

# 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, and 8VSB/QAM-B 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, and 8VSB/QAM-B 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

#### Output Formats:

Linear PCM & Dolby E (Pass-through)  
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)<sup>5</sup>

#### 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  
Up to 12 Separate Keys with License

#### Multi-BISS Support:

#### 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  
Up to 12 Separate Keys with License

#### Multi-BISS Support:

#### 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

# SPECIFICATIONS CONTINUED

## Advanced Modular Decoder MRD 5800

### VIDEO DECODER, CONTINUED MRD 58081 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/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)

### 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)