



X 1 0

X 2 0



Near limitless capacity, extensive video awareness, enhanced security, operational simplicity and exceptionally high reliability

VIDEO CONTRIBUTION OVER IP

The Appear TV X10/X20 platform is a dedicated solution for high speed video networking, enhanced IP security, video distribution and contribution. Designed for near limitless capacity, extensive video awareness, enhanced security, operational simplicity and exceptionally high reliability, the platform redefines video delivery.

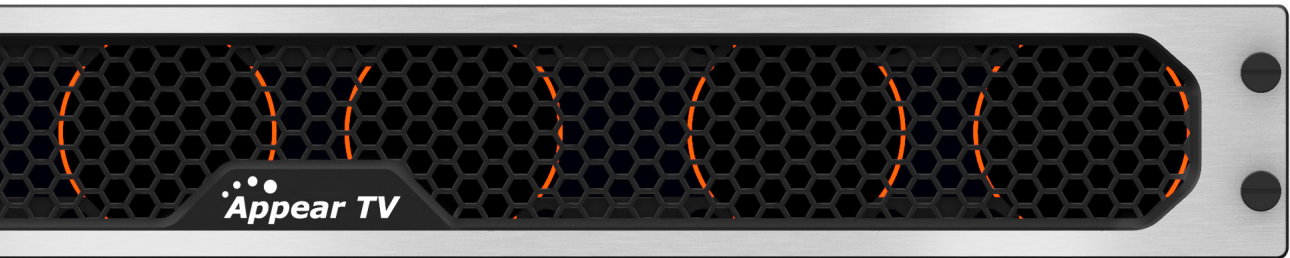
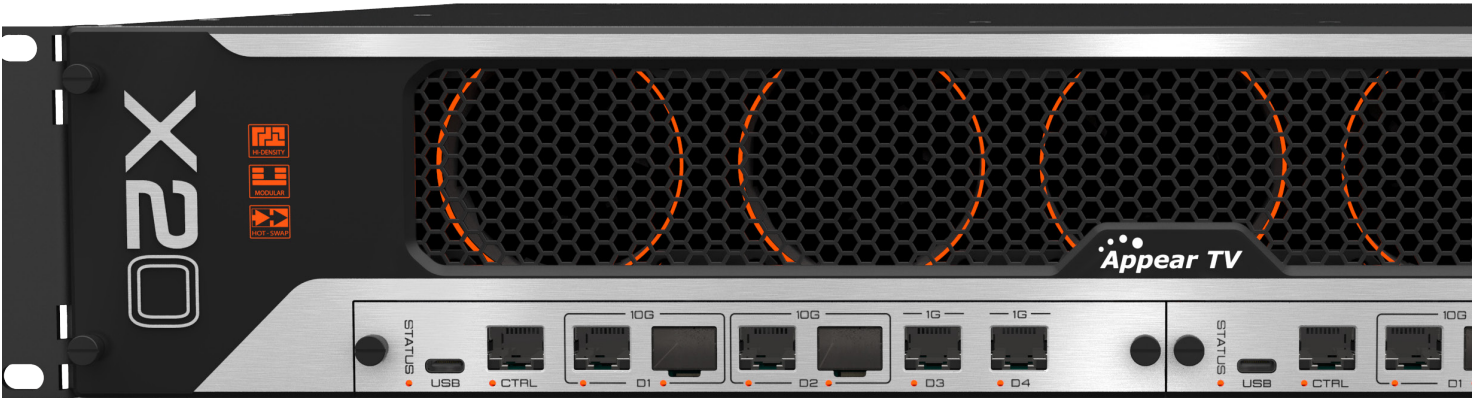
With IP network technology and infrastructure evolving, the distribution of video is changing. Dedicated coax-based SDI infrastructure are being replaced by transmission over standard IP-based networks. With 10G and 100G IP infrastructures available, broadcasters seek ways to use the added capacity, primarily for internal uncompressed or lightly compressed video contribution.

Specifically designed for IP-centric operations, the X10/X20 chassis has a significant video processing capacity. 10G bi-directional IP interfaces provide firewall-grade IP security at every connection node. Operating at a minimum internal throughput of 140G, the new backplane extends Appear TV's tradition of patented redundancy options. Service density can be defined up to 2,000 services in and out per module.

The X platform supports conversion of uncompressed video between legacy SDI and to/from SDI over IP with options to perform "light" compression/decompression using intra-codecs such as TICO and JPEG2000 or full encoding/decoding using AVC or HEVC.. With backplane latency of less than 1ms, universal applicability for virtually any video application is ensured, as is the implementation of both current and future IP video standards, including VSF-TR03, VSF-TR04 and SMPTE2110.



Advanced architecture
designed to save space, energy
and resources



CHASSIS

The X platform consists of a compact 1RU - X10 as well as a capacious 2RU - X20 option. Both chassis can be used independently, or in conjunction with Appear TV’s widely deployed XC5000 and XC5100 chassis. Built around an in-house developed, high capacity bus architecture that connects all modules, the X platform operates with dual hot-swappable power supplies, dual front-mounted control modules and six or twelve rear-mounted option slots. A -48VDC power supply option is available.

Dual control modules can optionally be fitted to either model, and will operate in active / active redundancy mode with redundant backplanes to provide seamless recovery from many critical fault scenarios. All option modules are interchangeable between the X10 and X20.

The Control/Switch module and the Dual IP IO modules provide native 10G uni-directional and bi-directional port connectivity. The Control/Switch module for X20 has two additional 1G uni-directional ports. Seamless input and cloned output modes are supported. High data rate interfaces such as 25G, 40G and even 100G NICs will be added on selected future option modules when required (for example to support handling of uncompressed 4K and 8K services).

All modules are hot-swappable (including power supplies and fans). The new architecture provides freedom from system releases enabling different software versions to be used on modules: This allows new features to be delivered to customers sooner.

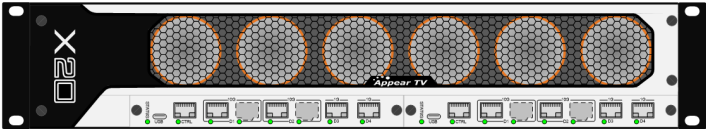
Service density can be defined up to 2,000 services in and out per module, while set-up and configuration is streamlined. By enabling the organization of services and multiplexes into several groups with a set of individually defined rules for each group, the operator can quickly apply changes to multiple services or multiplexes. Extensive search capabilities allow the operator to easily locate groups, services, etc.

FEATURES

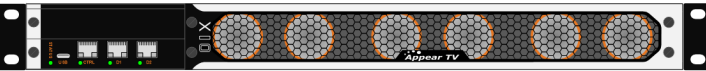
2RU - X20	1RU - X10
<ul style="list-style-type: none">• Modular configuration with up to 12 option slot boards• WEB based configuration, LED indicators on PS and modules• Forced air-cooling (front to back)• Dual redundant hot-swappable PS• Hot-swappable modules• 100-240 V AC, 50/60 Hz• -48VDC	<ul style="list-style-type: none">• Modular configuration with up to 6 option slot boards• WEB based configuration, LED indicators on PS and modules• Forced air-cooling (front to back)• Dual redundant hot-swappable PS• Hot-swappable modules• 100-240 V AC, 50/60 Hz

DIMENSIONS

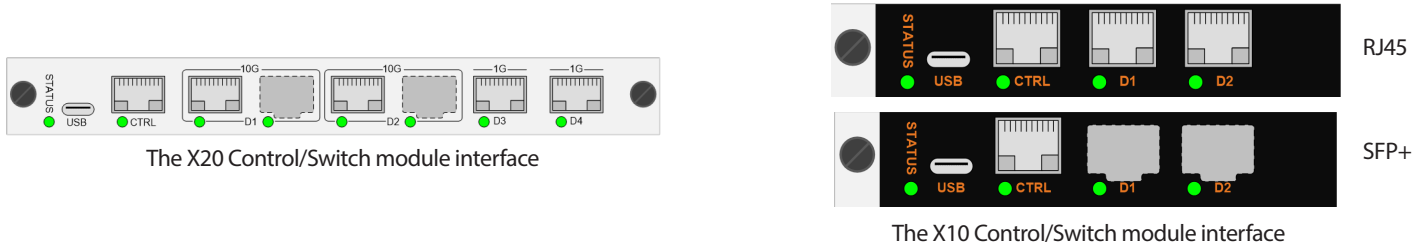
2RU (X20)
19" × 2RU × 540 mm (440 × 88 × 540 mm) (w × h × d mm)



1RU (X10)
19" × 1RU × 540 mm (440 × 44 × 540 mm) (w × h × d mm)



The X20 and X10 use the same set of modules and same SW, although the Control/Switch module differs between the two.





Designed to meet all challenges
that a full IP-based
infrastructure presents

HIGHLIGHTS

The X platform has been developed to exploit new opportunities driven by the increasing deployment of ultra-high speed IP networks within all areas of broadcasting. Designed to meet all challenges that a full IP-based infrastructure presents, the platform features:

HIGH SPEED

Multiple bi-directional 10G interfaces with the ability to route up to 140G of traffic internally.

DELAY

Low backplane latency (below 1ms) making overall contribution to delay negligible.

MPEG & NATIVE IP HANDLING

The ability to handle native IP, MPEG-2 TS with MPEG-DASH, MPEG-H MMT coming in future releases. Will also accommodate new standards not currently defined.

IP NETWORK SECURITY

A video centric, cost-effective, easy to deploy, high-capacity firewall feature that can monitor and regenerate traffic as required.

CAPACITY

Most modules support up to 4,000 (2,000 in and 2,000 out) streams / services per module and 10G of traffic.

MONITORING & CONTROL

A management system to control a potentially vast array of linear and on-demand service traffic effectively, as traditional IPTV / OTT worlds merge.

SDI TO IP

A high-density SDI input / output module supporting SMPTE 2022-6 and ASI with optional seamless TS packet switching.

ACCESS CONTROL

A new standard of access control, user management and IP security to secure access to critical network devices. A user account with four different access levels can be defined per user.

REDUNDANCY

Designed to be as reliable and failsafe as possible, even when used stand-alone. The uniquely efficient, built for purpose hardware design is engineered for high reliability and stability. Should an internal failure take place, a range of redundancy options can take effect to keep the chassis fully operational. Dual active - active control/switch module redundancy with internal seamless traffic switching can optionally be deployed within the chassis to make recovery from many critical errors totally seamless.

ENHANCED SECURITY

There are typically multiple locations within a modern broadcasting environment necessitating secure video interfaces between sites, especially when implemented using public networks. The high level of security needed must protect the different sites from outside attacks as well as protect the integrity of video transmission itself. Being a fully operational video firewall, the X platform maintains tight security on its control layer, supporting many advanced features encompassing Authentication, Authorisation and Audit. Security is assured by Appear TV's own FPGA based IP packet forwarding mechanism and proprietary internal network structure.

Video-centric features provided in the X series include:

- Multicast forwarding (IGMP join and forward)
- Inspect and forward MPEG-2 TS packets (deep layer 5/6 packet inspection)
- De-multiplex MPEG-2 TS streams
- Encryption and decryption of video data
- Seamless network protection according to SMPTE 2022-7
- Encode and decode SMPTE 2022-1 supplementary FEC

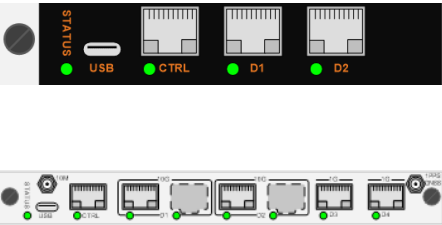
OVERVIEW

- Modular
 - Scalable
 - Compact with multiple inputs/ outputs per module
 - Advanced input analysis and status information
- Easy to configure from one common web GUI interface
 - Hot swappable
 - Wide range of input modules
 - Mix and match card types freely, and add as many as you need

MODULES

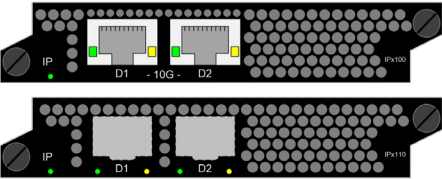
Control/Switch

X10 Spec details per line card: Total capacity Bitrate Interface	: 80 Gbps full duplex : 10 Gbps routing between modules in a chassis : 2x 1/10G Base-T Ethernet or 1G SFP/10G SFP+ (Base-T or SFP must be selected at order)
Protocols	: IPv4, IPv6, IGMP v2/v3, ICMP, ARP, 802.1Q (VLAN tag)
X20 Spec details per line card: Total capacity Bitrate Interface	: 140 Gbps full duplex : 10 Gbps routing between modules in a chassis : 2x 1/10G Base-T Ethernet or 1G SFP+ : 2x 1G Base-T Ethernet
Protocols	: IPv4, IPv6, IGMP v2/v3, ICMP, ARP, 802.1Q (VLAN tag)



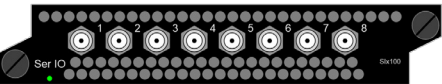
Dual 10G IP IO

Spec details per line card: Interface	: 2x 1/10G Base-T Ethernet or 1G SFP/10G SFP+ (Base-T or SFP must be selected at order)
Protocols	: UDP, RTP, SMPTE 2022-6, SMPTE 2110 VSF TR-03, VSF TR-04, AES67



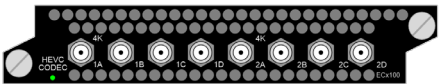
12G SDI/ASI IO

Spec details per line card: Interfaces	: 8x HD BNC 75 Ohm (brakeout to BNC available) or 3x Video SFP+ (BNC or SFP must be selected at order)
Video Format	: 12G-SDI (SMPTE ST-2082) – two inputs only : 3G-SDI (SMPTE 424M) : HD-SDI (SMPTE 292M) : SD-SDI (SMPTE 259M)
Traffic type Data flow	: SDI or ASI (configurable) : Input or output (configurable)



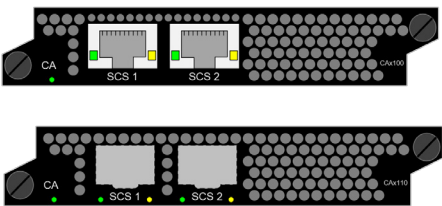
HEVC Codec

Spec details per line card: Video Input Connectors	: 8x HD BNC 75 Ohm (brakeout to BNC available)
Video Input Format	: 12G-SDI (SMPTE ST-2082) – two inputs only : 3G-SDI (SMPTE 424M) : HD-SDI (SMPTE 292M) : SD-SDI (SMPTE 259M)



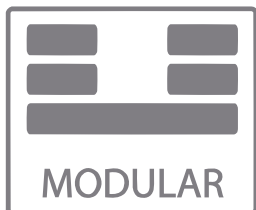
Scrambler

Spec details per line card: 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

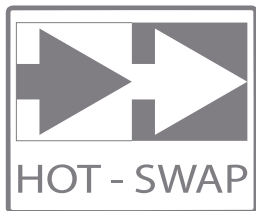




HI-DENSITY



MODULAR



HOT - SWAP

APPEAR TV AS

Po Box 8 Lilleaker

No-0216 Oslo

Norway

Tel: +47 24 11 90 20

Fax: +47 24 11 90 21

Email: info@appeartv.com

Web: www.appeartv.com