Panasonic
BUSINESS

KAIROS
Incredible Productivity

IT/IP Live Video Processing Platform

The live video production platform allows flexible system configuration and operation, delivering improved video quality and productivity.

In live video production today and from now on, new technologies can deliver more immerse experience for attendees and a more in-person experience to remote viewers. By embracing new technologies production crews can deliver all this with improved productivity. At the core of this newly evolved production system is KAIROS. The IT/IP platform ˝KAIROS˝ is a live video production platform developed based on a new concept and innovative architecture. It incorporates proprietary, ground-breaking software to maximize the CPU and GPU capacities for video processing. General-purpose IT equipment is deployed to run on CPU and GPU to take advantage of the most advanced IT technology. And the proprietary, and innovative software technology has enabled unprecedented flexible live video processing with low latency executed on a GPU , while the open software architecture ensures excellent system flexibility and scalability.

A variety of video inputs and outputs are available with KAIROS to support not only baseband signals such as SDI but also new IP signals including ST 2110 and NDI® to realize remote live video production.
KAIROS uses the GPU for the video processing, thus allowing flexible video production using multiple layers with unrestricted number of MEs or keys and the ˝CANVAS˝ screen unhampered by resolution or format.
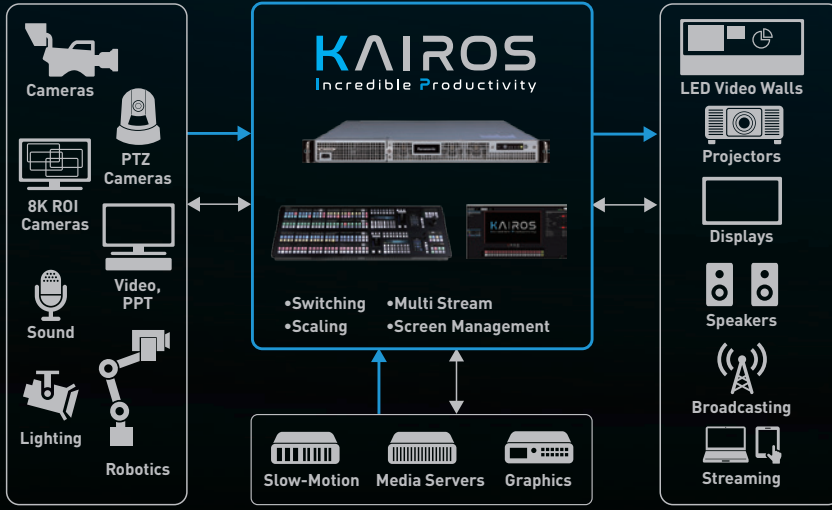Because KAIROS is an IT-based open architecture platform, it enables functional enhancements and control linkage with external devices by adding software.
With the system integration capability, KAIROS improves work efficiency and ensures future expandability.
Achieving flexibility in all levels of production unlike any existing hardware-based systems, KAIROS breaks new ground for live video production.

* NDI® is registered trademarks of NewTek in the United States.

KAIROS
Incredible Productivity

SHOOTING → COMPOSITION → VISUALIZATION

Cameras
PTZ Cameras
8K ROI Cameras
Video, PPT
Sound
Lighting
Robotics

KAIROS
Incredible Productivity

- Switching
- Scaling
- Multi Stream
- Screen Management

Slow-Motion   **Media Servers**   **Graphics**

LED Video Walls
Projectors
Displays
Speakers
Broadcasting
Streaming

VARIETY OF VIDEO INPUTS AND OUTPUTS AVAILABLE FOR USE

Compatible with various input and output signals

KAIROS fully supports baseband signal (12G/3G/HD-SDI, HDMI, Display Port) and IP packet (ST 2110, NDI®, RTP) input and output.

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Ample number of system inputs and outputs

With KAIROS, the number of inputs or outputs that can be connected to the system is unlimited, and it can be connected with 32 inputs and 16 independent outputs (maximum number when option is used) for HD (3G) or 8 inputs and 4 independent outputs (maximum number when option is used) for UHD. Multi-input operation is possible similar to using an external router.

Number of inputs and outputs that can be used simultaneously

		Standard	Expansion*2
Inputs	HD	Max. 24 channels	Max. 32 channels
	4K*1	Max. 6 channels	Max. 8 channels
Outputs	HD	Max. 12 channels	Max. 16 channels
	4K*1	Max. 3 channels	Max. 4 channels

*1: The optional AT-SF001 4K software is required. *2: The optional AT-SF002 I/O expansion software is required.

Resolution independent

Standard video formats with different resolutions such as HD/UHD can be mixed and used.

Two customizable multi-viewers configuration

In addition to the aforementioned video inputs and outputs, KAIROS is also equipped with two multiviewer outputs (Display Port) that are compatible with 4K/HD. The display layout can be freely customized and saved as your own template, and up to 36 screens images can be displayed on two screens. This multi-viewer can also manage to display virtual input and scene & AUX output.
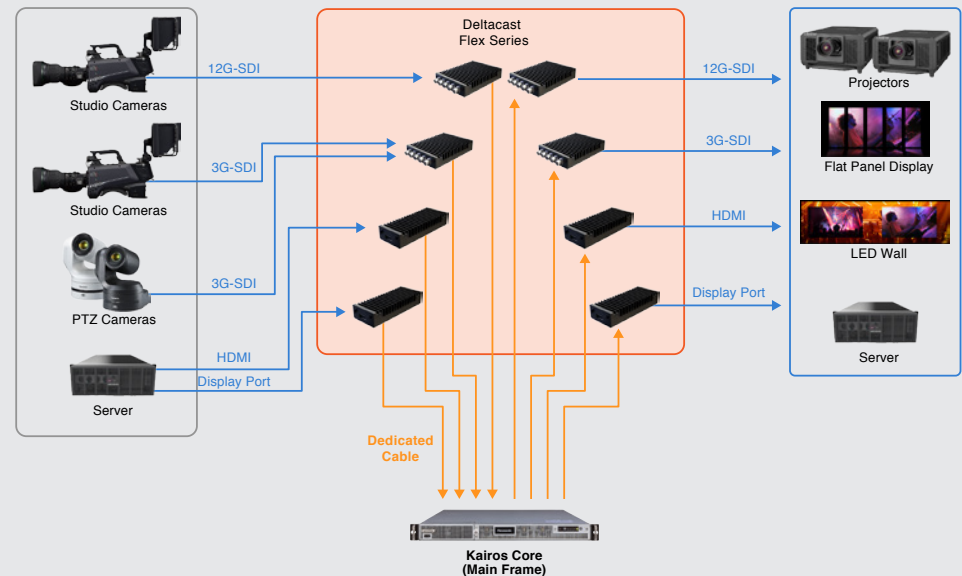
PTP synchronization

KAIROS supports PTP (Precision Time Protocol) synchronization, which is an IP-based synchronization and can fully manage the whole ST 2110 systems.

System Integration Example (IP-based)
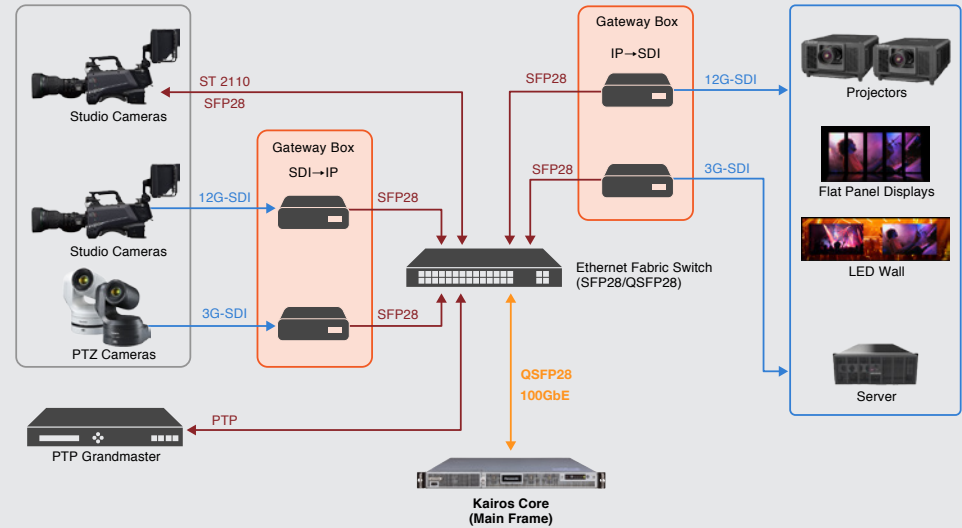
System Integration Example (SDI-based)

PROCESSING BY THE GPU FOR FLEXIBLE VIDEO EXPRESSION

Layered effects with unrestricted number of MEs

Unlike the conventional hardware-based switcher, KAIROS is unrestricted by the number of MEs or keys. Layers can be added as the GPU capacity permits similar to the layers of a standard image-editing app, allowing you to set the keys and scaling freely.

Diverse effects

Layers can be added with not only keys but also various effects. Color matte function is also provided.

Format-free Canvas

The Canvas function (optional) enables the production of videos in a special format, such as 32:9 for wall display, in addition to the standard 16:9 format. With the freely customizable multiviewer, videos with unique aspect can be displayed as is.

Short one frame latency

The KAIROS processing latency can be as low as one frame. Sports and concert performances can be presented with the action intact.

## Video/still picture file retention

With the built-in 24-GB RAM Player (8-ch, uncompressed) and Clip Player (2-ch, compressed), video footage can be played within the system and used as input sources. It also has a still picture storage (750MB).

- **RAM Player (8-ch, uncompressed)**
  Uncompressed images can be stored and played, making it suitable for playing relatively short videos such as intro videos. The recording time depends on the 24GB RAM capacity, and may change depending on the resolution and number of channels (maximum 8ch).
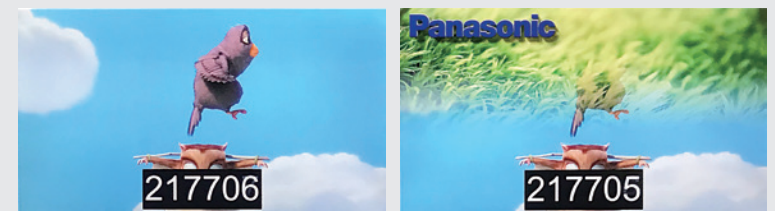
- **Clip Player (2-ch, compressed)**
  It is possible to play compressed video clips, making it suitable for playing relatively long clips such as commercial footage. Clips are imported externally and saved onto the internal SSD.
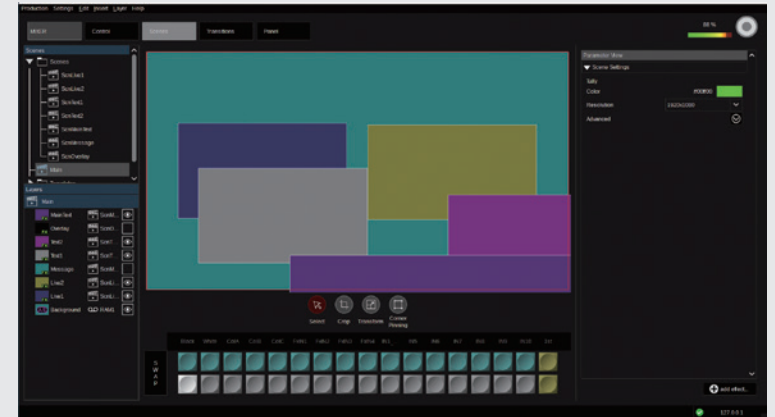
Various video effects using layers

The multiview displays a 32:9 format screen

Original

Mix Effected

The KAIROS processing latency can be as low as one frame.

SOFTWARE-BASED OPERABILITY AND EXPANDABILITY

PC software with intuitive GUI

The "KAIROS CREATOR" PC software features an easy-to-use intuitive GUI and various settings and operation are possible. It also displays the GUI control panel to make space saving operation possible.

User Assignable control panel

The "KAIROS CONTROL" control panel featuring two faders and 24XPT style layout provides user assignable operation. Indicators show the functions assigned to the individual buttons. Multiple panels can be used simultaneously with a single system.

Software-enabled function expandability and linkage

KAIROS is an IT-based open architecture platform, and allows expansion of functions and linkage of external devices with the additional software to provide high flexibility and expandability. By using various function options, it offers an efficient system design. The support of external protocols is continuously evolving and the flexibility of KAIROS will allow future system expansion and integration.

KAIROS Alliance Partners

KAIROS uses infinitely expanding IT ecosystems to easily expand functions with the additional software and linkage of external devices. In order to accelerate this linkage, Panasonic promotes collaborations with IT companies, video equipment manufacturers and suppliers.

The "KAIROS CREATOR" PC software with intuitive GUI

https://pro-av.panasonic.net/en/support/kairos_partners.html

USAGE EXAMPLES

IT/IP Platform "KAIROS" enables new "Smart Studio" concept

"KAIROS" is an open-architecture, software-based live video production platform. The Kairos Core (Main Frame) fully supports base bands, such as SDI, ST 2110 and NDI, and IP packet input and output. It is not subject to restriction by resolution or aspect ratio. KAIROS also supports remote production and full IP-based environments. Processing of effects/mixing is not restricted by the number of MEs or Keys, unlike a conventional switcher, and as many layers as the GPU power permits can be overlaid. Furthermore, the KAIROS processing latency can be as low as one frame. Kairos Creator (GUI Software) is designed for easy, intuitive operation, while Kairos Control (Control Panel) allows for flexible customization of the layout to contribute to space saving and improved operational efficiency. KAIROS does not require many dedicated devices, software, cables or conversion tools, which the conventional system needs, so it enables the creation of a simple, flexible and space-saving video production studio.

* NDI® is registered trademarks of NewTek in the United States.
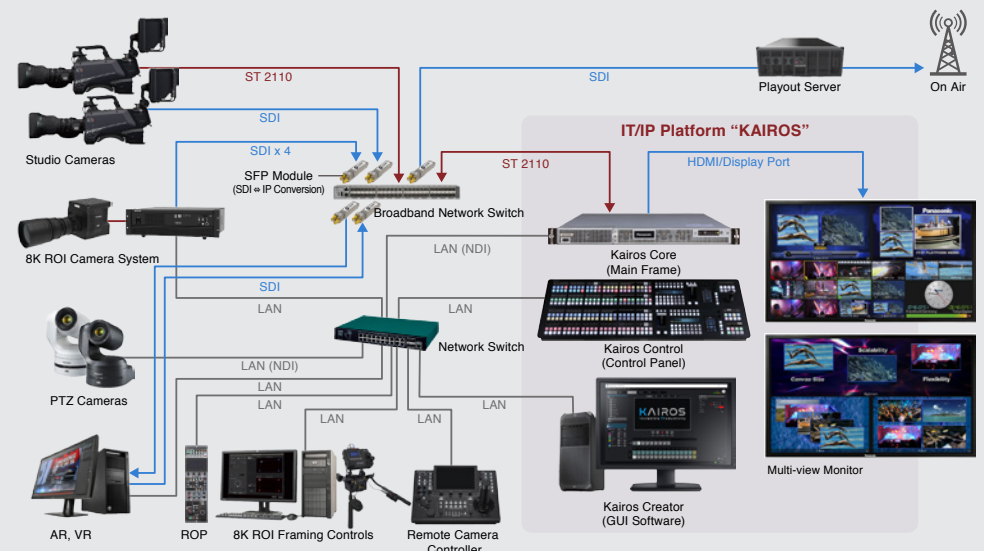

Integrated management of multi-camera recording, large screen displays and stage production

The IT/IP Platform "KAIROS" is a solution for improving IT/IP-based live video production, such as live concert recording. KAIROS fully supports base bands, such as SDI, ST 2110 and NDI, and IP packet input and output. Its operation is not restricted by the resolution or aspect ratio, so it can handle special aspect ratios such as 32:9 for wall displays. KAIROS is capable of simultaneously outputting video signals suitable for a variety of image display systems. All those operations can be integrally managed. When combined with an 8K ROI camera and remote camera, KAIROS simplifies the equipment to use and reduces the number of operators and the setup space. It helps achieve smart management that contributes to efficient live event/video production.

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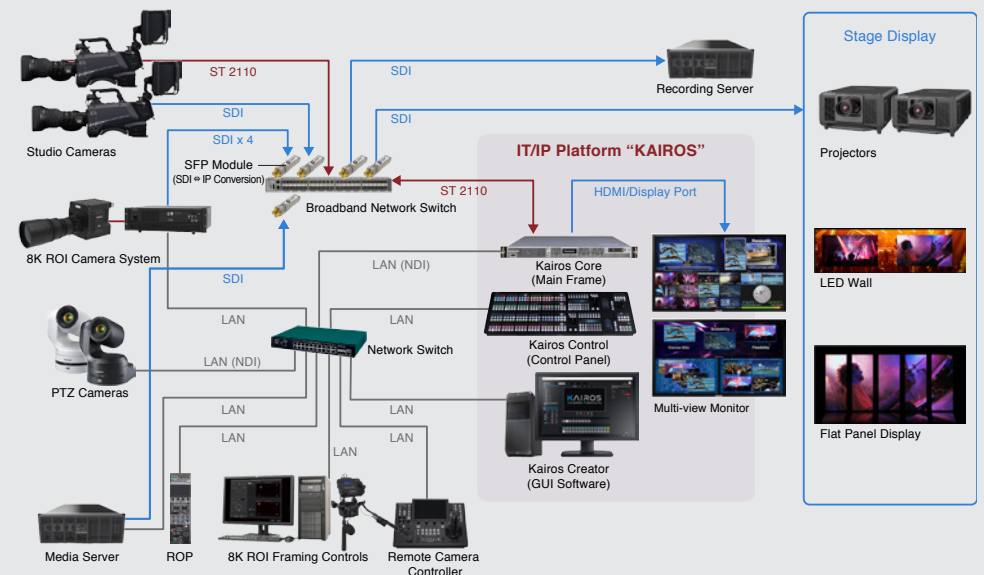
AT-KC100
Kairos Core 100 (Main Frame)
1 RU size

AT-SFC10
Kairos Creator (GUI Software/Software Key)
OS: Windows
For various settings and operations

- Power switch
- Power status LED

- MV1/MV2 (Display port Version 1.4, for multi-view output)
- LAN 1/2 RJ-45 1GbE
- QSFP28-1/2*[1] 100GbE
- Gateway port for Deltacast
- AC IN

*1: The QSFP28-2 will be supported in the future.
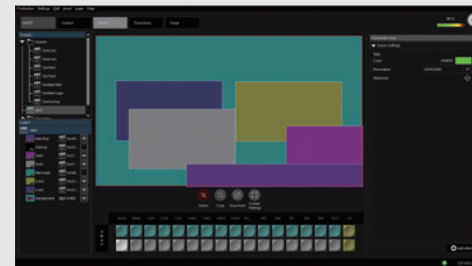
Scenes menu
Allows you to set each scene*[2] and layer.

Control Menu
Live operation is possible on the GUI software.

Live View menu
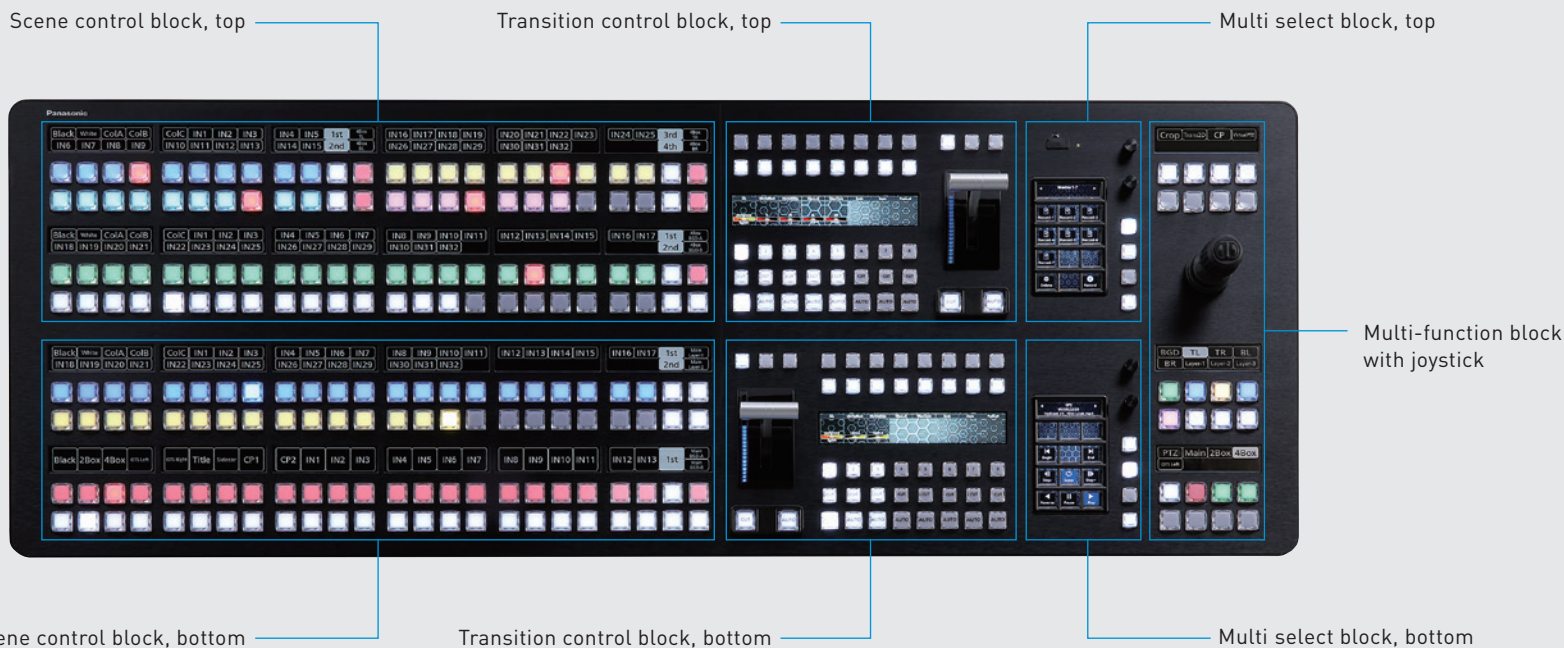Multi-view videos (MV1/MV2) can be monitored on the GUI software.

Input Settings menu
Allows you to select the input type (ST2110/SDI/ NDI) and other settings.

*2: What we call a "Scene" in KAIROS is an extended expression of the traditional "ME" in general switcher.
A "Scene" is for source video selection, transitions, and layer compositing like traditional ME but the number of layers, resolution, source video assignments etc., can be freely defined for each "Scene" by the user.

AT-KC10C1

Kairos Control
(Control Panel)

2 Faders with 24XPT style Layout;
all elements user assignable - operable in
linked condition

AT-SF001
Software Key
4K option

AT-SF002
Software Key
I/O option

AT-SF003
Software Key
Canvas option

AT-SFE03
Software Key
NMOS Option

More options will be available in the
future. For more information,
please refer to the following web
page.

Scene control block, top

Transition control block, top

Multi select block, top

Multi-function block
with joystick

Scene control block, bottom

Transition control block, bottom

Multi select block, bottom

Rear Panel Terminals

LAN RJ-45 1GbE

Power 1: DC IN 12V and power switch

Power 2: DC IN 12V and power switch

SPECIFICATIONS

AT-KC100 Kairos Core 100 (Main Frame)

General

Power requirement:	AC 100-240V, 50Hz/60Hz, 8-4A (3P AC-INLET x 2 (Redundant))
Operating temperature:	5 to 35 degree celsius
Operating humidity:	10% to 90% (no condensation)
Weight:	10.6kg / 23.36lb
Dimensions (W x H x D):	438 x 43.5 x 621 mm / 17.2 x 1.7 x 24.4 in. (Excluding protrusion)

Video Specifications

Supoort Video format:	Video format 4K: 3840/60p, 59.94p, 50p, 30p, 29.98p, 25p, 24p, 23.97p (With option AT-SF001) HD: 1080/60p, 59.94p, 50p, 30p, 29.98p, 25p, 24p, 23.97p HD: 720/60p, 59.94p, 50p
Signal processing:	Y,Pb,Pr: 4:2:2 10bit
Syncronous:	PTP Sync, FS (Frame Syncronize): Yes for each CH

I/O Specification

IP:	QSFP28: QSFP28 x 2, 100GbE LAN: RJ-45 x 2, 1GbE	
Baseband:	DisplayPort:	DisplayPort 1.4 x 2 (For Multiview output)
	Gateway Port:	Custom Interface Connectors x 8 (For DELTACAST FLEX modules)
	SDI:	12G-SDI (Deltacast FLEX module is required)
		3G-SDI (Deltacast FLEX module is required)
	HDMI:	HDMI2.0 (Deltacast FLEX module is required)
	DisplayPort:	DisplayPort 1.2 (Deltacast FLEX module is required)
Input CH:	4K:	Max. 6 CH (With option AT-SF001)
		Max. 8 CH (With option AT-SF001 & SF002)
	HD:	Max. 24 CH
		Max. 32 CH With option (AT-SF002)
Output CH:	4K:	Max. 3 CH (With option AT-SF001)
		Max. 4 CH (With option AT-SF001 & SF002)
	HD:	Max. 12 CH
		Max. 16 CH (With option AT-SF002)

Accessories

Accessories:	AC cable x 2 (Cable types vary by region), Rack-mounted slide rail: 1 set with screws

AT-KC10C1 Kairos Control (Control Panel)

General

|	
Power requirement:	DC 12 V, 8.0 A (XLR 4pin x 2 (Redundant)
Operating temperature:	0 to 40 degree celsius
Operating humidity:	10% to 90% (no condensation)
Weight:	15.4kg / 33.95lb
Dimensions (W x H x D):	1140 x 94 x 420 mm / 44.9 x 3.7 x 16.5 in. (Excluding protrusion)

Control Terminals

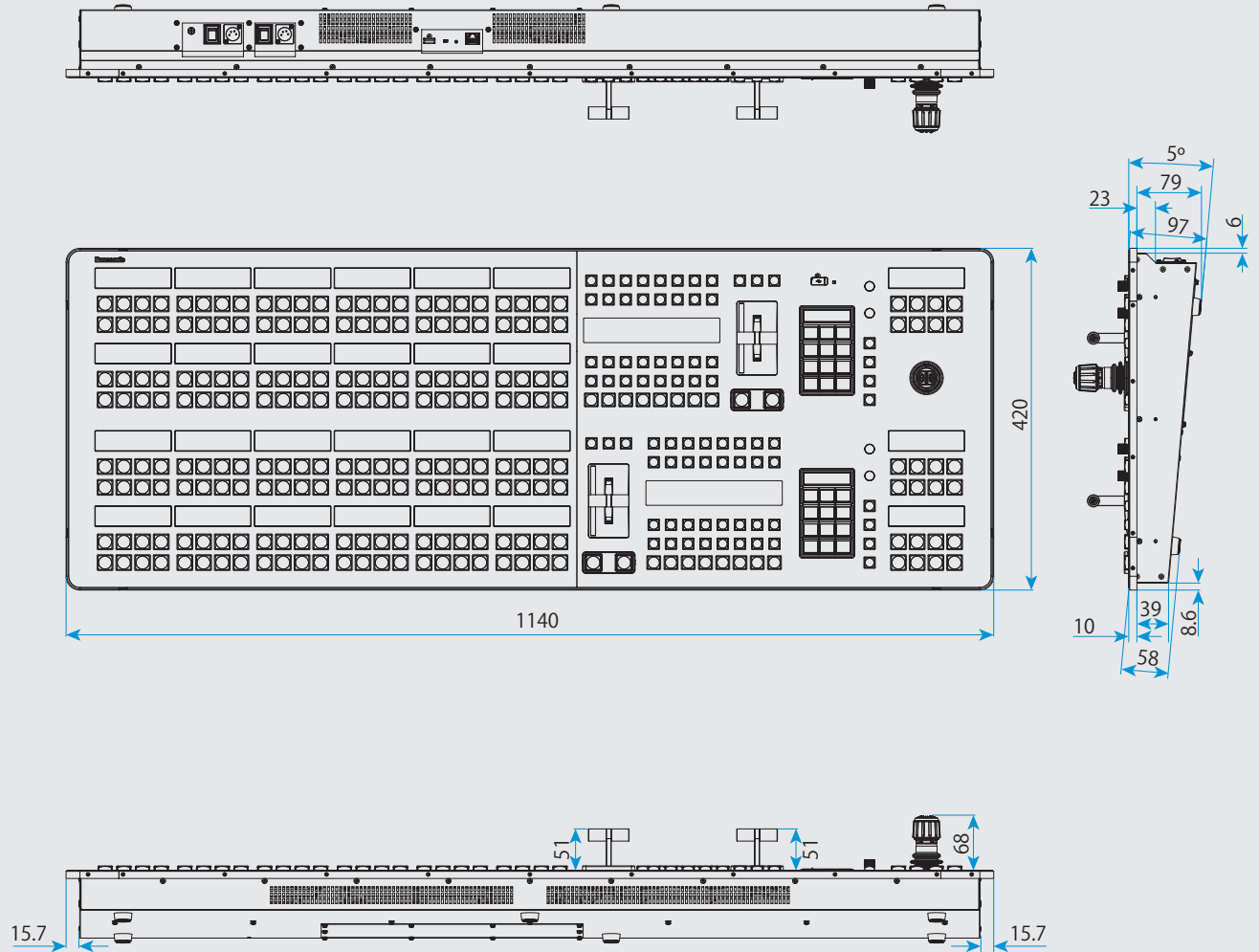|	
LAN (Rear Panel):	RJ-45 × 1, 1GbE
USB (Control Panel):	USB2.0 typeA × 1
USB (Rear Panel):	USB2.0 typeA × 1

* NDI® is registered trademarks of NewTek in the United States.

DIMENSIONS

Kairos Core 100 (Main Frame)　unit: mm
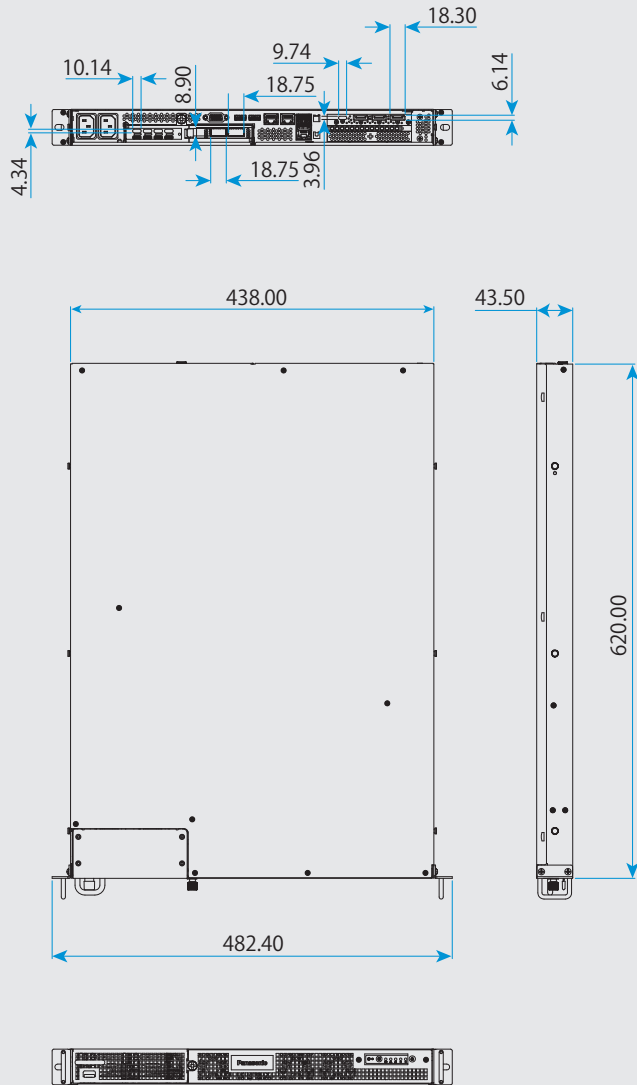
Kairos Control（Control Panel）　unit: mm

KAIROS
Incredible Productivity

https://pro-av.panasonic.net/
en/products/it_ip_platform/

ISO
14001
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JAPAN AUDIT AND CERTIFICATION ORGANIZATION FOR ENVIRONMENT AND QUALITY
EC98J2010

UKAS
MANAGEMENT
SYSTEMS
051

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certification. (Except for 3rd party's peripherals.)

For more information, please visit
Panasonic web site
https://pro-av.panasonic.net/en/qr/

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Facebook

Mobile App

*Specifications are subject to change without notice.

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