

Dockable optical fiber transmission unit with  
4x12G SDI for ENG up to 8K cameras



The CAM RACER is a complete optical fiber transmission solution for camera connection for Outside Broadcast, Studio and Cinema applications. It is composed of a camera dockable transmitter, agnostic to any type or brand of Camera and a 1RU basestation receiver.



## Product Highlights

With four 12G-SDI channels, the CAM RACER 8K can fit any camera from simple ENG to 8K Live sport devices making it suitable for any environment and ideal for rentals.

CAM RACER 8K delivers 140 Watts to the camera. An automatic battery backup will help the remote powering system if more power is needed suddenly.

Signals control and Setup is done through internal web server. Most signals are also reported on LED display of each unit. An Oled display gives direct access to optical receiving levels and server IP address.

An internal audio mixer allows 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.

# CAM RACER 8K



## Detailed Description

The transmitter is fitted in a V-mount dockable unit which can be installed on any camera. Red/green tally led are located on top of the unit.

A user panel feature LEDs for signal presence/activity, rotary button for volume adjustment and various level settings (sidetone, program1 / program2 listen level) along with push to talk commands. Cooling of the unit is done by a small and silent fan located at the back of the unit.

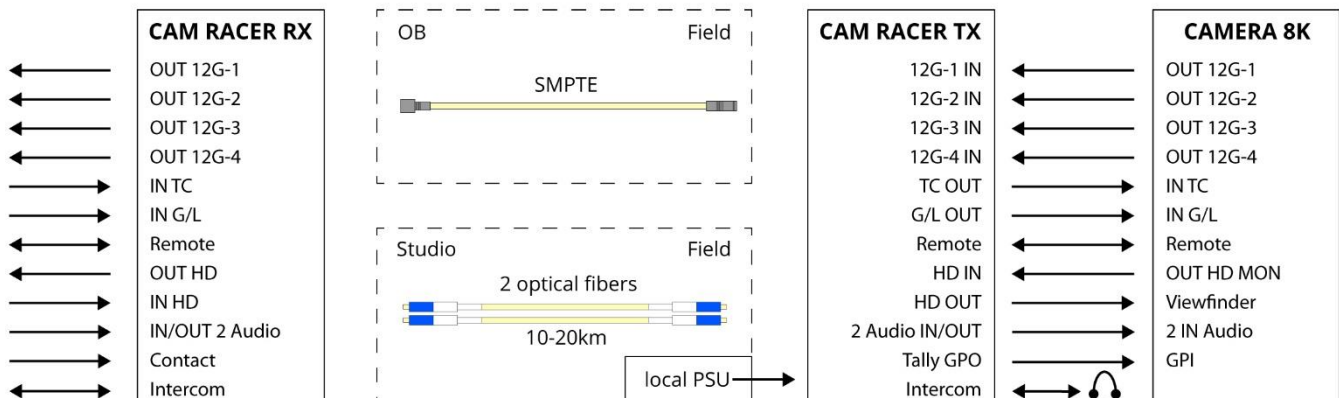
The basestation receiver is integrated in a standard 19" 1RU format. All signals are dispatched on standard connectors and standard pinout at the rear of the chassis. (Web server is on a separate Ethernet port). The front of the chassis is composed of a LED display panel indicating the status of each signals and technical alarms. An Oled display gives direct access to optical receiving levels and server IP address. The basestation integrates a single mains power supply and two fans for thermal management.

There are 3 standard configurations of CAM Racer.

Each equipment assumes transmission of a comprehensive set of signals as follows:

Specifications (docking unit)	CAM Racer Lite	CAM Racer	CAM Racer 8K
SDI Channel	1x3G In	2x3G In + 2x12G In (optional)	4x12G In
HD (Monitoring, BNC or HDMI input autoswitch)		1 HD In	
HD (Viewfinder, BNC)		1 HD Out	
Ethernet 10-100 Mb/s		1	
Admin port for web management from basestation		1	
Timecode		1 Out	
Lanc		1	
Audio Mic + 48V or Line		2 In/Out	
Genlock (Composite Video / Black burst / Tri-Level)	1 Out		2 Out
RS 232/422/485 serial channel	1		2
Intercom-Talkback channel	1 In/Out		2 In/Out
Tally GPIO	1 Out		2 Out
Remote power capacity for the camera	60W		140W

### Signal transmission diagram



## Camera Power Section

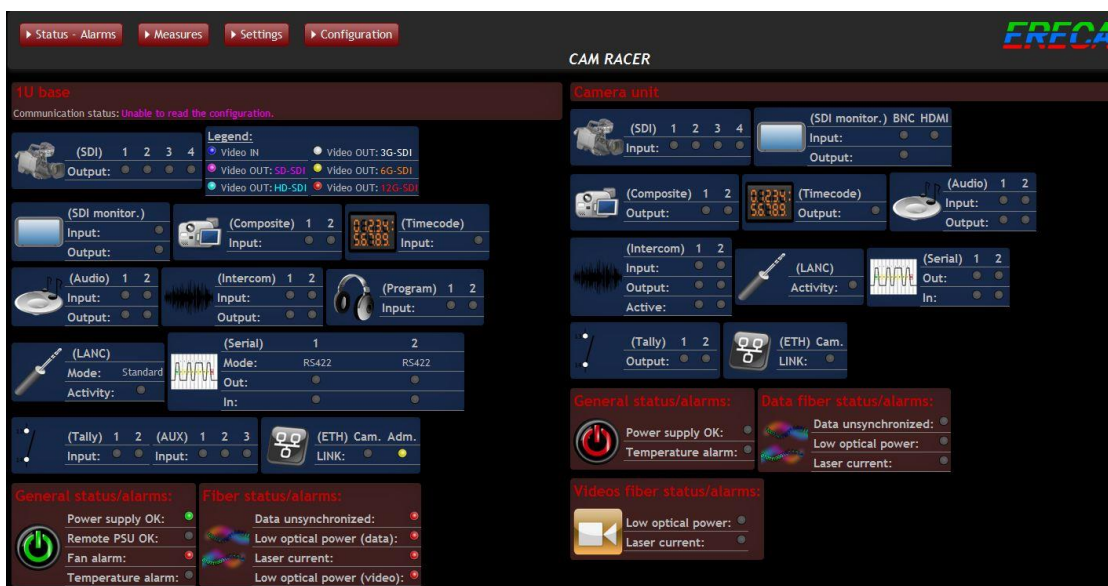
CAM Racer is basically remote powered from its base station. The camera unit is able to source up to 140W of power for the camera at 450m of 9.2mm SMPTE cable. Power budget decreasing slowly for longer runs.

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 for the CAM Racer and its camera. On very long lengths of SMPTE a temporary sudden extra consumption (accessory startup) may draw too much power regarding the loss of the installed SMPTE cable. In this case the CAM Racer will detect power drop and will switch on the battery and come back on the remote power supply to save battery energy.

## Web Management and Audio Mixing

The units can be monitored and managed via a simple and intuitive web interface.



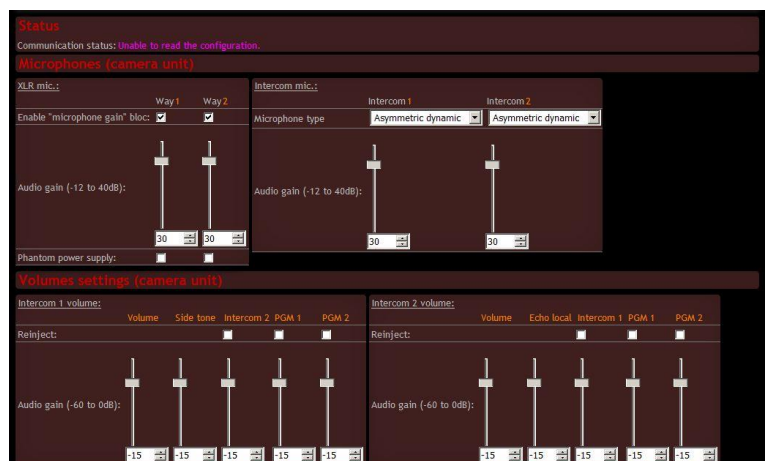
The **status-alarms** page displays all signals presence / activity for quick monitoring.

In regards to audio, the device integrates talkback headset interfaces suitable for any kind of mic (dynamic, electret, fully static) and any kind of earpiece impedance.

An internal audio console is available via the web interface which allows to control talkback, local audio channels inputs and program inputs. These signals can be mixed on every Camera unit audio outputs.

The **settings** page provides control for:

- Audio input type,
- Headsets type,
- Mic gain & Headphone volume,
- Talkback mixing,
- Audio mixing,
- Camera control,
- Tally settings,
- Setup save/recall.



## Technical Specifications

	CAM Racer Lite	CAM Racer	CAM Racer 8K
<b>Optical</b>			
Dynamic range:	15 dB for control, 10dB for 12G channels		
Connector:	LEMO 3K (EDW / FXW) or NEUTRIK OpticalCon DUO		
<b>SDI Video HD to 12G</b>			
Number:	1x3G	2x3G + optional 2x12G	4x12G
Connector:	3G certified 75Ω BNC and 12G certified 75Ω BNC		
Standard:	HD, 3G, 6G, 12G with optional 12G channels board		
Amplitude:	Input: cable equalization on all channels including 12G, Output: 800 mV pp / reclocked		
Return loss:	Better than: -15 dB for 0 to 1.5 Ghz, -10 dB for 1,5G to 3G, -6dB for 3G to 12G		
<b>Composite Video / GL</b>			
Number, connector:	1 x 75Ω BNC from RX to TX	2 x 75Ω BNC from RX to TX	
Standard:	Composite video, Black Burst, Tri-level (Bi / Tri level auto sense)		
Performance:	BW > 5.8 MHz at +/- 0.2 dB, DgDp < 1%, < 1°, Group delay < 10 ns, SNR > 67 dB (CCIR567)		
<b>Analog Audio</b>			
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		
<b>Mic input</b>			
Input:	Microphone input gain block on the camera unit		
Mic input, Gain:	From -12 to 40 dB, Tunable by 1 dB steps, Totally bypassable		
Phantom power:	48 volts switchable, Source Impedance 6.8 KΩ		
<b>Timecode</b>			
Number, connector:	1 from basestation to camera unit, 75Ω BNC		
<b>LANC</b>			
Number, connector:	1 bidirectional, Jack2.5mm		
Protocol	Standard LANC or RC-V100 remote protocol (5V open collector signaling)		
<b>Data</b>			
Number, connector:	1 bidirectional channel, RJ45	2 bidirectional channels, RJ45 for Ch1, Hirose 12 for Ch2	
Protocols, Data rate:	RS485, RS422, RS232 from 0 to 500 Kbd/s		
<b>Ethernet</b>			
Number, connector:	1 channel, RJ 45		
Protocols:	10 or 100 Mb/s, Full or Half-duplex (Auto sense), MDI or MDI-X (Auto sense)		
<b>Intercom / Tally</b>			
Number:	1 Tally, 1 Intercom	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)		
Basestation Inter. 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 basestation)		
Connector:	XLR 5 pins (intcom1), Hirose 12 pin (intcom2), Standard D SUB 25 pins on base (Tally, Intcom, PGM)		
<b>Power section</b>			
Camera unit:	7 Watts for 2x3G basic device + Additional 3W for dual 12G channel option		
Camera power capacity (Standard 9.2mm SMPTE)	14.4V, 60W continuous	14.4V, 140W continuous, temporary unlimited with automatic battery backup. Decreasing for length over 450m (100W at 600m).	
Battery plates:	V-Lock or Anton Bauer		
Basestation unit:	10 VA for the basestation (Additionally up to 200VA for remote power source)		
Mains source base:	From 90 to 260 VAC / 47 to 63 Hz		
<b>Mechanical</b>			
Camera unit:	155 * 145 * 44mm excluding connectors & plates (Add 13mm for power converter), weight 1400 grams		
Basestation:	1 RU 19" rack, depth 250mm excluding connectors, weight 3000 grams		
Operating Temp range:	From -20 to + 60°C. (Avoiding direct sun exposition)		