

Multichannel Multiformat Receiver Decoder

MRD 7000



Sencore’s latest receiver decoder utilizes a new software based platform to create a multichannel, multiformat professional receiver decoder. Staying agile is paramount in today’s market and the MRD 7000 is able to deliver. Decode HEVC/H.264/MPEG2 up to 4K/UHD resolutions at high bitrate with support for 4:2:2 10-bit video including HDR and WCG.

The MRD 7000 supports up to 8 services (16 channels) of audio processing for MPEG1/2, AAC and Dolby AC3/AC3+/Dolby E/ATMOS. Multichannel decode allows the MRD 7000 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, HDMI 2.0B and SMPTE 2110 via 25GB fiber. The MRD 7000 maintains a long tradition of ease of use, with a straight-forward user interface and web APIs and backed by Sencore’s best-in-class staff of ProCare support engineers.

Key Features

- Multichannel decode of UHD and HD streams
 - 4x HD streams or 1x UHD streams per 1RU
- Multiformat support to decode any stream
 - HEVC/H.264/MPEG2 up to 4:2:2 10-bit with HDR/WCG signaling
 - 16 channels of audio processing for MPEG1/2, AAC and Dolby AC3/AC3+/Dolby-E/ATMOS
- RTP/UDP MPEG/IP with FEC or hitless switching, satellite, Zixi, SRT, HLS, RTMP, ASI and file-based inputs
- SDI, IP and HDMI output options
 - 12G-SDI, 4x3G-SDI and 3G-SDI
 - SMPTE 2110 25GB fiber
 - HDMI 2.0B

Applications

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

SPECIFICATIONS

VIDEO DECODER

MRD 7000

Base Decoding (4K/UHD/HD/SD 4:2:2/4:2:0)
 Video Profile/Levels: MPEG-2 422P@HL
 H.264 up to Hi422P@L4.2
 HEVC M422-10P@HT up to L5.1
 JPEG2000, Tier 2 up to 200Mbps
 Video ES Bitrates: Up to 160Mbps, hardware dependent
 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
 ANC Data Types: HDR metadata (SMPTE 2108)
 Closed Captions (CEA-708)

OP-47 (SMPTE RDD-08)
 SCTE 104 (SMPTE 2010)
 SMPTE 2031
 VANC Passthrough (SMPTE 2038)
 VPID

Base Audio Decoding Features

Number of Audio Services: 8 audio services (16 audio channels)
 Audio Codecs Supported: Dolby Digital AC-3/AC-3+/Dolby E/
 ATMOS
 AAC-LC, HE-AAC, & HE-AACv2
 MPEG-1L2 & MPEG-2L2
 Output Formats: Digital Pass-through
 PCM (Downmixed for 5.1 Sources)

Base Audio Output Features

Embedded Audio Output: 8 Audio Pairs (16 audio channels)

12G-SDI and HDMI 2.0 Output Option

MRD 70130

Ports: 1x 12G-SDI input, 75-Ω BNC
 1x ASI Input, 75-Ω BNC
 1x HDMI 2.0B output, 75-Ω BNC
 1x Genlock port, HDMI type A

Physical layer: DVB-ASI: EN50083-9
 HD-SDI: SMPTE 292M
 3G-SDI: SMPTE 424M
 6G-SDI: SMPTE 2081
 12G-SDI: SMPTE 2082

4x 3G-SDI Output or 4xASI Input Option MRD 70141
 Ports: 4x 3G-SDI or ASI inputs (user configurable), 75-Ω HD-BNC
 1x Genlock Input, 75-Ω HD-BNC

Physical layer: DVB-ASI: EN50083-9
 SD-SDI: SMPTE 259M
 HD-SDI: SMPTE 292M
 3G-SDI: SMPTE 424M
 4K multi-link SMPTE 425-5

SMPTE 2110 Output Options MRD 70120 & MRD 70180
 Standards: SMPTE 2110-10
 SMPTE 2110-20
 SMPTE 2110-21
 SMPTE 2110-30
 SMPTE 2110-40

Connectors: 2x 25GB MSA compliant SFP28 connectors (MRD 70180)
 Synchronization: SMPTE 2059 (IEEE 1588 PTP)
 Correction: Hitless Switching (SMPTE 2022-7)

INPUTS

MPEG/IP Inputs
 Physical Interface: 2x 1000 Auto-Negotiate Base-T RJ45 for MRD 70020
 2x 1000 Auto-Negotiate Base RJ45 for MRD 70081 (100M Auto Negotiate support with MRD70200 installed)

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)

SRT Input License MRD 70750
 Protocol and IP Range: UDP, Unicast
 Negotiation Modes: Caller, Listener, Rendezvous
 Latency: 20-8000ms, user configurable
 Bitrate Range: .25 – 50 Mb/s
 Decryption: AES-128, AES-256
 10-79 UTF-8 characters
 Packets/IP Frame: Auto detect

Zixi Input License MRD 70751
 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

RTMP Input License MRD 70753
 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 License MRD 70754
 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

DVB-S/S2/S2X INPUT MODULE MRD 70191
 Physical Interface: 4x 75Ω F-Type
 Frequency Range: 950-2150 MHz
 Symbol Rates: 1-72 MSps with 8PSK/QPSK
 1-60 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)

**roadmap features*

BISS1/BISS2/Mode CA Descrambling License MRD 70740
 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
 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

MANAGEMENT

Connector: 1000 Auto-Negotiate Base-T RJ45 for MRD 70020
 1000 Auto-Negotiate Base RJ45 for MRD 70081 (100M Auto Negotiate support with MRD70200 installed)

Protocols: HTTP and SNMP
 User Interfaces: Full control via web GUI
 Automation Interfaces: Full status and control via SNMP
 Configurable SNMP traps
 Restful API
 Syslog message logging
 Firmware Updates: Via web GUI

Physical dimensions and operating conditions dependent on hardware selection