Advanced Modular Decoder

MRD 5800

The flagship MRD 5800 Advanced Modular Receiver continues Sencore's long history of leadership in the receiver/decoder space. The product boasts a full complement of cutting- edge features, including 4:2:2 HEVC 8bit/10bit decoding, up to 8 individual audio PIDs, 16/32/64APSK satellite demodulation, and 1080p60 video support with 3G-SDI output. Decoding and output formats are upgradable in the field via software license, so the receiver can grow as needs evolve. This feature set makes the MRD 5800 the ideal choice for contribution reception or demanding distribution applications which require a future-proof set of specifications.

Every MRD 5800 ships with a full complement of basic inputs and outputs built-in, including dual ASI input/outputs and dual SD/HD/3G-SDI outputs. The digital video output means that video monitoring is as easy as finding the nearest consumer television or PC monitor, and available factory-configurable MPEG over IP I/O, DVB-S/S2/S2X, 8VSB/QAM-B, DVB-T/T2/C/C2/ISDB-T modules adapt the product to any use case.

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

- Latest generation decoding technology enables support for nearly any video feed

  √ HEVC 4:2:0/4:2:2 8-bit and 10-bit video

  √ H.264 4:2:2 10-bit video

  √ MPEG-2 or H.264 4:2:0/4:2:2 8-bit video

  √ AVC-I 50/100 video

  √ All formats auto-detected and switchable on-the-fly
- Up to 8 services of audio decoding with support for all major audio formats
- Dual 3G/HD/SD-SDI auto-switching outputs
- ASI, IP, RF satellite, 8VSB/QAM-B and DVB-T/T2/C/C2/ISDB-T inputs
- Full complement of ancillary data output in ANC and VBI
- Intuitive, straightforward web interface
- Full control, status, and alarm monitoring via SNMP

APPLICATIONS

- **Receive and Decode Satellite or IP Contribution Feeds**
  Pull in high-bitrate, high-quality 4:2:2 HEVC video feeds with up to 8 associated audio services via DVB-S/S2/S2X or IP and decode to SDI for local processing or turn-around re- encoding. Be ready for upcoming satellite formats like 16/32/64APSK and multistream transmission.
- **Decode 1080p60 Video for Emerging Applications**
  Receive Full HD video signals and decode to 3G-SDI for monitoring and turn-around of emerging cinematic, sports, or live-action content.
- **Create a Future-Proof Distribution Installation**
  Prepare for the eventual transition of advanced formats such as HEVC into typical distribution, re-processing, and turn-around applications with the industry's most future-proof, powerful decoder platform.

SPECIFICATIONS
Advanced Modular Decoder MRD 5800

VIDEO DECODER

MRD 58081

Base Decoding (SD 4:2:2/4:2:0)

Video Profile/Levels:	MPEG-2 MP@ML, 422P@ML H.264 MP@L3, up to Hi422P@L3.2 HEVC MP@MT L3.1, M10P@MT L3.1, M422-10P@MT L3.1 (with License)

HEVC Decode License MRD 58765

Enables HEVC Decoding:	Requires MRD 58265 Option

4:2:0 HD Decoding License MRD 58710

Additional Profile/Levels:	MPEG-2 MP@HL H.264 up to HP@L4.2 HEVC MP@HT up to L4.1, M10P@HT up to L4.1 (with License)

4:2:2 HD Decoding License MRD 58720

Additional Profile/Levels:	MPEG-2 422P@HL H.264 up to Hi422P@L4.2 HEVC M422-10P@HT up to L4.1 (with License)

Additional Base Video Features

Video ES Bitrates:	CAVLC Entropy Coded - 100Mbps CABAC Entropy Coded - 80Mbps
Frame Synchronization Modes:	PCR-Recovered Clock Genlock Reference (with License)
Aspect Ratio Conversion	
Manual Selection:	Letterbox, Center-Cut, Anamorphic
Automatic Selection:	Follows AFD Codes
Output Formats:	1920x1080p @ 50, 59.94, 60(with License) 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:	2x 75Ω BNC
SDI Format Support:	Determined by Decode License
Digital Video:	1x HDMI-type Connector
Composite Output:	1x 75 Ω BNC NTSC, PAL-B/G/I/D/M/N

Simultaneous SD Video Output Module MRD 601

Mirrored SD SDI Outputs:	2x 75Ω BNC
Composite Output:	1x 75Ω BNC NTSC, PAL-B/G/I/D/M/N

HEVC Decoding Daughter Board MRD 58265

Enables HEVC Licensing:	Requires MRD 58765 License for decoding functionality

Genlock License MRD 58701

Enables genlock input:	1x 75Ω BNC

1080p50/60 Video Output License MRD 58740

Additional SDI Formats:	3G-SDI Level A
Additional Output Formats:	1920x1080p @ 50, 59.94, 60

Video Overlay Support

Closed Caption Overlays:	CEA-608, CEA-708, or SCTE-20
DVB-Subtitle Overlays:	HD/SD with Auto Scaling (EN 300743)
Image Overlay:	JPEG or PNG up to 4MB Triggered Manually, on Decode Failure, or by SCTE35

VIDEO DECODER, CONTINUED

MRD 58081

Base Audio Decoding Features

Number of Audio Services:	4 Standard, Up to 8 Available
Audio Codecs Supported:	Dolby Digital (AC-3) & Plus (EAC-3) AAC-LC, HE-AAC, & HE-AACv2 MPEG-1L2 & MPEG-2L2 Linear PCM & Dolby E (Pass-through)
Output Formats:	Digital Pass-through PCM (Decoded Discrete channels for 5.1 Sources or (Downmixed for 5.1 Sources) Analog (Decoded Discrete channels for 5.1 Sources or (Downmixed for 5.1 Sources)
Audio Delay/Advance:	Per Service, +100/-35 ms

Ancillary Data Support

SDI ANC Data Types:	AFD (SMPTE 2016) Closed Captions (CEA-708) OP-47 (SMPTE RDD-08) SMPTE RDD-11 VANC Passthrough (SMPTE 2038) SCTE 127 (SMPTE 2031) EN301775 (SMPTE 2031) Time Code (SMPTE 12M-2) SCTE 104(SMPTE 2010 with license)
VBI Waveforms (SDI/Composite):	Line 21 Captions (CEA-608) TVG2X, AMOL-48/96 (SCTE-127) Teletext/WSS/VPS (EN301775) Timecode in VBI (SMPTE 12M-1)[5]

SCTE 35 to SCTE 104/Relay Output License MRD 58992

Cablelabs ESAM POIS Interface License MRD 58993

Included Transport Stream Input/Output Features

ASI Input/Output:	2 x 75Ω BNC
Supported Bitrate:	250 Kbps to 200 Mbps

BISS-1 Descrambling License MRD 58921

Supported Modes:	Mode 0, Mode 1 with Session Word Mode E with SW and Injected ID
Multi-BISS Support:	Up to 12 Separate Keys with License

BISS-2/CA Descrambling License MRD 58922

Supported Modes:	Mode 0, Mode 1 with Session Word Mode E with SW and Injected ID Mode CA with Injected Private Key Mode CA with Buried Private Key
Multi-BISS Support:	Up to 12 Separate Keys with License

DVB-CI Multi-Service License MRD 58991

With DVB-CI Module:	Enables Multi-service Descrambling

8 Service Audio Decode License MRD 58880

Audio Decoding:	4 Additional Services (Total of 8)

Base Audio Output Features

AES Outputs:	8x 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:	8 Audio Pairs

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SPECIFICATIONS CONTINUED
Advanced Modular Decoder MRD 5800

VIDEO DECODER, CONTINUED — MRD 58081

PID/Service Filtering Output License — MRD 58928

Filtering:	5 Independent TS (MPTS or SPTS) outputs 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 58925

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 58916

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

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 58916

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
Authentication:	Local Login, TACACS+

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) Dual AC Power Supply

ENVIRONMENTAL CONDITIONS

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