HMMA

Agile Modulator

The HMMA is a high quality SAW filtered frequency agile modulator designed to meet high CATV performance standards. The small sized modulator is 1 inch wide for easy fit into 1 slot of the HMM Modular System. All channels, CATV 2-135 and UHF 2-69 are selected with convenient push-button switches. Low out of band noise levels allow for use in adjacent channel head-ends. The simple operation of this agile modulator makes the HMMA an excellent choice where versatility, performance and small size are required.

- **Output Channels: 2 – 135 CATV, 2 –13 UHF and 14-69 UHF**
- **SAW Filtered**
- **45 dBmV Output Level**
- **Low Out-of-Band Noise**
- **Easy to Read LED Channel Display**
- **Convenient Push Button Design**
- **Crystal Referenced PLL Tuning**

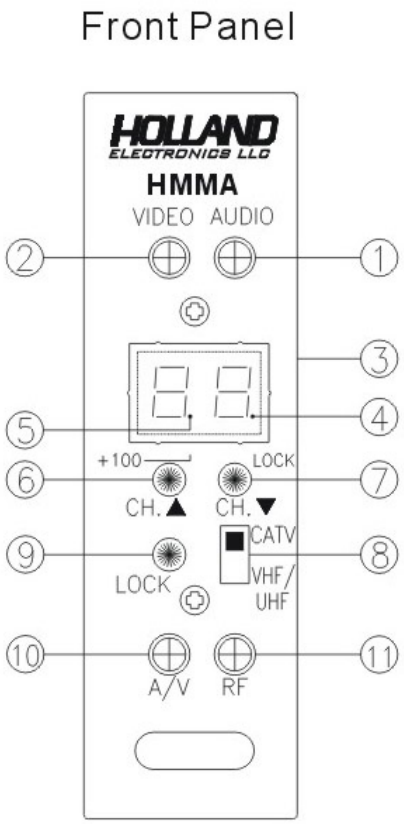
HMMA SPECIFICATIONS

RF	Output Channels	TV: VHF: 2-13; UHF 14-69 CATV: 2-135
	Output Level	45 dBmV max
	Output Impedence	75 ohms
	Output Range	0 ~ -12 dB (adjustable)
	A/V Ratio	-10 ~ -30 dB
	Frequency Stability	± 5 kHz
	Aural Carrier Offset	+4.500 ± .005 MHz
	Spurious Outputs	>-60dB
	C/N (In-Channel)	>60dB
	Output Return Loss	7 dB typ
	FCC Offsets	+12.5 kHz
VIDEO		
	Input Level	1 Vp-p typ @mod:87.5%
	Input Impedance	75 ohms
	Input Level Range	0.5 ~ 1.5 Vp-p
AUDIO:		
	Input Level	0.5 Vp-p typ @ dev: ± 25 kHz
	Input Impedance	5K ohms
	Input Level Range	0.3 ~ 1.0 Vp-p
	Pre-Emphasis	75 us

Installation Instructions:

1. Slide the model HMMA unit into the HMR rack.
2. Power up modulator by connecting the power from the HMPS power supply to the rear of HMMA.
3. Connect a spectrum analyzer or field strength meter to the modulator RF OUT port.
4. Set the HMMA to the proper channel.
5. Turn the RF output adjustment on the front of the modulator to get desired output level.
6. Turn the A/V adjustment to set the audio carrier 12 to 17 dB below the video carrier
7. Remove analyzer or field strength meter from the modulator RF OUT port
8. Connect baseband audio and video signals to the AUDIO IN and VIDEO IN ports respectively.
9. Connect modulator RF output to television/monitor. (Make sure to use the proper size attenuator between the modulator and television so as not to overdrive the television)
10. Turn on television and set to modulator channel
11. Turn the AUDIO adjustment on the front of the modulator to set the sound on television equal in volume to an off-air channel
12. Turn the VIDEO adjustment to set the video modulation:
    Over-modulation causes buzzing sounds, overly bright scenes, and distorted pictures.
    Under-modulation results in pictures with dull white levels and dark colors.
13. Remove television/monitor and attenuator from the modulator RF OUT port
14. Connect modulator RF OUT port to the RF input of the head-end system.

HMMA FRONT PANEL



HMMA FRONT PANEL FUNCTIONS

Functions on Front Panel:

1. **AUDIO TRIMPOT**:
   Adjustment for audio deviation of sound carrier

2, **VIDEO**:
   Adjustment for video modulation percentage of picture carrier.

3. **CHANNEL DISPLAY**:
   Display of output channel number

4. **LOCK Indicator**
   This indicator turns on when the unit is in LOCK mode.

5. **+100 Indicator**
   This indicator turns on when the channel number is 1XX
   Example: CH 115 shown as 1.5

6. **CH KEY**:
   Move the channel number upward for output channel selection.

7. **CH KEY**:
   Move the channel number downward for output channel selection.

8. **CATV/TV Switch**
1. When an output channel required is a terrestrial TV Channel, set the switch to TV
2. When an output channel required is a cable TV Channel, set the switch to CATV

9. **LOCK Key**
   - Press LOCK Key to lock up the settings to prevent changing of the output channel involuntarily.
   - The LOCK indicator is lit up to indicate that the unit is in LOCK mode. The CATV/TV Switch and CH /CH Keys are not functional in LOCK mode.
   - Press LOCK Key again to exit the LOCK mode. The LOCK indicator turns off.

10. **A/V Adjustment**
    Adjust for the ratio of picture carrier and sound carrier

11. **RF Adjustment**
    Adjust for the level of output Channel.