services use IRC frequency assignments. This is the default for the ChannelPlus SVM series modulators. However, if the cable service uses HRC or the TV appears to search for the "house channels," the modulator can be reprogrammed to use HRC assignments by entering the number " 98". Set to IRC by entering a "99". Both of these settings are only used for setting HRC/IRC. **Note**: This setting can be entered on any modulator channel, A, B, C, or D, and affects all channel assignments for that unit. Cable channels must either be all IRC or all HRC.

Specifications: typical @ 25°C ± 5°C

SVM Series modulators

Inputs	s-video	1 Vp-p @ 75Ω	
	audio	1 V rms @ 47kΩ	
Video performance	differential gain	4%	
	differential phase	<4º	
	signal/noise	55 dB	
RF output	standard	UHF	CATV
	channel ranges	14-64	65-125 (excluding 95-99)
	output level	+25 dBmV (85dBuV)	
	IM distortion	-60 dBC	
	alternate channel	-45dBC @ 12MHz	
Power supply	model number	SVM-22	SVM-24
	output current	900mA	900mA
	output voltage	15 VDC	
	input power	105-125 VAC	
	power consumption	9 watts	11 watts
Physical	height	4.4 cm (1.75 in)	
	width	43.2 cm (17 in)	
	depth	16.5 cm (6.5 in)	
	weight	1.19 kg (2 lbs 10 oz)	
MTS audio performance	frequency range	20Hz - 12kHz	
	signal/noise	65 dB	
	separation	25 dB @ 1000Hz	
	surround sound	Compatible with Dolby full logic surround sound	
	noise reduction	Certified dbx	

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.