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Find the *Stradis HDM500(e)* at our website: ***Click HERE***

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HDM500(e)(x)

High-Definition MPEG-2 Decoders

User Guide

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Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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This is the list of patents covered by the MPEG-2 Patent Portfolio License as of September 30, 1998.

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Features

With the HDM500(e)(x) High-Definition MPEG-2 Decoder, your application can offer:

- Continuous, seamless back-to-back playback of multiple MPEG streams (which may be in different formats: Transport, Program, System or Elementary streams) in all popular ATSC-compliant formats including 1920x1080I, 1280x720P, 720x576P, 720x576I, 720x480P and 720x480I
- High-quality conversion of source video to selected display format. Lock the output to one format and all outputs will be in that format, regardless of the source format.
- Frame-accurate, synchronized playback across multiple decoders
- High-speed, random access and display of any I-Frame in an MPEG file for variable speed reverse and forward play, plus seamless switching to any I-frame of another stream
- PCR-based clock recovery for 24/7/365 real-time stream reception for continuous decoding of streams received from any common delivery mechanism, including satellite, LAN, and ATM networks
- Complete control over all HDM500(e)(x) functions via the API for Microsoft Windows NT, Windows 2000, and Windows XP. Applications can access the API via a C interface or by using the *__stdcall* calling convention
- API compatibility with all Stradis SDM series standard-definition MPEG Decoders

Additional features for professional MPEG decoding and output:

- Still picture display from bit-map files with transition effects and simultaneous audio playback for “slide shows”
- True-color graphics over video or still pictures with keying or indexed color with blending
- Digital control of video saturation, brightness, contrast, and gamma
- Genlock (external framelock synchronization) input
- Hardware Audio/Video synchronization
- High-Definition Serial Digital Interface (SMPTE 292M) video output with 12 channels of embedded audio
- 6 AES3 digital audio outputs, may be used as 12 discreet audio channels or 4 may be used as IEC 61937/SMPTE 337M-2000 digital audio outputs to Dolby Digital® (AC-3) or MPEG Multichannel® audio decoders
- One pair of unbalanced analog audio outputs for monitoring
- Machine Control via remote connector (9-Pin, RS-422A) can be configured as either “Controller” or “Device”
- Linear Time Code (LTC) output based on stream time codes or synthesized by the API

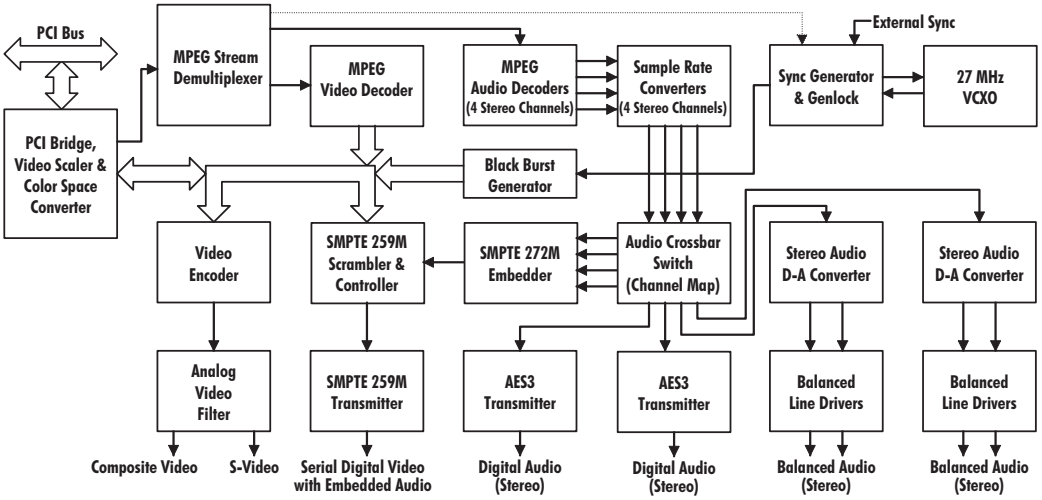
- Letterbox and pan-and-scan options for displaying 16:9 images on a 4:3 display
- Support for extraction of EIA 608 / EIA 708 closed captions with captions inserted into HD-SDI in accordance with SMPTE 334M
- API provides three interface levels: RateBuffer, Demux, and File Interface
- DirectShow® filters for compressed data input to the Stradis decoder
- SMPTE 302M-2002 support for uncompressed digital audio in the Transport, Program, and System streams
- Wave file playback and raw PCM audio playback
- Audio “voice-over” capability allows the application to replace the audio from the main multiplexed stream with another audio stream
- Virtual streams based on a single, repeated I-Frame that can be seamlessly played back-to-back with other MPEG streams
- Decryption function for file-based decryption using Stradis-supplied or user-definable algorithms
- Video capture interface for capturing decoded video output and placing it into PC memory
- Video image can be displayed on the computer’s VGA monitor in lower resolution to conserve PCI-Express bus bandwidth

Stradis HDM500(e)(x) Decoder Operation Highlights

- All decoding takes place in hardware
- 12-bit Video D/A, 2x oversampled
- Decodes MPEG audio (up to eight output channels) in parallel with MPEG video
- Supports SMPTE 302M-2002 uncompressed audio (up to 12 channels)
- IEC 61937/SMPTE 337M-2000 compressed digital audio output of AC-3 – ATSC A/52 on up to four AES3 outputs
- VCXO with clock recovery for streams received by satellite, LAN, ATM or any transport delivery mechanism
- Serial Digital Interface (SMPTE 292M) video output with up to 12 channels of embedded audio, plus DVI and analog RGB (or YpbPr) outputs

HDM500(e) Block Diagram

Commentaire [VTS1] : Ce diagram n'est pas correct. Il est pour les cartes SDM. Mais on n'en n'a pas d'autre. Doit-on continuer a le laisser ici ou pas ?



Specifications

MPEG Streams	ISO/IEC 13818 and ISO/IEC 11172 compliant. Accepts MPEG-2 Elementary, Packetized Elementary (PES), Transport and Program Streams and MPEG-1 System Streams.
MPEG Video	Decodes MP@HL (4:2:0) up to 80 Mbps.
Digital Bitstream Input	Through the PCI bus using bus mastering and burst transfer mode.
Digital Video Outputs	SMPTE 292M digital video output, with embedded audio. DVI (Digital Visual Interface) output via DVI-I Digital/Analog Connector
Analog Video Outputs	SMPTE 253M, 274M, 296M. RGB with sync-on-green, RGB with sync-on-all, YPbPr with sync-on-Y, YPbPr with sync-on-all, via DVI-I Digital/Analog Connector
Digital Audio Output	6 AES-3 outputs, 75 ohms, unbalanced (SMPTE 276M-1995), via DB15-HD connector, 4 may be configured as IEC 61937/SMPTE 337M-2000 Digital audio outputs
Analog Audio Output	1 pair unbalanced audio, via DB15-HD connector or MPC (CD-ROM style) header connector.
LTC	2V P-P, 1K ohm, BNC connector with optional SAC014
Machine Control	9-Pin, RS-422A can be configured as either “Controller” or “Device”
Genlock	Locks to the H-sync and V-sync, allows variable delay about the H-sync
On-Screen Display	Up to 24 bits per pixel or indexed color with blending.
Host System Requirements	Pentium-based PC with an available PCI-Express short card slot running Windows 2000, or greater, with a VGA display adapter supporting Microsoft® Direct Draw mode. Disk transfer rate may limit the maximum sustained MPEG data rate achievable.
Power Requirements HDM500(e)	3.3v (5 W typical), 5v (1.6 W typical), 12v (1.6 W typical), -12v (0.2 W typical)
Power Requirements HDM500ex	3.3v (7.6 W typical), 12v (2.64 W typical)
Size	Standard PCI-Express short card, 6.875 in. (174.63 mm) by 4.2 in. (106.68 mm), less connectors.
Regulatory Approvals	FCC Part 15, Class A. CISPR 22/EN55022, Class A. CISPR 22/EN55024 (98)

Accessories and Cables

SAC011	Unbalanced audio bracket
SAC012	Sync daisy chain cable
SAC014	Bracket with DB9 for RS422 Machine Control and BNC connector for LTC
SAC015	Audio Cable (DB15 to 6 BNCs for Digital Audio)
SAC017	PC bracket with 2 BNC connectors for sync input
SAC018	DVI-I to VGA Adapter
SAC019	Cable: DVI-A to 5 BNC 2 Meter
SAC020	DVI-I to DVI-D and VGA "Y" Adapter
SAC021	Audio Cable - for connecting a HDM500(e) HD Decoder to a sound card (60 cm)
SAC024	HDMI male to DVI male cable, 2 meter

See http://www.stradis.com/hdaccessories.html for more information



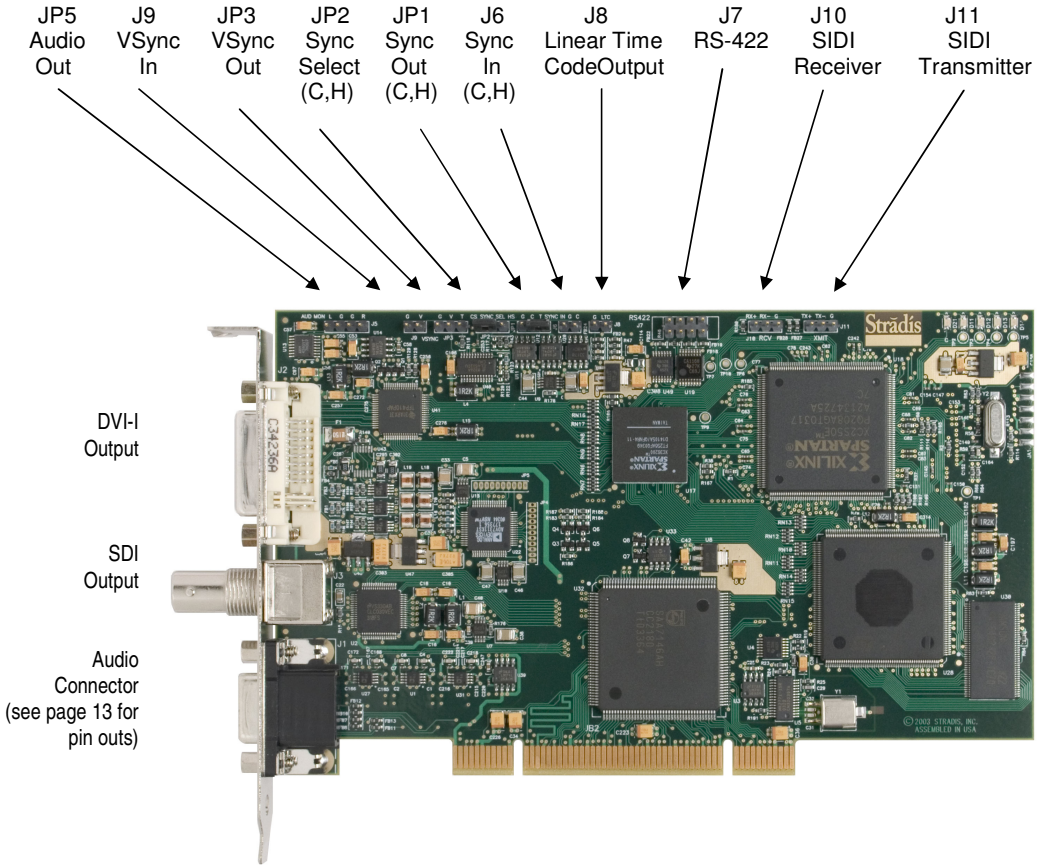
CAUTION

Observe all ESD precautions. Failure to do so could result in damage to the equipment.

Hardware Installation

1. Do not remove card from anti-static bag until you are ready to install it.
2. Turn off the power to the computer and any device connected to it such as a monitor, powered speakers, scanner, etc. Disconnect the power cord from the wall or uninterruptible power supply.
3. Touch a metal surface on the computer to ground yourself and to discharge any static electricity.
4. Remove the computer's cover.
5. Locate an unused PCI expansion slot.
6. Remove the metal cover from the back of the computer adjacent to the slot to be used. Do not lose the screw.
7. Holding the Stradis HDM500(e)(x) Card by the metal bracket, align it with the PCI slot and press it down into the connector. Avoid touching the board's edge connector. The card must be completely seated into the connector.
10. Secure the Decoder Card into the expansion slot by replacing the screw removed in step 6.
11. Replace the computer's cover and reconnect the power cables.
12. Proceed to "Installing the Device Drivers."

Back Panel and Onboard Connectors



JP2 is used to select composite vs. H sync. If JP2 is selected to composite then JP1 and JP6 are used for composite sync out and composite sync in, respectively. Otherwise, JP1 and JP6 are used for H sync out and H sync in, respectively. All the sync pairs work the same with the terminators. For example, in composite mode, JP1 and J6 are used for sync-in or sync pass-through. JP1 can switch a 75-ohm terminator in or out. If you have multiple boards in one PC chassis that you wish to genlock to an outside sync source, set JP1 to Hi-Z by removing the jumper factory installed between “C” and “T” on the first board. (You may wish to leave the jumper plugged into “T” only so that it will be available for future use.) Using a SAC012 "Sync daisy chain cable" plugged into JP1 (“G” is Ground & “C” is Sync), you can then feed sync to the subsequent boards, J6. Leave JP1 set to 75 Ohms on the last board.

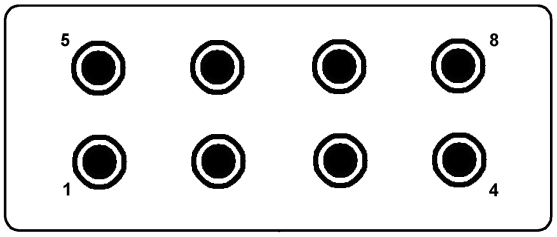
J5 can be used to feed audio into a PC sound card. It is an unbalanced output.

J7 is for RS-422 machine control. Connect it to the Stradis SAC014 or your own connector. To use the HDM500(e)(x) as a “Device” install the cable with the red (pin 1) line to the right side of the board. To use the HDM500(e)(x) as a “Controller” install the cable with the red (pin 1) line to the left.

J8 is the Linear Time Code output. Use a Stradis SAC014 or your own connector. **Important:** ground is to the left.

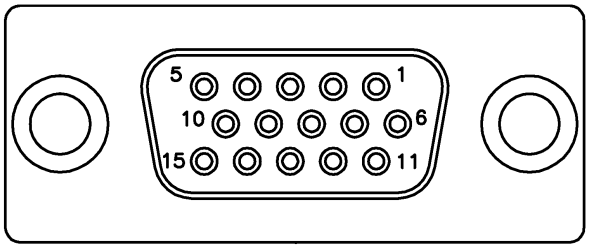
J10 and J11 are the transmitter and receiver components of the Stradis InterDevice Interface (SIDI) and can be used to sync boards together using a proprietary standard. Future support will be added to cards to communicate with each other for synchronization class to run between cards, and over several chassis.

RS422 Connector



PIN 1	Ground
PIN 2	RCV -
PIN 3	XMT +
PIN 4	Ground
PIN 5	Ground
PIN 6	RCV +
PIN 7	XMT -
PIN 8	Ground

Audio Connector (DB15-HD)



PIN 1	Digital Audio Output 1
PIN 2	Digital Audio Output 3
PIN 3	Digital Audio Output 5
PIN 4	No connection
PIN 5	Analog Audio Output Right
PIN 6	Digital Ground
PIN 7	Digital Ground
PIN 8	Digital Ground
PIN 9	No connection
PIN 10	Analog Ground
PIN 11	Digital Audio Output 2
PIN 12	Digital Audio Output 4
PIN 13	Digital Audio Output 6
PIN 14	No connection
PIN 15	Analog Audio Output Left

Installing the Device Drivers and the Stradis MPEG-2 Decoder Application

The Stradis MPEG-2 File Player Application (SMPEGDEC.EXE) is provided for testing and evaluation purposes only. If your Stradis decoder is part of a third-party system, follow the installation instructions provided by your system provider. DO NOT FOLLOW THESE INSTRUCTIONS. Doing so may render the third-party software inoperative.

1. Stradis Decoder Drivers are available at our website: http://www.stradis.com. (Please note that the HDM500e requires version 1.68 or later; and HDM500ex requires version 1.72a ot later.)
2. Download the appropriate driver installers.
3. It is strongly recommended for correct installation of the hardware and associated driver, that you reboot the computer and run no other program before using the setup program.
4. Access Device Manager by right clicking on My Computer, go down the context menu to Properties, and then select the Hardware tab. Click the “Driver Signature” button. You must set “File Signature Verification” to either “Warn” or “Ignore.”
5. Run the installer program.
6. Enter the following install password if prompted. The password is case-sensitive: mpeg4u
7. Follow the instructions on the screen to complete the installation.
8. If you are installing this software release on a system that had a Stradis device driver version 0.95 or earlier installed, the installation program will ask you to manually remove it using Device Manager. Expand the “Sound and Video Controller” section, select “Stradis Professional MPEG-2 Decoder,” and right click and select “Uninstall.”

Note: If you are asked by the installation software to remove an old driver, it is very important that you do so before rebooting. Not doing so could cause the installation to become confused and will require manually removing a number of files.

9. Reboot the computer. Windows “Plug and Play” will now load the drivers automatically. If you set “Driver Signature” to “Warn” you will be warned that Microsoft has not digitally signed the Stradis Driver. Click “OK” to complete the installation.
10. Proceed to SMpegDec User Guide.

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Stradis may terminate this Agreement and the License granted hereunder immediately without notice if: (a) Licensee fails to comply with any term or condition of this Agreement or (b) Licensee shall become insolvent or shall make an assignment for the benefit of its creditors or there shall be filed by or against Licensee any bankruptcy, receivership, reorganization, or other like proceeding under any present or future debtor relief law. No portion of the fees paid to Stradis for Software shall be returnable or refundable upon termination of this Agreement, whether such termination is by Licensee or by Stradis. Upon any termination of this Agreement, Licensee must immediately cease all use of the Software and immediately destroy all complete and partial copies of the Software, including all backup copies. Licensee shall certify to Stradis in writing that it has complied with the preceding sentence.

EXPORT RESTRICTIONS

Licensee acknowledges and agrees that the Software is subject to restrictions and controls imposed by the Export Administration Act and the Export Administration Regulations (the **"Acts"**). Licensee agrees and certifies that neither the Software nor any direct product thereof is being or will be used for any purpose prohibited by the Acts. Licensee agrees and certifies that Licensee is not a citizen or permanent resident of Cuba, Iran, Iraq, North Korea, Libya, Sudan or Syria.

U.S. GOVERNMENT

The Software is a "commercial item," as that term is defined at 48 C.F.R. 2.101 (OCT 1995), consisting of "commercial computer software" and "commercial computer software documentation," as such terms are used in 48 C.F.R. 12.212 (SEPT 1995) and the Department of Defense Federal Acquisition Regulations Sections 252.227-7014 (a) (1), (5). Consistent with 48 C.F.R. 12.212 and 48 C.F.R. 227-7202-1 through 227-7202-4 (JUNE 1995), all U.S. Government End Users acquire the Software (or Licensed

Product) with only those rights set forth herein. Stradis Inc., Stradis, Inc., 1800 Century Blvd NE Suite 1225, Atlanta, GA 30345-3218 U.S.A..

GENERAL PROVISIONS

Assignment. Licensee may not assign or transfer its rights and obligations under this Agreement without registration with Stradis and, unless the transfer is registered with Stradis, any purported assignment or transfer shall be null and void.

No Waiver. Any failure by either party to detect, protest, or remedy any breach of this Agreement shall not constitute a waiver or impairment of any such term or condition, or the right of such party at any time to avail itself of such remedies as it may have for any breach or breaches of such term or condition. A waiver may only occur pursuant to the prior written express permission of an authorized officer of the other party.

Severability. If any provision hereof is declared invalid by a court of competent jurisdiction, such provision shall be ineffective only to the extent of such invalidity, so that the remainder of that provision and all remaining provisions of this Agreement will continue in full force and effect.

Headings. Headings used in this Agreement are for convenience only and shall not be considered in construing or interpreting this Agreement.

Governing Law. The validity and performance of this Agreement shall be governed by Georgia law (without reference to choice of law principles), except as to copyright and trademark matters, which are covered by federal laws. This Agreement is deemed entered into at Atlanta, Georgia, and shall be construed as to its fair meaning and not strictly for or against either party. This Agreement does not limit any rights that Stradis may have under trade secret, copyright, patent, or other laws. The parties expressly exclude all application of the United Nations Convention on the International Sale of Goods to this Agreement. In any suit, arbitration, mediation, or other proceeding to enforce any right or remedy under this Agreement or to interpret any provision of this Agreement, the prevailing party will be entitled to recover its costs, including reasonable attorneys' fees, and all costs and fees incurred on appeal or in a bankruptcy or similar action.

Entire Agreement. This Agreement constitutes the final, complete, and exclusive statement of the agreement between the parties in respect of the subject matter hereof. This Agreement shall govern any services related to the Software, unless such services or content are subject to a separate written agreement between Licensee and Stradis. However, the limitations of liability and disclaimer of warranties in this Agreement shall apply to Stradis with respect to such services except to the extent provided otherwise in a separate written agreement approved by Stradis between Licensee and Stradis.

Limited Warranty on Hardware Products

What is covered:

Any defect in materials or workmanship.

For how long:

One year.

What we will do:

If your Stradis product is defective and returned within one year of the date of purchase, we will repair it or, at our option, replace it at no charge to you.

If we repair your Stradis product, we may use new or reconditioned replacement parts. If we choose to replace your Stradis product, we may replace it with a new or reconditioned one of the same or similar design. The repair or replacement will be warranted for either (a) 90 days or (b) the remainder of the original one-year warranty period, whichever is longer.

Limitations:

Stradis shall not be responsible for special, incidental, indirect or consequential damages resulting from any breach of warranty, or under any other legal theory, including but not limited to, loss of profits, downtime, goodwill, damage to or replacement of equipment and property, and any cost of recovering, reprogramming or reproducing any program or data stored in or used with Stradis products.

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

What we ask you to do:

To obtain warranty service for your Stradis product, call our technical support department at +1-404-320-0110, or send E-mail to support@stradis.com and we will issue a Return Material Authorization number (RMA#). Use the original packaging materials, or similar, to return the product.

Ship the product, prepaid to:

Stradis, Inc.
Attention: Warranty Repair
RMA# *(Must be on package)*
2200 Century Pkway NE Suite 900
Atlanta, GA 30345-3150 U.S.A.

Please be sure to include your name, company, shipping address, phone number, and a description of the problem. After repairing or replacing your Stradis product, we will ship it to you via a surface carrier of our choice at no cost to you. If you wish it shipped via a specific carrier at your cost, you must arrange it when you obtain the RMA#.

Repair or replacement of your Stradis product is your exclusive remedy.

What this warranty does not cover:

This warranty does not cover defects resulting from accidents, damage while in transit to our service location, alterations, unauthorized repair, failure to follow instructions, misuse, fire, flood, acts of God, or use in those countries where such use violates Part 779 of the Export Administration Regulations of the United States Department of Commerce.

If your Stradis product is not covered by our warranty, e-mail us at support@stradis.com or call us at +1-404-320-0110 for advice about whether we will repair your Stradis product and for other repair information, including charges. Stradis, in its sole discretion, may replace rather than repair your Stradis product with a new or reconditioned one of the same or similar design. The repair or replacement will be warranted for 90 days.

The limited warranties and remedies set forth above are exclusive and in lieu of all other warranties, whether oral or written, expressed or implied. Stradis specifically disclaims any and all implied warranties, including, without limitation, the warranties of merchantability and fitness for a particular purpose.

State Law Rights:

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

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