

Ktechtelecom
DVM-150E



Performance

The DVM-150E is a single rack, Professional DTV Receiver/Decoder with the capability of handling SD and HD MPEG2 4:2:0 DTV signals. Its modular design minimizes cost for the end user and allows it to be used in a wide variety of DTV applications. Seven module slots are available for end users to customize and choose the inputs and outputs that they desire, thus eliminating the extra cost and space of unwanted or unused inputs and outputs. The basic DVM-150E consists of a 1RU chassis equipped with a fan, power supply, motherboard and RS232.

RF Inputs

There are two types of receivers to choose from. The two available tuner modules are:

- 8-VSB - Tunes to any VHF/UHF channel, CH2-69
- QAM - Tunes to any CATV channel, CATV1-125
- QPSK - Tunes to L-band frequencies

Two LEDs, located on the front panel of the unit, provide the Lock Status and ATSC-PSIP detection of the RF input signal. SNR measurement is displayed on the front panel VFD as well.

Transport Stream I/O

DVB-ASI and SMPTE-310M inputs and outputs are available for users requiring MPEG2 transport stream I/O.

Video Decoding

The unit is capable of decoding MPEG2 (4:2:0) Main Profile @ High Level, Main Profile @ Main Level, Main Profile @ Low Level and Simple Profile @ Main Level. It supports all 18 ATSC formats, including 1080i, 720p, 480i and 480p video formats. Analog video options include: NTSC, S-Video, VGA/Y Pb Pr. Digital video options include: SDI/HDSDI. The unit can decode both EIA-608B and 708B standards.

Audio Decoding

Digital and analog audio outputs are available on a variety of connector types. The unit decodes both AC-3 and MPEG1 audio to Analog Left and Right. An additional module can be internally installed, to provide Secondary Audio Programming on any of the three types of connectors.

User Interface

All settings and controls can be viewed and set using the front panel's VFD screen and directional arrow keys. An RS232 option is available to save time and improve ease of use. Optional Management/SNMP and Ethernet Site Player modules are also available.

| Available Modules |
|---------------------------|
| 8-VSB/QAM Input |
| QPSK Input |
| DVB-ASI & SMPTE-310M I/O |
| GigE I/O |
| Dual GigE/ASI I/O |
| NTSC/AFD Output |
| VGA/YPbPr |
| SDI |
| HD-SDI |
| XLR Audio |
| BNC Audio |
| Terminal Strip Audio |
| BTSC 4.5 SubCarrier Audio |
| RS232 Remote Control |
| Management/SNMP |
| Secondary Audio Program |
| MPEG2 SD Encoder Module |

| Applications |
|--|
| <ul style="list-style-type: none"> • 8-VSB to NTSC/Analog L&R Converting off-air local digital broadcast to analog to carry on existing analog cable network. Benefit: Higher quality analog signal is delivered to viewers. • 8-VSB to DVB-ASI Receiving off-air local digital broadcast and inserting them into digital cable system • QPSK to DVB-ASI Receiving satellite digital broadcast and inserting them into digital cable system • Digital Video Decoding and Monitoring • NEW! Video Transcoding Simultaneously output HD and SD encoded video using SD Encoder module |

MPEG2 SD Encoder Option for the DVM-150E ®

In the past, cable operators often used transrating (rate shaping) methods to efficiently use the finite bandwidth of their cable networks. These methods have been found to work only up to 25% bit rate reduction before suffering reduced video quality¹.

Now system integrators are trying to find more efficient ways to reduce bandwidth, often using recoding techniques that are costly both in money and rack space.

Next is where the DVM-150E ® Professional DTV Receiver/Decoder excels. Using the existing DVM-150E ® platform, KTech's new SD Encoder module directory plugs into the 1RU decoder unit, adding a 4:2:0 MP@ML ISO/IED 13818-1 compliant Transport Stream output. Recoding often hurts the video quality in the instance where an external stand-alone encoder is used. In the DVM-150E's case, the decoder sends digital video to the internal encoder with 4:2:2 chromatic quality, thus preserving every bit of video color information.

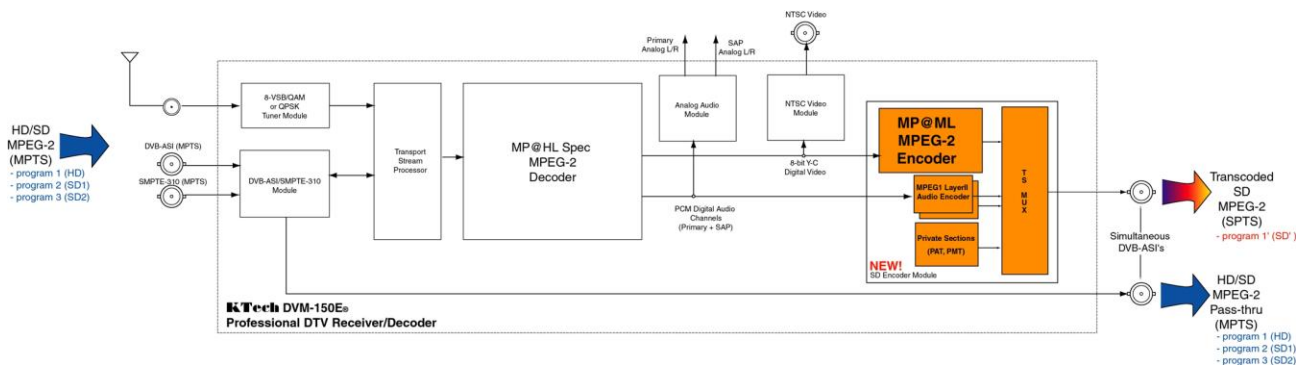
With this field upgradeable module, the DVM-150E, regardless of input format, will generate a Standard Definition video output as well as two (x2) audio streams for primary and SAP, all encapsulated

onto a MPEG2 TS. All bit rates are configurable at the click of a button in order to optimize the output video quality while still being able to squeeze out every bit of bandwidth.

Existing EIA-608 closed captioning is reinserted back into the recoded video header, providing a hassle-free video output. MPEG2 system tables that include the PAT and PMT are also muxed into the TS and are user configurable.

The DVM-150E's versatility is greatly expanded by this new MPEG2 SD encoder module. The existing DVM-150E platform can already provide a MPTS output received terrestrially when a unit is fitted with the 8-VSB tuner and a DVB-ASI/SMPTE I/O card. By simply adding the encoder module, cable operators can now simultaneously provide the same material in both HD (pass-thru) and SD using a single device, as shown in the figure below.

¹ Zou, Bill. DTV over digital cable: Reaching a larger audience. August 1, 2003. Broadcast Engineering




DVM-150E Professional DTV Receiver/Decoder



General Specifications (All specifications are preliminary and subject to change)

| | | | |
|----------------------|--------------------|----------------|---|
| AC Power | | Weight | |
| Frequency | 47-63 Hz | Net | 12 lbs |
| Voltage | 90-264 VAC | Gross | 15 lbs |
| Current | 1.2 A (Max) | | |
| Fuse | 1.5 A, 250 V | Front Panel | |
| | | Keypad | 4 Directional Arrow Keys |
| Operating Conditions | | Display | 2 lines x 20 characters VFD (Vacuum Fluorescent Display) |
| Temperature | 0° - 50°C | | |
| Altitude | 12,000 ft. | User Interface | |
| Humidity | 95% non-condensing | Local | Front Panel |
| Cooling | Blower | Remote | RS232 |
| | | | |
| Dimensions | | Rack Space | 1U |
| Height | 1.75" | | |
| Width | 19" | | |
| Depth | 18" | | |

RF Specifications

| | |
|--|---|
| <p>Part # RF 1</p> <p>8-VSB/QAM Tuner Module</p>  <p>Occupies slot #1</p> | <p>8-VSB Mode</p> <p>Tuning Range VHF/UHF CH 2 -69</p> <p>Connector 75Ω "F" type, female</p> <p>Input Sensitivity -28 dBmV to +33 dBmV</p> <p>Input Data Rate 19.392 Mbps</p> <p>Modulation Mode 8-VSB – ATSC Compliant</p> <p>Demod Gen 6TH Generation</p> <p>Adj Channel</p> <p>DTV into DTV >-33dB D/U @ -19 dBmV Desired Signal</p> <p>DTV into DTV >-33dB D/U @ -4 dBmV Desired Signal</p> <p>DTV into DTV >-20dB D/U @ +20dBmV Desired Signal</p> <p>NTSC into DTV >-40dB D/U @ -19dBmV Desired Signal</p> <p>NTSC into DTV >-35dB D/U @ -4 dBmV Desired Signal</p> <p>NTSC into DTV >-26dB D/U @ +20dBmV Desired Signal</p> <p>FP LED Status (1) Input Lock, (1) ATSC-PSIP Detected</p> <p>QAM Mode</p> <p>Tuning Range CATV 1-125</p> <p>Connector 75Ω "F" type, female</p> <p>Input Sensitivity -28 dBmV to +33 dBmV</p> <p>Input Data Rate QAM64 – 26.97035 Mbps QAM256 – 38.81070 Mbps</p> <p>Modulation Mode QAM64 – Annex B QAM256 – Annex B</p> <p>FP LED Status (1) Input Lock, (1) ATSC-PSIP Detected</p> |
|--|---|

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| | |
|--------------------------|--|
| Part # RF2 | |
| QPSK Tuner Module | |
| | |
| Occupies slot #1 | |
| | <p>QPSK Mode</p> <p>Tuning Range 950 – 2150 MHz- L-Band</p> <p>Connector 75Ω "F" type, female</p> <p>I.F. Bandwidth 27MHz/36MHz</p> <p>Modulation Type QPSK</p> <p>Sensitivity -65dBm to -25dBm</p> <p>LNB Control 13/18V, 22KHz on/off</p> <p>LNB Current 400mA</p> <p>Symbol Rate 2~45 M symbols per second</p> <p>Code Rate 1/2, 2/3, 3/4, 5/6, 7/8</p> |

Transport Stream Specifications

| | |
|----------------------------------|---|
| Part # T1 | |
| SMPTE-310M/DVB-ASI Module | |
| | |
| Occupies slot #2 | |
| | <p>SMPTE-310M</p> <p>Connectors 75Ω BNC, (1) Input, (1) Output</p> <p>Data Rate 19.392 Mbps</p> <p>DVB-ASI</p> <p>Connectors 75Ω BNC, (1) Input, (2) Outputs</p> <p>Input Data Rate Up to 50 Mbps</p> <p>Output Data Rates Input Mode – Data Rate</p> <p style="padding-left: 20px;">Passthru – up to 50 Mbps</p> <p style="padding-left: 20px;">8VSB – 19.392 Mbps</p> <p style="padding-left: 20px;">QAM64 – Pass-Thru</p> <p style="padding-left: 20px;">QAM256 – Pass-Thru</p> <p style="padding-left: 20px;">SMPTE310M – 19.392 Mbps</p> |

GigE Transport Specifications

| | |
|---------------------------------|---|
| Part # G2 | |
| DUAL GigE/ASI I/O Module | |
| | |
| Occupies slot #2 | |
| | <p>Data Rate Up to 1 Gbps</p> <p>Compliance IEEE 802.3</p> <p>Connector RJ-45 copper.</p> <p>MPEG Format MPEG-2 over IP, UDP based</p> <p style="padding-left: 20px;">Multi-cast or Uni-Cast</p> <p style="padding-left: 20px;">V2 and V3</p> <p>IGMP SPTS or MPTS</p> <p>Program Structure Dual GigE (Redundancy)</p> <p>DVB-ASI</p> <p>Connectors 75Ω BNC, (1) Input, (2) Outputs</p> <p>Input Data Rate Up to 50 Mbps</p> <p>Output Data Rates Input Mode – Data Rate</p> <p style="padding-left: 20px;">Passthru – up to 50 Mbps</p> <p style="padding-left: 20px;">8VSB – 19.392 Mbps</p> <p style="padding-left: 20px;">QAM64 – pass-thru</p> <p style="padding-left: 20px;">QAM256 – pass-thru</p> <p style="padding-left: 20px;">SMPTE310M – 19.392 Mbps</p> |

RS232 (Included) RJ45 (Optional) Specifications

| | |
|--------------------------|--|
| Part # M2 | |
| RS232/RJ45 Module | |
| | |
| | <p>Baud Rate 19,200, 8 data bits, no parity, 1 stop bit</p> <p>Connector DSUB 9, female</p> <p>Download Capability Firmware Upgrades</p> <p>User Controls All Front Panel functions</p> <p>Stream Information Video Bit Rate, Audio Bit Rate, Aspect Ratio, Native Format, SNR, BER</p> <p>Display Windows HyperTerminal</p> <p>Software (Optional)</p> <p>RJ45 Ethernet</p> |

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Management/SNMP Specifications (Optional)

| Management/SNMP | | Part # M4 |
|----------------------------|---|-----------|
| | | |
| Baud Rate | 57,600, 8 data bits, no parity, 1 stop bit | |
| Connector | DSUB 9, female | |
| Download Capability | Firmware Upgrades | |
| User Controls | All Front Panel functions | |
| Stream Information | Video Bitrate, Audio Bitrate, Aspect Ratio, Native Format, SNR, BER | |
| Display | Windows HyperTerminal | |
| Software | Ver 2 | |
| SNMP | RJ45 Ethernet | |



Video Decoder Specifications

| | |
|----------------------------|--------------------------------|
| Up/Down Conversion | 1080i, 720p, 480i (NTSC), 480p |
| Video Formats | 18 ATSC Formats |
| Decoder Bit Rate | 1.5 - 45 Mbps |
| Video Outputs | User Selectable |
| Video Input | User Selectable |
| Compatibility | MPEG2 (4:2:0) MP@HL |
| Closed Captioning Standard | EIA-608B, EIA-708B |

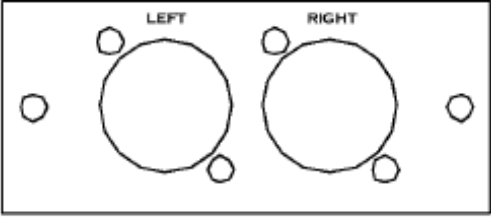
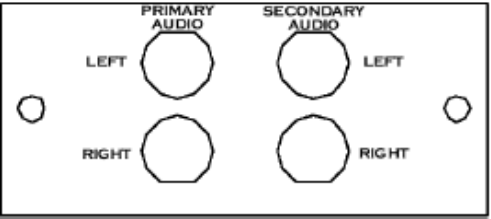
Analog Video Specifications

| | | |
|--|--|---|
| <p>Part # VV1</p> <p>AFD Ready NTSC Output</p> <p>Occupies slot #7</p> | | <p>AFD NTSC (Composite Video)</p> <p>Connector 75Ω BNC, (1) Output</p> <p>Output Level 1 Vp-p</p> <p>Video Format 480i</p> <p>AFD Support CEA-CEB16, TS-101-154</p> <p>VBI Support SCTE-127, AMOL, TV Guide, Closed Captioning Line 21</p> |
| <p>Part # VV7</p> <p>AFD Ready SDI Output</p> <p>Occupies slot #7</p> | | <p>AFD SDI</p> <p>Connector 75Ω BNC, (1) Output</p> <p>Output Level 800 mVp-p ± 10%</p> <p>Video Format 480i</p> <p>Standard SMPTE-259M</p> <p>Data Rate 270 Mbps</p> <p>Embedded Audio SMPTE-272M</p> <p>AFD Support CEA-CEB16, TS-101-154</p> <p>VBI Support SCTE-127, AMOL, TV Guide, Closed Captions Line 21</p> |
| <p>Part # V1</p> <p>NTSC Video Module</p> <p>Occupies slot #3</p> | | <p>NTSC (Composite Video)</p> <p>Connector 75Ω BNC, (1) Output</p> <p>Output Level 1 Vp-p</p> <p>VBI EIA-608 CC Line 21</p> <p>Video Format 480i</p> |
| <p>Part # V2</p> <p>VGA/YPbPr Module</p> <p>Occupies slot #6</p> | | <p>VGA/ Y Pb Pr</p> <p>Connectors (3) 75Ω BNC's (1) SVGA 15 pin socket</p> <p>Output Level 1000 mV ± 10 mV</p> <p>Video Format 1080i, 720p, 480p</p> |

Digital Video Specifications

| | |
|---|---|
| <p style="text-align: right;">Part # V3</p> <p style="text-align: center;">SDI Module</p>  <p style="text-align: center;">Occupies slot #5</p> | <p>SDI</p> <p>Connector 75Ω BNC, (2) Output</p> <p>Output Level 800 mVp-p ± 10%</p> <p>Video Format 480i</p> <p>Standard SMPTE-259M</p> <p>Data Rate 270 Mbps</p> <p>Embedded Audio SMPTE-272M</p> |
| <p style="text-align: right;">Part # V5</p> <p style="text-align: center;">HDSDI Module</p>  <p style="text-align: center;">Occupies slot #7</p> | <p>HDSDI</p> <p>Connector 75Ω BNC, (2) Output</p> <p>Output Level 800 mVp-p ± 10%</p> <p>Video Format 1080i, 720p, 480p</p> <p>Standard SMPTE-292M</p> <p>Data Rate 1.485 Gbps</p> |

Analog Audio Specifications

| | |
|---|--|
| <p style="text-align: right;">Part # A1</p> <p style="text-align: center;">XLR Audio Module</p>  <p style="text-align: center;">Occupies slot #4</p> | <p>Outputs (1) Balanced Audio Left (1) Balanced Audio Right</p> <p>Connectors 600Ω XLR male</p> <p>Audio Program Primary or Secondary</p> |
| <p style="text-align: right;">Part # A2</p> <p style="text-align: center;">BNC Audio Module</p>  <p style="text-align: center;">Occupies slot #4</p> | <p>Outputs (1) Primary Audio Left (1) Primary Audio Right (1) Secondary Audio Left (1) Secondary Audio Right</p> <p>Connectors (4) BNC's</p> <p>Audio Program Primary and Secondary (with SAP option)</p> |

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| Part # A4 | Outputs | <table border="1"> <thead> <tr> <th>PIN</th> <th>SIGNAL</th> </tr> </thead> <tbody> <tr><td>1</td><td>Primary Balanced Left</td></tr> <tr><td>2</td><td>Primary Balanced Left</td></tr> <tr><td>3</td><td>GND</td></tr> <tr><td>4</td><td>Primary Balanced Right</td></tr> <tr><td>5</td><td>Primary Balanced Right</td></tr> <tr><td>6</td><td>GND</td></tr> <tr><td>7</td><td>Secondary Balanced Left – w/SAP Option</td></tr> <tr><td>8</td><td>Secondary Balanced Left – w/SAP Option</td></tr> <tr><td>9</td><td>GND</td></tr> <tr><td>10</td><td>Secondary Balanced Right – w/SAP Option</td></tr> <tr><td>11</td><td>Secondary Balanced Right – w/SAP Option</td></tr> <tr><td>12</td><td>GND</td></tr> </tbody> </table> | PIN | SIGNAL | 1 | Primary Balanced Left | 2 | Primary Balanced Left | 3 | GND | 4 | Primary Balanced Right | 5 | Primary Balanced Right | 6 | GND | 7 | Secondary Balanced Left – w/SAP Option | 8 | Secondary Balanced Left – w/SAP Option | 9 | GND | 10 | Secondary Balanced Right – w/SAP Option | 11 | Secondary Balanced Right – w/SAP Option | 12 | GND |
|---|---|--|-----|--------|---|-----------------------|---|-----------------------|---|-----|---|------------------------|---|------------------------|---|-----|---|--|---|--|---|-----|----|---|----|---|----|-----|
| PIN | SIGNAL | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Primary Balanced Left | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Primary Balanced Left | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | GND | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Primary Balanced Right | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Primary Balanced Right | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | GND | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Secondary Balanced Left – w/SAP Option | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | Secondary Balanced Left – w/SAP Option | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | GND | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Secondary Balanced Right – w/SAP Option | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | Secondary Balanced Right – w/SAP Option | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | GND | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Terminal Strip Audio Module</p> | | <p>Connector</p> <p>12 pin Phoenix Terminal Strip</p> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Occupies slot #4</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Digital Audio Specifications

| | |
|---------------------------------|--|
| Part # A6 | <p>Outputs</p> <p>(1) AC-3 Digital Audio Output</p> <p>Connectors</p> <p>600Ω XLR male</p> <p>Audio Program</p> <p>Primary</p> <p>Output Level</p> <p>0.5 Vp-p ± 20%</p> <p>Connectors</p> <p>(2) BNC's Analog Audio</p> <p>(1) Primary Audio Left</p> <p>(1) Primary Audio Right</p> |
| <p>AC-3 Audio Module</p> | |
| <p>Occupies slot #4</p> | |

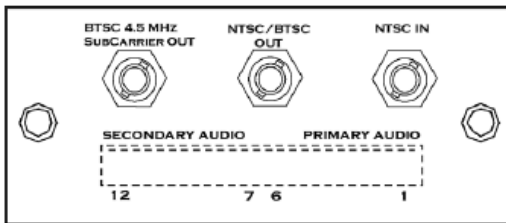
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BTSC 4.5 MHz Subcarrier Specifications

Preliminary - Available Sept. 08

Part # B2

BTSC Audio Module



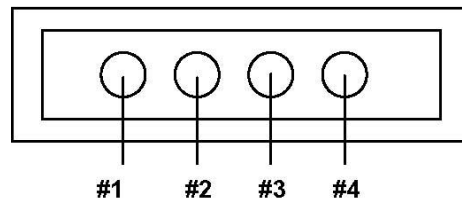
Occupies slot #4

| | |
|----------------------|---|
| Outputs | (1) AC-3 Digital Audio Output |
| Connectors | 600Ω XLR male |
| Audio Program | Primary |
| Output Level | 0.5 Vp-p ± 20% |
| Connectors | (2) BNC's Analog Audio |
| | (1) Primary Audio Left |
| | (1) Primary Audio Right |
| Outputs | BNC 1 NTSC Input |
| | BNC 2 NTSC + BTSC Output |
| | BNC 3 BTSC 4.5MHZ Subcarrier Out |
| PIN | SIGNAL |
| 1 | Primary Balanced Left |
| 2 | Primary Balanced Left |
| 3 | GND |
| 4 | Primary Balanced Right |
| 5 | Primary Balanced Right |
| 6 | GND |
| 7 | Secondary Balanced Left – w/SAP Option |
| 8 | Secondary Balanced Left – w/SAP Option |
| 9 | GND |
| 10 | Secondary Balanced Right – w/SAP Option |
| 11 | Secondary Balanced Right – w/SAP Option |
| 12 | GND |
| Connector | 12 pin Phoenix Terminal Strip, 3x BNC |

Contact Relay

Definition of the 4-pin barrier strip:

Part # M1



The truth table for the terminals is shown below (default):


| Decoding Status | Pin #1 & #4 |
|-----------------|-------------|
| Bad | Open |
| Good | Closed |

Note: It is possible to change the polarity of the relay contact using the front panel control. A firmware upgrade may be needed.

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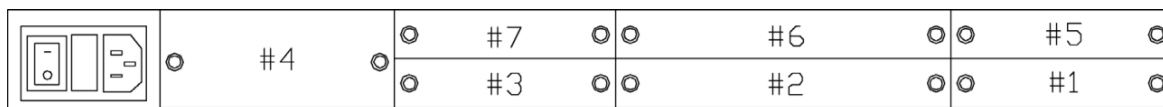


MPEG2 SD Encoder Specifications

| | |
|---|---|
| <p style="text-align: center;">Part # SD1</p> <p style="text-align: center;">SD Encoder Module</p>  <p style="text-align: center;">Occupies slot #6</p> | <p>Video</p> <p>Coding Standard ISO/IEC 1381-2 (MPEG-2 MP@ML)</p> <p>Encode Size NTSC 720x480@29.97/30 Hz</p> <p>Video Rate 2 to 15 Mbps</p> <p>Picture Structure Field/Frame</p> <p>Format 4:2:0</p> <p>Motion Estimation +/- 300 pixel</p> <p>Rate Control CBR/VBR</p> <p>Ancillary Data Closed Captioning (EIA-608) Line 21</p> <p>Audio (Primary)</p> <p>Coding Standard ISO/IEC 11172-3 (Layer II)</p> <p>Sampling Rate 32, 44.1, 48 kHz</p> <p>Audio Rate Max 384 kbps</p> <p>Channels 2 (Left/Right)</p> <p>Audio (Secondary)</p> <p>Coding Standard ISO/IEC-11172-3 (Layer II)</p> <p>Sampling Rate 32, 44.1, 48 kHz</p> <p>Audio Rate Max 384 kbps</p> <p>Channels 2 (Left/Right)</p> <p>Transport</p> <p>Standard ISO/IEC 13818-1 (Transport Stream)</p> <p>Output Format 188 byte</p> <p>Bit Rate 2 to 60 Mbps</p> <p>Lip Sync Yes</p> <p>Interface DVB-ASI (BNC 75Ω) x 2</p> <p>GigE</p> <p>Data Rate Up to 1 Gbps.</p> <p>Compliance IEEE 802.3z draft D5.0-1000BASE-SX</p> <p>Connector Supports copper RJ45.</p> <p>MPEG format MPEG-2 over IP, UDP based</p> <p>Program Capacity (max) 1 program @ 2~15 Mbps.</p> <p>Configuration Parameters IP address, Subnet mask, and UDP port number</p> <p>Program Structure SPTS</p> <p>Control Front panel</p> |
|---|---|

Professional DTV Receiver/Decoder

Rear Panel



| Position and Signal | Option, Description and Part # |
|------------------------------|--|
| #1 TUNER | <input type="radio"/> A (1) 8-VSB/QAM IN (RF1) |
| | <input type="radio"/> B (1) QPSK IN (RF2) |
| | <input type="radio"/> N NONE |
| #2 MPEG2 | <input type="radio"/> A (1) SMPTE IN, (1) SMPTE OUT, (1) DVB-ASI IN, (2) DVB-ASI OUT (T1) |
| | <input type="radio"/> B Dual GigE I/O, (1) ASI IN, (1) ASI OUT (G2) |
| | <input type="radio"/> CR Contact Relay (M1) |
| | <input type="radio"/> N NONE |
| #3 VIDEO | <input type="radio"/> A (1) NTSC OUT (V1) |
| | <input type="radio"/> N NONE |
| #4 AUDIO | <input type="radio"/> A (2) XLR (Balanced) -Primary Audio (A1) |
| | <input type="radio"/> B (4) BNC (Unbalanced) - without SAP (A2) |
| | <input type="radio"/> C (4) BNC (Unbalanced) - with SAP (A3) |
| | <input type="radio"/> D Terminal Strip (Balanced) - without SAP (A4) |
| | <input type="radio"/> E Terminal Strip (Balanced) - with SAP (A5) |
| | <input type="radio"/> F Digital AC-3, (1) XLR (A6) |
| | <input type="radio"/> G BTSC (4.5 MHz Sub Carrier) (B1) |
| | <input type="radio"/> H BTSC (4.5) MHz Sub Carrier - with SAP (B2) |
| #5 VIDEO | <input type="radio"/> A (2) SDI OUT - embedded audio without SAP (V3) |
| | <input type="radio"/> B (2) SDI OUT - embedded audio with SAP (V4) |
| | <input type="radio"/> E Ethernet/Site Player (M2) |
| | <input type="radio"/> M Management (M4) |
| | <input type="radio"/> CR Contact Relay (M1) |
| #6 VIDEO | <input type="radio"/> N NONE |
| | <input type="radio"/> A VGA/YPbPr Out (V2) |
| | <input type="radio"/> B MPEG2 SD Encoder w/ DVB-ASI and GigE Out (SD1) |
| | <input type="radio"/> CR Contact Relay (M1) |
| #7 VIDEO | <input type="radio"/> N NONE |
| | <input type="radio"/> A (2) NTSC/AFD OUT (VV1) |
| | <input type="radio"/> B (2) HDSDI OUT - embedded audio (V5) |
| | <input type="radio"/> C (2) HDSDI OUT - embedded audio - with SAP (V6) |
| | <input type="radio"/> E Ethernet/Site Player (M2) |
| | <input type="radio"/> S (1) NTSC/AFD OUT - (1) SDI/AFD OUT - embedded audio (VV7) |
| | <input type="radio"/> CR Contact Relay (M1) |
| <input type="radio"/> N NONE | |

Ordering Information

| Part Number | Description |
|-------------|-----------------------------------|
| DVM-150E | Professional DTV Receiver/Decoder |