

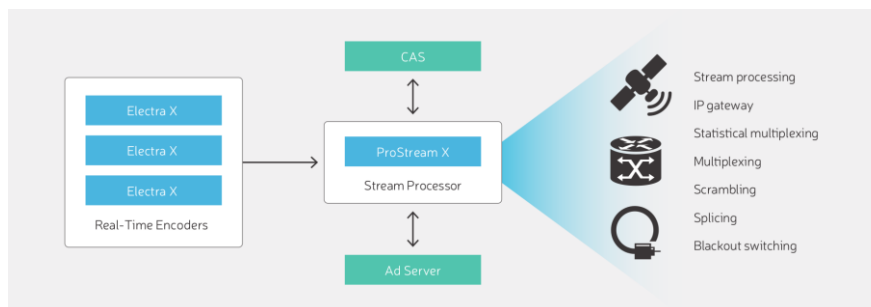
# HARMONIC ProStream X



## VIDEO STREAM PROCESSOR & GATEWAY

The Harmonic ProStream X video stream processor and gateway leverages advances in IT infrastructure to provide best-in-class, high-performance stream processing for mission-critical broadcast, cable, satellite, IPTV and OTT delivery applications.

- Multiplexing and scrambling of up to 2,000 simultaneous broadcast services
- High-throughput 10-Gbps video gateway
- Advanced multiplexing of any service from any input to any output
- Target Average Bitrate
- DataTrack
- IP networking and mirroring
- DiviTrack IP statistical multiplexing with remote distributed encoders
- Live-to-live splicing for MPEG-2, MPEG-4 AVC and HEVC video streams
- DVB CSA3, DVB CSA2 and AES scrambling
- Slate insertion for service disruption messages
- Emergency Alert System (EAS) compliance including SCTE-18 Trigger



## SPECIFICATIONS

| 10-GbE IP I/O              |                                                                                                                                                   |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Type                       | IEEE 802.3z                                                                                                                                       |
| IP Ports                   | Four independent                                                                                                                                  |
| Connectors                 | Four 1-GbE ports, RJ45 on board<br>PCI option card for two 10-GbE ports SFP (up to two cards per platform)<br>Support for IEEE 802.Q VLAN tagging |
| I/O Speed                  | Up to 10 Gbps                                                                                                                                     |
| IP Encapsulation           | MPEG TS over UDP/IP/MAC<br>1 to 7 TS/IP                                                                                                           |
| MPEG Format                | 188 B per TS                                                                                                                                      |
| MPEG Transport Streams     | MPTS and SPTS                                                                                                                                     |
| I/O Processing             | 1,000 sockets<br>Up to 10 Gb per platform (configuration dependent)                                                                               |
| Maximum Bitrate per Socket | 300 Mbps                                                                                                                                          |
| Addressing                 | Multicast                                                                                                                                         |
| Management                 | IGMPv2/v3                                                                                                                                         |

|                                             |                                                                                                                                                  |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ASI I/O</b>                              |                                                                                                                                                  |
| Type                                        | ASI input/output                                                                                                                                 |
| ASI Ports                                   | Eight ports per card, up to two cards per platform                                                                                               |
| Connectors                                  | Eight mini-DIN ports                                                                                                                             |
| I/O Direction                               | Configurable, input or output, per port                                                                                                          |
| MPEG Format                                 | 188/204 B per TS                                                                                                                                 |
| I/O Processing                              | One MPTS/SPTS per port<br>Up to 213 Mbps per input or output                                                                                     |
| <b>MANAGEMENT INTERFACES</b>                |                                                                                                                                                  |
| Ethernet                                    | 1000Base-TX                                                                                                                                      |
| Connectors                                  | Two RJ45 (1 management, 1 CAS)                                                                                                                   |
| <b>SCRAMBLING</b>                           |                                                                                                                                                  |
| SCS                                         | Internal                                                                                                                                         |
| Standards                                   | DVB common scrambling<br>Open CAS<br>DVB CSA2, DVB CSA3, AES-CBC, AES-NSA2 scrambling<br>AES descrambling<br>Fix Key scrambling and descrambling |
| CAS connections                             | Simultaneous connections to 30 different CA systems                                                                                              |
| BISS Encryption                             | Mode 1                                                                                                                                           |
| Number of ECMs                              | 2,000 ECMs per platform                                                                                                                          |
| <b>STATMUX CONTROL</b>                      |                                                                                                                                                  |
| Codecs Supported                            | MPEG-2, MPEG-4 AVC, HEVC                                                                                                                         |
| Formats Supported                           | SD, HD, UHD, interlaced, progressive                                                                                                             |
| Frame Rates Supported                       | PAL, NTSC                                                                                                                                        |
| <b>REMULPLEXING</b>                         |                                                                                                                                                  |
| Routing                                     | Any input to any output                                                                                                                          |
| PID                                         | Remapping, filtering, multicasting                                                                                                               |
| PID Multicasting                            | Any input PID can be multicasted to multiple TS outputs with different remapping and processing (different CW, if scrambled)                     |
| PSI/SI                                      | Extraction, injection, spooling, regeneration                                                                                                    |
| Output Mirroring                            | Any to any                                                                                                                                       |
| Advanced Stream Processing                  | Live-to-live splicing, PID range                                                                                                                 |
| <b>REDUNANCY</b>                            |                                                                                                                                                  |
| Device                                      | 1:1<br>Under NMX or stand-alone GUI management                                                                                                   |
| Internal                                    | Any-to-any input TS<br>TS output mirroring<br>Port redundancy                                                                                    |
| Triggers                                    | ETR 290                                                                                                                                          |
| <b>SYSTEM MANAGEMENT</b>                    |                                                                                                                                                  |
| NMX™ Digital Service Manager 7.6.2 or later |                                                                                                                                                  |
| Stand-alone web user interface              |                                                                                                                                                  |
| <b>PHYSICAL</b>                             |                                                                                                                                                  |
| Dimensions (W x H x D)                      | 17.28 in x 1.7 in x 28 in (1 RU)<br>43.9 cm x 4.32 cm x 71.12 cm                                                                                 |
| Weight                                      | 28.7 lbs/13 kg                                                                                                                                   |
| <b>POWER</b>                                |                                                                                                                                                  |
| Power Supplies                              | Dual redundant                                                                                                                                   |
| Voltage                                     | 90-132 V<br>180-264 V                                                                                                                            |
| Line Frequency                              | 47-63 Hz                                                                                                                                         |

| ENVIRONMENTAL                           |                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cooling                                 | Six fans, hot-swappable                                                                                                                                                                                                                                                                                                                                     |
| <b>Operating Temperature</b>            |                                                                                                                                                                                                                                                                                                                                                             |
| ASHRAE Class A2                         | +50° to +95° F<br>+10° to +35° C<br>Continuous operation with max rate of change: 10° C/hr                                                                                                                                                                                                                                                                  |
| ASHRAE Class A3                         | Includes operation up to 40° C for up to 900 hrs/yr                                                                                                                                                                                                                                                                                                         |
| ASHRAE Class A4                         | Includes operation up to 45° C for up to 90 hrs/yr                                                                                                                                                                                                                                                                                                          |
| Storage Temperature                     | -40° to +158° F<br>-40° to +70° C                                                                                                                                                                                                                                                                                                                           |
| Safety Compliance                       | UL60950-CSA 60950 (USA/Canada)<br>EN60950 (Europe)<br>IEC60950 (International)<br>CB Certificate & Report, IEC60950<br>CE-Low Voltage Directive 2006/95/EC (Europe)                                                                                                                                                                                         |
| Electromagnetic Compliance<br>(Class A) | FCC /ICES-003 -Emissions (USA/Canada) Verification<br>CISPR 22 - Emissions (International)<br>CISPR 24 - Immunity (International)<br>EN55022 - Emissions (Europe)<br>EN55024 - Immunity (Europe)<br>CE-EMC Directive 2004/108 EC (Europe)<br>AS/NZS 3548 Emissions (Australia/New Zealand)<br>BSMI CNS 13438 Emissions (Taiwan)<br>KC Certification (Korea) |

## ORDERING INFORMATION

### PLATFORM

| PART NUMBER               | DESCRIPTION                                                                                        |                      |                                                                                                 |
|---------------------------|----------------------------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------|
| PRM-X-21-AC-FF            | ProStream X G2 stream processing platform with AC dual PSU                                         | FW-PRM-X-AES-CW      | ProStream X AES SCR firmware license; one per service required                                  |
| PRM-X-21-DC-FF            | ProStream X G2 stream processing platform with DC dual PSU                                         | FW-PRM-X-SCR-FIX-SRV | ProStream X fixed key firmware license; one per service required                                |
| PRM-X-DUAL-10GBE          | ProStream X G2 stream processing platform with dual-port 10-Gbe optical NIC with SFP+              | FW-PRM-X-SELC-SCR    | ProStream X Selective Encryption firmware license; one per service required                     |
| PRM-X-OCTO-ASI            | ProStream X optional ASI card, with up to eight ASI I/O ports                                      | FW-PRM-X-SELC-EHP    | ProStream X Encryption Hacking Prevention scrambling firmware license; one per service required |
| FW-PRM-X-BASE             | ProStream X base license                                                                           | FW-PRM-X-DES-FIX-SRV | ProStream X AES Fixed key descrambling firmware license. One per service required               |
| FW-PRM-X-LAB              | ProStream X firmware license for lab license                                                       |                      |                                                                                                 |
| FW-PRM-X-DEMO             | ProStream X firmware license for all functions for 90-day demo usage; for none commercial use only |                      |                                                                                                 |
| FW-PRM-X-SPARE            | ProStream X cold spare firmware license for all ProStream functions; 30 days; one per chassis      |                      |                                                                                                 |
| FW-PRM-X-DEVICEREDUNDANCY | ProStream X stand-alone device redundancy firmware license; one per chassis required               |                      |                                                                                                 |

### HIGH THROUGHPUT

| PART NUMBER         | DESCRIPTION                                    |
|---------------------|------------------------------------------------|
| FW-PRM-X-2G-GATEWAY | ProStream X 2-Gbps throughput firmware license |

### SPLICING

| PART NUMBER      | DESCRIPTION                                                                          |
|------------------|--------------------------------------------------------------------------------------|
| FW-PRM-X-SRV-SUB | ProStream X Splicing Service Substitution firmware license; one per service required |

### MULTIPLEXING

| PART NUMBER               | DESCRIPTION                                                                                                                                  |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| FW-PRM-X-DT-POOL          | ProStream X firmware license for statmux control; one DiviTrackIP license per pool                                                           |
| FW-PRM-X-SLATE-SRV        | ProStream X firmware license for Slate Insertion; one per service required                                                                   |
| FW-PRM-X-EAS-SRV          | ProStream X firmware license for Emergency Alert System; one per service required                                                            |
| FW-PRM-X-FEC-TS           | ProStream X FEC firmware license; one per transport stream required                                                                          |
| FW-PRM-X-DT-REGIONALSRV   | ProStream X firmware license for sharing common services between regional statmux pools; license is per one duplicate of the common services |
| FW-PRM-X-ESAM             | ProStream X ESAM interface firmware license; one per service required                                                                        |
| FW-PRM-X-DT-TARGETBTR-SRV | ProStream X with Target Average bitrate algorithm; one per service required.                                                                 |
| FW-PRM-X-DATATRACK        | ProStream X capability to add external Data/Audiopids to the DiviTrack statmux pool.                                                         |

### SCRAMBLING

| PART NUMBER           | DESCRIPTION                                                                |
|-----------------------|----------------------------------------------------------------------------|
| FW-PRM-X-DVB-CSAv3-CW | ProStream X DVB CSA3 scrambling firmware license; one per service required |
| FW-PRM-X-DVB-CW       | ProStream X DVB SCR firmware license; one per service required             |
| FW-PRM-X-BISS-FIX-SRV | ProStream X BISS fixed key firmware license; one per service required      |