UHD Receiver Decoder

MRD 6000

The MRD 6000 is a new 4K/UHD receiver decoder built with latest-generation 4K/UHD ASIC decoder technology in order to deliver a reliable, cost-effective appliance for monitoring, turn-around, signage, hospitality and enterprise 4K/UHD video applications.

MRD 6000 will decode and output 4K/UHD video with dual-audio and includes core features required in professional video delivery networks.

Key features include: ASI I/O, MPEG/IP I/O, DVB-S/S2/S2X satellite inputs, QAM/VSB RF receiver, DVB-T/T2, C/C2, & ISDB-T inputs, BISS descrambling, and dual DVB-CI CAM slots

The receiver also maintains Sencore's long tradition of ease of use, with a straight-forward web interface accessible via all major browsers and complete control of the unit via the front panel keypad, and is backed by Sencore's best-in-class staff of ProCare support engineers.

KEY FEATURES

- Decode of pro 4K and consumer UHD formats
  - Up to HEVC Level 5.1 @ Main10 Profile
  - Up to 4Kp60 and 2160p60
  - 4:2:0 chroma at 8-bit and 10 bit depths
- HDMI 2.0 and quad 3G-SDI video/audio outputs
- Decode, down-mix and pass-through of 2 simultaneous audio services
  - Support for all major audio types
  - AES, analog and embedded audio outputs
- Dual DVB-CI CAM slots (option)
- ASI In/Out + MPEG/IP, Satellite, and RF input options with failover features
- Web and front-panel interfaces

APPLICATIONS

- Monitoring of 4K/UHD video services
- Turn-around and distribution of 4K/UHD TV
- 4K/UHD signage, hospitality and enterprise video

FUTURE FEATURES

- 4x audio decode support
- Simultaneous HD/SD output support
- Expand VANC embedding support
- HDR support
- 12G-SDI, SFP, and SDIoIP output options

SPECIFICATIONS
UHD Receiver Decoder MRD 6000

VIDEO DECODER — MRD 60002

Base Decoding (UHD/4K, HD, SD 4:2:0)

Video Profile/Levels:	MPEG-2 MP@HL H.264 up to HP@L4.2 HEVC M10P@MT up to L5.1
Video ES Bitrates:	Up to 40 Mbps for UHD HEVC Up to 100 Mbps+ for H.264 & MPEG2
Frame Synchronization Modes:	PCR-Recovered Clock
Output Formats:	1920x1080p @ 50, 59.94, 60 1920x1080i @ 25, 29.97, 30 1920x1080p @ 23.97, 24, 25, 29.97, 30 1280x720p @ 50, 59.94, 60 720x576i @ 25 720x480i @ 29.97
Output Interfaces:	
SD/HD/3G-SDI:	Mirrored 5x 75Ω BNC
SDI Format Support:	3G-SDI Level A
Composite Video Output:	1x 75Ω BNC NTSC, PAL, SECAM
Digital Video:	1x HDMI-2.0a Connector

4x3G-SDI Output for 4K/UHD Video Output License — MRD 60730

Output Formats:	4096x2160p up to 60 3840x2160 up to 60
Output Interfaces:	4x 75Ω BNC, Quad Link
SDI Link Modes:	4x HD panels or SMPTE 425-5 interleaved (user selectable) 1x 75Ω BNC HD down-convert

Base Audio Decoding Features

Number of Audio Services:	Up to 2 audio services
Audio Codecs Supported:	Dolby Digital (AC-3) & Plus (EAC-3) AAC-LC, HE-AAC, & HE-AACv2 MPEG-1L2 & MPEG-2L2
Output Formats:	Digital Pass-through PCM (Decoded Discrete channels for 5.1 Sources or (Downmixed for 5.1 Sources) Analog ((Downmixed for 5.1 Sources)

Additional Base Video Features

Simultaneous SD Video Output License — MRD 60601

Enable Mirrored SD SDI Outputs:	2x 75Ω BNC

Video Overlay Support

DVB-Subtitle Overlays:	HD/SD with Auto Scaling (EN 300743)

Base Audio Output Features

AES Outputs:	4x 75Ω BNC
Analog Outputs:	2x 15 pin D-Sub (4 Stereo Services) 4x XLR Breakout Cable Available 4x BNC Breakout Cable Available Terminal Block Cable Available
SDI Embedded Audio Output:	4 Audio Pairs SDI Embedded Audio

Ancillary Data Support

SDI ANC Data Types:	EN301775 (SMPTE 2031)

Included Transport Stream Input/Output Features

ASI Input/Output:	2 x 75Ω BNC (selectable in/out)
Supported Bitrate:	250 Kbps to 200 Mbps

BISS Descrambling License — MRD 60921

Supported Modes:	Mode 1, Mode E, Injected ID
Multi-BISS Support:	Up to 12 Separate Keys with License

DVB-CI Multi-Service License — MRD 60991

With DVB-CI Module:	Enables Multi-service Descrambling

PID/Service Filtering Output License — MRD 60928

Filtering:	10 Independent TS (MPTS or SPTS) created; output via IP or ASI
Table Regeneration (MPEG Mode):	PAT regeneration
Table Pass-through (MPEG Mode):	PMT, CAT, NIT pass-through table
Regeneration (DVB Mode):	PAT, SDT
Table Pass-through (DVB Mode):	PMT, CAT, NIT, EIT, RST, TDT, TOT

DVB-CI DESCRAMBLING MODULE — MRD 421

Physical Interface:	Adds two DVB-CI CAM Slots
Without Multi-Service License:	Descrambles Decoded Service Only
With Multi-Service License:	Number of Services limited by CAM

IP INPUT/OUTPUT MODULE — MRD 127

Physical Interface:	2x RJ45, 10/100/1000 Auto-Negotiate
Input Format:	UDP or RTP Constant Bitrate or Null-Stripped RTP Header Extensions Supported SMPTE 2022/CoP3 FEC Supported
Output Format:	UDP, RTP (with License)
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

MPEG/IP FEC Output License — MRD 60925

Additional Output Formats:	RTP and Header Extensions SMPTE 2022/CoP3 FEC Supported

DVB-S/S2 INPUT MODULE — MRD 116

Physical Interface:	4x 75Ω F-Type
Frequency Range:	950-2150 MHz
Symbol Rates:	1-45 MSps
DVB-S Modulation Modes:	QPSK (All FEC Rates)
DVB-S2 Modulation Modes:	QPSK/8PSK (All FEC Rates) 16/32APSK (with License)
LNB Power:	Off/13/14/18/19VDC @ 450mA
Control Tone Support:	22 kHz On/Off
Supported Roll-off Factors:	0.35, 0.25, 0.20, 0.15, 0.10, 0.05

DVB-S2 Advanced Feature License — MRD 60916

Additional Modulation Modes:	16/32/64APSK (All FEC Rates) VCM Demodulation Support Multistream Support (Single ISI)

SPECIFICATIONS CONTINUED
UHD Receiver Decoder MRD 6000

DVB-S/S2/S2X INPUT MODULE MRD 116A

Physical Interface:	4x 75Ω F-Type
Frequency Range:	950-2150 MHz
Symbol Rates:	1-72 MSps with 8PSK/QPSK 1-60 Msps with 16APSK and higher
DVB-S Modulation Modes:	QPSK (All FEC Rates)
DVB-S2/S2X Modulation Modes:	QPSK/8PSK (All FEC Rates) 16/32/64APSK (with License)
LNB Power:	Off/13/14/18/19VDC @ 450mA
Control Tone Support:	22 kHz On/Off
Supported Roll-off Factors:	0.35, 0.25, 0.20, 0.15, 0.10, 0.05

DVB-S2/S2X Advanced Feature License MRD 60916

Additional Modulation Modes:	16/32/64APSK (All FEC Rates) VCM Demodulation Support Multistream Support (Single ISI)

8VSB/QAM-B INPUT MODULE MRD 101

Physical Interface:	75Ω F-Type
Frequency Range:	50-1000 MHz
Sensitivity:	-34 to +40 dBmV (A74 Compliant)
8VSB Standard:	ATSC A/53E
8VSB Channel Plans:	Broadcast
QAM Standard:	ITU Annex B/SCTE DVS-031
QAM Channel Plans:	FCC, IRC, HRC
QAM Constellations:	QAM64, QAM256

BROADCOM TURBOPSK RECEIVER MODULE MRD 111

Physical Interface:	1x 75Ω F-Type
Frequency Range:	950-2150 MHz
Symbol Rates:	1-30 MSps
DVB-S Modulation Modes:	QPSK (All FEC Rates)
TurboPSK Modulation Modes:	QPSK /8PSK (All FEC Rates)

DVB-T/T2/C/C2/ISDB-T INPUT MODULE MRD 115

Physical Interface:	1x 75Ω F-Type
Frequency Range:	42-1002 MHz
Bandwidth:	1.7MHz, 5 MHz, 6MHz, 7MHz, 8MHz
Constellations:	
DVB-T:	QPSK, QAM16, QAM64 (All FEC Rates)
DVB-T2:	QPSK, QAM16, QAM64, QAM256 (All FEC Rates)
DVB-C:	QAM16, QAM32, QAM64, QAM128, QAM256 (All FEC Rates)
DVB-C2:	QAM16, QAM64, QAM256, QAM1024, QAM4096 (All FEC Rates)
ISDB-T:	QPSK, QAM16, QAM64 (All FEC Rates)

MANAGEMENT

Connector:	RJ-45 10/100 - Auto Negotiating
Protocols:	HTTP and SNMP
User Interfaces:	Full control via web GUI Full control via front panel
Automation Interfaces:	Full status and control via SNMP Configurable SNMP traps Web services API available Syslog message logging
Firmware Updates:	Via web GUI

DIMENSIONS/POWER

Height:	1 RU, 1.72" (44 mm)
Width:	1 RU, 17.2" (437 mm)
Depth:	14.6" (370 mm)
Power:	100-240 VAC 50/60 Hz
Supply Options:	Single AC Power Supply (Standard)

ENVIRONMENTAL CONDITIONS

Operating Temp:	0° to 50°C
Storage Temp:	-40°C to 65°C
Relative Operating Humidity:	<95% (non-condensing)