

# RACK400



## 4K UHD & MULTI-HD ENCODER FOR REMOTE PRODUCTION OVER UNMANAGED NETWORKS



The RACK400 is our latest generation of video encoder designed for space-constrained live production, including contribution applications and remote/at-home productions. **Multi-camera production in HD** or single pristine **4K UHD** capabilities are combined with mission-critical transmission in this compact half 1U solution.

The RACK400 is a promise to reduce on-site infrastructure costs (CAPEX) and operating costs such as on-site team (OPEX) while covering more live events and producing more contents.

Indeed, our encoder is designed to be deployed on fixed/remote locations, directly connected to wired IP networks, offering a real cost-effective alternative to satellite or fiber. The solution is also suitable for installing in vans or trucks, connected to a roof-mounted AVIWEST QUAD CellLink (active 3G/4G multi-antennas) and/or Ka satellite, enabling video broadcast from any place around the globe, even in the midst of unpredictable and unmanaged network conditions.

The RACK400 supports the upmost generation of UHD H.265/HEVC hardware encoder by offering premium video quality with optimized data usage and **low end-to-end latency** (down to 0,5 sec). The widely adopted H.264/AVC format is still supported for compliancy with deployed infrastructures. Our innovative design enables multiple encoding and transmission workflows from single HD source for News, to multiple HD sources (up to 4) for sports, through single 4K UHD for premium events coverage.

The RACK400 can help your **Remote Production** or **At-Home Production** reach its full potential. As first, it supports a perfect video synchronization and lip sync across multiple cameras in the venue to guarantee seamless camera switching and efficient video editing in the remote production studio. As second, our solution enables remote control of network-based devices such as PTZ cameras and tally lights. Our solution is camera agnostic and runs simultaneously with the live transmission. In addition, the RACK400 supports low delay and high-quality video delivery from the studio to the field units. Also known as Video Return, this feature allows delivering teleprompter information or studio feed to the field. At least, bi-directional audio intercom is available for communication between the field and the studio.

The RACK400 provides **robust and error-free transmission over any networks** such as cellular, satellite, IP leased line or simple the Internet. It is made possible thanks to our **Emmy® awarded SST Technology** (Safe Stream Transport). This technology offers advanced techniques of networks aggregation, Adaptive packet Retransmission (ARQ) and Forward Error Correction (FEC) to reach the upper networks throughput and maximizes the Quality of Services.



### SIMPLE

The RACK400 has been designed with ease-of-use in mind, the user-friendly intuitive interface allows broadcasting live videos in two touch screen taps.



### VERSATILE

Single 4K UHD sources or Quadruple HD sources transmission are supported in within 1U half rack form factor, enabling cost reduction and space saving. Delivered in a "as-a-box" design, it can also be rack mounted thanks to dedicated kits hosting one or two units in 1U.



### HIGH PERFORMANCE

By implementing the best state-of-the-art H.265/HEVC hardware encoder in a compact design enclosure, the RACK400 enables video professionals to provide seamless high quality sports and event coverage.



### ANY NETWORKS

Leveraging Emmy® award winning AVIWEST's SST protocol, an intelligent IP bonding stack and powerful contribution network protocols, the RACK400 ensures the delivery of live video even in the midst of unpredictable and unmanaged network conditions.

# MAIN FUNCTIONS

## PREMIUM 4K UHD LIVE

You want the highest-quality video performance and we offer the latest generation of HEVC encoder for pristine HD and 4K UHD video transmission. Built on AVIWEST doubly awarded SST bonding technology, the unit reaches up to 80Mbps HEVC live video encoding.

## MULTI-CAMERA REMOTE PROD

Move your Remote At-Home Production to the next level with four frame-synced HD feeds combined with remote control of any IP-based equipment.

It is possible wherever you are in the field, thanks to our superior video transmission performances over unmanaged networks such as the Internet or cellular networks.

## IFB & VIDEO RETURN

Ensure two-ways audio communication between the producer, production crews & on-air talent thanks to a seamless and robust intercom. Receive and watch high quality HD feed from the Studio during live sessions or when the device is idled. With sub second latency delivery, it is especially designed for receiving on-air program, teleprompting information or ensuring confidence monitoring from the field.

## REC & PROGRESSIVE FORWARD

Record UHD/HD broadcast-grade quality video on the SD card, and optimize your time by forwarding the file progressively whereas the record is still in progress.

This forward approach enables fast and error-free video delivery.

# MAIN SPECIFICATIONS

## VIDEO

<b>STANDARDS</b>	UHD: 2160p60/59.94/50/30/29.97/25 HD: 1080p60/59.94/50/30/29.97/25 1080i60/59.94/50 720p60/59.94/50
<b>DENSITY</b>	Single UHD/HD Quadruple HD
<b>ENCODING</b>	H.265/HEVC 4:2:0/4:2:2* 8-bit, 10-bit* H.264/AVC 4:2:0, 8-bit Dynamic resolution adjustment HDR10* and HLG*
<b>BITRATES</b>	2 Mbps to 80 Mbps for UHD 300 Kbps to 20 Mbps for HD Constant Bitrate (CBR) Variable Bitrate (VBR)
<b>INPUTS</b>	SDI

## AUDIO

<b>ENCODING</b>	AAC-LC
<b>BITRATES</b>	32 Kbps to 256 Kbps
<b>MODE</b>	Mono, Stereo
<b>DENSITY</b>	Up to 4 Mono or up to 4 Stereo
<b>INPUTS</b>	Embedded over SDI

## NETWORK CONNECTIONS

<b>ETHERNET</b>	2 x Gigabit Ethernet ports - LAN, WAN - portable satellite (BGAN, GX, Ka & Ku Band)
<b>CELLULAR</b>	AVIWEST QUAD CellLink - 4 x 3G/4G-LTE world-wide compliant modems - 4 SIM slots - High efficiency embedded antenna

## ADVANCED FEATURES

Dual encoding for simultaneous Live & Record (single HD mode)
Sub second glass-to-glass latency (down to 500 ms)
Video and Audio level preview
Intercom/IFB
Video return from Studio (full HD, sub-second latency)
Automatic Live Start
Networks Links priorities (user configurable)
Data Bridge for switching the device as mobile router
Simultaneous Live and IP traffic (for remote camera control)

## INTERFACES

1 x 12G/3G-SDI input and 3 x 3G-SDI inputs (BNC)
1 x 12G-SDI output (BNC)
1 x HDMI 1.4 output
1 x GenLock input (BNC)
2 x RJ-45 Ethernet
2 x USB 3.0 (type-A), 1 x USB 3.0 (type-C)
1 x mini jack for IFB/intercom headset
1 x micro SD card slot

## CONTROL & MONITORING

Embedded touch screen
Web UI (through laptop, smartphone, etc.)
From AVIWEST STREAMHUB transceiver

## POWER

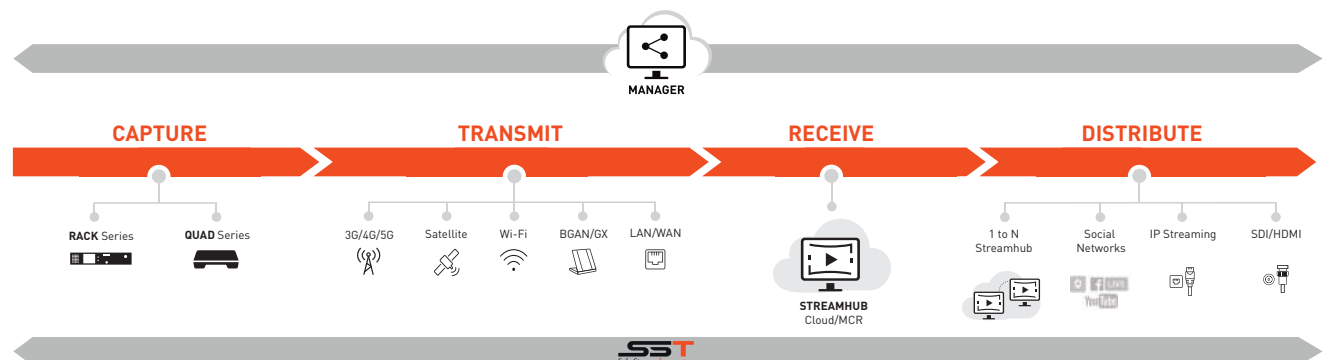
<b>POWER SUPPLY</b>	Dual DC input 18V
<b>CONSUMPTION</b>	25W typical, 30W max

## PHYSICAL

<b>DIMENSIONS (W x H x D)</b>	22.2 cm x 4.4 cm x 11.5 cm (8.66" x 1.57" x 4.33")
<b>WEIGHT</b>	1.4 Kg / 3.08 lbs

\* H1 2022 support (firmware upgrade)

# SYSTEM OVERVIEW



AVIWEST continuously improves its products portfolio and reserves the right to modify the specifications without prior notice.

# RACK200 & RACK300



## PREMIUM HEVC ENCODER FOR CONTRIBUTION & REMOTE PRODUCTION OVER UNMANAGED NETWORKS



The RACK Series is a range of video encoders designed for space-constrained live production, including contribution applications and multi-camera remote/at-home productions.

The RACK Series is designed to be deployed in fixed locations, directly connected on wired IP networks, offering a real cost-effective alternative to satellite or fiber. The RACK Series is also designed to be used on vans or trucks, connected to a roof-mounted AVIWEST QUAD CellLink (active 3G/4G multi-antennas) and/or Ka satellite transmitter, enabling video broadcast from any location around the world, even in the midst of unpredictable and unmanaged network conditions.

Equipped with a user-friendly, intuitive touchscreen, the unit supports multiple operational modes including live, record, live and record, file forward, and data bridge for high-speed internet connectivity.

The RACK Series embeds a best-in-class full HD hardware H.265/HEVC encoder, as well as an H.264/AVC encoder to reach low bitrates at sub-second latency without compromising on video quality. Powered by the double award-winning SST technology (Safe Streams Transport), the RACK encoder offers ultra-reliable transmission on any network, thanks to an intelligent IP-bonding stack that aggregates all available bandwidth without needing to stop a live transmission, even as connections are added or dropped.



### SIMPLE

The RACK Series has been designed with ease-of-use in mind, the user-friendly intuitive interface allows broadcasting live videos in two touch screen taps.



### VERSATILE

With its 1U half rack form factor, the product reduces costs and space requirements. Delivered in a "as-a-box" design, it can also be rack mounted thanks to dedicated kits hosting one or two units in 1U.



### HIGH PERFORMANCE

By implementing the best state-of-the-art H.265 / HEVC hardware encoder in a compact design enclosure, the RACK Series enables video professionals to provide seamless high quality live video contribution, and event coverage.



### ANY NETWORKS

Leveraging Emmy® award winning AVIWEST's SST protocol, RACK Series ensures the delivery of live video even in the midst of unpredictable and unmanaged network conditions by aggregating simultaneously multiple network connections dynamically adapting the video bitrate, protecting stream content and supporting retransmission of lost data.

## PRODUCTS COMPARISON CHART

	RACK300	RACK200
H.265/HEVC encoder	●	
H.264/AVC encoder	●	●

# MAIN FUNCTIONS

## LIVE & AUTO-RECORD

Broadcast premium quality video live over bonded IP networks : 3G/4G/5G, Ethernet, Wi-Fi, and satellite networks such as BGAN, GX and Ka Band. Combined with the automatic record feature, you can simultaneously record this live on the pluggable SD card with different resolution and bitrate to ensure an optimal and constant video quality.

## REC & PROGRESSIVE FWD

Record broadcast-grade quality video on the SD card, and optimize your time by forwarding the file progressively whereas the record is still in progress. This forward approach enables fast and error-free video delivery.

## DATA BRIDGE

By leveraging the transmitter's aggregated networks connections, switch the unit to behave as a mobile router in order to benefit a high speed internet connection from anywhere.

## IFB & VIDEO RETURN

Ensure two-ways audio communication between the producer, production crews & on-air talent thanks to a seamless and robust intercom. Receive and watch high quality HD feed from the Studio during live sessions or when the device is idled. With sub second latency delivery, it is especially designed for receiving on-air program, teleprompting information or ensuring confidence monitoring from the field.

# MAIN SPECIFICATIONS

## VIDEO

<b>STANDARDS</b>	HD: 1080p25/29.97/30/50/59.94/60, 1080i50/59.94/60, 720p50/59.94/60 SD: PAL, NTSC
<b>ENCODING</b>	H.265/HEVC 4:2:0, 8-bit H.264/AVC 4:2:0, 8-bit Dynamic resolution adjustment
<b>BITRATES</b>	200 Kbps to 20 Mbps Constant Bitrate (CBR) Variable Bitrate (VBR)
<b>INPUTS</b>	SDI, HDMI

## AUDIO

<b>ENCODING</b>	AAC-LC
<b>BITRATES</b>	32 Kbps to 256 Kbps
<b>MODE</b>	Mono, Dual Mono or Stereo 2.0
<b>DENSITY</b>	Up to 4 channels
<b>INPUTS</b>	Embedded (SDI, HDMI), Analog (L/R)

## NETWORK CONNECTIONS

<b>ETHERNET</b>	Gigabit Ethernet port - LAN, WAN - portable satellite (BGAN, GX, Ka & Ku Band)
<b>CELLULAR</b>	AVIWEST QUAD CellLink - 4 x 3G/4G-LTE world-wide compliant modems - 4 SIM slots - Internal high efficiency antennas

## ADVANCED FEATURES

Dual encoding for simultaneous Live & Record  
Sub second glass-to-glass latency (down to 500ms)  
Video and Audio level preview  
Network links priorities user-configurable  
Data Bridge mode for switching the device as mobile router  
Hot Folder mode for enabling smart & automatic files Forward  
Intercom / IFB  
AES scrambling

## INTERFACES

1 x 3G-SDI input (BNC), 1 x 3G-SDI output (BNC)  
1 x HDMI 1.4 input, 1 x HDMI 1.4 output  
2 x RJ-45 Ethernet  
1 x USB 3.0 (type-A)  
1 x mini XLR (for IFB / intercom headset)  
2 x mini XLR balanced (for analog audio)  
1 x SD card slot

## CONTROL & MONITORING

On screen display  
Web GUI (through laptop, smartphone, etc.)  
From AVIWEST MANAGER Management System  
From AVIWEST STREAMHUB Transceiver

## POWER

**POWER SUPPLY** Dual DC input 18V (XLR input hot swap)

**CONSUMPTION** 30W max (24W to 28W typical)

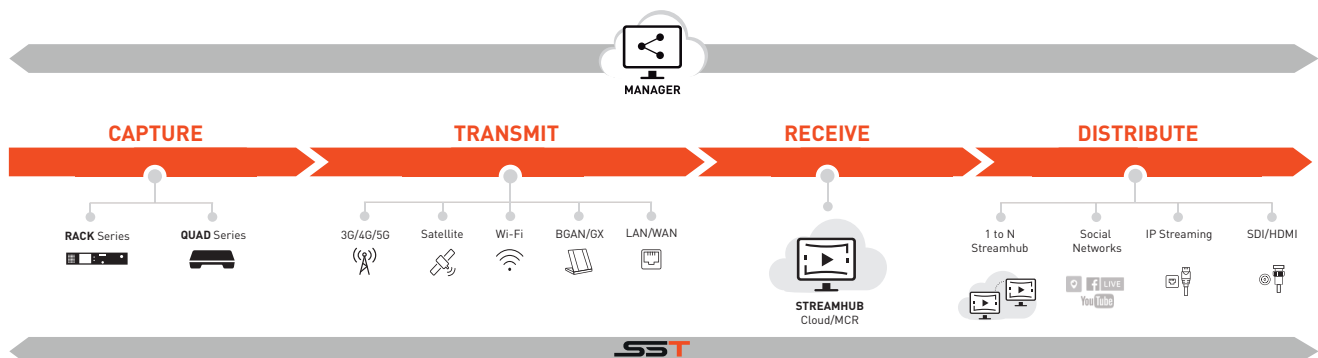
## PHYSICAL

**DIMENSIONS (W x H x D)** 22.2 cm x 4.4 cm x 12.5 cm  
(8.66" x 1.57" x 4.72")

**WEIGHT** RACK200: 1.22 Kg (2.69 lbs)  
RACK300: 1.32 Kg (2.91 lbs)

**OPERATION TEMPERATURE** -5°C to 45°C (23°F to 113 °F)

# SYSTEM OVERVIEW



AVIWEST continuously improves its products portfolio and reserves the right to modify the specifications without prior notice.