

# Sencore AFN Platform

AFN-1000/250 - CONFIGURATION AND ORDERING GUIDE

## FRAME SELECTION

To properly configure the AFN product, begin with frame selection. Sencore currently offers 2 frame options, the AFN-1000 1RU chassis or the more portable AFN-250 1/4RU chassis.

- The AFN-1000 frame includes a system host module with IP multiplexing capabilities, a web-based user interface, dual power supplies, and a front panel for base configuration. It can accommodate 7 additional modules.
- The AFN-250 frame is a light-weight portable chassis. While it has no front panel control, it shares the same web-based user interface and can be rack mounted with the purchase of optional hardware. It can accommodate a total of 2 modules; a primary module which includes the system host functions and a secondary module for added functionality. The AFN-250 has a single power supply.

## AFN-1000 - SPECIFICATIONS

### PHYSICAL / ENVIRONMENTAL

#### Temperature:

Operating: 0°C to 50°C / 32°F to 122°F Ambient  
Storage: 40°C to 85°C / -40°F to 185°F Ambient

#### Non-condensing Relative Humidity:

95% Max

#### Power:

Dual Redundant Internal Power Supplies  
Input Voltage: 90VAC - 264 VAC  
Startup Consumption: 400mA (min)  
Dual Side-to-Side Convective Cooling Fans

#### Measurements: (H X W X D):

1.75" X 18.97" X 18.51"  
44.45 mm X 481.84 mm X 470.15 mm

#### Weight:

Frame Weight: 8.50 lbs/ 3.86 kgs  
(Module Weights Not Included)

#### Safety & Certification:

CE / RoHS

### INCLUDES SYSTEM HOST CARRIER

Dual GigE IP Input/Outputs (1Mbps - 210Mbps)  
Primary - Web-Based Control / Secondary - TSOIP  
· SRT, UDP, RTP (RFC 3550) encapsulated routes  
· Supports BISS-CA Encryption (up to 80Mbps)  
· Supports multiple SPTS/MPTS w/bouquet management  
· Supports Turn-Around (Pass stream intact)  
· Supports KLV Metadata

## AFN-250 - SPECIFICATIONS

### PHYSICAL / ENVIRONMENTAL

#### Temperature:

Operating: 0°C to 50°C / 32°F to 122°F Ambient  
Storage: -30°C to 70°C / -22°F to 158°F Ambient

#### Non-condensing Relative Humidity:

40-60%

#### Power:

Single Internal Power Supply  
Input Voltage: 90~264VAC 50~60Hz  
Startup Consumption: 165mA (min)  
Side-to-Side Convective Cooling Fans

#### Measurements: (H X W X D):

1.72" X 5.20" X 14.70"  
43.7mm X 132.1mm X 373.4mm

#### Weight:

Frame Weight: 2.35 lbs/1.07 kgs  
(Module Weights Not Included)

#### Safety & Certification:

CE / RoHS

**THE SYSTEM HOST FOR THIS DEVICE MUST BE INCLUDED IN THE PRIMARY MODULE SELECTION.**

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## ADDING VIDEO ENCODE MODULES

- The AFN-VEC0301-0600 module is capable of four SD/HD video encodes or one 4K/UHD and comes with four 3G-SDI inputs. This module can be placed in an AFN-1000 chassis or be added to the secondary slot of an AFN-250 chassis.
- The AFN-VEC0301-0610 module is capable of four SD/HD video encodes or one 4K/UHD and comes with four 3G-SDI inputs, one of which can be changed to 12G-SDI for 4K/UHD input. This module can be placed in an AFN-1000 chassis or be added to the secondary slot of an AFN-250 chassis.
- The AFN-VEC0301-0501 module is capable of four SD/HD video encodes or one 4K/UHD and comes with four mini-DIN inputs. This module is specific to the AFN-250 frame and should be used in the primary slot as it also includes the system host functionality.

Select one or more Video and Audio Feature Keys to add encoding capabilities to the encode module.

### VIDEO FEATURE KEYS

AFN-4K-UHD	Enables 4K(UHD)/HD/SD resolutions for a single channel of HEVC or AVC *Max 1 per VEC0301 module.
AFN-HEVC-Channel	Enables HD/SD resolutions for a single channel of HEVC. Also includes AVC & MPEG-2. *Max 4 per VEC0301 module.
AFN-AVC-Channel	Enables HD/SD resolutions for a single channel of AVC. Also includes MPEG-2. *Max 4 per VEC0301 module.
AFN-MPEG2-Channel	Enables HD/SD resolutions for a single channel of MPEG-2 *Max 4 per VEC0301 module.
AFN-10-bit/4:2:2	Enables 10-bit, 4:2:2 for any applicable CODEC and purchased channel. *Max 1 per VEC0301 module.
AFN-HDR	Enables HD/SD resolutions for a single channel of MPEG-2 *Max 1 per VEC0301 module. Requires 10-bit/4:2:2 license.

### AUDIO FEATURE KEYS

AFN-MP/AAC-2Pairs	Enables two pairs of MP1L2, AAC-LC audio encoding per video encode. *Max 4 per encoder for MP1L2; max 2 per encoder for AAC.
AFN-DDAC3-2Pairs	Enables two pairs of Dolby Digital/AC3 audio decoding per video decode. *Max 4 per encoder.

## VEC0301 - ENCODER TECHNICAL SPECIFICATIONS

### VIDEO ENCODE PROFILES

Only one CODEC can be encoded per carrier at a time.

HEVC / H.265 Profiles:

Main, Main 10, Main 4:2:2 10, up to 4K/60p

Video Rates:

4K/UHD: 10.0 - 80.0 Mbps (Encoder 1 Only)

HD: 1.1 - 24.5 Mbps

SD: 0.2 - 3.0 Mbps

Video Formats & Frame Rates:

4096 X 2160p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

3840 X 2160p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

1080p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

1080i: 60, 59.94, 50

720p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

576p: 50, 25

576i: 50

480p: 60, 59.94, 30, 29.97, 24, 23.97

480i: 60, 59.94

Chroma Sampling / Bit Depth:

4:2:2, 4:2:0 / 8-bit, 10-bit

AVC / H.264 Profiles:

BP, MP, HP, High 10, High 4:2:2, up to 4K/60p

Video Rates:

4K/UHD: 24.0 - 95.0 Mbps (Encoder 1 Only)

HD: 1.5 - 24.5 Mbps

SD: 0.5 - 16.0 Mbps

Video Formats & Frame Rates:

4096 X 2160p: 50, 30, 29.97, 25, 24, 23.97

3840 X 2160p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

1080p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

1080i: 60, 59.94, 50

720p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

576p: 50, 25

576i: 50

480p: 60, 59.94, 30, 29.97, 24, 23.97

480i: 60, 59.94

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Chroma Sampling / Bit Depth:  
4:2:2, 4:2:0 / 8-bit, 10-bit

MPEG 2 Profiles:  
MP@HL 4:2:0 8-bit, up to 1080/60i

Video Rates:  
HD: 4.0 - 24.5 Mbps  
SD: 1.0 - 15.0 Mbps

Video Formats & Frame Rates:  
1080p: 30, 29.97, 25, 24, 23.97  
1080i: 60, 59.94, 50  
720p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97  
576p: 50  
576i: 50  
480p: 60, 59.94  
480i: 60, 59.94

Chroma Sampling / Bit Depth:  
4:2:0 / 8-bit

### AUDIO PROCESSING PROFILES

Audio Encoding Codecs:  
MPEG 1 Layer 2  
MPEG 2 Layer 2  
Dolby Digital AC3  
Dolby Digital Plus  
AAC-LC

Bit Rates: 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384, 448, 512 Kbit/s.

\* Up to 8 pairs of audio per video.

### INPUTS

SD-SDI / HD-SDI / 3G-SDI and 12G-SDI (only 610 module):

SD - SMPTE 259M-C - with embedded audio per SMPTE 272M A, B, and C.  
HD - SMPTE 292M with embedded audio per SMPTE 299M.  
3G - SMPTE 424M Level A and Level B.  
12G - SMPTE 2082

### VBI / VANC PROCESSING

Ancillary:  
Closed Captioning

### ENCRYPTION

BISS-1 / BISS-E (up to 80 Mbps)

### LATENCY

Very Low / Low / Normal / Long

### GOP

Open/ClosedIP / IBP / IBBP

### Single Channel Mode

Ideal for 4K/UHD or HD single-channel encoding applications. Audio is configured in this mode to support 4 pairs per single video.

### VEC0301-0501 ONLY

#### Dual GigE IP Input/Outputs

Primary - Web-Based Control / Secondary - TSOIP

Output Rates: 1 - 210Mbps  
SRT Send/Receive (up to 80 Mbps)  
MPEG 2 RTP v2 transport ( RFC 3550 )  
MPEG 2 UDP transport  
Supports multiple SPTS/MPTS w/bouquet management  
Supports BISS-CA Encryption (up to 80 Mbps)  
Supports Turn-Around (Pass through)  
Supports KLV Metadata

## ADDING VIDEO DECODER MODULES

- The AFN-VDC0301-0600 decoder module is capable of two video decodes and comes with four standard BNC outputs. This carrier can be placed in an AFN-1000 chassis or be added to the secondary slot of an AFN-250 chassis.
- The AFN-VDC0301-0501 module is capable of two video decodes and comes with four mini-DIN outputs and hosts all of the audio on-board. This module is specific to the AFN-250 frame and should be used in the primary slot as it also includes the system host functionality.

\* Note that there are 4 SDI Oupputs per module but only 2 Decoders. This provides redundant outputs for SD/HD decode.

## VIDEO FEATURE KEYS

AFN-4K-UHD	Enables 4K(UHD)/HD/SD resolutions for a single channel of HEVC or AVC *Max 1 per VDC0301 module.
AFN-HEVC-Channel	Enables HD/SD resolutions for a single channel of HEVC. Also includes AVC & MPEG-2. *Max 2 per VDC0301 module.
AFN-AVC-Channel	Enables HD/SD resolutions for a single channel of AVC. Also includes MPEG-2. *Max 2 per VDC0301 module.
AFN-MPEG2-Channel	Enables HD/SD resolutions for a single channel of MPEG-2 *Max 2 per VDC0301 module.
AFN-10-bit/4:2:2	Enables 10-bit, 4:2:2 for any applicable CODEC and purchased channel. *Max 1 per VDC0301 module.

## AUDIO FEATURE KEYS

AFN-MP/AAC-2Pairs	Enables two pairs of MP1L2, AAC-LC, AAC-HEV1/v2 audio decoding per video decode. *Max 4 per decoder / Max 8 per VDC0301 module.
AFN-DDAC3-2Pairs	Enables two pairs of Dolby Digital/AC3 audio decoding per video decode. *Max 4 per decoder / Max 8 per VDC0301 module.

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## VDC0301 - DECODER TECHNICAL SPECIFICATIONS

### VIDEO DECODE PROFILES

Only one CODEC can be decoded per module at a time.

#### HEVC / H.265 Profiles:

Main, Main 10, Main 4:2:2 10, up to 4K/60p

#### Video Rates:

4K/UHD: 10.0 - 80.0 Mbps (Decoder 1 Only)

HD: 1.0 - 24.5 Mbps

SD: 0.2 - 3.0 Mbps

#### Video Formats & Frame Rates:

4096 X 2160p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

3840 X 2160p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

1080p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

1080i: 60, 59.94, 50

720p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

576p: 50, 25

576i: 50

480p: 60, 59.94, 30, 29.97, 24, 23.97

480i: 60, 59.94

#### Chroma Sampling / Bit Depth:

4:2:2, 4:2:0 / 8-bit, 10-bit

#### AVC / H.264 Profiles:

BP, MP, HP, High 10, High 4:2:2, up to 4K/60p

#### Video Rates:

4K/UHD: 24.0 - 95.0 Mbps (Decoder 1 Only)

HD: 1.0 - 24.5 Mbps

SD: 0.5 - 16.0 Mbps

#### Video Formats & Frame Rates:

4096 X 2160p: 50, 30, 29.97, 25, 24, 23.97

3840 X 2160p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

1080p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

1080i: 60, 59.94, 50

720p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

576p: 50, 25

576i: 50

480p: 60, 59.94, 30, 29.97, 24, 23.97

480i: 60, 59.94

#### Chroma Sampling / Bit Depth:

4:2:2, 4:2:0 / 8-bit, 10-bit

#### MPEG 2 Profiles:

MP@HL 4:2:0 8-bit, up to 1080/60i

#### Video Rates:

HD: 7.0 - 24.5 Mbps

SD: 1.0 - 15.0 Mbps

#### Video Formats & Frame Rates:

1080p: 30, 29.97, 25, 24, 23.97

1080i: 60, 59.94, 50

720p: 60, 59.94, 50, 30, 29.97, 25, 24, 23.97

576p: 50

576i: 50

480p: 60, 59.94

480i: 60, 59.94

#### Chroma Sampling / Bit Depth:

4:2:0 / 8-bit

### AUDIO PROCESSING PROFILES

#### Audio Encoding Codecs:

MPEG 1 Layer 2

MPEG 2 Layer 2

Dolby Digital AC3

Dolby Digital Plus

AAC-LC

AAC-HEv1

AAC-HEv2

Bit Rates: 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, 384, 448, 512 Kbit/s.

\* Up to 8 pairs of audio per video.

### VEC0301-0501 ONLY

#### Dual GigE IP Input/Outputs

#### Primary - Web-Based Control / Secondary - TSOIP

SRT Send/Receive (up to 80 Mbps)

MPEG 2 RTP v2 transport ( RFC 3550 )

MPEG 2 UDP transport

Supports multiple SPTS/MPTS w/bouquet management

Supports Turn-Around (Pass through)

# Sencore AFN Platform

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## ADDING TRANSPORT MODULE:

- The AFN-TMC0100-0100 module serves as an IP multiplexer. Capable of IP input and output, it can be added to an encoder-based frame for an all-in-one solution. It can also be installed in a frame as a stand-alone multiplexer supporting turn-around or remux applications. This module can be placed in an AFN-1000 chassis or be added to the secondary slot of an AFN-250 chassis.
- The AFN-TMC0100-0400 module is an ASI multiplexer with output capabilities. With four independent or mirrored BNC ports, this module can be used for encoder transport or transport of remuxed or turn-around services. This module can be placed in an AFN-1000 chassis or be added to the secondary slot of an AFN-250 chassis.
- The AFN-TMC0100-0600 module is an ASI multiplexer with input capabilities. With four independent BNC ports, this module can be used as an integrated receiver for decoder applications or as a stand-alone receiver for turn-around or remux applications. This module can be placed in an AFN-1000 chassis or be added to the secondary slot of an AFN-250 chassis.

## TRANSPORT-MUX FEATURE KEYS

AFN-BISS-CA                      Enables BISS-CA encryption/decryption for a single module with ASI or IP outputs.

## TRANSPORT/MULTIPLEXER TECHNICAL SPECIFICATIONS

### IP Transport

#### Output

Use: Transport stream output. TSolP Egress (GigE) Standard: MPEG 2 RTP v2 transport ( RFC 3550 )  
Output Rates: 1 - 210Mbps (188 byte DVB packet size, 7 per IP packet) MPEG 2 UDP transport  
Supports multiple SPTS/MPTS w/bouquet management Supports Turn-Around (Pass through)

Standard: MPEG 2 UDP transport  
Output Rates: 1 - 210Mbps (188 byte DVB packet size, 7 per IP packet)

Standard: SRT transport  
Output Rates: 1 - 80Mbps

Connection speed: GigE ( 100/1000BaseT )

The sum of all transport streams must fall within the supported limit of 210Mbps per module.

Connector: 2x RJ45 10/100/1000  
Transport Table Generation  
MPEG Program Specific Information (PSI) table compliance:  
PAT / CAT / PMT

DVB Service Information (SI) static table compliance:  
SDT / NIT / EIT / TDT/TOT  
ATSC A65B (PSIP) static table compliance:  
MGT (TVCT) – Terrestrial / STT / RRT / EIT 0-3

#### Input

Use: Transport stream input. TSolP Ingress (GigE) concurrent with TSolP Egress (GigE).  
Decode / Remux / Turn-Around Applications. In Remux applications, the tables are stripped. In Turn-Around applications, the stream is left in tact and passed from the input to the output.  
Standard: MPEG-2 RTP v2 transport ( RFC 3550 )  
Input Rates: 1 - 210Mbps (188 byte DVB packet size, 7 per IP packet)

Standard: MPEG-2 UDP transport  
Output Rates: 1 - 210Mbps (188 byte DVB packet size, 7 per IP packet)

Standard: SRT transport  
Output Rates: 1 - 80Mbps

Connection speed: GigE ( 100/1000BaseT )  
The sum of all transport streams must fall within the supported limit of 210Mbps per module.  
Connector: 2x RJ45 10/100/1000

### ASI Transport

#### Output

Use: Transport stream output.  
Standard: Asynchronous Serial Interface per EN500083-9 / ISO13818-1  
MPEG 2 Transport Stream per EN 50083-9:1997 (188 byte only)  
Output Rates: DVB-ASI 210Mb/s (SPTS and MPTS). The sum of all four transport streams must fall within the supported limit of 210Mbps per module. Mirrored outputs are not additive.  
Connector: Four independent or mirrored standard BNC (75 Ohm)

Transport Table Generation

MPEG Program Specific Information (PSI) table compliance:  
PAT / CAT / PMT

DVB Service Information (SI) static table compliance:

SDT / NIT / EIT / TDT/TOT

ATSC A65B (PSIP) static table compliance:

MGT (TVCT) – Terrestrial / STT / RRT / EIT 0-3

Encryption: BISS-CA

#### Input

Use: Transport stream input.  
Decode / Remux / Turn-Around Applications  
In Remux applications, the tables are stripped.  
In Turn-Around applications, the stream is left in tact and passed from the input to the output.

Standard: Asynchronous Serial Interface per EN500083-9 / ISO13818-1  
MPEG 2 Transport Stream per EN 50083-9:1997 (188 byte only)

Input Rates: DVB-ASI 180Mbps (SPTS and MPTS).

Connector: Four independent standard BNC (75 Ohm). Each input can be routed to any decoder or output.

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## COMMON AFN CONFIGURATIONS: COMPONENT LISTS

### AFN-1000 Common Configurations

#### 8-CH HEVC Encoder w/Max Audio

Includes eight channels of HEVC encoding up to 10-bit 4:2:2, eight pairs of (DD-AC3) audio encoding per video, IP & ASI Multiplexer.

##### Component List:

- 1 - AFN-1000 w/system host
- 2 - AFN-VEC0301-0600
- 32 - AFN-DDAC3-2Pairs
- 1 - AFN-TMC0100-0400
- 8 - AFN-HEVC-Channel (includes AVC & MP2)
- 2 - AFN-10-bit/4:2:2

#### 8-CH HEVC Decoder w/Max Audio

Includes eight channels of HEVC decoding up to 10-bit 4:2:2, eight pairs of (MP/DD-AC3/AAC-LC/HEV1/2) audio decoding per video, IP & ASI Receiver.

##### Component List:

- 1 - AFN-1000 w/system host
- 4 - AFN-VDC0301-0600
- 1 - AFN-TMC0100-0600
- 8 - AFN-HEVC-Channel (includes AVC & MP2)
- 4 - AFN-10-bit/4:2:2
- 32 - AFN-DDAC3-2Pairs
- 32 - AFN-MP/AAC-2Pairs

#### 4-CH AVC Encoder w/Advanced Audio

Includes four channels of AVC encoding up to 10-bit 4:2:2, four pairs of (MP/AAC-LC) audio encoding per video, IP & ASI Multiplexer.

##### Component List:

- 1 - AFN-1000 w/system host
- 1 - AFN-VEC0301-0600
- 8 - AFN-MP/AAC-2Pairs
- 1 - AFN-TMC0100-0400
- 4 - AFN-AVC-Channel (includes MP2)
- 1 - AFN-10-bit/4:2:2

#### 4-CH AVC Decoder w/Advanced Audio

Includes four channels of AVC decoding up to 10-bit 4:2:2, four pairs of (MP/DD-AC3/AAC-LC/HEV1/2) audio decoding per video, IP & ASI Receiver.

##### Component List:

- 1 - AFN-1000 w/system host
- 2 - AFN-VDC0301-0600
- 1 - AFN-TMC0100-0600
- 4 - AFN-HEVC-Channel (includes AVC & MP2)
- 2 - AFN-10-bit/4:2:2
- 8 - AFN-DDAC3-2Pairs
- 8 - AFN-MP/AAC-2Pairs

### AFN-250 Common Configurations

#### 1-CH 4K/UHD HEVC Encoder w/Advanced Audio

Includes a single channels of 4K/UHD HEVC encoding with four pairs of (MP or AAC-LC) audio encoding, ASI & IP Multiplexer.

##### Component List:

- 1 - AFN-250
- 1 - AFN-VEC0301-0501 w/system host
- 2 - AFN-MP/AAC-2Pairs
- 1 - AFN-TMC0100-0400
- 1 - AFN-HEVC-Channel
- 1 - AFN-4K/UHD

#### IP to IP/ASI Turn-around Device

Dual In/Out GigE module & Quad ASI output module with bouquet management or turn-around capabilities. UDP/RTP/SRT/DVB-ASI

##### Component List:

- 1 - AFN-250
- 1 - AFN-TMC0100-0100
- 1 - AFN-TMC0100-0400

#### 2-CH AVC Encoder w/Min Audio

Includes two channels of AVC encoding up to 8-bit / 4:2:0, two pairs of (MP or AAC-LC) audio encoding per video, IP & ASI Multiplexer.

##### Component List:

- 1 - AFN-250
- 1 - AFN-VEC0301-0501 w/system host
- 2 - AFN-MP/AAC-2Pairs
- 1 - AFN-TMC0100-0400
- 2 - AFN-AVC-Channel

#### 2-CH AVC Decoder w/Min Audio

Includes two channels of AVC decoding up to 8-bit / 4:2:0, two pairs of (MP/DD-AC3/AAC-LC/HEV1/2) audio decoding per video, IP & ASI Receiver.

##### Component List:

- 1 - AFN-250
- 1 - AFN-VDC0301-0501 w/system host
- 1 - AFN-TMC0100-0600
- 2 - AFN-AVC-Channel
- 2 - AFN-DDAC3-2Pairs
- 2 - AFN-MP/AAC-2Pairs