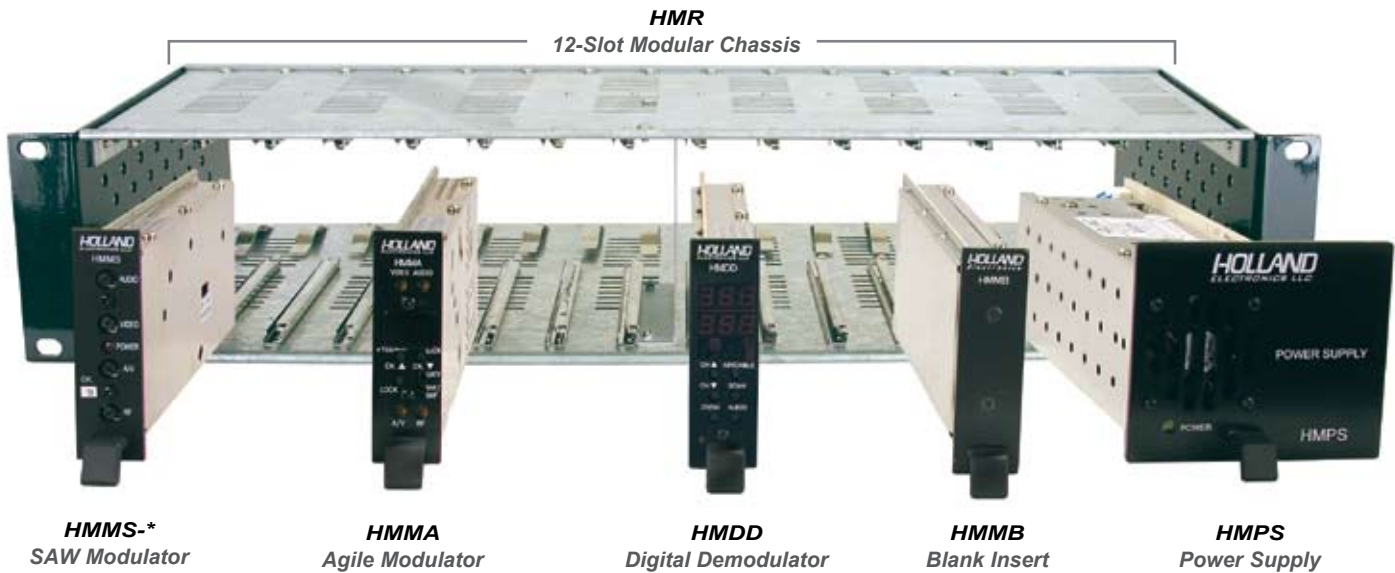


MODULAR HEAD-END SYSTEM

MODELS HMMS-* : HMMA : HMDD : HMMA : HMPS : HMR



HMMS-*
SAW Modulator

HMMA
Agile Modulator

HMDD
Digital Demodulator

HMMA
Blank Insert

HMPS
Power Supply

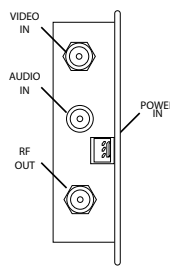
FEATURES



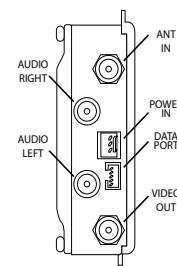
- **SAW Filtered**
- **PLL Oscillator Controlled Modulators**
- **Stereo Encoder Available (ST-MOD)**
- **Microprocessor Controlled (HMMA/HMDD)**
- **Fan Cooled Power Supply for Extra Reliability**
- **International Power Supply (100-240VAC)**
- **Front Panel Controls**
- **Five-Year Warranty**

Holland Electronics' **Modular Head-End System** consists of a 12-slot mounting chassis and power supply capable of holding any combination of 12 high-quality SAW filtered modulators and/or demodulators. The HMR slide-in mounting system uses only 3.5" of rack height, has 12 individual slots and makes for easy installation and efficient use of space (as simple as sliding in the modules and plugging in the HMPS power supply).

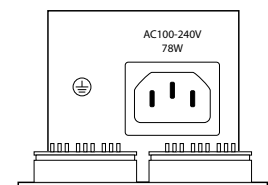
- **Inverted Channel Format (HMMS)**
- **Stereo Encoder (ST-MOD)**
- **HMMA: Blank Insert for Unused Slots**



HMMA / HMMS
Rear View



HMDD
Rear View



HMPS
Rear View

MODULAR HEAD-END SYSTEM

MODELS HMR RACK : HMPS : ST-MOD : HMMB

HMR RACK

12-Slot Modular Chassis



MOUNTING RACK: MODEL HMR	
Width	19"
Height	3.5"
Depth	9"
Capacity	12 Individual Slots (Not Including HMPS)

HMPS POWER SUPPLY

Power Supply for 12-Slot System



POWER SUPPLY: MODEL HMPS	
AC Input	95 - 240VAC (50 - 60 Hz)
DC Output	5VDC, 12VDC
Output Current (Max.)	5.5A @ 5V, 4A @ 12V
Protection	Short Circuit & Overload
Regulation	5%
Ripple	25 mV
Operating Temperature	0 to 50° Celsius

AVAILABLE OPTIONS



ST-MOD

Converts right and left audio inputs to stereo output. Small size and lightweight allows for easy integration with the HMM* Head-End System.

STEREO ENCODER: MODEL ST-MOD	
Audio Input	10K ohms
Input Level	.5 - 1.5 V
Output	BTSC
Separation	20 dB (50 Hz - 13 kHz)



HMMB

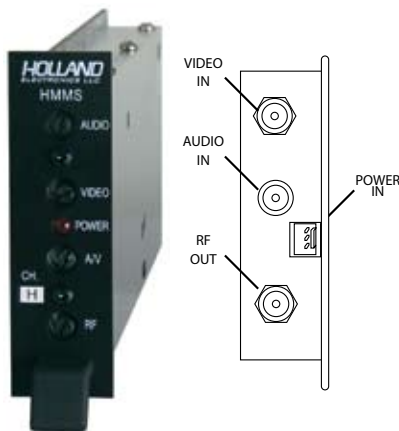
Blank insert for unused slots.

BLANKS: MODEL HMMB	
Single Slot Blank Insert	Model HMMB

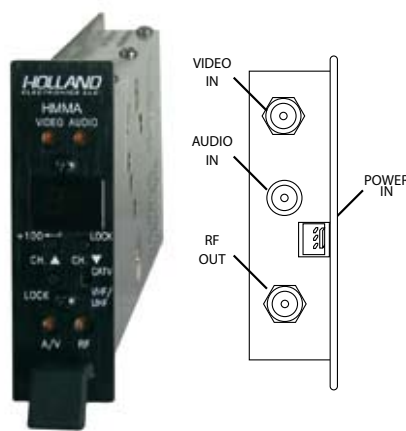
NOTE: All specifications typical unless otherwise noted

MODULAR HEAD-END SYSTEM

MODELS HMMS-* : HMMA : HMDD



MODEL HMMS-*



MODEL HMMA



MODEL HMDD

FEATURES



- **SAW Filtered**
- **PLL Controlled Oscillator**
- **Front Panel Controls**
- **Low Out-of-Band Noise**
- **LED Channel Display (HMMA/HMDD)**
- **Microprocessor Controlled (HMMA/HMDD)**
- **Stereo Encoder Available (ST-MOD)**
- **Five-Year Warranty**

AVAILABLE OPTIONS

- **Inverted Channel Format (For HMMS)**
- **Stereo Encoder (ST-MOD)**
- **HRC & IRC Offsets Available (For HMMS)**

* Denotes specified channel for fixed channel units (HMMS)

HMMS : FIXED SAW MODULATOR

The **HMMS-*** mini-modulator is a commercial grade fixed channel modulator that integrates with Holland Electronics' Modular Head-End System. The HMMS-* accepts any A/V baseband input and modulates to CATV channels 2-135.

HMMA : AGILE SAW MODULATOR

The **HMMA** is a high quality SAW filtered frequency agile modulator covering 860 MHz and has been designed to meet high CATV performance standards. Low out-of-band noise makes it ideal in adjacent channel head-ends.

HMDD : DIGITAL DEMODULATOR

The **HMDD** permits the delivery of digital television signals in analog format directly to a television. They also interface easily with existing analog modulators on CATV networks. This high-performance digital receiver allows for the reception and demodulation of an 8VSB (Off-air SD/HD digital TV Signal) or QAM (Digital CATV) signal into a baseband NTSC video and audio output.

MODULAR HEAD-END SYSTEM

SPECIFICATIONS

RF	HMMS-*	HMMA
Output Channels:	2 - 117 CATV (54-750 MHz) 14 - 59 UHF (470-750 MHz)	2 - 135 CATV (54 - 860 MHz) 14 - 69 UHF (470 - 806 MHz)
FCC Offsets (Where Applicable)	±12.5 kHz, ±25 kHz	±12.5 kHz, ±25 kHz
Output Level	30 - 45 dBmV (Adj.)	30 - 45 dBmV (Adj.)
A/V Ratio	-11 to -18 dB (Adj.)	-11 to -18 dB (Adj.)
Frequency Stability	±5 kHz (Meets FCC Docket 21006)	±5 kHz (Meets FCC Docket 21006)
Aural Carrier Frequency	4.5 MHz ± 5 kHz	4.5 MHz ± 5 kHz
Spurious Outputs	-60 dBc	-60 dBc
C/N (In-Band)	60 dB	60 dB
Out-of-Band Noise	-95 dBc	-78 dBc
Output RL	12 dB	12 dB
VIDEO		
Input Level (Min.)	.5V p-p (for 87.5% Modulation)	.8V p-p (for 87.5% Modulation)
Frequency Response	±1.5 dB (50 Hz - 4.2 MHz)	±1.5 dB (50 Hz - 4.2 MHz)
Video C/N	60 dB	60 dB
Hum/Noise	-60 dB	-60 dB
Modulation Range	0 - 90%	0 - 90%
Input Impedance	75 ohms	75 ohms
Differential Phase	±5°	±3°
Differential Gain	±5%	±5%
Group Delay	75 ns	75 ns
AUDIO		
Input Level	.5V p-p (25 kHz Dev)	.5V p-p (25 kHz Dev)
Input Impedance	5k ohms	10k ohms
Distortion (THD)	1%	1%
Flatness	±1 dB (50 Hz - 15 kHz)	±1 dB (50 Hz - 15 kHz)
Pre-Emphasis	75 µs (Switchable)	75 µs (Switchable)
BTSC Stereo Encoder	Optional	Optional
CONNECTORS		
Video Input, RF Output	F	F
Audio Input	RCA	RCA
GENERAL		
Power Requirements	5VDC @ 190mA, 12VDC @ 100mA	5VDC @ 280mA, 12VDC @ 400mA
Operating Temperature	0° to 50° Celsius	0° to 50° Celsius
Dimensions	1" x 3.1" x 7.5"	1" x 3.1" x 7.5"
Weight	.75 lb.	.75 lb.

NOTE: All specifications typical unless otherwise noted

RF	HMDD
Input Channels	2-125 CATV/HRC/IRC 14 - 69 UHF (470 - 806 MHz)
Input Power Range	0 - 25 dBmV
Noise Figure	6 dB: VHF / 8 dB: UHF
VIDEO	
Output Level	.5 - 1.2V p-p (Adj.)
Impedance	75 ohms
Frequency Response	± 2 dB
Differential Phase	± 5°
Differential Gain	± 5%
AUDIO	
Output Level	.8 - 1.5V p-p (Adj.)
Output Impedance	600 ohms
Distortion (THD)	2%
CONNECTORS	
RF Input, Video Output	F
Audio Output	RCA
GENERAL	
Power Requirements	12VDC, 5VDC @ 150 mA
Operating Temperature	0 to 50° Celsius
Dimensions	1" x 3.1" x 8.5"
Weight	.75 lb.