Receiver Decoder Card
AG 4400 openGear® Module

OVERVIEW
The new AG 4400 card-based receiver decoder provides an ideal solution for high-quality video decoding where rack space is at a premium. The platform supports up to 10 H.264/MPEG2 decoder cards in a 2RU OG-3 frame. The product supports decoding MPEG2 or H.264 video, as well as up to four audio PIDs. The audio decoding capability is the perfect solution for video distributors looking to meet upcoming descriptive video requirements, while continuing to support surround, stereo, and SAP services.

The AG 4400 receiver decoder card offers satellite, IP, ASI, and 8VSB/QAM-B and DVB-T/T2/C/C2/ISDB-T inputs for flexible installation into a variety of video delivery systems. Optional integrated DVB-CI descrambling, as well as BISS-1/E capabilities, makes the AG 4400 a powerful solution for receiving feeds from primary distribution.

When combined with versatile IP input/output capabilities, a full complement of ancillary data support, and tested interoperability with all major encode vendors, the AG 4400 is an ideal solution for high-density re-encode or monitoring.

In addition, the decoder benefits from Sencore’s tradition of receiver decoder design and is backed by best-in-class ProCare support.

KEY FEATURES
- Intuitive, straightforward web interface
- Extensive automation support via SNMP status, configuration, and traps, HTTP-based APIs, and Syslog
- Shared software and feature-set with Sencore 1RU decoders ensure reliability and interoperability
- Support for All Common Video Formats
  - MPEG2 or H.264, HD or SD video
  - Codecs auto-detected and switchable on-the-fly
- Up to 4 services of audio decoding or SDI pass-through with support for all major audio formats
- Dual SDI auto-switching outputs
- Built-in ASI I/O for maximum value and flexibility
- Available IP, 8VSB/QAM-B, DVB-T/T2/C/C2/ISDB-T and satellite inputs
- Full complement of ancillary data output in ANC and VBI
- Closed-caption or auto-scaling subtitle overlays for monitoring or burn-in applications
- Full control, status, and alarm monitoring via SNMP

APPLICATIONS
- **Monitor Multi-channel Distribution Installations**
  Create a real-time monitoring system to feed an SDI matrix or power a multi-viewer with minimal rack-space and power consumption. Time-tested, professional grade decode engine handles any video feed.

- **Decode Multiple Channels for Re-encoding**
  Reduce the footprint of existing decode/re-encode infrastructure without reinventing the entire system. Redundant SDI outputs with a full complement of ancillary data interoperate with any encoder.
AVAILABLE VIDEO DECODER MODULES
AG 44021A   ASI I/O, SDI Outputs, Discrete Audio, Genlock Support
AG 44020A   ASI, SDI Outputs, Discrete Audio

COMMON VIDEO DECODER FEATURES

Base Decoding (SD 4:2:0)
Additional Profile/Levels: MPEG2 MP@ML
H.264 up to MP@L3

HD Decoding License
Additional Profile/Levels: MPEG2 MP@HL
H.264 up to HP@L4.2

Additional Base Video Features
Frame Synchronization Modes:
- PCR-Recovered Clock
- Genlock Reference (AG 44021 Only)

Aspect Ratio Conversion
Manual Selection: Letterbox, Center-Cut, Anamorphic
Automatic Selection: Follows AFD Codes

Output Formats:
- 1920x1080i @ 25, 29.97
- 1920x1080p @ 23.97, 24, 25, 29.97, 30
- 1280x720p @ 50, 59.94, 60
- 720x576i @ 25
- 720x480i @ 29.97

Output Interfaces:
- SD/HD-SDI: 2x 75Ω BNC
- Digital Video: 1x HDMI-type Connector

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

Base Audio Decoding Features
Number of Audio PIDs:
- 2 Standard, Up to 4 Available
- Dolby Digital (AC-3) & Plus (EAC-3)
- AAC-LC, HE-AAC, & HE-AACv2
- MPEG-1/2 & MPEG2L2
- Linear PCM & Dolby E (Pass-through)
- Digital Pass-through
- PCM (Downmixed for 5.1 Sources)
- Analog (Downmixed for 5.1 Sources)
- Per Service, +/-0.35 ms

Audio Delay/Advance:
- +100/-35 ms

4 Service Audio Decode License
Additional Audio PIDs:
- 2 PIDs (Total of 4 PIDs)

Discrete Channel Audio Output License
For 5.1 Sources:
- Output Individual Channel Pairs

Base Audio Output Features
AES Outputs:
- 2x 75Ω BNC

SDI Embedded Audio Output:
- 4 Audio Pairs

Ancillary Data Support
SDI ANC Data Types:
- AFD (SMPTE 2016)
- Closed Captions (CEA-708)
- OP-47 (SMPTE RDD-08)
- SMPTE RDD-11
- VANC Passsthrough (SMPTE 2038)
- SCTE 127 (SMPTE 2031)
- EN301775 (SMPTE 2031)
- Time Code (SMPTE 12M-2)

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)

COMMON VIDEO DECODER FEATURES, CONTINUED

SCTE 35 to SCTE 104 Output License
Cablelabs ESAM POIS Interface License

Included Transport Stream Input/Output Features
ASI Input/Output:
- 1x In, 1x Out - 750 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

PID/Service Filtering License
Filtering:
- 10 Independent TS (MPTS or SPTS)
- created; output via IP or ASI

Table Regeneration (DVB Mode):
- PAT regeneration
- Table Pass-through (DVB Mode):
- PAT, SDT, PMT, CAT, NIT pass-through Table
- Table Pass-through (DVB Mode):
- PAT, SDT, PMT, CAT, NIT, EIT, RST, TDT, TOT

DVB-S/S2 INPUT MODULE

Physical Interface:
- 2x 75Ω BNC
- 2x 75Ω BNC

Frequency Range:
- 950-2150 MHz
- 950-2150 MHz

Symbol Rates:
- 1-45 Msps
- 1-45 Msps

DVB-S Modulation Modes:
- QPSK (All FEC Rates)
- QPSK (All FEC Rates)

DVB-S2 Modulation Modes:
- QPSK/8PSK (All FEC Rates)
- QPSK/8PSK (All FEC Rates)
- 16/32APSK (with License)
- 16/32APSK (with License)

LNB Power:
- Off/13/14/18/19VDC @ 450mA
- Off/13/14/18/19VDC @ 450mA

Control Tone Support:
- 22 kHz On/Off
- 22 kHz On/Off

Supported Roll-off Factors:
- 0.35, 0.25, 0.20, 0.15, 0.10, 0.05
- 0.35, 0.25, 0.20, 0.15, 0.10, 0.05

DVB-S2 Advanced Feature License
Additional Modulation Modes:
- 16APSK/32APSK (All FEC Rates)
- 16APSK/32APSK (All FEC Rates)

VCM Demodulation Support
Multi-stream (Single ISI)
Multi-stream (Single ISI)

DVB-S/S2 INPUT MODULE WITH DVB-CI

Physical Interface:
- Adds one DVB-CI CAM Slot
- Adds one DVB-CI CAM Slot

Without Multi-Service License:
- Descrambles Decoded Service Only
- Descrambles Decoded Service Only

With Multi-Service License:
- Number of Services limited by CAM
- Number of Services limited by CAM

DVB-CI Multi-Service Descrambling License
With DVB-CI Capable Input:
- Enables multi-service Descrambling
- Enables multi-service Descrambling

8VSB/QAM-B INPUT MODULE

Physical Interface:
- 1x 75Ω BNC
- 1x 75Ω BNC

Frequency Range:
- 50-1000 MHz
- 50-1000 MHz

Sensitivity:
- -34 to +40 dBmV (A74 Compliant)
- -34 to +40 dBmV (A74 Compliant)

8VSB Standard:
- ATSC A/53E
- ATSC A/53E

8VSB Channel Plans:
- Broadcast
- Broadcast

QAM Standard:
- ITU Annex B/SCTE DVS-031
- ITU Annex B/SCTE DVS-031

QAM Channel Plans:
- FCC, IRC, HRC
- FCC, IRC, HRC

QAM Constellations:
- QAM64, QAM256
- QAM64, QAM256

SPECIFICATIONS
Receiver Decoder Card AG 4400

605.978.4600
www.sencore.com
**SPECIFICATIONS**

**Receiver Decoder Card AG 4400**

### IP INPUT/OUTPUT MODULE  
**AG 127A**

- **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
- **MPE De-encapsulation:** Up to 2 PIDs  
  - Up to 60 Mbps per MPE PID
- **Addressing:** Unicast or Multicast
- **IGMP compatibility:** Version 1, 2 & 3
- **Per TS Bitrate:** 250 Kbps to 200 Mbps
- **MPEG/IP FEC Output License**  
  - RTP with SMPTE 2022/CoP3 FEC

### MPEG/IP FEC Output License  
**AG 44925**

### DVB-T/T2/C/C2/ISDB-T INPUT MODULE  
**AG 115A**

- **Physical Interface:** 1x 75Ω BNC
- **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)

### DVB-S/S2/S2X INPUT MODULE  
**AG 116B**

- **Physical Interface:** 2x 75Ω BNC
- **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**  
  - 16/32/64APSK (All FEC Rates)
  - VCM Demodulation Support
  - Multistream (Single ISI)

### DVB-S2/S2X INPUT MODULE WITH DVB-CI  
**AG 137B**

- **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
- **DVB-CI Multi-Service Descrambling License**  
  - AG 44991
  - With DVB-CI Capable Input: Enables Multi-service Descrambling

### DVB-T/T2/C/C2/ISDB-T INPUT MODULE WITH DVB-CI  
**AG 115B**

- **Physical Interface:** Adds one DVB-CI CAM Slot
- **Without Multi-Service License:** Descrambles Decoded Service Only
- **With Multi-Service License:** Number of Services limited by CAM
- **DVB-CI Multi-Service Descrambling License**  
  - AG 44991
  - With DVB-CI Capable Input: Enables Multi-service Descrambling

### MANAGEMENT

- **User Interfaces:** Full control via web GUI
- **Automation Interfaces:** SNMP status, control, traps  
  - Syslog alarm output
  - HTTP Web services API
  - Remote in-band control with CMD 4000

### ENVIRONMENTAL CONDITIONS

- **Power:** 100-240 VAC 50/60 Hz
- **Dual, Redundant Supply Available**
- **Operating Temp:** 0° to 50°C