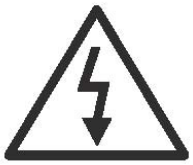
CABLETRONIX™

INSTALLATION MANUAL

CTFCM55
Audio/Video Modulator

IMPORTANT INFORMATION



The lighting 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 accompanying 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.

PACKAGE CONTENTS

This package contains:

One CTFCM55 Audio/Video Modulator
One CTFCM55 instruction manual

PRODUCT DESCRIPTION

The **CTFCM55** is an all solid-state audio/video modulator that provides a modulated video and aural RF carrier output on a fixed channel from 54MHz to 300MHz. The modulator accepts standard polarity video at a 1 Vp-p level from video sources such as a satellite receiver, demodulator, TV camera, DVD player or video tape recorder. The unit provides high quality video, color, and audio signals on any unused channel within a closed circuit MATV, SMATV, or CATV system. For easy operation, all level controls are located on the front panel.

The **CTFCM55** comes in two versions – (a) fixed channel for channels 2 through I, and (b) a fixed frequency channel for channels J through W. The front panels and process for adjusting level settings varies slightly between the two units.

SPECIFICATIONS

CTFCM55

Audio/Video Modulator Specifications (Typical)

RF	
1.Output Level	+55 dBmV
2.Output Level Range	15 dB (Continuously Adjustable)
3.A/V Carrier Ratio Control	-12 dB to -18 dB below video carrier (Continuously Adjustable 2-I and adjusted in steps J-W)
4.Spurious Output	-60 dB below video carrier with A/V ratio @-15dB
5.Frequency Accuracy/Stability	±5 KHz
6.Output Impedance	75 Ohms
7.Output Return Loss	15 dB
8.Video Modulation Depth	87.5% TYP. (@Video 1 Vp-p)
VIDEO	
1.Video Input Level	1 Vp-p @87.5% Modulation
2.Differential Gain	3% @87.5% modulator
3.Differential Phase	±3˚ @87.5%Modulation
4.Video S/N Ratio	60 dB
5.Visual Carrier to Noise Ratio	>60 dB @ 4MHz BW
6.Video Response	±1.5 dB
AUDIO	
1.Input Level	0.5 Vp-p for ±25 KHz Deviation
2.Input Impedance	600 Ohms Unbalanced
3.Audio Distortion	0.80%
4.Aural Frequency	4.5 MHz ±5 KHz
5.Audio Frequency Response	±1.0 dB
6.Pre-Emphasis	75 µSec
GENERAL	
1.Power Input Range	108 V ~ 125 VAC, 60 Hz
2.Operating Temperature	32 ˚F ~ 122 ˚F
3.Connectors	All "F" Type
MECHANICAL	
1.Dimensions	19" (W) x 1-3/4" (H) x 3" (D)
2.Weight	3.75 lbs

INSTALLATION AND OPERATION

NOTE TO SYSTEM INSTALLER

System installer must adhere to Article 820-40 of the NEC that provides guidelines for proper grounding and 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.

1. UNPACKING and HANDLING

Each unit is shipped with all equipment assembled, and factory tested.

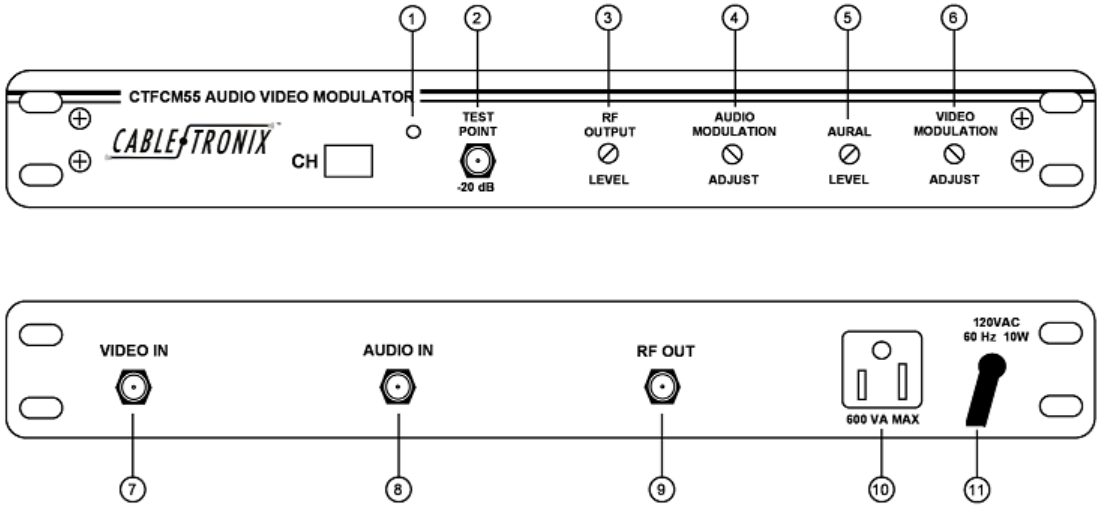
Ensure that all accessories are removed from the container before discarding packing material

2. MECHANICAL INSPECTION

Inspect the front and rear of the equipment for shipping damage. Make sure the equipment is clean, and no connectors are broken, damaged, or loose. If equipment appears to be damaged or defective please contact us at 1-610-429-1511 for assistance.

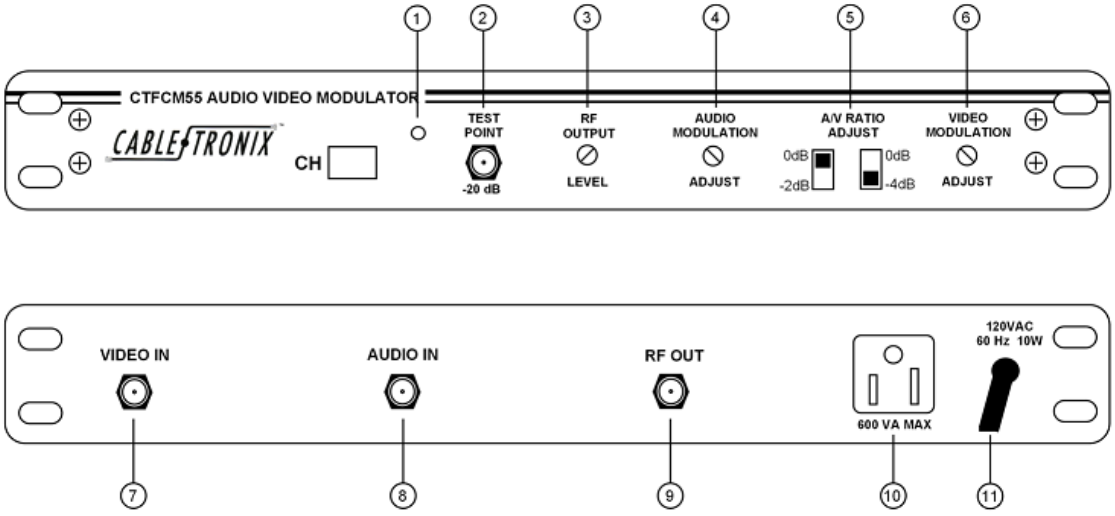
3. PRODUCT DIAGRAM

FRONT and REAR PANELS (Fixed Channel Units for Channels 2 through I)



1	**Power**	Power-On indicator light.
2	**Output Test Port**	The input signal is tapped down –30dB for monitoring. Test port must be terminated when not in use.
3	**RF Output Level Adjustment**	Simultaneously adjusts amplitude of aural and visual carriers.
4	**Audio Modulation Adjustment**	Adjusts for 25KHz peak deviation.
5	**Aural Level Adjustment**	Controls amplitude of aural RF carrier to change aural/video ratio.
6	**Video Modulation Adjustment**	Adjusts depth of modulation when video level is greater than 1.5Vp-p terminated signal.
7	**Video Input**	F-connector accepts video signal from a video source such as a satellite receiver, demodulator, or DVD player.
8	**Audio Input**	F-connector accepts audio signal from a video source such as a satellite receiver, demodulator, or DVD player.
9	**RF Output**	The modulated output signal is available for distribution from the F-connector port.
10	**Convenience Outlet**	Allows looping of power among units
11	**Power Cord**	For 120VAC, 60Hz

FRONT and REAR PANELS (Fixed Channel for Channels J through W)



1	**Power**	Power-On indicator light.
2	**Output Test Port**	The input signal is tapped down –30dB for monitoring. Test port must be terminated when not in use.
3	**RF Output Level Adjustment**	Simultaneously adjusts amplitude of aural and visual carriers.
4	**Audio Modulation Adjustment**	Adjusts for 25KHz peak deviation.
5	**Audio/Video Ration Adjustment**	Slide switches control amplitude of aural RF carrier to change aural/video ratio.
6	**Video Modulation Adjustment**	Adjusts depth of modulation when video level is greater than 1.5Vp-p terminated signal.
7	**Video Input**	F-connector accepts video signal from a video source such as a satellite receiver, demodulator, or DVD player.
8	**Audio Input**	F-connector accepts audio signal from a video source such as a satellite receiver, demodulator, or DVD player.
9	**RF Output**	The modulated output signal is available for distribution from the F-connector port.
10	**Convenience Outlet**	Allows looping of power among units
11	**Power Cord**	For 120VAC, 60Hz

4. HARDWARE CONNECTIONS

a. The CTFCM55 is designed for installation in a standard 19" EIA rack.

b. Connect a 75ohm coaxial cable with F-connectors from the **video source's Audio Output port to the CTFCM55's Audio Input port.**

c. Connect a 75ohm coaxial cable with F-connectors from the **video source's Video Output port to the CTFCM55's Video Input port**.

d. Connect a 75ohm coaxial cable with F-connectors from the **CTFCM55's RF Output port to the headend combiner**.

e. Connect the CTFCM55 to an appropriate power source capable of powering this device. Be certain that power source is capable of handling the load if the CTFCM55 and other equipment are being powered by it. The use of a surge protector is highly recommended. Product warranty does not cover surge damages.

5. CHANNEL SELECTION

The CTFCM55 is a fixed frequency modulator and units are pre-programmed for a single given channel at the factory. No channel selection is available from the unit.

6. ADJUSTMENT

a. After installation and completing all hardware connections power the unit and wait 20 minutes before making the following adjustments.

b. For testing purposes no more than 15dB from the **RF Output** should be going to a TV or RF input monitor. Use an attenuator to reduce the signal level if testing with an RF Input monitor. Individual CTFCM55 setup and level settings can be tested from the **RF Output** port. However, system level testing should be done from the combiner.

c. With a nominal 1 Vp-p video source connected, adjust the **VIDEO MODULATION LEVEL** control fully clockwise. The video AGC circuit will automatically set the unit for 87.5% modulation over an input level of 0.7 to 1.5 volts peak-to-peak. If the video input is greater than 1.5Vp-p, adjust the **VIDEO MODULATION LEVEL** for correct percentage of modulation (87.5%). If test equipment is not available then adjust for proper picture contrast when viewed on a TV monitor and compare with known Off-Air broadcast picture quality.

d. With audio source connected, adjust **AUDIO MODULATION LEVEL** control on the front panel for 25 KHz deviation. Instead of an audio modulation meter, use a TV set and adjust for equal volume as compared to a known Off-Air broadcast. Monitor for a few minutes to assure the maximum volume does not over modulate, which can cause picture distortion.

e. Aural level should be set to -14 to -16dB. For units supporting fixed channels between channels 2 through I adjustment can be made by turning the **AURAL LEVEL** control on the front panel. For units supporting fixed channels between channels J through W adjustment can be made by moving the **A/V RATIO ADJUST** switches as follows: (a) to set the audio carrier -12dB below the video carrier move both switches in the 0dB position, (b) for an A/V ratio of 14dB set the left switch to –2dB and the right switch to 0dB, (c) for an A/V ratio of 16dB set the left switch to 0dB and the right switch to –4dB, and (d) for an A/V ratio of 18dB set both the left and right switches to –4dB.

f. During field maintenance of the headend the CTFCM55's **Output Test** port can be used for taking unit measurements. However, note the output from the port is padded down -30 dB and must be taken into consideration when adjusting levels.

7. TROUBLESHOOTING

a. Ensure you are using quality multiple shielded cables with quality radial or compression F-connectors.

b. Ensure the F-connector's center conductor is making solid contact with the CTFCM55's **Video Input, Audio Input, and RF Output** ports.

c. If the CTFCM55 is receiving power but no signal, check to be sure the video and/or audio input cables are securely connected with their respective Video Output and Audio Output ports on the video source and the Video Input and Audio Input ports on the CTFCM55. Also ensure the cable is securely connected at the CTFCM55's **RF Output** port and the combiner's input ports.

d. When taking measurements it is always best to use a quality signal level meter. For initial individual CTFCM55 setup measurements may be taken from the unit's RF Output port. System level measurements, however, should be taken from the combiner's output. For field maintenance, the CTFCM55's Output Test port may be used. However, note that port is padded down -30dB that must be taken into consideration when determining individual unit level settings and output.

e. Further troubleshooting assistance can be found on-line at www.northamericancable.com and www.cabletronix.com in addition to support from Cabletronix sales engineers at 1-610-429-1511.

8. FREQUENCY OF OPERATION

The **CTFCM55** can be ordered in the following channels. The FCC 21006 offsets are automatically factory set positive. The channel chart is listed below.

BAND	CHANNEL		FREQUENCY		FCC 21006	VIDEO	CRYSTAL
	NUM	LTR	BAND	EDGE	OFFSET	CARRIER	CARRIER
LOW BAND	2		54	60		55.25	59.75
	3		60	66		61.25	65.75
	4		66	72		67.25	71.75
	5		76	82		77.25	81.75
	6		82	88		83.25	87.75
	95	A-5	90	96		91.25	95.75
	96	A-4	96	102		97.25	101.75
MID BAND	97	A-3	102	108		103.25	107.75
	98	A-2	108	114	+ 25kHz	109.275	113.775
	99	A-1	114	120	+ 25kHz	115.275	119.775
	14	A	120	126	+12.5kHz	121.2625	125.7625
	15	B	126	132	+12.5kHz	127.2625	131.7625
	16	C	132	138	+12.5kHz	133.2625	137.7625
	17	D	138	144		139.25	143.75
	18	E	144	150		145.25	149.75
	19	F	150	156		151.25	155.75
	20	G	156	162		157.25	161.75
	21	H	162	168		163.25	167.75
	22	I	168	174		169.25	173.75
HI BAND	7		174	180		175.25	179.75
	8		180	186		181.25	185.75
	9		186	192		187.25	191.75
	10		192	198		193.25	197.75
	11		198	204		199.25	203.75
	12		204	210		205.25	209.75
	13		210	216		211.25	215.75
SUPER	23	J	216	222		217.25	221.75
BAND	24	K	222	228		223.25	227.75
	25	L	228	234	+12.5kHz	229.2625	233.7625
	26	M	234	240	+12.5kHz	235.2625	239.7625
	27	N	240	246	+12.5kHz	241.2625	245.7625
	28	O	246	252	+12.5kHz	247.2625	251.7625
	29	P	252	258	+12.5kHz	253.2625	257.7625
	30	Q	258	264	+12.5kHz	259.2625	263.7625
	31	R	264	270	+12.5kHz	265.2625	269.7625
	32	S	270	276	+12.5kHz	271.2625	275.7625
	33	T	276	282	+12.5kHz	277.2625	281.7625
	34	U	282	288	+12.5kHz	283.2625	287.7625
	35	V	288	294	+12.5kHz	289.2625	293.7625
	36	W	300	306	+12.5kHz	295.2625	299.7625