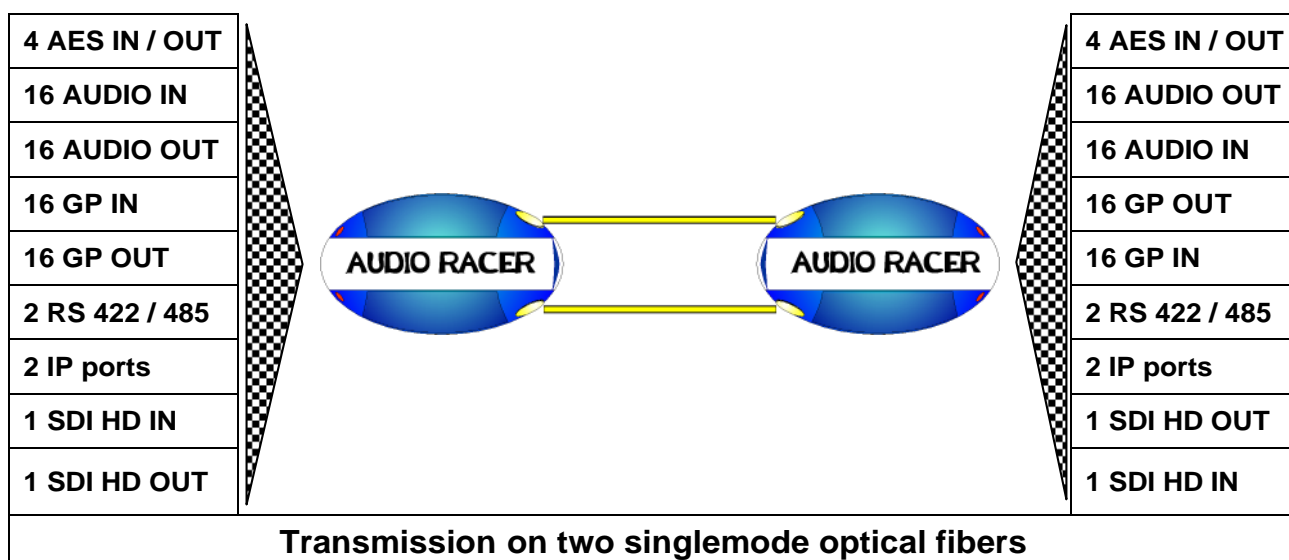




MULTISIGNAL TRANSMISSION OVER OPTICAL FIBER



The **AUDIO RACER** is the compact and efficiency solution for the transmission of commodities signals and also signals for the photo director , over optical fibers, between OB truck and stage. One link offer s the transmission of the following signals:

- 16 analog and bidirectional audio channels,
- 16 General purpose input / output,
- 4 bidirectional AES links "protocol_less" on one coaxial cable each,
- 1 Ethernet 10/100Mbps, 2 RJ45 port on two VLAN.
- 2 RS 422/485 channels.
- 1 bidirectional HDSDI signal.

The products are in a 19" 1U chassis rack, with forced air cooling controlled in temperature.

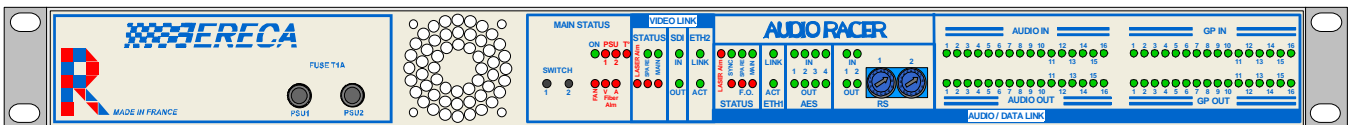
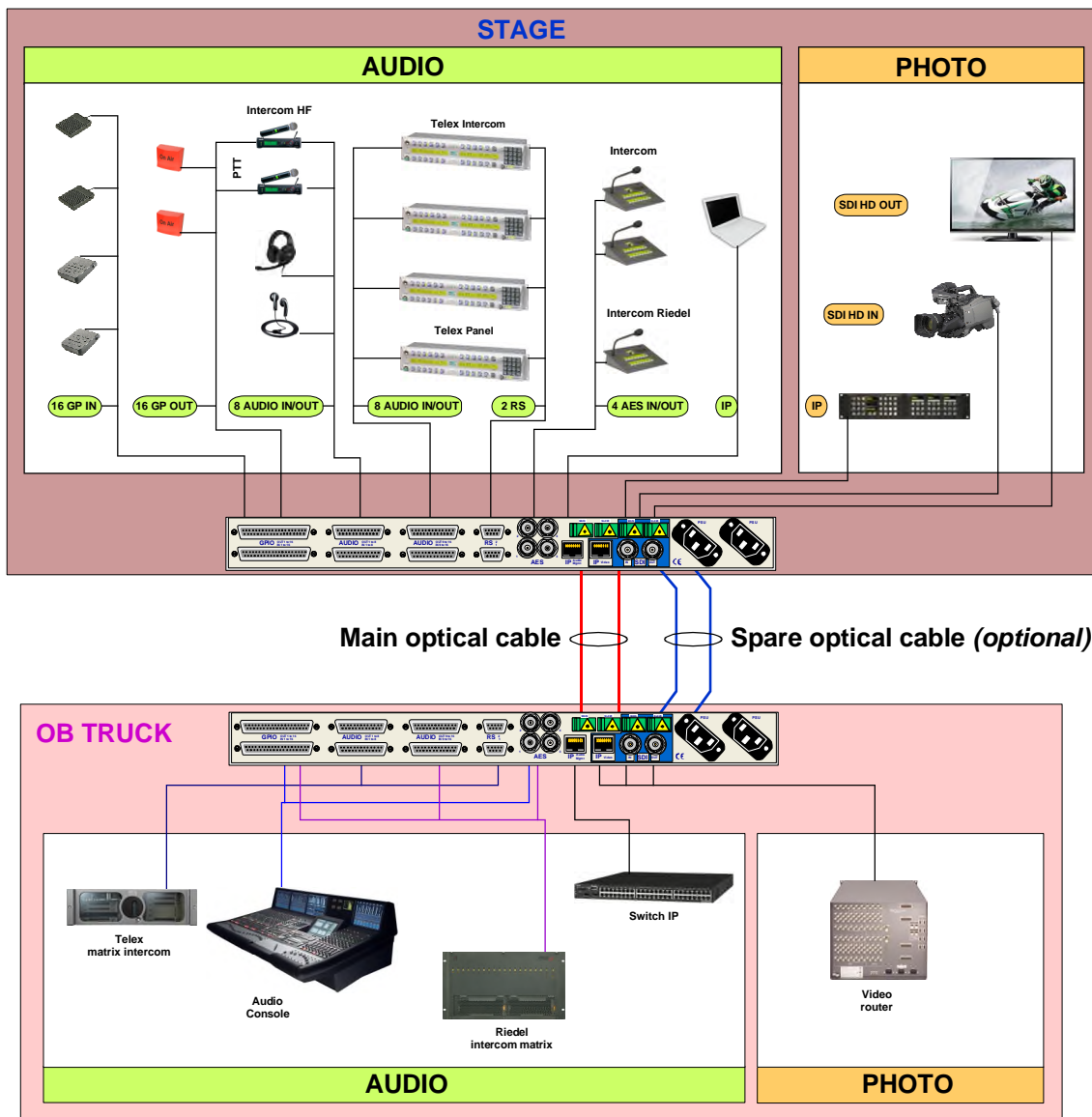


Figure 1 : Front face of the Audio RACER, with complete status of signals and operating.

<p><u>Real time, low delay</u></p> <p>In order to avoid any audio noticeable delay for the staff working on stage, the AUDIO RACER analog and AES audio processing features :</p> <ul style="list-style-type: none"> • Synchronism of the sampling frequencies of the signals. • Clock management at receiver side to synchronize the clock with the return channel. <p>Thus enabling a no buffer transmission with delay kept as minimum.</p>	<p><u>Redundancy: optical fiber / power supply</u></p> <p>As an option, a dual optical component version secures the optical fiber links and offers an automatic redundancy in case of main optical cable breakdown.</p> <p>For each optical link, one LED indicates that the optical power received is correct. As one fiber is disconnected or broken, the corresponding LED shuts off, and an alarm LED lit to indicate a fiber is out of order. In the mean time, the AUDIO racer selects the remaining fiber and continues to operate without perturbations.</p> <p>The AUDIO RACER comprises a redundant power supply working on current sharing.</p>
<p><u>Signaling</u></p> <p>To facilitate installation/trouble shoot process, the AUDIO RACER features on the front face full information LED status, displaying all signal presence and technical alarms of the product. No external diagnostic equipment is required at first start.</p>	<p><u>Supervising</u></p> <p>One http server is integrated in the AUDIO RACER, it delivers the status of the equipment on web page interface. The available information includes technical information of the product (internal voltages, internal temperature, optical status...) and also signals information (signal presence, data setting). The RJ45 of the "AUDIO" VLAN gives the access to the server.</p>
<p><u>Ethernet</u></p> <p>The audio racer also carries One 100 Mbs Ethernet signal. Two copper ports are available on each product. One is dedicated for the "AUDIO" section and the other is dedicated for the "VIDEO" applications.</p> <p>The two copper ports are totally separated by an internal VLAN setting. As the trunk is at 100 Mbs the total payload of the two VLAN is also 100 Mbs.</p>	<p><u>Cooling and power consumption</u></p> <p>AUDIO RACER uses last technology of low power consumption components. The internal motherboard is designed to avoid heat spots and spread the thermal energy all over its surface. Cooling requirement is kept to minimal. A small noiseless thermally controlled FAN is used to provide enough cooling</p> <p>As a result AUDIO RACER is a quiet solution over large temperature range.</p>

Application note: Audio stage box



Optical transmission:

- Optical dynamic range: 15dB (~ 30Km),
- Optical architecture: 2 separate optical links,
 - One transmits HD SDI signals,
 - One transmits audio AES and all the other signals (GPIO, IP, RS, audio)
- Optical redundancy: Redundancy of the optical links (optional), automatic management
- Optical connector: SC/APC.

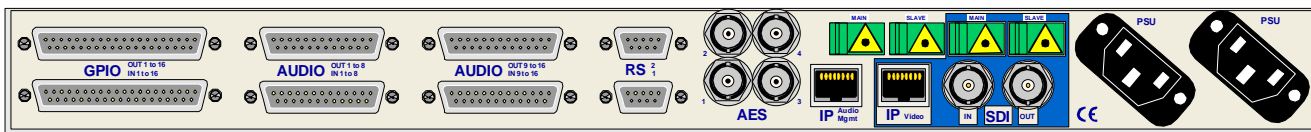


Figure 2 : Rear face of the AUDIO RACER, with optical transmission redundancy

TECHNICAL CHARACTERISTICS

Video SD/HD:	
Number, connector:	1 bidirectional channel on BNC
Impedance:	75 Ω
Standard:	SDI, ASI, HD, 2HD (3G optional, specific optical component)
Amplitude:	Input: cable equalization (140 m Belden 1694A for HD), Output: 800mV pp
Return loss:	Better than -15 dB
Analog Audio:	
Number:	16 bidirectional channels, on 4 SUB-D 25 sockets
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, (20Hz to 20 KHz at -3dB)
Distortion:	0.05% at 1KHz +18 dBm
Signal to noise ratio:	90dB, "A" weighted
Signaling threshold:	-15 dBm on inputs / -15 dBFS on outputs
Delay:	380 microseconds
Audio AES:	
Number:	4 channels, each channel is bidirectional on one BNC
Impedance:	75 Ω
Amplitude:	1.5 Volts peak to peak
Gigue:	0.02UI RMS / 0.04UI peak to peak (Audio signal at 48 KHz)
Delay:	1.8 microseconds
Data:	
Number:	2 bidirectional channels, 1 SUB-D 9 sockets connector per channel
Protocols:	RS485, RS422, RS232
Data rate:	0 to 230 Kbd/s
Setting:	A coding raw at front face of AUDIO RACER for each signal (RS 485 2 wires by bonding on SUB-D)
Ethernet:	
Number:	2 channels separate by internal VLAN
Connector:	RJ45 (Auto MDI)
Protocols:	10 or 100mb/s, Full or Half-duplex (Auto), MDI or MDI-X (Auto)
GPIO:	
Number:	16 GPIO, on 2 connectors SUB-D 37 sockets
Output:	Relay (dry contact). 'Common' – 'Normally Open' terminals for each relay
Input:	Opto-coupler, Command 5 to 24 volts not polarized, Built in current limitation
Delay:	3ms Typical (Time for relay switching)
Power supply	
Consumption:	20 Watts per rack
Voltage:	230VAC (+10, -15%) 50-60Hz
Type:	Redundancy PSU with current sharing principle
Mechanical	
Dimensions:	19" 1U chassis rack
Cooling:	One fan with speed management
Signaling	
2 x Video:	Video presence (2 LED)
16 x Analog audio:	Inputs: Audio presence (16 LED), Outputs: audio presence (16 LED)
4 x AES:	Inputs: Audio presence (4 LED), Outputs: audio presence (4 LED)
2 x Ethernet:	"Link" and "activity" (4 LED)
2 x RS 422, 485:	"Rx" and "Tx" (4 LED)
16 x GPIO:	Status of the relay (16 LED), Status of the input (16 LED)
Optical:	Optical receiver status, optical component alarm, optical fiber alarm
Power supply:	"ON" (indicates internal voltage are OK)