

LIMITLESS

LIVE

PRODUCTION



**BLADE** Runner

arkona

# The world's first live production technology built for Infrastructure-as-Code deployments.



## BLADE//runner

From its very inception BLADE//runner was designed around the concepts of resource pooling, software defined functionality and an open and standard API in a fully IP environment.

### SOFTWARE-DEFINED INFRASTRUCTURE

BLADE//runner is the first broadcast technology platform based around the concept of Infrastructure-as-Code, allowing for rapid deployment of complex workflows through scripted and version-controlled templates. Whether you're starting off with some of the prepared configurations we offer that cover the most common use cases, or you have a customized template tailored to your exact requirements, configuration is done in seconds with our user-friendly web UI or through our VAPI development platform.

### API FIRST

At arkona, we believe in open standards and an API First approach. API First allows for a high degree of flexibility where user specific workflows are at the center, and where an operator is no longer limited by static and proprietary "standard" operational models. We have built an extensive and powerful API that lets you control ALL features of our software through WebSocket, putting YOU in charge. In addition, we offer NMOS IS-04 and IS-05 support for easy discovery and connection management.

## BLADE//RUNNER SOFTWARE FRAMEWORK

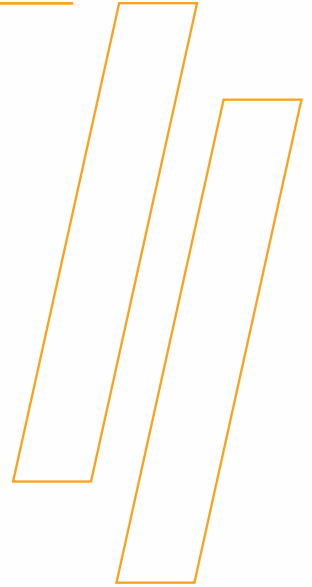
Designed around a highly flexible and modular software framework that forms the foundation upon which all additional processing apps are built, BLADE//runner allows for the creation, control and deletion of all processing functions on the fly through our web-based UI, our open API as well as through NMOS.

Input/Output functionality is provided through instantiable ST2110 and ST2022 transmitters and receivers while interfacing to legacy infrastructure is offered with our versatile modular rear-plates. All IP senders and receivers support ST2022-7 seamless protection switching with at least class C (150ms) path differential.

All BLADE//runner applications include a stand-alone 6k X 6k audio router for mono level shuffling, gain control and sample-rate conversion.

All routing is “clean and quiet” with make-before-break (MBB) or break-before-make (BBM) configurable per Video receiver. Audio routing and shuffling within the audio router is always done with crossfade while V-fade is used when an audio IP receiver changes source.

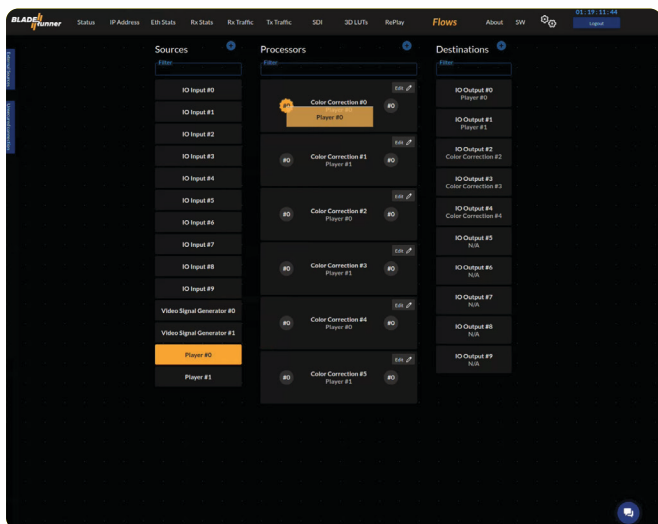
Delay and Framesync are provided for Audio, Video and Metadata through routable instances using a shared memory pool. BLADE//runner also provides conversion between UHD single-link to/from quad-link.



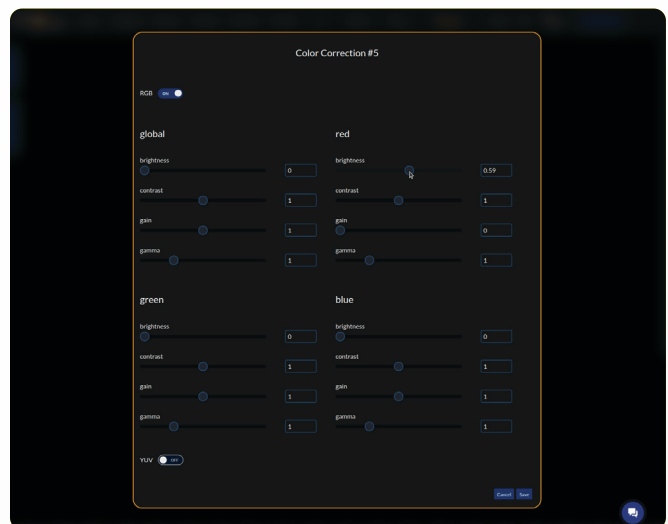
## SIMPLE CONFIGURATION WITH “FLOWS”

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 ST2110 devices can also easily be added directly into FLOWS.

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03



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 Color Correctors, HDR/SDR converters, Delays etc directly from the UI. Clicking on any processing function presents all the most commonly used parameters for easy adjustment.

## BLADE//RUNNER APPLICATIONS

The BLADE//runner apps are designed to operate on the AT300 which is a modern FPGA Programmable Acceleration Card (PAC) with dual native true 100GE interfaces and high bandwidth memory (HBM). Designed to fit interchangeable modular rear-plates it is a great choice for hybrid applications that still require interfacing with legacy infrastructure.



### IP GATEWAY AND ROUTER (IPGR)

IPGR is a software application for the AT300 that provides a comprehensive Audio, Video and Metadata framework for ST2110/2022-6 Encapsulation/De-encapsulation, Routing and Delay/Sync of IP and baseband utilizing the AT300 PAC. In addition to the AT300's dual native 100GE IP network interfaces, SDI and MADI I/O are available when using one of the micro-BNC rear-modules which allows direct access to legacy baseband infrastructures. IPGR also features test-signal and LTC insertion.



### JPEG-XS (JXS)

JXS is a software application for the AT300 that provides 8 instances of ST2110-22 JPEG-XS codecs. All 8 codecs are configured as either all encode OR all decode but can be changed on the fly. Each codec instance supports one UHD/FHD/HD signal for a max of 8 x UHD.

In addition, the JXS app provides uncompressed gateway capabilities with 2110-20, 30/31 and 40 encapsulation/de-encapsulation as well as routing/shuffling and delay/sync capabilities.

## BLADE//RUNNER APP OPTIONS



### VIDEO COLOR CORRECTION AND CONVERSION (VCC)

VCC is an optional software add-on to the IPGR and JXS apps that provides additional routable instances of RGB/YUV color correction and SDR-HDR color space conversion.



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

The GMC is an optional software add-on for the IPGR and JXS apps that provides PTP Grandmaster and analog/tri-level synchronization functionality.



### VIDEO MIXER AND KEYSER (VMK)

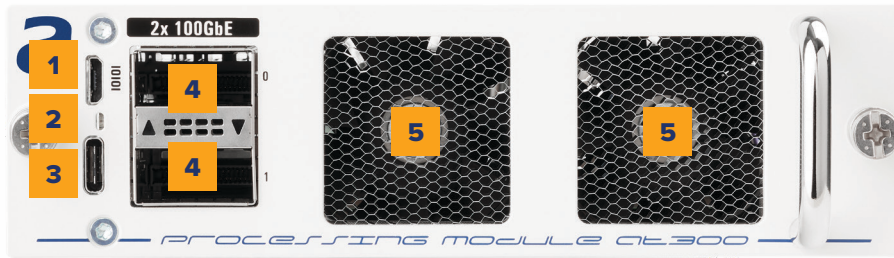
The VMK is an optional software add-on for the IPGR app that adds routable instances of Mixing and Keying, Still store Player/Grabber and Clip playing functionality.

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## AT300 – FRONT VIEW

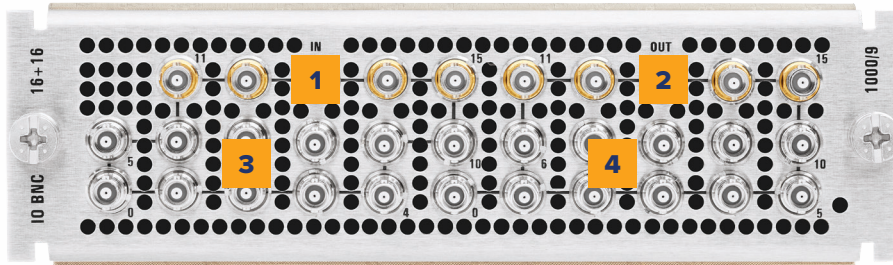


- 1 Console Port
- 2 Status LED
- 3 USB C MGMT Port
- 4 2x QSFP28
- 5 Dual Fans

## REAR-PLATES

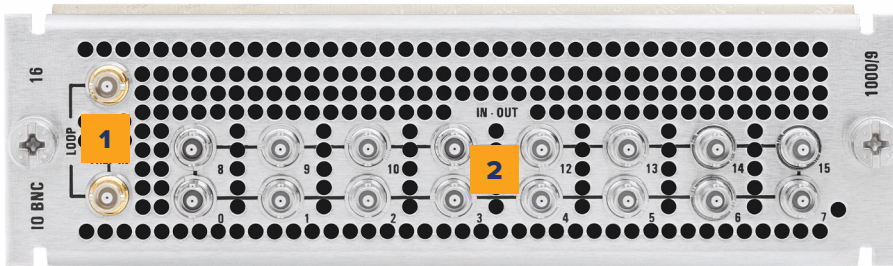
We offer different types of modular rear-plates for the AT300.

### IO BNC 16+16



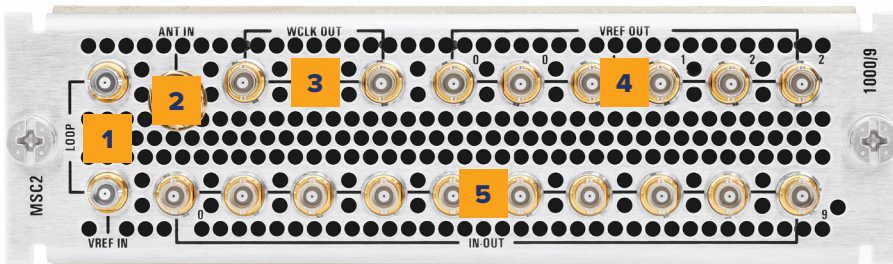
- 1 5 input micro-BNC (3G, HD, SD, MADI)
- 2 5 output micro-BNC (3G, HD, SD, MADI)
- 3 11 input micro-BNC (UHD, 3G, HD, SD, MADI)
- 4 11 output micro-BNC (UHD, 3G, HD, SD, MADI)

### 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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05



# 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.

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 supplementary in-frame fans and holds 2 cards.

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



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

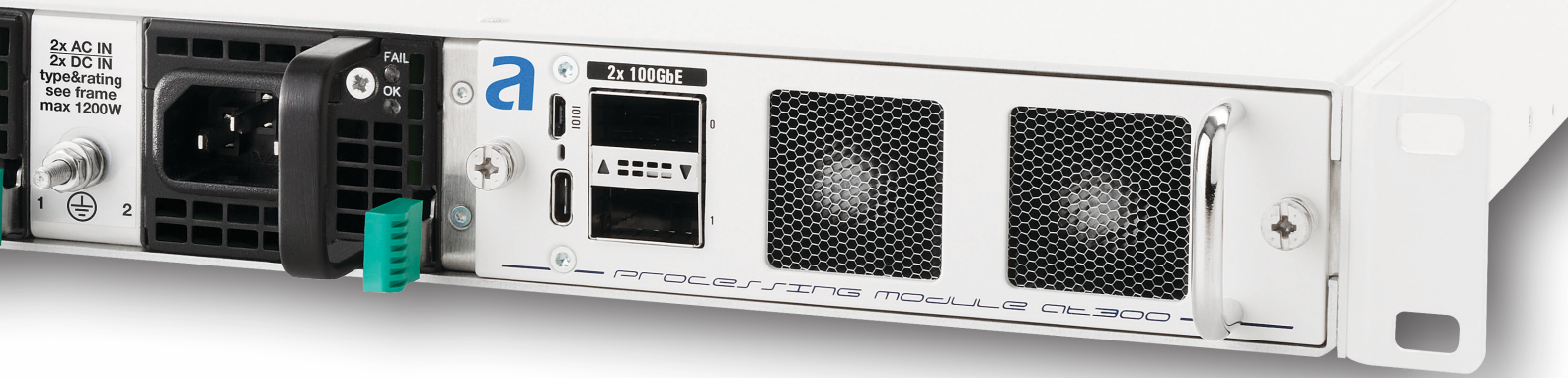


## BLADE//RUNNER – 3RU (HOLDS 8 CARDS)



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





### BLADE//RUNNER – FRONT VIEW



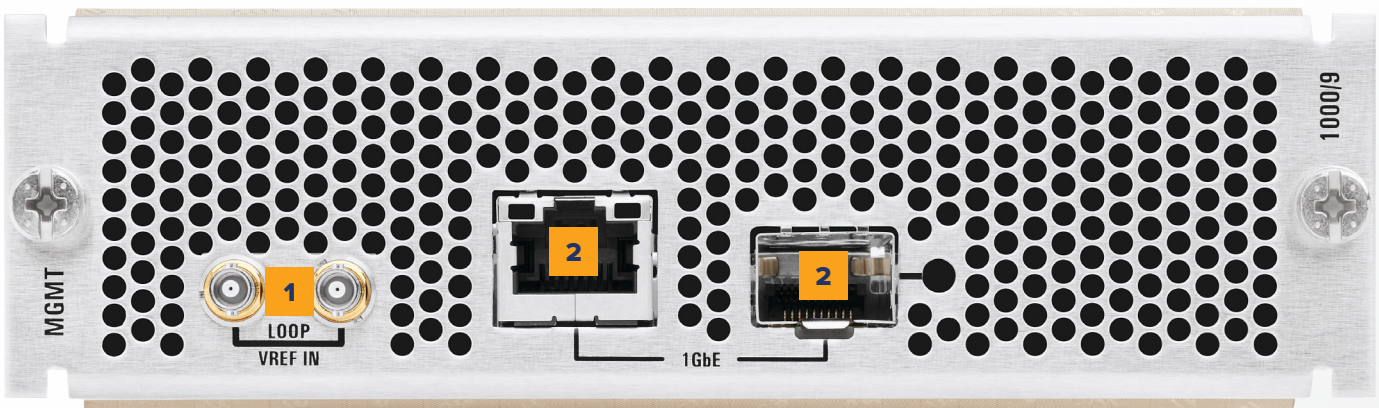
### BLADE//RUNNER – REAR VIEW



- 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 I/O modules 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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