

STAGE RACER 2



Decentralized TRANSMISSION, ROUTING, DISTRIBUTION and PROCESSING solution
Supercharge your optical FIBER



Product Highlights

The STAGE RACER 2 is a complete optical fibre transmission solution for every broadcast event, ranging from simple OB interconnect to complex star, ring or linear topology spread over a whole TV compound. It also supports long distance transmission for remote production capacity allowing content exchange between distant locations.

Stage Racer 2 is designed to accept all kinds of signal on a same device without external adapter. Internally those signals can be associated together / routed / distributed to all other machines of the network.

Stage Racer 2 also offers processing capabilities with Audio Embedding/De-embedding, Audio shuffling, Audio SRC, Frame buffering, and much more...

Stage Racer 2 network can be controlled by a built-in intuitive web interface or with automation systems like VSM, KSC Core...

Electrical Interfaces

The Stage Racer 2 is available in two standard configurations: 12 or 24 SDI channels, direction configurable, plus a common set of signals. Each equipment assumes transmission of a comprehensive set of signals as follows:

Stage Racer 2 – 24 SDI version	Stage Racer 2 – 12 SDI version
16 SD to 3G bidirectional channels	8 SD to 3G bidirectional channels
8 SD to 12G bidirectional channels	4 SD to 12G bidirectional channels
1 Distributed Genlock (Composite video / Black burst / Tri-level)	
16 Bidirectional Analog Audio (optional mic gain/48V module)	
2 Ethernet 10/100/1000Mbs	
2 Data RS 232/422/485 (optional 6 additional 500Kbps RS422 serial channels)	
8 Contact closures	
4 AES 3 bidirectional (Intercom panel compatible)	
1 Bidirectional MAD1 (AES10) Signal (Shared with 2 of the 4 AES connectors)	
Optional Dante / AES67 audio module with 64 channels support.	

Each SDI port can be independently configured as an input or an output for asymmetrical usage at central points.

Signal Transmission

Transmission is based on TDM multiplexing for the all signals managed by the system, each TDM multiplex is transmitted to another machine by "Trunk" ports. Each machine can have up to 4 trunk ports (minimum is 1 for a network endpoint).

Most part of bandwidth is dynamically allocated for hi datarate signals (SDI / Ethernet / Raw signals). A small remaining bandwidth is fixed and guaranteed, dedicated to low datarate signals (Genlock / Audio / Serial / GPIO / System management) with a predefined maximum channel capacity per signal type.

As a base rule, each trunk total capacity is:

- 25 HD signals (or similar rate signals like GB Ethernet), or 12x3G or 3x12G or any combination,
- 1 Genlock / Trilevel / Composite,
- 400 Bidirectional Audio channels,
- 50 Bidirectional Serial channels,
- 200 Bidirectional GPIO.

For SDI, routing engine will send the signals at the desired points only, after this point the signal is not carried on the network and its bandwidth is available.

For audio all required signals will be allocated one of the 400 channels and routed elsewhere in the network. The same principle is applied to GPIO and Serial channels and allow signal distribution or point to point transmission.

For remote production applications the machine will act as a bridge between the standard and the IP world. Signals managed locally can be sent over IP and vice versa. Depending of application SMPTE ST2022 or SMPTE ST2110 is available.

Processing

To ease system setup and provide a seamless integration the STAGE RACER 2 offers the following (but not limited to) processing capabilities:

Frame buffer: Each SDI can be transmitted independently (with its own master clock frequency) or it can be frame synced to the system supplied Genlock.

Embedding/De-embedding: Audio can be inserted or extracted from any SDI port of the system.

Audio SRC: Each digital audio input (SDI De-embedded / MADI / Dante) enters the transmission engine thru an SRC to be at the same rate as the analog channels. Inversely each output (SDI Embed / Dante) will exit the transmission engine thru an SRC. Any kind of audio source can be routed to any kind of audio output.

Connectors / Cooling / Power / Options

Standard connectors are used for all the signals. SDI, Analog video and Digital audio are mostly on BNC connectors, eight 3G SDI ports are on Mini sized HD BNC. The other connectors are RJ45 / D SUB with same pinout as the original stage racer.

Each transmission trunk is available on a dual LC/PC socket, the 4 remote production ports are grouped on a singlemode MPO connector and need a standard break out cable to access each port

The unit achieves a very efficient and silent cooling thanks to the design effort spent on internal heatsinks and venting grilles. Temperature raise on the mother board is kept under 25°C at the fans lower speed making this product a good choice for outside applications.

Each unit has a built-in redundant power supply. An optional 12V power input can act as a third power source.

Mic preamp with 8 channels and 6 hi speed serial channels options are also available.

Web interface / Routing

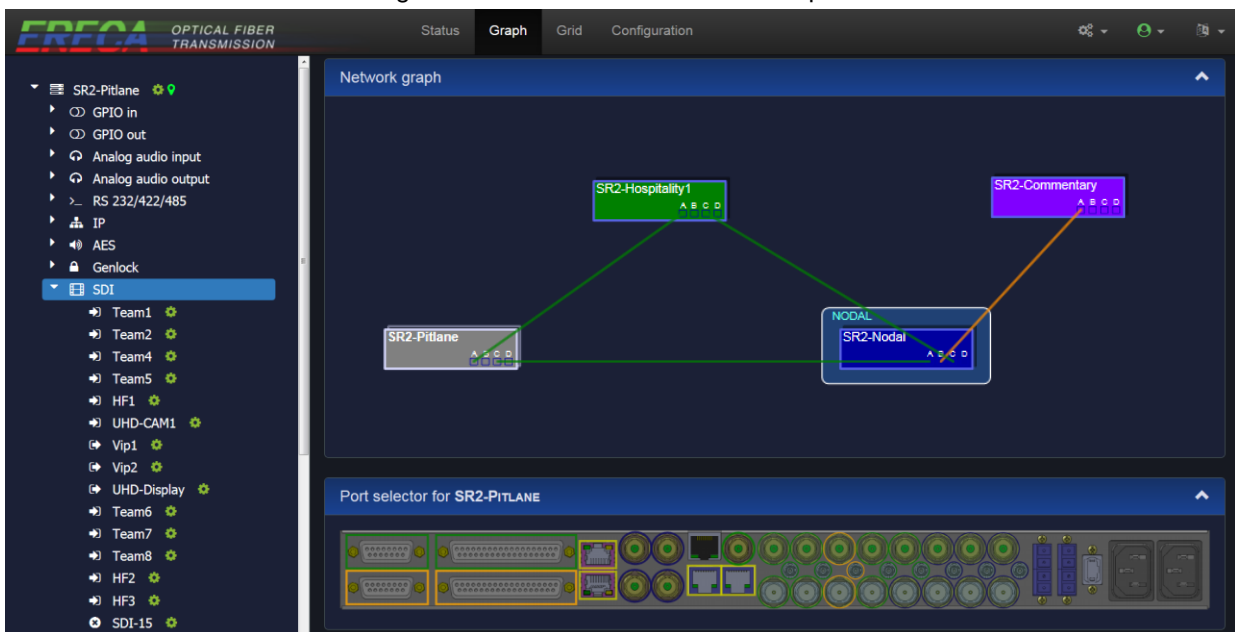
All the configuration is done through a standard HTML web interface, no plugin or heavy client is needed. Through this interface the user can:

- Explore the network topology,
- Preview video and audio streams,
- Monitor the link status (saturation, redundancy, ...),
- Route all signals (audio, video, IP, GPIO, ...).

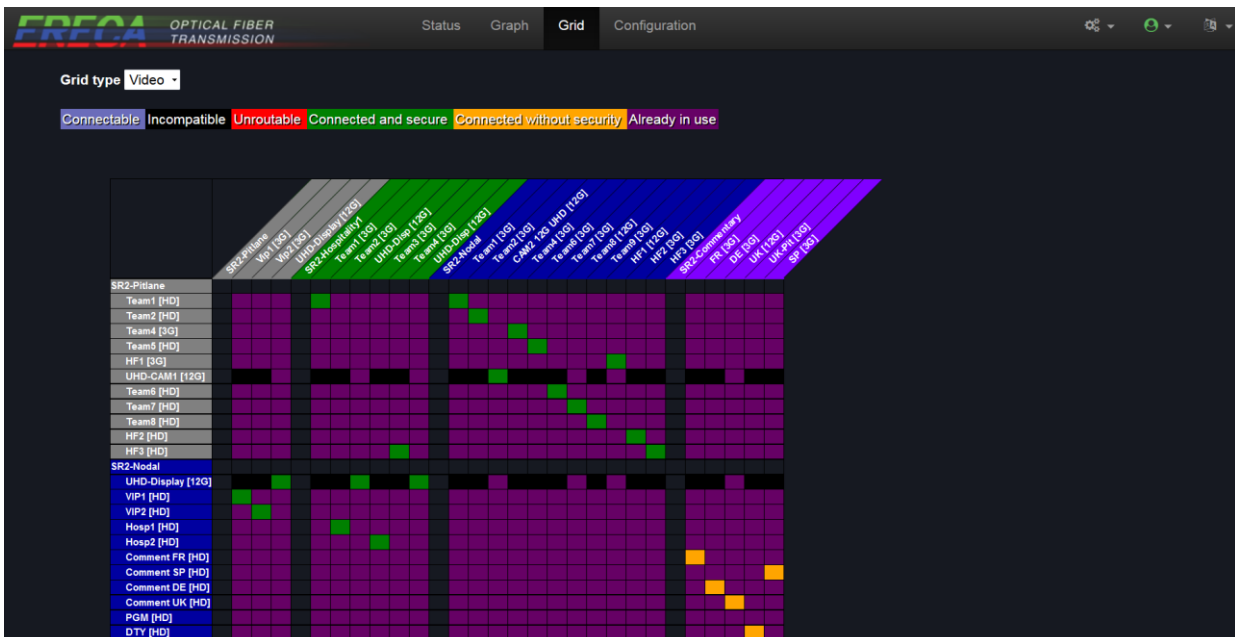
The stage racers discover the fibre network topology automatically and will attempt to re-route signals in case of link breakage.

The architecture is completely decentralized, if any node is added or removed the rest of the network will automatically detect the new topology and keep working as intended. For this reason, it's possible to temporarily connect multiple networks to mutualize resources for big events without having to reconfigure the entire system.

Port configuration interface and Network Graph screenshot:



Cross point matrix and Grid view Screenshot:



Technical specifications

Optical	
Trunk:	10Km of single mode fiber / Link power budget 10dB / LC/PC connector. (Optionally 40Km range).
Remote production:	4 Standard 10Gbe Ethernet port / 10Km single mode fiber / MPO connector for the 4 channels.
SDI Video	
Number, connector:	12 or 24 Channels (Each channel is direction configurable).
Impedance:	75 Ω .
Standard (Lower row):	SDI, HD, 3G, 6G, 12G / BNC Connector.
Standard (Mid row):	SDI, ASI, HD, 3G / HD-BNC Mini Connector.
Standard (Upper row):	SDI, ASI, HD, 3G / BNC Connector.
Return loss:	Better than - 15 dB for 0 to 1,5 GHz / - 10 dB for 1,5 to 3 GHz / - 6 dB for 6 to 12 GHz.
Composite Video / GL	
Number:	1 port, direction configurable / BNC Connector.
Standard:	PAL, NTSC. Composite / BB / Tri-level (Auto sense). Genlock clock may not support all formats.
Impedance:	75 Ω .
Bandwidth:	> 5.8 MHz at +/- 0.2 dB.
Differential Gain/Phase:	< 1%, < 1°.
Group delay:	< 10 ns.
SNR:	> 67 dB (CCIR567).
Analog Audio	
Number, connector:	16 bidirectional channels, D-SUB 37 female socket.
Impedance:	Input: 10 K Ω differential (non floating), Output: 20 Ω differential (non floating).
Amplitude:	+4 dBm nominal (saturation at + 18 dBm).
Bandwidth:	50 Hz to 15 KHz at +/- 0.5dB, (20 Hz to 20 KHz at -3 dB).
Distortion:	0.05% at 1KHz +18 dBm.
Signal to noise ratio:	90dB, "A" weighted.
Mic preamp option:	Gain from 10 to 60dB (3dB steps) / Phantom power / Preamp Bypass (8 preamp fitted on channels 9 to 16).
Digital audio	
AES ports:	4 bidirectional ports (Intercom panel compatible) / 75 Ω BNC connector / Shared with Madi port BNC.
MADI port:	1 input, 1 output / 48 or 96 KHz support (SRC) / 75 Ω BNC connector.
DANTE option:	Dante and AES67 support / 64 channels / 48 or 96 KHz support (SRC) / Routed to the gigabit ports.
Serial	
Number, connector:	2 bidirectional channels, 1 RJ 45 socket per channel.
Protocols:	RS485, RS422, RS232.
Data rate:	0 to 500 Kbd/s (Sony compatible).
RS422 option:	6 bidirectional RS422 / 0 to 500 Kbd/s (Sony compatible) / D-SUB 25 female socket on front side.
Ethernet	
Number, connector:	2 independent channels, RJ45 Socket.
Protocols:	10, 100 or 1000 Mb/s, Full or Half-duplex (Auto), MDI or MDI-X (Auto).
GPIO	
Number, connector:	8 bidirectional GPIO contacts / 6 on D-SUB 15 female plus 1 GPIO along each RJ45 Serial connector.
Output:	Relay (dry contact). 'Common' – 'Normally Open' terminals for each relay.
Input:	Floating on the D-SUB, Input pin grounding on RJ45.
Powering	
Consumption:	80 Watts per unit maximum (All trunks and all signals used + Remote production active).
Mains source:	Dual redundant built in PSU / Voltage range 90 to 260 VAC / 47 to 63 Hz.
Low voltage option:	10 to 16 VDC / D-SUB 25 with power inserts (fitted on front side) / protected by internal fast acting fuse.
Mechanical	
Size:	1 RU 19" rack, depth 335mm excluding connectors.
Weight:	4.5 Kilograms.
Cooling:	Internal fan tray with transversal cooling flow / side panels in/out / Passive heatsinks on actives.
Operating Temp range:	From -20 to + 60°C. (Avoiding direct sun exposition).
Signalling / Admin	
Local display:	OLED display for main parameters (IP add / Optical power) / 1 LED per signal / Technical alarms LED.
Setup:	Web interface / Automation protocols (VSM, KSC Core....).
Connection:	1 dedicated 10/100Mbs ethernet port.

ERECA reserve the right to change specifications without notice.

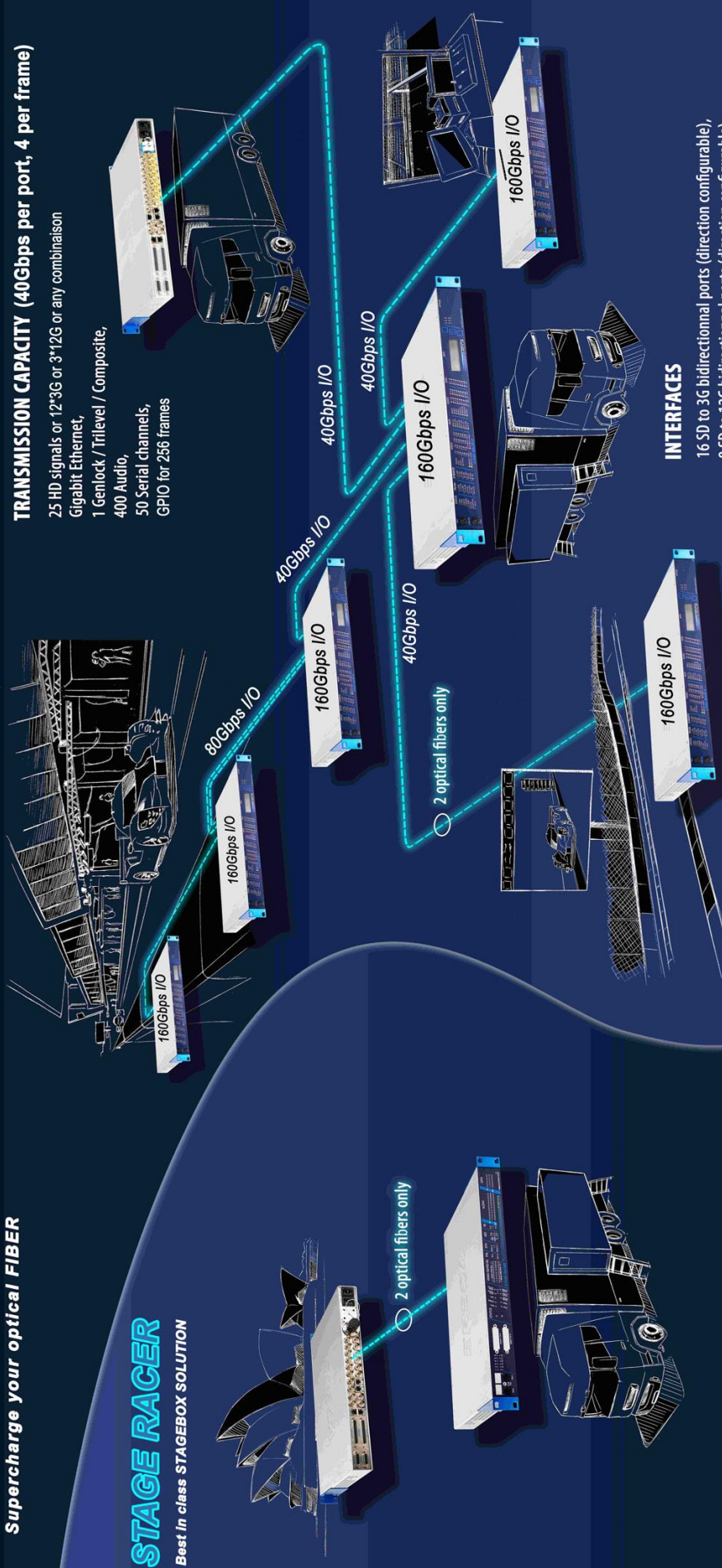
STAGE RACER 2

Best In class NETWORKED SOLUTION

Supercharge your optical FIBER

STAGE RACER

Best In class STAGEBOX SOLUTION



TRANSMISSION CAPACITY (40Gbps per port, 4 per frame)

- 25 HD signals or 12*3G or 3*12G or any combination Gigabit Ethernet,
- 1 Genlock / Trilevel / Composite,
- 400 Audio,
- 50 Serial channels,
- GPIO for 256 frames

SPECIFICATIONS

- 4 to 12 video 3G / HD / SDI signals (direction configurable with Web interface),
- 1 Genlock bidirectional (Composite video / Black burst / Tri-level),
- 16 Analog audio for intercom or broadcasting,
- 2 Ethernet 10/100/1000Mbps (1 Gigabit trunk with 2 VLANs),
- 4 Data RS 232/422/485,
- 8 Contact closures,
- 4 AES 3 bidirectional (Intercom panel compatible),
- 1 Bidirectional MADI (AES10) Signal (Shared with 2 of the 4 AES connectors).

FEATURES

- Routing
- Distribution
- Dynamic topology linear / ring / star / combination
- Processing Audio Embedding-Deembedding, SRC, Audio Shuffling, Framesync...
- 3rd party control (VSM, KSC Core...)
- Built for ST2110 compliance

INTERFACES

- 16 SD to 3G bidirectional ports (direction configurable),
- 8 SD to 12G bidirectional ports (direction configurable),
- 1 Distributed genlock (Composite video / Black burst / Tri-level),
- 16 analog audio for intercom or broadcasting,
- 2 Ethernet 10/100/1000Mbps,
- 2 Data RS 232/422/485 (+ 6 RS422 optional),
- 8 Contact closures,
- 4 AES 3 bidirectional (Intercom panel compatible),
- 1 Bidirectional MADI (AES10) Signal (Shared with 2 of the 4 AES connectors),
- 1 Built in Dante / AES67 audio port,
- 1 Administration Port (Web interface / VSM / ...).