CAM RACER

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12G-SDI Dockable optical fibre transmission unit for HD / 3G / 4K / 8K Cameras.

CAM Racer is a complete camera fibre optic transmission solution for OB Van, Studio and Cinema applications. It comprises a camera dockable transceiver and a 1RU base station unit.

Product Highlights

With two 12G-SDI channels plus two 3G-SDI channels the CAM Racer will fit any camera from ENG to 4K and 8K Cinema devices.

CAM Racer can deliver up to 140 Watts of power to the camera over 450 metres of standard 9.2mm SMPTE cable.
An optional automatic battery backup provides additional power in the case of a sudden increase in demand.

Signal control and setup is provided through an internal web server. Signal status is also reported on an LED display on each unit. The base station Oled display gives direct access to optical receiving levels and server IP address.
An internal audio mixer allows the user to mix between talkback, programs inputs and local audio channels for Eng and Reporter headsets.
Camera control channel supports: Ethernet, RS422 Serial, Canon RC-V100 protocol (Enhanced Lanc).

Camera synchronization supports: Two Composite Video signals and one Timecode.

Detailed Description

The transceiver is fitted in a V mount dockable unit able to be installed on every camera. A red/green tally LED is located on top of the unit.
A user panel has LEDs for signal presence/activity, a rotary button for volume adjustment and various level settings (sidetone, program1 / program2 listen level) and push to talk commands.
Cooling of the unit is performed by a small and silent fan located at the base of the unit.

The base station receiver is integrated in a standard 19” 1RU rack frame. All signals are on standard connectors located at the rear of the chassis. (the web server is on a separate Ethernet port).
The front of the chassis has an LED display panel indicating the status of each signal and technical alarms.
An Oled display gives direct access to optical receiving levels and server IP address.
The base station has an internal mains power supply and two fans for thermal management.

Each CAM Racer has as standard the following signal set:

- 2 3G / HD / SD signals from Camera,
- 1 Viewfinder HDSDI from base station,
- 1 Monitoring HDSDI from the camera (HDMI or BNC input autoswitch),
- 2 Genlock from base station (Composite video / Black burst / Tri-level),
- 2 Bidirectional audio with mic preamp and phantom power at camera side,
- 1 Talkback in/out with headset interface at camera side,
- 1 Time code from base station,
- 1 Ethernet 10/100 Mbps,
- 1 Serial data RS 232/422/485,
- 1 Canon RC-V100 protocol (Enhanced Lanc),
- 1 Red Tally Contact closure from base station.

Two options are available for more complex setups (4K/8K, 2 talkback channels):

- 2 extra 12G / 6G / 3G / HD / SD signals from Camera (board add on),
- 2nd Talkback in/out with headset interface at camera side +
  2nd Tally (Green) Contact closure from base station +
  2nd Serial data RS 232/422/485 (connector add on).

The camera unit has talkback headset interfaces suitable for all types of mic (dynamic, electret, fully static) and any earpiece impedance.
An internal audio console enables talkback, local audio channels inputs, and program inputs to be mixed onto each camera unit audio output.

<u>Base Station & Camera Unit connector view:</u>

Camera Power Section

CAM Racer can be remotely powered from its base station. Up to 140W of power is available at the camera unit over 450m of 9.2mm SMPTE 311 cable.

An optional V-lock battery support enables the CAM racer and its camera to be locally powered by a battery.

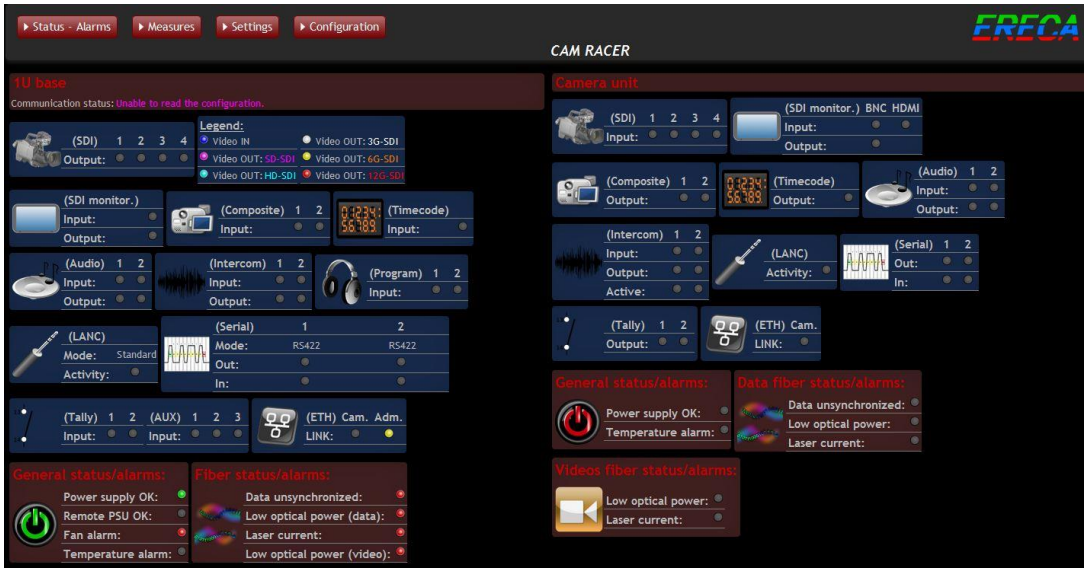
A key feature of the CAM Racer is the automatic switching between remote power and battery power without power loss to the CAM Racer and its camera. On very long lengths of SMPTE a temporary sudden extra power demand (e.g. camera or accessory startup) may draw too much power. In this situation the CAM racer will detect the power drop and switch to the battery, returning to the remote power supply when the extra demand drops to save battery life.

CAM racer is also designed for low power consumption devices like Canon C300/C500. In this case the remote power section is not required. The V-lock battery option powers the CAM Racer and includes an internal high efficiency voltage regulator to deliver 8.4Volts 32Watts for the Canon Camera from a dedicated D-Tap connector.

Web Management

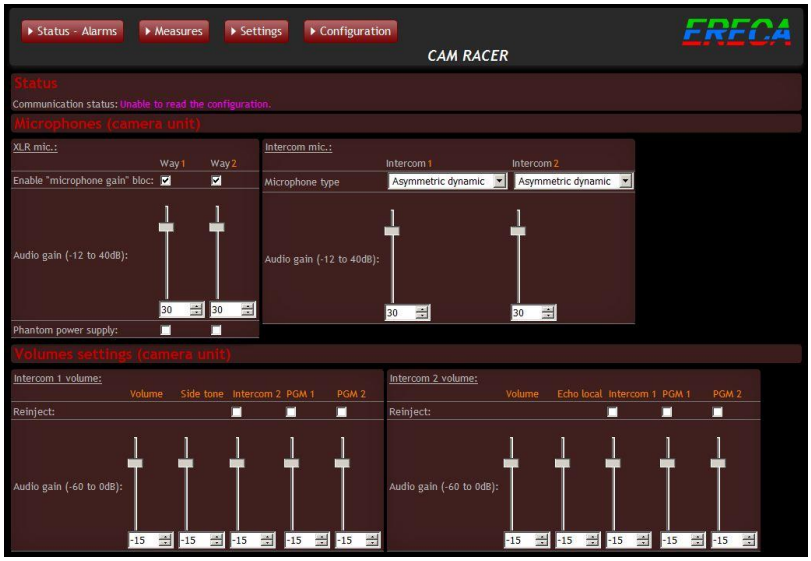
Web management has two main pages.

The *Status* page displays all signal presence / activity for quick status indication.



The *Settings* page for:

- Audio input type,
- Headsets type,
- Talkback mixing,
- Audio mixing,
- Camera control,
- Tally settings,
- Setup save/recall.



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Technical Specifications

Optical	
Dynamic range:	15 dB for control and 3G signals, 10dB for 12G channels.
Connector:	LEMO 3K (EDW / FXW) or NEUTRIK OpticalCON DUO.
SDI Video SD to 12G	
Connector:	3G certified BNC and 12G certified BNC.
Impedance:	75 Ω.
Standard:	SDI, ASI, HD, 3G on basic model. SDI, HD, 3G, 6G, 12G with optional 12G channels board.
Amplitude:	Input: cable equalization on all channels including 12G, Output: 800 mV pp / re-clocked.
Return loss:	Better than: - 15 dB for 0 to 1.5 Ghz, - 10 dB for 1,5G to 3G, -6dB for 3G to 12G.
Composite Video / GL	
Number, connector:	2 from base station to camera, 2 BNC.
Standard:	Composite video, Black Burst, Tri-level (Bi / Tri level auto sense).
Impedance:	75 Ω.
Performance:	BW > 5.8 MHz at +/- 0.2 dB, DgDp < 1%, < 1°, Group delay < 10 ns, SNR > 67 dB (CCIR567).
Analog Audio	
Number, connector:	2 bidirectional channels, XLR 5pins on camera unit, XLR 3pins on base station.
Impedance:	Input: 10 KΩ differential (non floating), Output: 20 Ω differential (non floating).
Amplitude:	+ 18 dBm maximum.
Bandwidth:	50 Hz to 15 KHz at +/- 0.5dB, (20 Hz to 20 KHz at -3 dB).
Distortion:	0.05% at 1Khz / 0 dBm.
Signal to noise ratio:	90dB, "A" weighted.
Mic input	
Input:	Microphone input gain block on the camera unit.
Mic input, Gain:	From -12 to 40 dB, Tunable by 1 dB steps, Totally by-passable.
Phantom power:	48 volts switchable, Source Impedance 6.8 KΩ.
Timecode	
Number, connector	1 from base station to camera unit, BNC.
Impedance, Connector:	75 Ω, BNC.
LANC	
Number, connector	1 bidirectional, Jack2.5mm.
Protocol	Standard LANC or RC-V100 remote protocol (5V open collector signaling).
Data	
Number, connector:	2 bidirectional channel, RJ 45 for Channel 1, Hirose 12 for channel 2.
Protocols:	RS485, RS422, RS232.
Data rate:	0 to 500 Kbd/s.
Ethernet	
Number, connector:	1 channel, RJ 45.
Protocols:	10 or 100 Mb/s, Full or Half-duplex (Auto sense), MDI or MDI-X (Auto sense).
Intercom / Tally	
Number:	2 Tally, 2 Intercom.
Tally output:	Relay (dry contact) shared with serial RJ45 (red) and Hirose 12 (green). Red/Green LED
Tally input:	Contact or Voltage input. Shared on intercom D-SUB 25 pins with standard CCU pinout.
Camera Intercom I/O	Any type of Headset Mic (Dynamic, Electret; Static) and Earpiece impedance (20 to 600 Ohms)
Base st. Intercom I/O	Line levels for Intercom and program input.
Talk command	Pushbutton on cam unit, PTT input on RJ45 for pocket PTT switch. (Talk latch release on base station).
Connector	XLR 5 pins (intcom1), Hirose 12 pin (intcom2), Standard D SUB 25 pins on base (Tally, Intcom, Pgm).
Power section	
Camera unit:	7 Watts for 2x3G basic device + Additional 3W for dual 12G channel option.
Camera power capacity	14.4V, 140W continuous, temporary unlimited with automatic battery backup.
Regulator option	8.4Volts 4Amps output for Canon devices on dedicated D-TAP.
Battery plates	V-Lock or Anton Bauer (under development).
Base station unit:	10 VA for the base station (Additionally up to 200VA for remote power source).
Mains source base:	From 90 to 260 VAC / 47 to 63 Hz.
Mechanical	
Camera unit:	155 * 145 * 44mm excluding connectors & plates (Add 13mm for power converter), weight 1400 grams.
Base station:	1 RU 19" rack, depth 250mm excluding connectors, weight 3000 grams.
Operating Temp range:	From -20 to + 60°C. (Avoiding direct sun exposure).

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