HOLLAND
Electronics LLC

INSTALLATION MANUAL
Model :HDD

ATSC/QAM DIGITAL DEMODULATOR
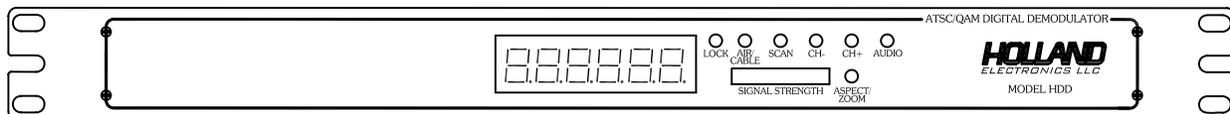
LOCK AIR/ SCAN CH- CH+ AUDIO
CABLE

SIGNAL STRENGTH ASPECT/ ZOOM

HOLLAND
ELECTRONICS LLC
MODEL HDD

ATSC/QAM Digital Demodulator

PACKAGE CONTENTS

This package contains:
   One HDD ATSC/QAM Demodulator
   One HDD Installation Manual

PRODUCT DESCRIPTION

The HDD is an ATSC/QAM professional grade demodulator designed for cost effective digital-to-analog conversion of an unencrypted 8VSB (Off-Air SD/HD TV signal) or QAM unencrypted (digital CATV) RF signal to baseband NTSC video and left and right stereo audio outputs. All of the 18 ATSC video formats including HD format can be received by the HDD and then converted for display on non-digital TV sets over analog channels with the use of a modulator.

SPECIFICATIONS

RF	
1. Input frequency range	54 – 860MHz
2. Channels	2-13 (VHF) 14-69 (UHF)
3. 8VSB input channel bandwidth	6 MHz
4. Data rate	19.392 Mbps.
5. Noise figure	< 8dB
6. QAM input frequency range	CATV 2-135
7. QAM data rate	27 Mbps
8. QAM 256 data rate	38 Mbps
9. Input level range	-7 dBm to -80 dBm
10. Adjacent channel rejection	60dB
11. Image rejection	40dB
12. Demodulation mode	8VSB, 8VSB MP @ ML
13. Symbol clock frequency	10.762 MHz
14. Input connector	75 ohm F-female
GENERAL	
1. Video output (analog)	
Frequency response	30Hz to 4.2MHz, +/-1.5dB
Video output level	1 Vp-p +/- 0.2Vp-p
Impedance	75ohms
Connector type	RCA
2. Audio L/R outputs	
Impedance	600 ohms.
Level	1 Vp-p +/- 0.2Vp-p
Frequency response	30Hz to 20kHz, +/-2dB
Distortion	1% max
Connector	RCA
3. Power	
Power	8.33W / AC120V / 60Hz
Voltage Range	AC100V ~ AC120V /57Hz ~ 63Hz
Dimensions :	483 x 86 x 44mm

INSTALLATION AND OPERATION

1. UNPACKING and HANDLING

Each unit is shipped 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.

### 3. THE USE OF RACK MOUNT UNITS AND POWER REQUIREMENTS

The HDD is designed to be mounted in standard 19" EIA racks and to be powered by AC110V/60Hz power. Using the wrong AC power voltage can damage the HDD.
Contact your distributor for more information.

4. PRODUCT CONTROLS and CONNECTIONS
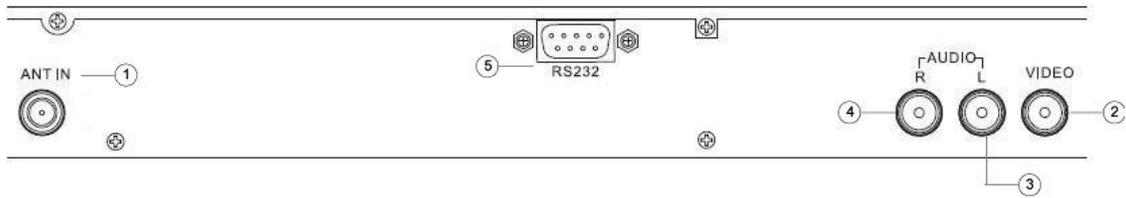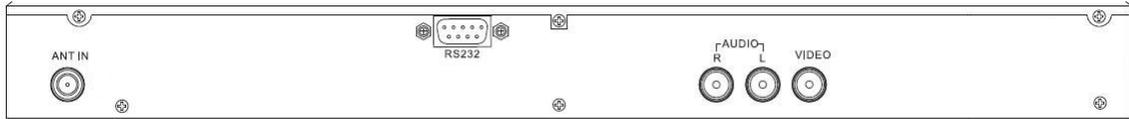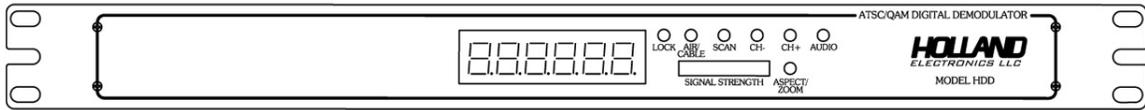
REAR PANEL

1 Antenna Input for Off-Air or CATV (F connector)
2 Video Output (RCA connector)
3 Audio Left Output (RCA connector)
4 Audio Right Output (RCA connector)
5 RS-232 Input (For Future Use)
6 AC Power Cord AC120V / 60Hz
7 AC Power Socket for Extension
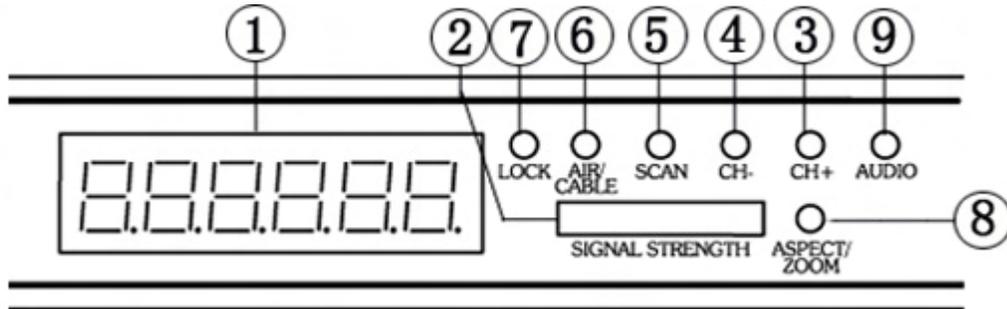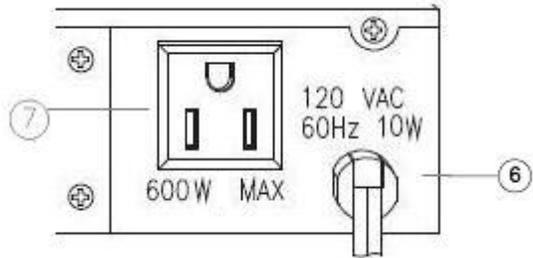
FRONT PANEL

1 Message and Channel Display
2 Signal Strength Indicator
3 CH+ Channel up button
4 CH- Channel down button
5 Scan button (searches for digital RF input signals)
6 AIR/CABLE button selects OFF-AIR (8VSB) or CABLE (QAM)
7 LOCK LED indicate signal/channel locked
8 Aspect/Zoom button (user selectable screen format for 4:3/16:9 letterbox, full, zoom, or center)
9 Audio button (select between English and SAP)

5. HARDWARE CONNECTIONS

a. The HDD is designed for installation in a standard 19" EIA racks.

b. The use of a surge protector and a UPS is highly recommended. Product warranty does not cover surge or spike damages.

c. Connect a 75-ohm coaxial cable with proper connectors from the **HDD Antenna Input Port** to the Off-Air antenna or other cable source.

d. For mono audio output connect an audio patch cable with RCA male connectors on both ends between the **HDD Audio LEFT (White) output port** to the **modulator's audio input port.** For output to a stereo modulator use patch cables from the **HDD Audio LEFT (White) and Audio RIGHT (Red) Output ports.**

e. Connect a coaxial cable using an RCA male connector to the **HDD Video Output Port** and a male F-connector to the **modulator's video input port.**

f. Note you will require 1 HDD for each channel or subcarrier to be converted and demodulated. You will also require 1 modulator for each channel to be remodulated.

g. Connect the HDD to the AC power.

6. SETTINGS
a. Confirm the HDD is powered on and the input signal cable is connected to the antenna input port on the rear of the HDD.

b. Select input signal type, Off-Air (8VSB) or Cable (QAM) using the HDD **Air/Cable**

Selection Button.

c. Press the **HDD Scan button**. The HDD will initiate a channel scan for available signals/channels in the given area. **"SEARCH"** will appear in the **HDD Display**. The scan process can take several minutes. Based on knowing what channels are available in the area you can determine which of the signals needs to be converted and demodulated.

d. When the channel scan is complete one of the found channels numbers will be shown in the **HDD Display**. The HDD may find multiple channels. Use the **CH+** and **CH- Buttons** to scroll through the available channels until you find the desired channel to be converted and demodulated. The **HDD Lock LED** will light up indicating a channel has been found and selected.

e. The desired channel should have sufficient signal strength to produce a quality image. Use the **HDD Signal Strength Meter**. Each segment on the meter represents 15% signal strength ranging from 15% or less for the bottom (red) bar up to 90% or greater for the top and last bar.

<div align="center">

90   75   60 45   30 15   % Signal strength

</div>
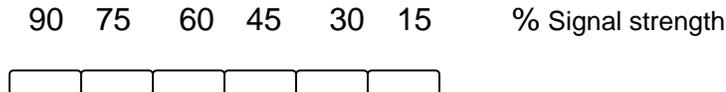
f. The HDD includes an alternate **Audio** function (SAP) which allows the user to select from English or Spanish audio content (if available). To select English audio press the **Audio** button on the HDD until the display reads **Lang1**. To select Spanish audio press the **Audio** button on the HDD until the display reads **Lang2**.

Note: Some broadcasters do not default the SAP audio back to English audio if the program being broadcast does not support SAP. When a program does not support SAP but the HDD is set to **Lang2**, there will be no audio outputted of the HDD. This is a function of the broadcasters transmission and in no way means the HDD is defective.
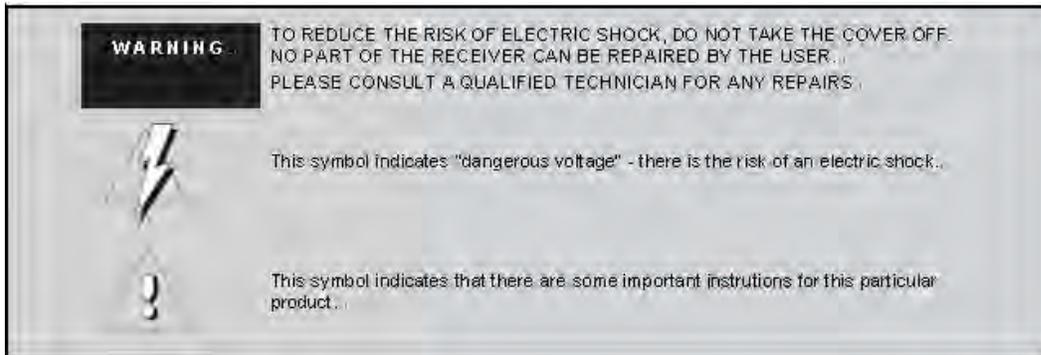
g. The HDD also includes a **Aspect/Zoom** feature that allows the selected channel picture to be displayed either as 4:3 Full, Letterbox, Center, and Zoom for standard screen display or 16:9 Letterbox, Center, and Zoom for widescreen display. You may use the **HDD Aspect/Zoom Button** to select the desired screen format to be displayed on the television. However, the Zoom feature is channel dependent. Further, as the Zoom setting could be considered a viewer preference it may be advisable leave the setting in the default position. Note: The available aspect ratio may be channel and program dependent making selection impossible. Selected aspect ratio and format will be shown on the **HDD Display**.
.
h. Six samples of "8" format display as below:

1. 888888 [Air]   2. 888888 [Cable]   .

3. 888888 [Search]   4. 888888 [NoSig]

5. 888.888 [A 69.1]   6. 888.888 [130.556]

7. TROUBLESHOOTING

a. Ensure you are using quality multiple shielded cables to prevent signal ingress.
b. Ensure the cables center conductors are making solid contact with the **HDD Antenna Input, Audio Output, and Video Output port**.

c. If the HDD is receiving power but no signal, make sure the video cable is securely connected between the HDD and the video source, and the video and/or audio cables are securely connected between the HDD and the modulator.

d. If the HDD is not receiving power make sure the power cable is firmly connected. Be sure the power source is properly rated to handle the HDD load especially if other equipment is being powered by that same source.

WARNING TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT TAKE THE COVER OFF. NO PART OF THE RECEIVER CAN BE REPAIRED BY THE USER. PLEASE CONSULT A QUALIFIED TECHNICIAN FOR ANY REPAIRS.

This symbol indicates "dangerous voltage" - there is the risk of an electric shock.

This symbol indicates that there are some important instructions for this particular product.

Caution: These servicing instructions are for use by qualified service personnel only. To reduce the risks of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

HOLLAND ELECTRONICS LLC
LIMITED WARRANTY

Holland ELECTRONICS LLC, warrants that the product enclosed with this Limited Warranty statement will conform to the manufacturer's specifications and be free of defects in the workmanship and material for a period of five years (5) from the date of original purchase.

WARRANTY PROCEDURE:
If the product appears to be defective, contact Holland Electronics LLC at (805) 339-9060.   We will analyze the problem and offer solutions to prevent removing the unit from service.   If the unit is to be returned for evaluation, you will be issued a Return Material Authorization (RMA) number.

Holland Electronics LLC will, at its option, repair or replace the defective unit, under warranty, without charge for parts or labor.   This repair will be subject to charges if signs of tampering or misuse are detected.   Incoming shipping costs will be the customer's responsibility.   Returns will not be accepted without an RMA number.

The warranty and remedy provided above are exclusive and in lieu of all other express warranties and unless stated herein, any statements or representations made by any other person or firm are void.   The duration of any implied warranties of merchantability or fitness for a particular purpose on this product shall be limited to the duration of the express warranty set fourth above.   Except as provided in this written warranty, Holland Electronics LLC shall not be liable for any loss, inconvenience, or damage, including direct, special, incidental, or consequential damages, resulting from the use or inability to use this product, whether resulting from breach of warranty or any other legal theory.

Some states do not allow limitations on how long an implied warranty lasts and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

To arrange for Warranty Service: Call Holland Electronics LLC (805) 339-9060