

CT-SAMM-V2 User Manual





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1. Safeguards

1.1 Product Inspection

Inspect the equipment for shipping damage. Should any damage be discovered, immediately file a claim with the carrier.

1.2 Important Safety Instructions

To insure proper installation and operation, take a moment to read this guide before proceeding with the installation. If you have any questions or comments about the CT-SAMM-V2 mini-modulator, please refer to the Service & Support section to contact customer service or technical support.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (Servicing) instructions in the literature accompany the appliance.



WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK. DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.



CAUTION:

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

1. **Read Instructions:** All safety and operating instructions should be read before the appliance is operated.
2. **Retain Instructions:** The safety and operating instructions should be retained for future reference.
3. **Heed Warnings:** All warnings on the appliance should be adhered to.
4. **Follow Instructions:** All operating and user instructions should be followed.
5. **Cleaning:** Unplug this appliance from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleansers.
6. **Do Not Use Attachments:** Use of attachments not recommended by the manufacturer may cause hazards.
7. **Water and Moisture:** Do not use this product near water—for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool—and the like.



- 8. Accessories:** Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the appliance.
- 9. Ventilation:** This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to. Any slots or opening in the cabinet are provided for ventilation. To ensure reliable operation of the video product and to protect it from overheating, these openings must not be blocked or covered. Openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface.
- 10. Grounding or Polarization:** This video product is equipped with either a three prong plug for 110 VAC use or a two prong flat blade 220 VAC type plug. Each type is to be inserted into only the type of receptacle for which they specifically designed. DO NOT cut off the round grounding pin in order to be able to fit into a two prong receptacle as this could cause injury and will void warranty..
- 11. Power Sources:** This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your appliance dealer or local power company.
- 12. Power-cord Protection:** Power-supply cords should be routed so they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.
- 13. Lightning:** For added protection for this product during a lightning storm, or when it is left unattended or unused for long periods of time, the unit should be disconnected from power source.
- 14. Power Lines:** An outside antenna system should not be located in the vicinity of overhead power lines, other electric light or power circuits, where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them may be fatal.
- 15. Overloading:** Do not overload wall outlets and extension cords as this can result in risk of fire or electric shock.
- 16. Object and Liquid Entry:** Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
- 17. Servicing:** Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 18. Damage Requiring Service:** Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - When the power-supply cord or plug is damaged.
 - If liquid has been spilled, or objects have fallen into the product.
 - If the product has been exposed to rain or water.
 - If the product does not operate normally by following the operating instruction. Adjust only those controls that are covered by the operating instructions. An improper adjustment may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - If the product has been dropped or the cabinet has been damaged.
 - When the product exhibits a distinct change in performance—this indicates a need for service.

- 19. Replacement Parts:** When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock or other hazards.
- 20. Safety Check:** Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating conditions.
- 21. Outdoor Antenna Grounding:** Before attempting to install this product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges.
- Use No.10 AWG (5.3mm) copper, No.8 AWG (8.4mm) aluminum, No.7 AWG (10mm) copper-clad steel or bronze wire or larger, as ground wire.
 - Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22m) to 6 feet (1.83m) apart.
 - Mount antenna discharge unit as close as possible to where leading enters house.
 - A driven rod may be used as the grounding electrode where other types of electrode systems do not exist. Refer to the National Electrical Code, ANSI/NFPA 70-1984 for information.
 - Use jumper wire not smaller than No.6 AWG (13.3mm) copper or equivalent, when a separate antenna grounding electrode is used.
- 22. Waste Electrical and Electronic Equipment (WEEE) Disposal:** At end of useful life, this product should be deposited at an appropriate waste disposal facility for recycling and disposal. Do not dispose this equipment with household waste.

**NOTE TO THE CATV SYSTEM INSTALLER:**

THIS REMINDER IS PROVIDED TO CALL THE CATV SYSTEM INSTALLER'S ATTENTION TO ARTICLE 820-22 OF THE NEC THAT PROVIDES GUIDELINES FOR PROPER GROUNDING AND, IN PARTICULAR, SPECIFIES THAT THE CABLE GROUND SHALL BE CONNECTED TO THE GROUNDING SYSTEM OF THE BUILDING, AS CLOSE TO THE POINT OF CABLE ENTRY AS PRACTICAL.

2. Description

2.1 CT-SAMM-V2 SAW Filtered Agile A/V Mini-Modulator

The CT-SAMM-V2 is a microprocessor controlled rebroadcast quality PLL synthesized, frequency agile CATV/TV television modulator. The double conversion and superior SAW filtering provides adjacent channel compatibility and spurious free output. The CT-SAMM-V2 provides 45dBmV output level from 54 to 864MHz including CATV and TV frequencies. The channelization configuration can be changed by the up/down buttons located on the front panel.

2.2 Features

- Double heterodyne conversion.
- 45dBmV minimum @50~864MHz.
- Compatible with most manufacturers mini-modulator chassis.
- Automatic band splitting filters for superior carrier to noise ratio.
- SAW filtered.
- Supports TV, CATV, frequency and lock function.
- FCC frequency offset with automatic setting.
- Pre-emphasis defeat switch accessible from side panel for the insertion of composite BTSC stereo signal.
- IRC and HRC offset available for frequency settings in systems using offset channels.



3. Specifications

RF		
Parameter	Specification	Test Conditions
Channels	CATV:CH2~135 / ANT:CH2~69	
Frequency range	NTSC 54 MHz to 864 MHz	30Hz -4.2MHz
FCC frequency offset	Automatic	+12.5KHz,+25KHz or None as require for each channel
Output Level	+45 dBmV (min)	Adjustable from front panel
Output Level Control	≥10 dB (min)	
Output Impedance	75Ω	
A/V Ratio	-11 - -23 dB±3 dB	
Carrier -to-noise (in band)	-60 dB (min)	Measured at -15 dB A/V ratio and with Modulator Output Level of +45 dBmV
Carrier -to-noise (out of band)	-55 dB (min)	
Frequency Accuracy	± 10 KHz	
Inter Carrier Frequency	± 2.0 KHz	@4.5 MHz
Adjacent channel beat (fv-4.5 mhz)	-60 dB (min)	Measured at -15 dB A/V ratio and with Modulator Output Level of +45 dBmV
Spurious outputs	-55 dBc (min)	

Video		
Parameter	Specification	Test Conditions
Level	1 Vp-p (min) for (87.5% Modulation)	
Response	±1.2 dB	30Hz ~ 4.2MHz
Differential Gain	< 5%	10 ~ 90% APL
Differential Phase	< 5°	10 ~ 90% APL

Audio		
Parameter	Specification	Test Conditions
Deviation	± 25KHz	0.5Vp-p @Sin Wave 1KHz
Preemphasis	75us	
Audio baseband input impedance	600 ohm	

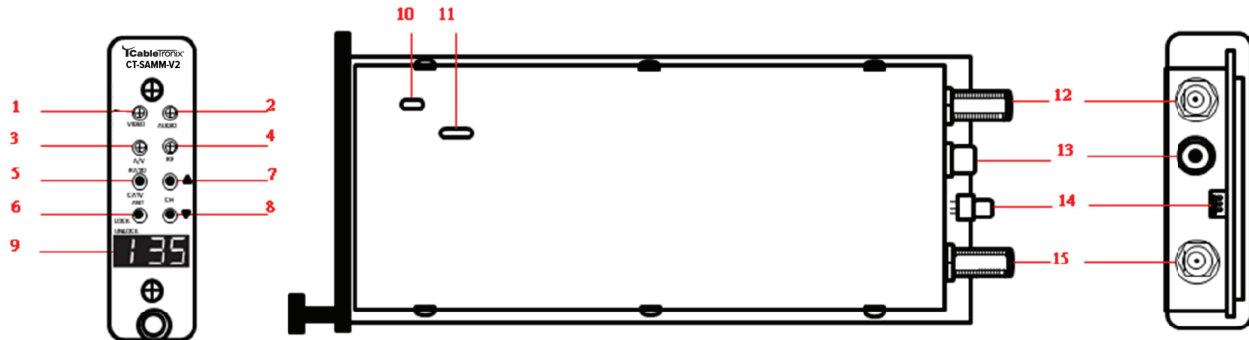
General		
Parameter	Specification	Test Conditions
Power Consumption	< 300mA	@5VDC
	< 250mA	@12VDC
Dimensions	1" x 8" x 3.45" (2.54 x 20.32 x 8.76 cm)	
Weight	0.8 lbs. (0.36kg)	
Operating Temperatures	32°-122°F (0° - 50°C)	
Connector	Video In / RF Out: "F" type Audio In: RCA	
Warranty	1 year - Can be extended to 3 years	

3.1 Ordering Information

SAW Filtered Agile A/V Mini-Modulator
Model No. **CT-SAMM-V2**

4. Operation & Controls

4.1 Panels



Panels

1. **Video Level Control:** Use this control to adjust the video modulation level (picture quality).
2. **Audio Level Control:** Use this control to adjust the audio modulation level (volume).
3. **Audio/Video Ratio Control:** Used to set the level of the audio carrier in relation to the video carrier.
4. **RF Output Level Control:** Used to set output level.
5. **CATV/ANT:** Push this button to select either CATV or TV mode.
6. **Channel Lock Control:** Switch is used to prevent accidental change of channel.
7. **Channel Select:** Push this button to change channel to higher channel number.
8. **Channel Select:** Push this button to change channel to lower channel number.
9. **Channel Display:** Indicates selected channel and that power is on when lit.
10. **Pre-emphasis On/Off:** Allows pre-emphasis to be disabled when used with BTSC generator.
11. **HRC, IRC, STD Control:** Slide switch selects standard, HRC, IRC and STD frequencies.
12. **Video Input:** Accepts video output from satellite receiver, VCR and CCTV camera.
13. **Audio Input:** Accepts audio output from satellite receiver and VCR.
14. **DC Power Inputs:** The three-wire power cable(+5V/+12V/GND) from the power supply connects to this jack.
15. **RF Output:** Connect this port to distribution system.



5. Installation Procedure

5.1 Installation

Use a small plastic screwdriver to make required selection of switches and buttons.

1. If module is to be used in an HRC or IRC CATV frequency assignment, slide the format assignment switch inside the side of module to HRC or IRC (unit is shipped with this switch in the STD position).
2. If the audio source is BTSC stereo, slide the pre-emphasis switch inside the side of module to off (unit is shipped with this switch in the on position).
3. Align the top and bottom edge of module with the guide channel in chassis.
4. Slide module into chassis.
5. Connect the 3 pin power supply connector.
6. Connect a cable between the module RF output connection and the channel-combining network.
7. Connect cables from the programming source baseband output to the audio and video input connectors of module.
8. If needed, press the CATV/ANT button to select between cable TV and off-air channel assignment.
9. Select the desired channel by pressing either channel button adjacent to the arrows on front panel.
10. When the desired channel is displayed, press the set button to lock channel.
11. Connect a signal level meter or spectrum analyzer to a common port of the channel combiner network.
12. Adjust RF output control on the front of modulator until the RF video carrier level matches the RF video level of adjacent channels.
13. Adjust the A/V ratio control on the front panel until the RF audio carrier level is between 13 and 17 dB below the RF video carrier level.
14. Connect a television set to a common port of the channel combiner network.
15. Analyze the brightness of channel compared to adjacent channels.
16. If needed, adjust video control on the front of modulator until the brightness level matches the brightness of adjacent channels.
17. Analyze the sound level of channel compared to adjacent channels.
18. If needed, adjust audio control on the front of modulator until the sound level matches the sound of adjacent channels.

5.2 Module Replacement

1. Disconnect the 3 pin connector from module.
2. Disconnect the audio, video, and RF connectors from back of module.
3. Remove module by sliding the unit out the front of the chassis.
4. Insert replacement module into chassis.
5. Reconnect the 3 pin connector and audio, video, and RF connectors to the rear of module.
6. Set Channel Frequency, level and deviation controls as described in installation procedures.

5.3 Operation & Care

Do's and Dont's

- Always operate in a cool well-ventilated environment.
- Always provide a stable, conditioned power source.
- Heed all safety warnings and obey all environmental and electrical operating requirements.
- To clean, use a soft damp cloth to clean.
- Do not use solvents or harsh detergents.
- Do not use this product for purposes other than intended.

5.1 Installation

5.4 Headend/Distribution Interface



CTRC-12

12 Unit Power Supply

CTPS-12

CTRC-12

12 Unit Rack Chassis

CTAMM PICO ADAPTER

For use with Pico Power supplies

CTRC HARNESS

Replacement Harness



CTPS-12



CABLETRONIX - 1 Year Limited Warranty

CABLETRONIX. (the “Company”) warrants to the Original Purchaser that the item purchased is free from defects in workmanship or material under normal use. This warranty starts on the date of shipment of the hardware to the Original Purchaser.

During the warranty period, the Company agrees to repair or replace, at its sole option, without charge to Original Purchaser, any defective component. To obtain service, the Original Purchaser must return the item to the Company properly packaged for shipping. All defective products must be returned to the Company within thirty (30) days of failure. Products must be returned with a description of the failure and Return Merchandise Authorization (RMA) number supplied by the Company. To receive a RMA number and a return shipping address on where to deliver the hardware, call 610-429-1821. The shipping, and insurance charges incurred in shipping to the Company will be paid by Original Purchaser, and all risk for the hardware shall remain with the Original Purchaser until such time as Company takes receipt of the hardware. Upon receipt, the Company will promptly repair or replace the defective unit, and then return said unit to Original Purchaser, shipping prepaid. The Company may use reconditioned or like-new parts or units, at its sole option, when repairing any hardware. Repaired products shall carry the same amount of outstanding warranty as from original purchase. Any claim under the warranty must include dated proof of purchase or invoice. In any event, the Company’s liability for defective hardware is limited to repairing or replacing the hardware.

This warranty is contingent upon proper use of the hardware by Original Purchaser and does not cover: if damage is due to Acts of God (including fire, flood, earthquake, storm, hurricane or other natural disaster), accident, unusual physical, electrical, or electromechanical stress, modifications, neglect, misuse, operation with media not approved by the Company, tampering with or altering of the hardware, riot, war, invasion, act of foreign enemies, hostilities (regardless of whether war is declared), civil war, rebellion, revolution, insurrection, military or usurped power or confiscation, terrorist activities, nationalization, government sanction, blockage, embargo, labor dispute, strike, lockout or interruption or failure of electricity, air conditioning, or humidity control, Internet, network, or telephone service.

The warranties given herein, together with any implied warranties covering the hardware, including any warranties of merchantability or fitness for a particular purpose, are limited in duration to one year from the date of shipment to the Original Purchaser. Jurisdictions vary with regard to the enforceability of warranty limitations, and you should check the laws of your local jurisdiction to find out whether the above limitation applies to you.

The Company shall not be liable to your for loss of data, loss of profits, lost savings, special, incidental, consequential, indirect, or other similar damages arising from breach of warranty, breach of contract, negligence, or other legal action even if the Company or its agent has been advised of



the possibility of such damages, or for any claim brought against your by another party. Jurisdictions vary with regard to the enforceability of provisions excluding or limiting liability for incidental or consequential damages. You should check the laws of your local jurisdiction to find out whether the above exclusion applies to you.

This warranty allocates risks of product failure between Original Purchaser and the Company. The Company's hardware pricing reflects this allocation of risk and the limitations of liability contained in this warranty. The warranty set forth above is in lieu of all other express warranties, whether oral or written. The agents, employees, distributors, and dealers of the Company are not authorized to make modification to this warranty, or additional warranties binding on the Company. Accordingly, additional statements such as dealer advertising or presentations, whether oral or written, do not constitute warranties by the Company and should not be relied upon.

This warranty gives you specific legal rights. You may also have other rights which vary from one jurisdiction to another.