

Accelerated Multichannel Receiver Decoder

MRD 8000



Sencore’s latest receiver decoder utilizes a new hybrid GPU platform to create a more cost-effective solution for a multichannel, multiformat, professional receiver decoder, and one that is primed for future AI enhancements. Flexibility is paramount in the broadcast market and the MRD 8000 is able to deliver. Decode HEVC/H.264/MPEG-2 up to 4K/UHD resolutions with support for 4:2:2 and 10-bit video, including HDR and WCG.

The MRD 8000 supports up to 8 services (16 channels) of audio processing for MPEG-1/2, AAC and Dolby AC3/AC3+/AC-4/Dolby-E/ATMOS. Multichannel decode allows the MRD 8000 to process up to 4x HD services or 1x UHD service in a 1RU chassis. Output options include 4x3G-SDI (two sample interleave & four quadrant), 12G-SDI, and SMPTE 2110 via 25GB fiber. The MRD 8000 maintains a long tradition of ease of use, with a straight-forward user interface and web APIs, and it is backed by Sencore’s legendary reliability and best-in-class staff of ProCare support engineers.

Key Features

- Multichannel decode of 4K/UHD and HD/SD streams
 - Up to 4x HD/SD streams or 1x 4K/UHD streams per 1RU
- Multiformat support to decode any stream
 - HEVC/H.264/MPEG-2 up to 4:2:2 10-bit with HDR/WCG signaling
 - Up to 16 channels of audio processing for MPEG1/2, AAC and Dolby AC3/AC3+/AC-4/Dolby-E/ATMOS
- RTP/UDP MPEG/IP with FEC or hitless switching, satellite, Zixi, SRT, HLS, RTMP, ASI and file-based inputs
- SDI, IP, ASI output options
 - 12G-SDI, 4x3G-SDI and 3G-SDI
 - SMPTE 2110 25GB fiber

Applications

- Primary distribution with multichannel decode of 4x HD/SD or 1x 4K/UHD services per 1RU
- Contribution decode of 4:2:2 10-bit 4K/UHD with HDR/WCG
- Reference decoder for lab environments to decode and output in a variety of codecs and formats

SPECIFICATIONS

DECODER

MRD 80100

Video Decoding Features (4K/UHD/HD/SD 4:2:0) Channels
 1x HD/SD 4:2:0 decode included
 MRD 80805 license adds 1x HD/SD 4:2:0 decode (max 3x for a total of 4)
 4K/UHD decode requires and takes place of and 4x HD/SD decodes
 MRD 80806 license is bundle of 3x MRD 80805

Max Video Profile/Levels:
 MPEG-2 422P@HL
 H.264 up to Hi422P@L4.2
 HEVC M422-10P@HT up to L5.1
 *4:2:0 and 8-bit decode included
 *4:2:2 and/or 10-bit decode requires MRD 80810 license

Video ES Bitrates:
 Up to 80Mbps

Output Formats:
 3840x2160 @ 23.98, 24, 25, 29.97, 30, 50, 59.94, 60
 1920x1080p @ 23.97, 24, 25, 29.97, 30, 50, 59.94, 60
 1920x1080i @ 25, 29.97, 30
 1280x720p @ 50, 59.94, 60
 720x576i @ 25
 720x480i @ 29.97

HDR & WCG Support:
 HLG (ARIB.B67)
 HDR10 (PQ10)

Color Gamut Support:
 BT.709
 BT.2020
 BT.601

ANC Data Types:

HDR metadata (SMPTE 2108)
 Closed Captions (CEA-708)
 OP-47 (SMPTE RDD-08)
 SMPTE 2031
 VANC Passthrough (SMPTE 2038)
 VPID
 SCTE 104 (SMPTE 2010) *Requires MRD 80830 license

Audio Decoding Features

Number of Audio Services:

4 audio services (8 audio channels)
 *Upgradeable to 8 audio services with MRD 80820 license

Audio Codecs Supported:

Dolby Digital AC-3/E-AC-3/AC-4/
 Dolby E/ ATMOS
 AAC-LC, HE-AAC, & HE-AACv2
 MPEG-1L2 & MPEG-2L2

Output Formats:

Digital Pass-through
 PCM (Downmixed for 5.1 Sources)

Audio Output Features

Embedded Audio Output:

4 audio pairs (8 audio channels)
 *Upgradeable to 8 audio pairs with MRD 80820 license

1x 12G-SDI or 4x 3G-SDI Output, 4xASI Input or 4x ASI Output Option MRD 80141

Ports: 5x 75-Ω HD-BNC
 1x 12G-SDI output with genlock, or
 4x 3G-SDI output with genlock
 Each SDI port can be configured
 as an ASI input or output

1x 12G-SDI or 4x 3G-SDI Output, 2xASI I/O, HDMI Out, 4x AES Output Option MRD 80151

Ports: 5x 75-Ω HD-BNC
 1x 12G-SDI output with genlock, or
 4x 3G-SDI output with genlock
 Two of the SDI ports can be
 configured as an ASI input or
 output (future with software
 upgrade)
 1x HDMI 2.1 output (future with
 software upgrade)
 1x 15-pin D-Sub connector with
 breakout cable to 8x AES audio
 outputs (75-Ω BNCs)

Standards for 80141/151: DVB-ASI: EN50083-9
 SD-SDI: SMPTE 259M
 HD-SDI: SMPTE 292M
 3G-SDI: SMPTE 424M
 12G-SDI – SMPTE 2082
 4K multi-link SMPTE 425-5
 HDMI: HDMI v2.1
 AES: AES3id-2001

SMPTE 2110 Output Options MRD 80182

Standards: SMPTE 2110-10
 SMPTE 2110-20
 SMPTE 2110-21
 SMPTE 2110-30
 SMPTE 2110-40
 Connectors: 2x 25GB MSA compliant SFP28
 connectors
 Synchronization: SMPTE 2059 (IEEE 1588 PTP)
 Correction: Hitless Switching (SMPTE 2022-7)
 NMOS: Optional with MRD 80860 license

INPUTS

MPEG/IP Inputs
 Physical Interfaces: 2x 100M/1000M Auto-Negotiate
 Base-T RJ-45
 Input Format: UDP or RTP
 Constant Bitrate or Null-Stripped
 RTP Header Extensions Supported
 Correction: Hitless Switching (SMPTE 2022-7)
 SMPTE 2022/CoP3 FEC Supported
 IP Encapsulation: 1 to 7 TS Packets per IP Packet
 Addressing: Unicast or Multicast
 IGMP compatibility: Version 1, 2 & 3
 Per TS Bitrate: 250 Kbps to 200 Mbps

File Inputs
 File Types: Transport streams (.ts, .trp)

RTMP Input
 Protocol and IP Range: TCP, Unicast
 Payload: MP4, FLV containing H.264 video and
 AAC or MP3 audio
 Modes: Pull
 Bitrate Range: 0.25 – 50 Mbps

HLS Input
 Protocol and IP Range: HTTP, HTTPS, TCP, Unicast
 Payload: Chunked transport stream
 Modes: Pull
 Profile Reception: Single profile selection
 Bitrate Range: 0.25 – 50 Mbps
 Decryption: AES-128
 Packets/IP Frame: 1-7 MPEG Packets/IP Frame

SRT Input License MRD 80850

Protocol and IP Range: UDP, Unicast
 Negotiation Modes: Caller, Listener, Rendezvous
 Latency: 20-8000ms, user configurable
 Bitrate Range: 0.25 – 50 Mb/s
 Decryption: AES-128, AES-256
 10-79 UTF-8 characters
 Packets/IP Frame: Auto detect

Zixi Input License MRD 80851

Protocol and IP range: UDP, unicast
 Mode: Connect or pull mode, to Broadcaster
 Latency: 30-10000ms, user configurable
 Bitrate range: 1-50 Mb/s
 FEC overhead: 0-50% of content bitrate
 Decryption: AES-128, AES-192, AES-256
 10-79 UTF-8 characters
 Packets/IP frame: Auto detect

DVB-S/S2/S2X INPUT MODULE MRD 80191

Physical Interfaces: 4x 75Ω F-Type
 Frequency Range: 950-2150 MHz
 Symbol Rates: 0.5-60 MSps with 8PSK/QPSK
 0.5-60 MSps with 16APSK/32APSK
 1-43 Msps with 64APSK and higher
 DVB-S Modulation Modes: QPSK (All FEC Rates)
 DVB-S2 Modulation Modes: QPSK/8PSK/16APSK/32APSK
 (All FEC Rates)
 DVB-S2X Modulation Modes: 64APSK/64APSKL/128APSK/
 256APSK/256APSK-L
 (All FEC Rates)
 DVB-S2X Frame Length: Long and Short frames
 LNB Power: Off/13/14/18/19VDC @ 500mA
 Overcurrent & short circuit protection
 Control Tone Support: 22 kHz On/Off
 Supported Roll-off Factors: 0.35, 0.25, 0.20, 0.15, 0.10, 0.05
 Additional Modulation Modes: ACM Demodulation Support
 VCM Demodulation Support
 Multistream Support (Single ISI)

DVB-S/S2/S2X INPUT MODULE WITH DVB-CI DESCRAMBLING MRD 80192

Physical Interfaces: 2x 75Ω F-Type (2x tuners per input, for a
 total of 4)
 2x DVB-CI Conditional Access Module slots
 Frequency Range: 950-2150 MHz
 Symbol Rates: 1-45 MSps with DVB-S
 1-45 MSps with DVB-S2
 1-34 MSps with DVB-S2X
 DVB-S Constellations: QPSK
 DVB-S2 Constellations: QPSK/8PSK/16APSK
 DVB-S2X Constellations: QPSK/8PSK/16APSK/32APSK/64APSK
 DVB-S FEC Modes: 1/2, 2/3, 3/4, 5/6, 7/8
 DVB-S2 FEC Modes: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
 DVB-S2X FEC Modes: 11/15, 7/9, 4/5, 5/6
 LNB Power: Off/13/18 VDC @ 400mA
 Control Tone Support: 22 kHz On/Off
 Supported Roll-off Factors: 0.35, 0.25, 0.20, 0.15
 Additional Modulation Modes: Multistream Support (Single ISI)
 Maximum TS bitrate: 200 Mb/s
 Number of stored keys: Up to 12 keys
 Number of descrambled services: No limitation to number of services
 descrambled per key

OUTPUTS

MPEG/IP Outputs
 Physical Interfaces: 2x 100M/1000M Auto-Negotiate Base-T RJ-45

Output Format: UDP or RTP
 IP Encapsulation: 1 to 7 TS Packets per IP Packet
 Addressing: Unicast or Multicast
 IGMP compatibility: Version 1, 2 & 3
 Per TS Bitrate: Bypass from input (manual bitrate settings for RTMP and HLS inputs)

Service/PID Filtering: Optional with MRD 80857 license
 T2MI De-encapsulation: Optional with MRD 80858 license

BISS1/BISS2/Mode CA Descrambling License MRD 80840
 BISS 1: Mode 0
 Mode 1 with Session Word
 Mode E with Session Word and Injected ID

BISS 2: Mode 0
 Mode 1 with Session Word
 Mode E with Session Word and Injected ID
 Mode CA with Public Key and Injected Private Key
 Mode CA with Public Key and Buried Private Key

Compatibility Standards:
 DVB-CSA1
 DVB-CISSA
 AES-128
 RSA-2048

MANAGEMENT

Connectors: 2x 100/1000M Auto-Negotiate Base-T RJ45 (Shared with MPEG-IP I/O ports)
 2x additional 100/1000M RJ45 ports available with MRD 80200 option

Protocols: HTTP, HTTPS, and SNMP
 User Interfaces: Full control via web GUI
 IP address configuration via MRD 80090 front panel screen/button option

Automation Interfaces: Full status and control via SNMP
 Configurable SNMP traps
 Restful API
 Syslog message logging
 Via web GUI

Firmware Updates:

PHYSICAL

Dimensions: 1RU - 1.7x17.2x13.3 inches (LxWxD)
 1RU - 44x437x338 mm (LxWxD)

Power: 100-240 VAC 50/60 Hz
 Dual 150W Power Supplies Included
 0° to 50°C
 Operating Temperature: -40°C to 65°C
 Storage Temperature: <95% non-condensing
 Operating Relative Humidity:

