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 straightforward 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.
### VIDEO DECODER

**Base Decoding (SD 4:2:2/4:2:0):**
- Video Profile/Levels:
  - MPEG-2 MP@ML, 422P@ML
  - H.264 M@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:**
- Enables HEVC Decoding: Requires MRD 58265 Option
- Profile/Levels:
  - HEVC MP@MT L3.1,
  - M10P@MT L3.1,
  - M422-10P@MT L3.1 (with License)

**4:2:0 HD Decoding License:**
- 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:**
- 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
  - 1280x720p @ 50, 59.94
  - 720x576i @ 25
  - 720x480i @ 29.97

**Output Interfaces:**
- SD/HD/3G-SDI: 2 x 75Ω BNC
- Digital Video: 1x HDMI-type Connector
- Composite Output: 1x 75Ω BNC
- NTSC, PAL-B/G/I/D/M/N
- SDI Embedded Audio Output: 8 Audio Pairs

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

**HEVC Decoding Daughter Board:**
- Enables HEVC Licensing: Requires MRD 58765 License for decoding functionality
- Genlock License: Enables genlock input: 1x 75Ω BNC
- 1080p50/60 Video Output License:
  - Additional SDI Formats: 3G-SDI Level A
  - Additional Output Formats: 1920x1080p @ 50, 59.94, 60

**Video Overlay Support:**
- Closed Caption Overlay:
  - CEA-608, CEA-708, or SCTE-20
- HD/SD with Auto Scaling (EN 300743)

**Base Audio Decoding Features:**
- Number of Audio Services: 4 Standard, Up to 8 Available

### VIDEO DECODER, CONTINUED

**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

**Audio Delay/Advance:**
- Per Service, +100/-35 ms

**Ancillary Data Support:**
- SDI ANC Data Types:
  - AFD (SMPTE 2016)
  - Timecode in VBI (SMPTE 12M-1)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)

**SCTE 35 to SCTE 104/Relay Output License**
- Cablelabs ESAM POIS Interface License

**Included Transport Stream Input/Output Features:**
- ASI Input/Output: 2 x 75Ω BNC
- Supported Bitrate: 250 Kbps to 200 Mbps

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

**DVB-CI Multi-Service License**
- With DVB-CI Module: Enables Multi-service Descrambling

**8 Service Audio Decode License**
- Audio Decoding: 4 Additional Services (Total of 8)

**Base Audio Output Features:**
- AES Outputs: 8 x 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

**PID/Service Filtering Output License**
- 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
- DVB 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
- **Output Format:** 1 to 7 TS Packets per IP Packet
- **IP Encapsulation:** SMPTE 2022/CoP3 FEC Supported
- **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
- SMPT 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**
- **Additional Modulation Modes:** 16/32/64APSK (All FEC Rates)
- VCM Demodulation Support
- Multistream Support (Single ISI)

DVB-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**
- **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:** 1.7MHz, 5 MHz, 6MHz, 7MHz, 8MHz
- **Constellations:** QPSK, QAM16, QAM64 (All FEC Rates)
- **DVB-T:** QPSK (All FEC Rates)
- **DVB-T2:** QPSK (All FEC Rates)
- **DVB-C:** QAM16, QAM32, QAM64, 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
- **Automation Interfaces:** Full status and control via SNMP
- **Firmware Updates:** Configurable SNMP traps
- **Web services API available**
- **Syslog message logging**
- **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
- **36-72 VDC**
- **Supply Options:** Single AC Power Supply (Standard)
- **Dual AC Power Supply**
- **Single DC Power Supply**

ENVIRONMENTAL CONDITIONS

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