

# Digital Media Gateway

DMG 4100/4200



Introducing the new DMG 4100 and DMG 4200 Digital Media Gateway from Sencore. The next generation of the DMG platform is an entirely new product engineered for the increased demand in ultra-high bandwidth IP video networking applications. Capable of routing an immense number of services while performing tasks such as multiplexing, scrambling and descrambling.

With increased capacity of up to 168GB internally and up to 4000 streams handled per module, the next generation of DMG is ready to overcome any video-aware networking challenge.

The new SDI/ASI gateway module can be used to encode/decode uncompressed or lightly compressed streams such as SMPTE 2022-6, JPEG 2000 and TiCo with support for legacy ASI signals. In addition, a DVB-CSA or AES scrambler module is available for very high density scrambling applications.

High capacity also means a greater need for redundancy. The DMG's dual active switch modules and backplanes with seamless traffic switching abilities let you rest assured your content is always available.

1RU and 2RU AC or DC form factors both offer dual hot-swappable power supplies, dual switch modules, dual front mounted control modules and six or twelve rear mounted option slot bays.

## KEY FEATURES

- High speed 10GB network interfaces to support up to 4000 services per IP module
- Video-centric IP Firewall Features
  - Perform multicast forwarding (IGMP join and forward)
  - Inspect and forward transport streams packets
  - Demultiplex and remultiplex transport streams
  - Encryption and decryption of video data
  - Provide seamless network protection according to SMPTE 2022-7
  - Receive SMPTE 2022-1 FEC
- Low latency (below 1ms), ideal for delay-critical circuits
- Dense scrambling up to 4000 services per module with DVB-CSA or AES encryption
- SDI and ASI to IP gateway supporting encoding and decoding of SMPTE 2022-6, JPEG 2000 and TiCo
- Access control with defined user rights and level of control for all interfaces
- Interfaces designed for high density in mind. Manage and monitor many streams with service grouping, group rules, and extensive search capabilities.

## APPLICATIONS

- **Video Aware Network Firewall**

The DMG is the perfect solution, offering high capacity, extensive video awareness, high security, operational simplicity and exceptional reliability. Security is assured by Sencore's own FPGA based IP packet forwarding mechanism and proprietary internal network structure.
- **Dense Scrambling**

An ultra-high density scrambler module is perfect for scrambling the very high service densities seen with the real-time online delivery of linear and VOD assets. Simulcrypt compliance enables up to four CA systems to be used concurrently and is rated for up to 16,000 ECMs.
- **SDI to IP Gateway**

The DMG can be used as a versatile SDI or ASI to IP gateway. Each module accepts up to 3G-SDI or ASI and software configurable as input or output. The module translates between SDI and uncompressed video over IP according to SMPTE 2022-6, JPEG 2000 or TiCo. Combine this with other modules to create a truly multi-purpose solution.

# SPECIFICATIONS

## Digital Media Gateway DMG 4100/4200

### 4100 SWITCH MODULE

#### SWITCH ARCHITECTURE

Total capacity: 80 Gbps full duplex  
Bitrate: 10 Gbps routing between modules in a chassis  
Placement: Front loaded

#### DATAPORTS

Interface: 2x 1/10G Base-T Ethernet or 1G SFP/10G SFP+ (Base-T or SFP must be selected at order)  
Operational mode: Seamless Input (SMPTE 2022-7)  
Cloned Output (SMPTE 2022-7)  
Seamless Input and Cloned Output (SMPTE 2022-7 Full Duplex)  
Single Input and Single Output (on separate interfaces)

Seamless buffer size (network path differential): Configurable up to 400ms  
Protocols: IPv4, IPv6, IGMP v2/v3, ICMP, ARP, 802.1Q (VLAN tag)

Maximum input data rate per port: 1/10G

### 4200 SWITCH MODULE

#### SWITCH ARCHITECTURE

Total capacity: 140 Gbps full duplex  
Bitrate: 10 Gbps routing between modules in a chassis  
Placement: Front loaded

#### DATAPORTS

Interface: 2x 1/10G Base-T Ethernet  
2x 1G Base-T Ethernet  
Operational mode: Seamless Input (SMPTE 2022-7)  
Cloned Output (SMPTE 2022-7)  
Seamless Input and Cloned Output (SMPTE 2022-7 Full Duplex)  
Single Input and Single Output (on separate interfaces)

Seamless buffer size (network path differential): Configurable up to 400ms  
Protocols: IPv4, IPv6, IGMP v2/v3, ICMP, ARP, 802.1Q (VLAN tag)

Maximum input data rate per port: 1/10G

### SWITCH MODULE (COMMON FOR 4100 & 4200)

#### CONTROL INTERFACE

Interface: 10/100/1000 Base-T Ethernet  
Built-in user interface: Web  
Protocols: IPv4, IPv6, HTTPS, SSH, ICMP, ARP  
External interface: SNMP for alarms, SOAP for configuration and status (TBD)

#### GENERIC TRAFFIC

Protocols: UDP, RTP, SMPTE 2022-6, SMPTE 2110 VSF TR-03, VSF TR-04, AES67  
IP input de-jitter: Yes, based on RTP timestamps or CBR bitrate  
IP input de-jitter buffer size: Configurable up to 200ms  
Maximum number of flows per port: 2000 input and 2000 output flows

#### MPEG TS TRAFFIC

Key reference specification: ISO/IEC 13818-1:2015, ETSI TS 102 034 V2.1.1, ETSI TR 101 211 V1.9.1  
Protocols: UDP, RTP  
Multicast, Unicast  
IP input de-jitter: Yes, based on PCR timestamps or CBR bitrate

#### MPEG TS TRAFFIC (CONTINUED)

IP input de-jitter buffer size: Configurable up to 200ms  
Maximum number of flows per port: 2000 input and 2000 output flows  
Forward Error Correction: SMPTE 2022-1 (licensed) - later release

Transport stream: Single program (SPTS) and multi program (MPTS)  
MPEG TS processing capacity: 6Gbps input and 6Gbps output  
Service filtering: Yes  
Video format: MPEG-2, H.264, HEVC (Transport Stream)

Multiplexing (MPTS output): Yes  
PCR regeneration: Yes  
Tables Supported: MPEG PSI -> PAT, PMT  
DVB SI -> SDT actual  
PSI/SI Table Regeneration: Yes, based on input and operations performed

#### LICENSED FEATURES

Forward Error Correction (SMPTE 2022-1) - Later Release  
Seamless Input (SMPTE 2022-7)  
MPEG TS multiplexing (MPTS output)  
Number of configured MPEG TS input streams  
OSFP output redundancy - Later Release

### DUAL 10G IP IO MODULE

#### DATAPORTS

Interface: 2x 1/10G Base-T Ethernet or 1G SFP/10G SFP+ (Base-T or SFP must be selected at order)  
Operational mode: Seamless Input (SMPTE 2022-7)  
Cloned Output (SMPTE 2022-7)  
Seamless Input and Cloned Output (SMPTE 2022-7 Full Duplex)  
Single Input and Single Output (on separate interfaces)

Seamless buffer size (network path differential): Configurable up to 400ms  
Protocols: IPv4, IPv6, IGMP v2/v3, ICMP, ARP, 802.1Q (VLAN tag)

Maximum input data rate per port: 1/10G

#### GENERIC TRAFFIC

Protocols: UDP, RTP, SMPTE 2022-6, SMPTE 2110 VSF TR-03, VSF TR-04, AES67  
IP input de-jitter: Yes, based on RTP timestamps or CBR bitrate  
IP input de-jitter buffer size: Configurable up to 200ms  
Maximum number of flows per port: 2000 input and 2000 output flows

#### MPEG TS TRAFFIC

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Protocols: UDP, RTP  
Multicast, Unicast  
IP input de-jitter: Yes, based on PCR timestamps or CBR bitrate  
IP input de-jitter buffer size: Configurable up to 200ms  
Maximum number of flows per port: 2000 input and 2000 output flows  
Forward Error Correction: SMPTE 2022-1 (licensed) - later release

Transport stream: Single program (SPTS) and multi program (MPTS)  
MPEG TS processing capacity: 6Gbps input and 6Gbps output  
Service filtering: Yes  
Video format: MPEG-2, H.264, HEVC (Transport Stream)

Multiplexing (MPTS output): Yes  
PCR regeneration: Yes  
Tables Supported: MPEG PSI -> PAT, PMT  
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# SPECIFICATIONS

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### LICENSED FEATURES

Forward Error Correction (SMPTE 2022-1) - Later Release  
Seamless Input (SMPTE 2022-7)  
MPEG TS multiplexing (MPTS output)  
Number of configured MPEG TS input streams  
OSFP output redundancy - Later Release

### 3G SDI/ASI IO MODULE

#### DATAPORTS

Interface: 8 × 3G HD BNC 75 Ω  
Traffic type: HDSDI or ASI (configurable)  
Data flow: Input or output (configurable)

#### ASI IN/OUT

Key reference specification: EN 50083-9 Annex B  
Maximum input bit-rate per port: Up to 216 Mbit/s burst mode  
Up to 72 Mbit/s spread mode  
Maximum output bit-rate per port: Up to 216 Mbit/s burst mode  
Up to 72 Mbit/s spread mode  
Number of MPEG services: 2000 (all ports)  
Input signal protection: Seamless switching between 2 input sources  
Operational modes: Input  
Output  
Cloned ASI out  
Dual ASI in with seamless switchover  
Transport stream : Single program (SPTS) and multi program (MPTS)  
Service filtering: Yes  
Video format : MPEG-2, H.264, HEVC (Transport Stream)  
Multiplexing (MPTS output): Yes  
PCR regeneration: Yes  
Tables Supported: MPEG PSI -> PAT, PMT  
DVB SI -> SDT actual  
PSI/SI Table Regeneration: Yes, based on input and operations performed on the signal

#### SDI IN/OUT

Key reference specification: SMPTE 259M  
Resolution / Frame rates: 480i - 29.97fps  
576i - 25fps

#### HD SDI IN/OUT

Key reference specification: SMPTE 292M  
Resolution / Frame rates: 720p - 50 fps or 59.94 fps  
1080i - 25 fps or 29.97 fps

#### 3G SDI IN/OUT

Key reference specification: SMPTE 424M  
Resolution / Frame rates: 1080p - 50 fps or 59.94 fps

#### AUDIO IN/OUT

Key reference specification: SMPTE 272M (SD), SMPTE 299M (HD/3G)  
Sample Rate: 48kHz, synchronous to video

### ANCILLARY DATA AND VBI

TBD

### LICENSED FEATURES

Number of ASI in/out  
Number of 3G-SDI, HDSDI, SDI in/out  
Seamless ASI  
MPEG TS multiplexing (with ASI output)

### SCRAMBLING MODULE

#### SCRAMBLING

Scrambling algorithm: DVB-CSA v1 (48-bit)  
DVB-CSA v2 (64-bit)  
AES (128-bit)  
Entropy reduction: Yes for DVB-CSA v1 (Reduced to 48-bit)  
No for AES  
AES mode of operation: ATIS IIF Default Scrambling Algorithm (IDSA)  
DVB Common IPTV Software-oriented Scrambling Algorithm (CISSA)  
AES-ECB1 / AES-ECB2 / AES-CBC1  
Irdeto AES-CBC1  
PVR support (trick mode): PES header in clear (leave a number of packets in clear after PES header)  
MPEG TS processing capacity: 6Gbit/s  
Services per scrambler card: 2000  
Video format: MPEG-2, H.264, HEVC (Transport Stream)  
Interface towards CA System: Simulcrypt interface  
Number of CA systems: 8  
Maximum number ECM (sum of all CA systems): 1600  
EMM insertion: Yes  
EIS support: Yes  
Tables Supported: CAT generation

### LICENSED FEATURES

Number of scrambled services  
Number of CA systems  
PES header in clear (PVR trick mode)

### CHASSIS

#### PHYSICAL DIMENSIONS

4100 chassis: 19" × 1RU × 540mm (440 × 44 × 540 mm)  
4200 chassis: 19" × 2RU × 540mm (440 × 88 × 540 mm)

#### MODULE SLOTS

Number of switch modules (front): 1 or 2 active  
4100 Number of modules (rear): 6  
4200 Number of modules (rear): 12  
Hot swap support: Yes

#### POWER SUPPLY

Power rating 4100: 750 Watt  
Power rating 4200: 1200 Watt  
Input voltage: 100-240 V AC, 50/60 Hz  
Redundancy: Yes, dual hot swappable PS  
Monitoring: Via WEB GUI and LED indicators on PS

#### COOLING

4100 chassis: Single fan tray with 6 fans  
4200 chassis: Single fan tray with 5 fans  
Airflow direction: Front to back  
Hot swap support: Yes, complete fan tray

### ENVIRONMENTAL CONDITIONS

#### OPERATIONAL CONDITIONS

Temperature: 0 to +40 °C  
Humidity: 5–95% (non-condensing)

#### STORAGE

Temperature: -20 to +70 °C  
Humidity: 5–95% (non-condensing)

### SAFETY STANDARDS

Electric safety: IEC 60950-1  
EMC: EN 55032, EN55024, EN61000-3-2, EN61000-3-3, FCC CFR 47 Part 15  
RoHS: Compliant  
WEEE: Compliant