LIMITLESS

LIVE

PRODUCTION


BLADE Runner®

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# The world's first live production solution designed around the principle of Infrastructure-as-Code.

BLADE//runner

BLADE//runner was designed to deliver unparalleled flexibility, leveraging resource pooling and software-defined functionality in a fully IP-based environment.

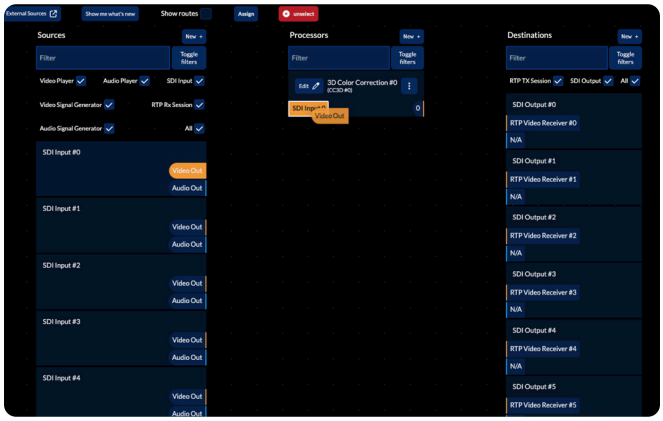
## SOFTWARE-DEFINED INFRASTRUCTURE

Unlike traditional platforms with rigid, predefined processing paths, BLADE//runner features a fully non-blocking central core that connects all I/O and processing functions. This architecture allows you to route SDI, IP, and processing functions in any combination and any order, giving you the flexibility to design customized workflows that perfectly align with your production requirements.

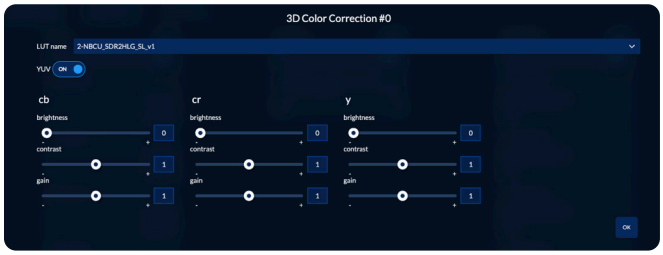
At arkona, we believe in open standards and an API First approach. We have built an extensive and powerful API that lets you control ALL features of our software through WebSocket or REST, putting YOU in charge. NMOS IS-04, IS-05 and Ember+ is included for easy discovery and interoperability with legacy systems. Additionally, every system comes with a complimentary extensive monitoring and telemetry solution (vTelemetry). This solution includes prebuilt Grafana views and a dedicated PCAP application for comprehensive network analysis.

## SIMPLE CONFIGURATION WITH “FLOWS”

BLADE//runner configuration is a breeze with the built-in FLOWS configuration tool which presents Sources, Processing and Outputs in a simple point, click and drag web UI where all the most commonly used parameters are at your fingertips. FLOWS easily allows you to configure routing between Sources, Processing functions and Destinations to build your desired processing path. Audio, Video and Metadata sources from other IP devices can also be added directly into FLOWS.




FLOWS presents Sources, Processing functions and Destinations in a simple layout. Routing Sources is as simple as dragging the source on top of the desired Destination such as a Processor or Output.

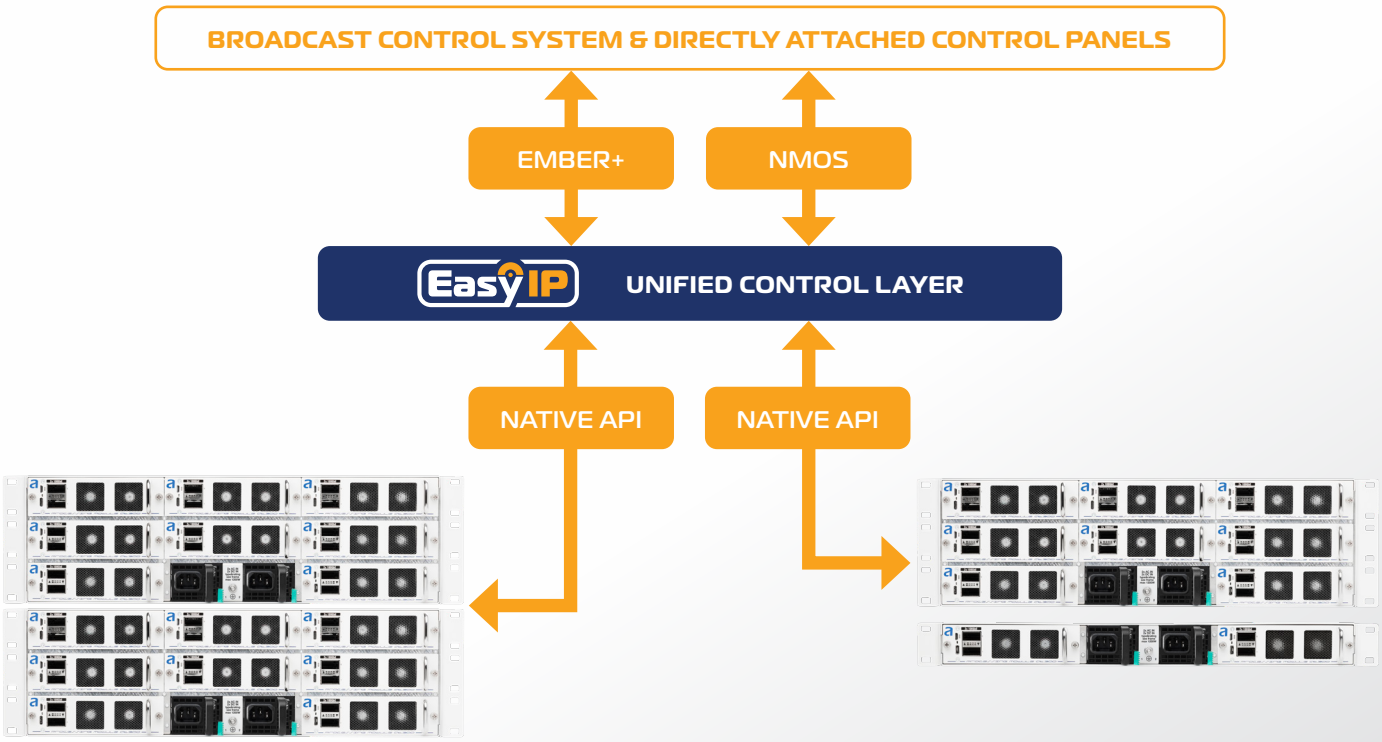



It’s easy to dynamically add and remove processing functions such as Audio and Video mixing, HDR/SDR conversion, Delays etc. directly from the UI. Clicking on any processing function presents all the most commonly used parameters for easy adjustment.

## EASY-IP



BLADE//runner can be configured to present a group of AT300s as a single instance. This allows multiple AT300s to function as a homogeneous video router that can perform clean and quiet switching across multiple blades in a single switch command.



## BLADE//RUNNER APPLICATIONS

BLADE//runner is powered by the AT300, a high-performance programmable acceleration card (PAC) with dual 100GbE interfaces and a high-bandwidth memory FPGA. Each AT300 can load one out of several different applications (APPs) that each offer a different set of functionality tailored to specific use-cases.

### IP GATEWAY AND ROUTER (IPGR)

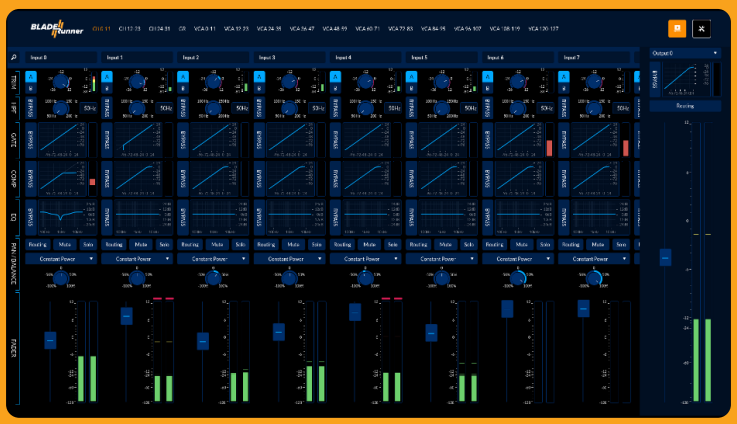
The IPGR application for the AT300 provides comprehensive audio/video/metadata Gateway, Routing, Frame-sync, Audio/Video Delay, Embedding, De-embedding, Sample Rate Conversion and Clip Player/Grabber functionality. IPGR includes support for a wide variety of SMPTE standards such as ST2110, ST2022-6, ST2042(VC2) and ST2022-7. A massive 6k by 6k router provides mono audio routing for both SDI and IP I/O.

### JPEG-XS (JXS & JXS16)

JPEG-XS encode/decode is available in two different applications for the AT300 and provides up to 16 freely routable JPEG-XS codecs. These can be configured as either all encode, all decode or as 8 encode and 8 decode and can be changed on the fly. Each codec supports one UHD/FHD/HD signal for a max of 16 x UHD. In addition to JPEG-XS functionality both the JXS and JXS16 apps are capable of additional uncompressed ST2110/2022-6 gateway functionality and include a 6k by 6k mono audio router, Frame-sync, Sample-Rate-Conversion, Audio/Video Delay and Clip Player/Grabber functionality.

### IP AUDIO (IPA)

IPA is a dedicated audio application that provides a non-blocking audio router with over 16 thousand inputs and 12 thousand outputs, large enough to provide the audio routing for an entire broadcast facility. In addition to routing, the IPA app includes Mono, Stereo and Mix-minus (N-1) mixing instances that can be dynamically allocated to any audio signals in the router. All mixing and DSP instances are freely assignable and can be combined in any order without introducing delay. The total delay from input to output is 2 samples.



The BLADE//runner IP Audio app includes a built-in web-based GUI but can also be controlled via external hardware panels, through the API or in any combination of the above.

## BLADE//RUNNER APP OPTIONS

### VIDEO COLOR CORRECTION AND CONVERSION (VCC)

VCC is an optional software add-on for the IPGR and JXS apps that provides pooled instances of RGB/YUV color correction and SDR-HDR color space conversion that can be assigned to any video source in the AT300.

### PTP GRANDMASTER CLOCK AND SYNC PULSE GENERATOR (GMC)

The GMC is an optional software add-on for the IPGR and JXS/JXS16 apps that provides PTP Grandmaster, Blackburst and Tri-level generation functionality. Up to three different genlocks can be configured and it is possible to generate a genlock from PTP or synchronize PTP from an external genlock.

### VIDEO MIXER AND KEYER (VMK)

VMK is an optional software add-on for the IPGR app that adds pooled instances of Mixing and Keying. Any of the video sources in the AT300 can be used as inputs, including outputs of other VMK instances, making it possible to build a multi M/E switcher.

### AUDIO MIXER (AMIX)

AMIX is an optional add-on for the IPGR and JXS/JXS16 apps that provides freely routable high quality floating point Mono, Stereo and Mix-minus (N-1) instances. The mixers can be cascaded together in any order without incurring additional delay.

### DIGITAL SIGNAL PROCESSING (DSP)

DSP is an optional add-on for the IPA app that adds Dynamic Compressors (comp/gate/limit/autogain), Delays (sample accurate + multi-tap), Equalizers as well as True-Peak and Loudness metering.

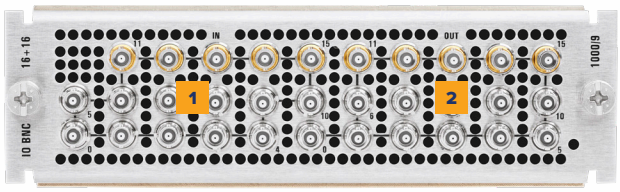
## AT300 – FRONT VIEW


1 Console Port
2 Status LED
3 USB C MGMT Port
4 2x QSFP28
5 Dual Fans

## REAR-PLATES

When combined with one out of several different optional rear-plates the AT300 supports up to 16 inputs and 16 outputs of 12G SDI, MADI and external reference inputs (GPS, Blackburst and Tri-level).

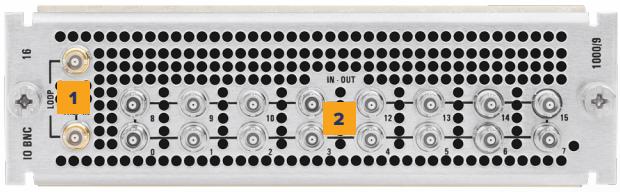
## IO BNC 16+16




1 16 input micro-BNC (UHD, 3G, HD, SD, MADI)
2 16 output micro-BNC (UHD, 3G, HD, SD, MADI)

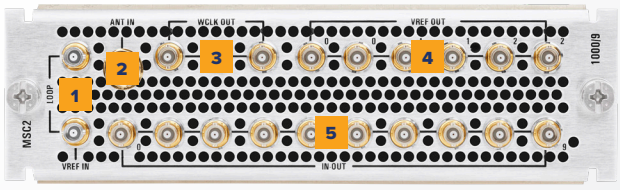


## IO BNC 16




1 Video Reference Port with loopback
2 16 bi-directional micro-BNC (UHD, 3G, HD, SD, MADI)

## IO MSC2




1 Video Reference Port with loopback
2 GPS antenna input
3 3x Wordclock Output
4 3x dual video reference outputs
5 10 bi-directional micro-BNC (UHD, 3G, HD, SD, MADI)

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BLADE//Runner®

Blade//Runner frames are available in 1, 2 and 3RU sizes that provide redundant power and optionally a centralized out-of-band management Gigabit Ethernet port (Electrical and Optical) that connects to all the cards in the frame. Designed around a backplane-free architecture where each card is independent, it is possible to easily scale a BLADE//runner system across multiple frames and multiple locations where processing is placed at the most appropriate location to meet the demands of the user. Both AT300 processing cards as well as rear-plates are hot-swappable.

The 1RU frame holds 2 cards, the 2RU holds 5, and the 3RU holds 8. In addition, there is a 2RU “low-noise” frame that has additional in-frame fans and holds 2 cards.

## **BLADE//RUNNER – 1RU** (HOLDS 2 CARDS)

## **BLADE//RUNNER – 2RU** (HOLDS 5 CARDS)

## **BLADE//RUNNER – 3RU** (HOLDS 8 CARDS)

## **BLADE//RUNNER – 2RU LOW NOISE** (HOLDS 2 CARDS)


## BLADE//RUNNER – FRONT VIEW


## BLADE//RUNNER – REAR VIEW




1 AT300 Front Plate (refer to page 5 for details)
2 Redundant Power Supply (Hot-Swappable)
3 Module Rear Plate (refer to page 5 for details)
4 Video Reference Input and Loop-Thru; blackburst or tri-level distributed via backplane to all PACs in a frame
5 1x 1 Gigabit Ethernet available through RJ45 or SFP+ for control and monitoring (allows for centralized access to all core processing blades in a frame)

## IO MGMT REAR-PLATE


All frames can optionally be configured with the IO_MGMT rear-plate providing a 1GE management interface (RJ45 and SFP) which connects to all blades in the frame thereby simplifying out-of-band control. In-band control is available on either of the two 100GE interfaces.

1 Video reference port with loopback
2 1GE centralized management port (RJ45 and SFP+)

At arkona we take pride in developing cutting edge IP core infrastructure solutions for the most discerning live broadcast productions in the world. Our software was designed with flexibility and scalability in mind. All processing functions are dynamically instantiated and can be created and deleted on demand, just as you have come to expect in a hybrid-cloud environment.

## OUR TENETS

### COMPREHENSIVE
We offer a wide variety of Audio, Video and Metadata processing functions for professional live broadcast.

### AGILE
We believe in fast and iterative software development in close cooperation with our clients and partners.

### TRUSTED
Our solutions form the backbone for some of the most prestigious Tier 1 productions in the world.

### ON-DEMAND
Create or delete processing functions quickly and easily according to the production needs you have at that time.


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