CAM RACER

12G–SDI Dockable optical fiber transmission unit for HD / 3G / 4K / 8K Camera.

TECHNICAL PRESENTATION

CONTENTS

1   CAM RACER OVERVIEW

The CAM RACER is a complete optical fiber transmission solution for camera connexion for OB Van, Studio and Cinema applications. It is composed of a camera dockable transmitter and a 1RU basestation receiver.

1.1 KEY FEATURES

The following key features makes the CAM RACER a product of choice for all kind of production from HD to 8K applications.

- Transmit Two 12G-SDI channels plus two 3G-SDI channels.
- Power unit delivers 140 Watts to the camera after 450 meter of standard 9.2mm SMPTE cable.
- 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 internal web 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 Time code.

1.2 SIGNAL CAPACITY

Each CAM Racer comes in standard with the following signal set:

- 2 3G / HD / SD signals from Camera,
- 1 Viewfinder HDSDI from basestation,
- 1 Monitoring HDSDI from the camera (HDMI or BNC input autoswitch),
- 2 Genlock from basestation (Composite video / Black burst / Tri-level),
- 2 Bidirectionnal audio with mic preamp and phantom power at camera side,
- 1 Intercom in/out with headset interface at camera side,
- 1 Time code from basestation,
- 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 basestation.

Two options are available for more complex setups (4K/8K, 2 Intercom separate headsets):

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

2   DETAILED DESCRIPTION

The transmitter is fitted in a battery (V-mount or AB) dockable unit able to be installed on every camera. All connectors are standard and located on the right side of the unit. Audio and intercom connectors are located at the rear of the unit along the battery.
A user panel feature LEDs for signal presence/activity, rotary button for volume adjustment and various level settings (sidetone, program1 / program2 listen level) and push to talk commands. Red/green tally led are located on top of the unit.
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.

2.1 CAMERA UNIT CONNECTORS LOCATION
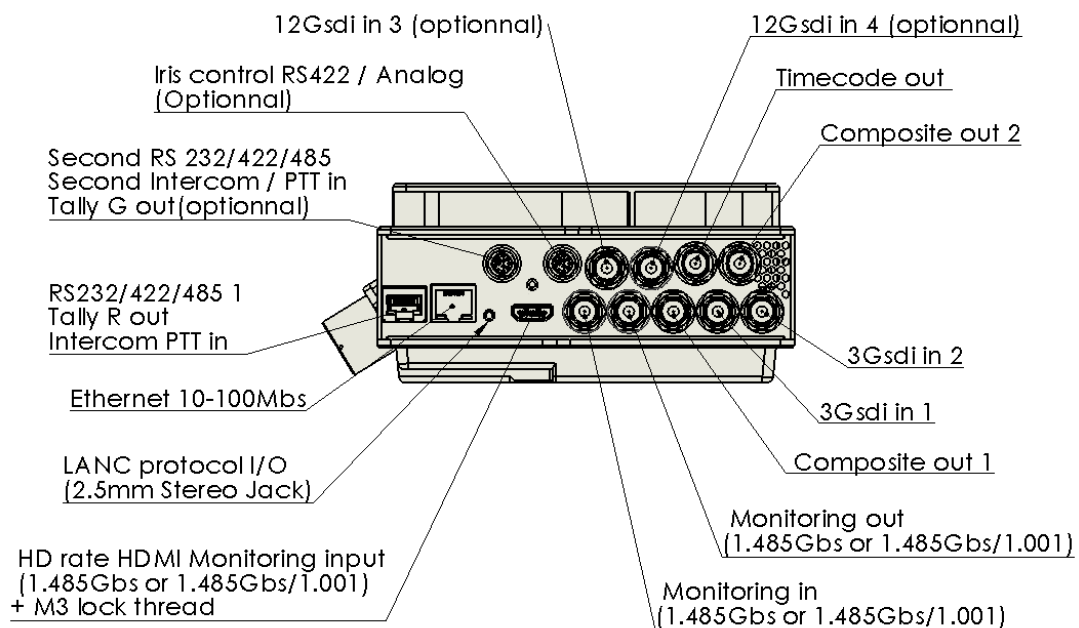
Right side connectors.
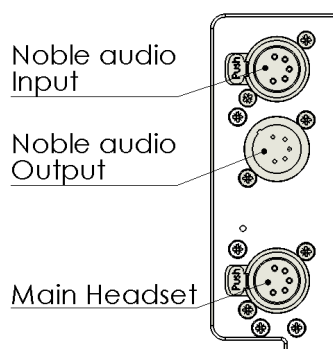
Audio XLR's.
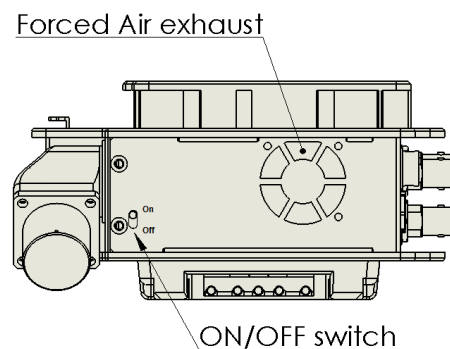
Bottom.

2.2 BASESTATION CONNECTORS LOCATION

Basestation connectors.
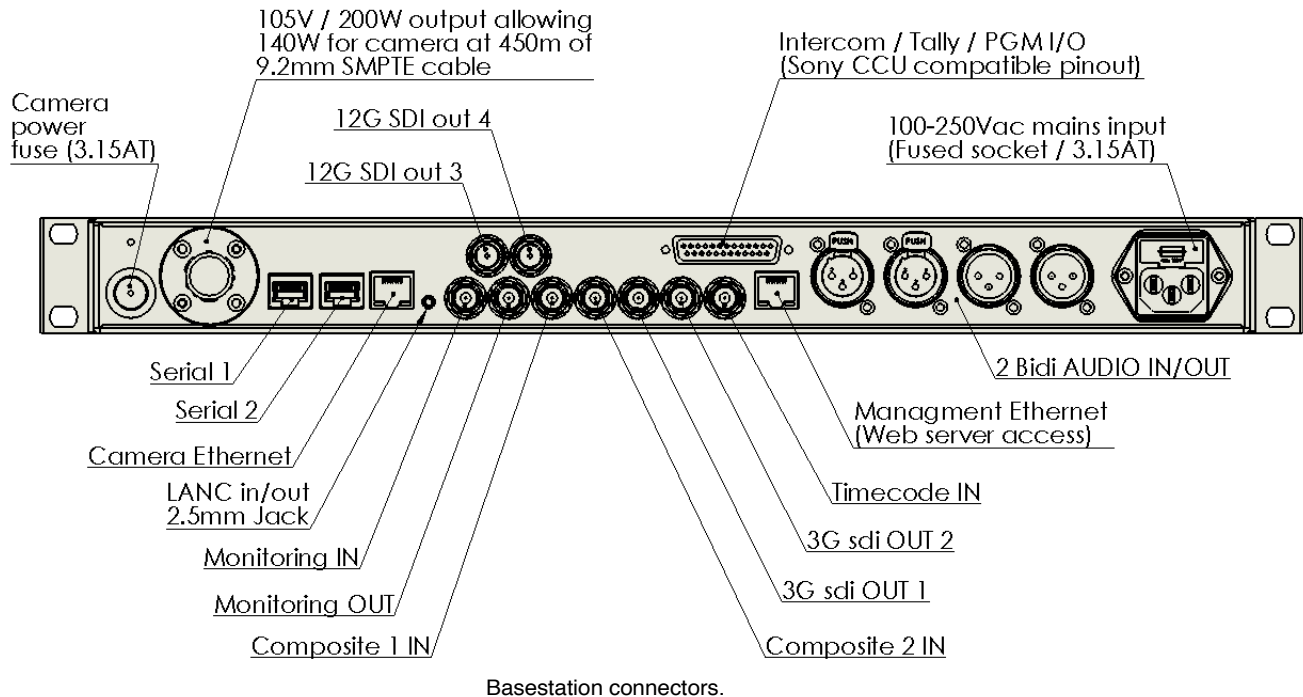
2.3 CONNECTORS DESCRIPTION

Digital video, Composite video and Timecode I/O's are on standard size BNC.

The pinout and specificities of the remaining connectors is detailed in the following sections.

2.3.1 SDI CHANNELS

3G channels supports from 270Mbs to 3Gbs, 12G channels supports from 270Mbs to 12Gbs.
All channels are reclocked and support RAW formats.

2.3.2 SDI MONITORING

Monitoring channel is transmitted by TDM along the other low datarate signals and supports only HD rates (1.485GBs or 1.485/1.001 Gbs), the ANC part of the signal SDI is transmitted (Embedded audio etc).

At camera side the monitoring input can be either SDI or HDMI autosense. If both signals are fed to the camera unit the selector will use the first valid signal detected.

Note: The HDMI audio is not re embedded in the Monitoring SDI signal transmitted to the basestation.

2.3.3 ETHERNET PORTS

Ethernet interfaces are 10-100 Mb/s autosense.
The camera ports are both Auto Crossover and will work with any type of cables.
The admin port is not Auto Crossover and will require a crossed cable to work directly with a computer.

2.3.4 COMPOSITE INPUT 1 SPECIFICITY

This channel is mainly used for Genlocking the camera on the studio Black-Burst.
In order to ease the distribution of Genlock to many cam racers by using BNC T's only, the Composite 1 input impedance can be turned to High Impedance.
To do so, go to the settings webpage of the units and tick the "High impedance for composite 1" on most of the cam racer's. The last unit fed by the signal will remain with 75 Ohms input impedance ("High impedance for composite 1" = unticked).
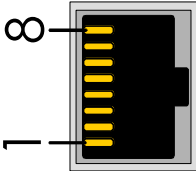
2.3.5 RJ45 DATA1 ON CAMERA HEAD

The RJ 45 connector provide 1 differential pair for RS422 transmit and 1 differential pair for RS422 receive.
To build half duplex RS485 transmission just bridge pins 3 with pin 4 and pin 5 with pin 6.
Max bitrate is 500 Kbds.

For RS485 also setup the corresponding Baud rate within the web server to enable the cam racer to manage output impedance at the right serial byte duration.

Shorting pin 1 and 2 will trigger the Intercom for talking on channel 1.

Pins 7 and 8 are shorted at camera side (Floating dry contact) when tally RED is triggered at base station.

1: GND (Shield for serial channel)
2: *PTT input (Intercom Channel 1 / ENG)*
3: RX RS 422 – (Cam racer electrical OUTPUT)
4: TX RS 422 – (Cam racer electrical INPUT)
5: TX RS 422 + (Cam racer electrical INPUT)
6: RX RS 422 + (Cam racer electrical OUTPUT)
7: *TALLY Red OUT*
8: *TALL T Red OUT*

Note1: For RS 485 Telex/RTS talkback panels please ask ERECA for wiring tip.
Note2: For RS 232 pin 3 is cam racer output, pin 4 is cam racer input. Leave pins 5 and 6 unconnected.

2.3.6 RJ45 DATA1 ON BASE STATION

For serial channel the settings are the same as above (See camera head section).

An extra power output is provided to ease wiring of each RCP to the base station without power harness.

1: GND (Shield for serial channel)
2: *Green Tally input (Short to ground to trig)*
3: RX RS 422 – (Cam racer electrical OUTPUT)
4: TX RS 422 – (Cam racer electrical INPUT)
5: TX RS 422 + (Cam racer electrical INPUT)
6: RX RS 422 + (Cam racer electrical OUTPUT)
7: *+12 Volts output for RCP power (1 Amp maximum, protected with resettable fuse)*
8: *Ground*

2.3.7   RJ45 DATA2 ON BASE STATION

For serial channel the settings are the same as above (See camera head section).

1: GND (Shield for serial channel)
2: Red Tally input (Short to ground to trig)
3: RX RS 422 – (Cam racer electrical OUTPUT)
4: TX RS 422 – (Cam racer electrical INPUT)
5: TX RS 422 + (Cam racer electrical INPUT)
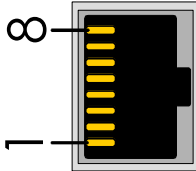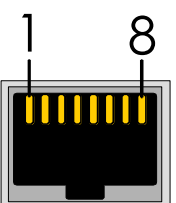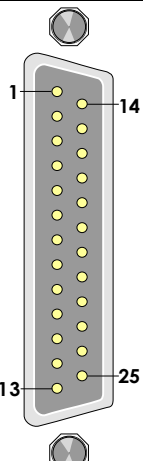**6: RX RS 422 + (Cam racer electrical OUTPUT)**
7: Unconnected
8: Unconnected

Note: This connector is fitted in standard on every base station, but the serial signals are routed on an optional multipin connector on the camera unit. (See section 2.3.1.1 for shared pinout details).

2.3.8   INTERCOM AND TALLY

Intercom audio and tally are located on a DSUB 25 Female connector with same pinout as other popular CCU's.

	Socket contact	D SUB 25 Intercom/Tally	Socket contact	SIGNAL
Intercom 1 OUT+	1		14	Intercom 2 OUT+
Intercom 1 OUT-	2		15	Intercom 2 OUT-
GND	3		16	GND
Intercom 1 IN+	4		17	Intercom 2 IN+
Intercom 1 IN-	5		18	Intercom 2 IN-
PGM1 IN +	6		19	PGM1 IN +
PGM1 IN -	7		20	PGM1 IN -
GND	8		21	GND
GND	9		22	AUX4 input
AUX3 input	10		23	AUX5 input
RED TALLY IN+	11		24	GREEN TALLY IN+
RED TALLY IN-	12		25	GREEN TALLY IN-
Chassis GND	13			

Output signal amplitude is around 0dBm with standard dynamic mike headsets.
Input amplitude can go up to +18Dbm.

Tally inputs are trigged by a dry contact or by a potential greater or equal to 5 volts applied to pins 11 or 24 respective to ground or pins 12, 25. Selection between the two options is done at the bottom of the settings web page.

AUX3 to AUX5 pins are seen by the basestation unit but have no internal actions for the moment.

All the ground pins are tied together inside the equipment.
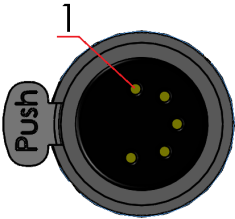
2.3.9 INTERCOM PINOUT

Intercom XLR is 5 pins Female with common pinout. Intercom microphone type can be:

- Dynamic,
- Asymmetric dynamic (most common),
- Electret or Carbon (8 V / 470 Ohms polarization),
- Fully static with 48V phantom power.

The microphone type selection and gain setting is done on the top of the settings webpage in a zone called "intercom mic".

For Dynamic or Fully static microphone pin 1 become the negative input of the mic section, in this case use pin 3 for shielding. For the other types pin 1 is automatically tied to ground internally.

The output impedance of the earpiece amplifier is 20 Ohms and suitable for 50 to 600 Ohms headsets.

	1: Mic input – or Mic Shield, 2: Mic input +, 3: Ground for Earpiece, 4: Ear piece, 5: NC(default) or special use, see note.
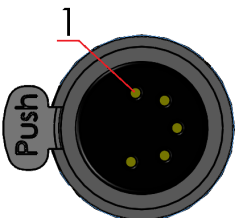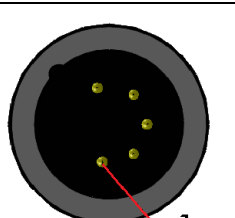
Note: Upon request pin 5 can either be shorted internally to pin 4 for stereo headsets **or** routed on the output of the second headphone amplifier to hear only the second intercom channel on pin 5.

2.3.10 NOBLE AUDIO

A stereo bidirectional channel is available between the two units. At Camera side, the input can be either line level or with built in mic gains and phantom power. Setting is done on the top of the settings webpage in a zone called "XLR mic".

2.3.10.1 CAMERA SIDE PINOUT

Camera XLR are 5 pins models, pinout is as follows.

	1: Channel 1 Input +, 2: Channel 1 Input -, 3: Ground, 4: Channel 2 Input -, 5: Channel 2 Input +.
	1: Channel 1 Output +, 2: Channel 1 Output -, 3: Ground, 4: Channel 2 Output -, 5: Channel 2 Output +.

2.3.10.2 <u>BASESTATION PINOUT</u>

Basestation are on standard 3 pins XLR's, pinout is as follows for each channels.
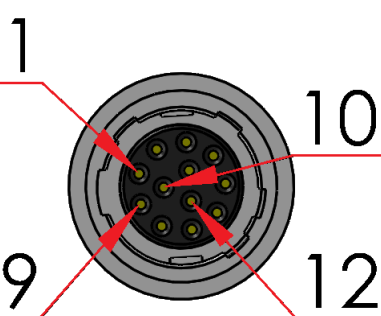
1: Ground,
2: Input +,
3: Input -.

1: Ground,
2: Output +,
3: Output -.

2.3.11 <u>OPTIONNAL CONNECTOR</u>

At camera side an optional connector give access to the following signals

- 2nd Intercom in/out with headset interface at camera side,
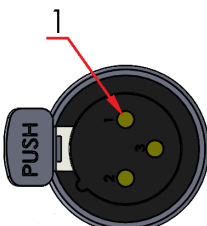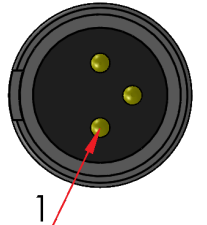- 2nd Tally (Green) Contact closure from basestation,
- 2nd Serial data RS 232/422/485.

Connector socket is Hirose HR10A-10R-12S (mate with HR10A-10P-12P), pinout is a follows:

1: RX RS 422 – (Cam racer electrical OUTPUT),
2: RX RS 422 + (Cam racer electrical OUTPUT),
3: Ground,
4: Intercom 2 Mic input +,
5: Intercom 2 Mic input - / Shield,
6: +14V output (1A internal resettable fuse),
7: Green Tally ground closure,
8: Intercom 2 PTT input,
9: Intercom 2 Earpiece,

10: Reserved / Do not connect,
11: TX RS 422 + (Cam racer electrical INPUT),
12: TX RS 422 - (Cam racer electrical INPUT).

Serial 2 settings and behavior are the same as for serial 1 interface.

Intercom 2 will work only if "separated intercoms" choice is selected in the settings webpage. Settings and and electrical specifications are the same as for intercom 1.
In this case only channel 1 is routed to intercom 1 XLR socket and channel 2 is routed to intercom 2 on this Hirose 12 socket.
When "monoral intercom" is set pin 8 acts as a third PTT input to ease external wiring.

2.3.12 <u>LANC CONNECTOR</u>

Lanc connector is a 2.5mm stereo jack on each units. Protocol supported is RC-V100.

Tip is Lanc signal and *Ring* is +5V output trough a 10 Ohms serial resistor for remote control power.
The 10 Ohms serial resistor is also fitted in the cam racer Head unit, we suggest to leave the ring unconnected in your cable.

<u>Caution:</u> Lanc management is not symmetric, the camera must be connected on camera head unit and the remote connected on the basestation unit.

2.3.13 <u>OPTICAL CONNECTORS</u>

The CAM Racer stage racer uses the two fibers of the SMPTE cable for signal transmission.
One fiber is used bidirectionally with a 2.5Gbs TDM signal carrying all the low datarate signals and the HD monitoring signal. The other fiber

The CAM Racer is available with the following optical terminals:

- LEMO 3K,
- NEUTRIK OPTICALCON Duo (Caution 100V remote power supply),
- Tyco MX or Fibreco Mini2 Expanded beam (Special request).

2.4   DISPLAY UNIT

2.4.1   CAMERA HEAD

The display panel enables user to perfom Three different functions, the SETUP led indicates in which mode is the display:

- • 1) Monitor alarms and signal presence. (Setup OFF),
- • 2) Various volume adjustments (Setup Lit Solid),
- • 3) Monitor which Talkback channel is used (Setup Blinking).

Note also that all leds can be forced off from the webpage settings.
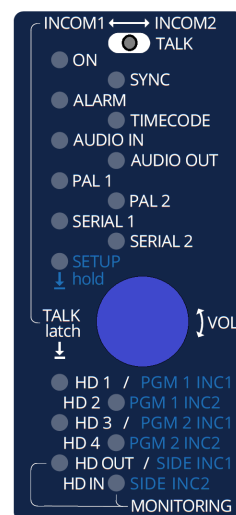
2.4.1.1   MODE 1 (NORMAL)

This is the default mode, in this mode the texts colored in white apply.

Major Status:
ON: Green LED, ON when all internal supplies are within +/- 5% of target.
SYNC: Green LED, ON when the unit is SYNC'ed on the basestation signal.
ALARM: Red LED, ON when something is wrong in the unit (Bad optical power on the receiver, Too low or too high laser current).

Various signal status:
TIMECODE: Green LED, ON when timecode is delivered on the camera unit output.
AUDIO IN: Green LED, ON when the optical power is low on main path.
AUDIO OUT: Green LED, ON when the optical power is low on main path (if option fitted).
PAL1: Green LED, ON when a composite/trilevel video is delivered on the camera unit output 1.
PAL2: Green LED, ON when a composite/trilevel video is delivered on the camera unit output 2.
SERIAL1: Green LED, ON when activity (TX or RX) on the serial port 1.
SERIAL2: Green LED, ON when activity (TX or RX) on the serial port 2.

SDI signal status:
HD1 – HD4, HDIN: Corresponding led is lit Green if a SDI signal is detected on the corresponding input.
HDOUT: Led is lit Green if a valid HD signal is delivered to the Monitoring output port (Means that the internal circuitry is able to extract the signal from the TDM and re-create the corresponding clock of the signal fed at the basestation).

In this mode rotating the "Blue" button will adjust the global listen volume of the Intercom headset 1.

2.4.1.2 MODE 2 (SETUP)

Setup is entered by a long press on the Blue button (3 second or more), then the SETUP led is lit Solid.

This mode enables the user to adjust, from the camera unit, the audio mixing level and the side tone heard in both intercom headsets/channels.

The meaning of the "major status" and "various status" sections remain the same. The SDI signal status change and the texts written in blue apply.

A single led will be lit in this section indicating what level will be adjusted by the blue button rotation.

On each short press (Less than 0.5 second) the indicating led will point the next level, if not desired, short press again to go to the desired level. After the sixth level the led will point again the first one.

Adjustable levels are scrolled in this order:

- PGM1 INC1: Listen level on PGM1 input,
- PGM2 INC1: Listen level on PGM2 input,
- SIDE INC1: Adjust sidetone level for headset 1 (Need to be in talk position),
- PGM1 INC2: Listen level on PGM1 input,
- PGM1 INC2: Listen level on PGM1 input,
- SIDE INC2: Adjust sidetone level for headset 2 (Need to be in talk position).

The drawing below illustrate this mode.
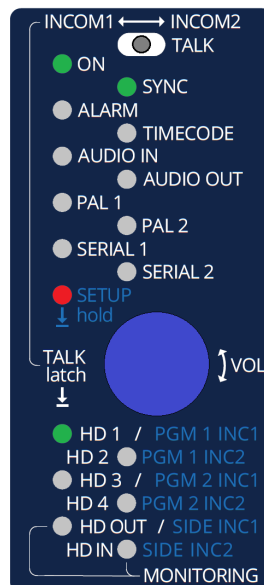
2.4.1.3 MODE 3 INTERCOM TALK

The purpose of this mode is only to indicate visually that an intercom channel is used. The two examples shown below illustrate what happen for each channel, note that the setup led is blinking.

The meaning of the "major status" and "various status" sections remain the same.
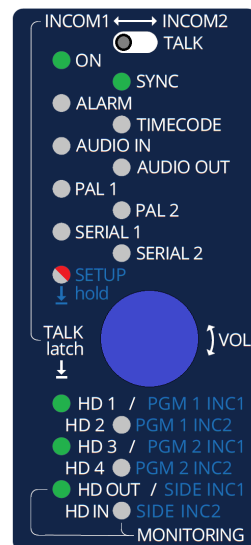
Talk on channel 1
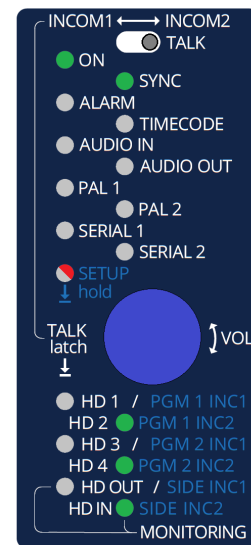
Talk on channel 2

2.4.2 BASESTATION

2.4.2.1 OLED DISPLAY AND ROTARY BUTTON

An OLED display associated to a rotary button displays the most useful information related to the Basestation / Camera Head pair.

Rotating the button will lit the OLED for 30 seconds and display the following infos:

- User camera name (Set in the basestation webserver),
- Basetsation IP address,
- Optical power received by the Camera Head unit,
- Optical power received by the Basestation unit,
- Optical power received by HD1 video receiver,
- Optical power received by HD2 video receiver,
- Optical power received by HD3 video receiver,
- Optical power received by HD4 video receiver.

2.4.2.2 <u>GENERAL STATUS LED'S</u>

This section groups technical alarms / main information of the transmission unit.
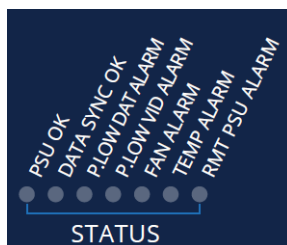
<u>PSU OK:</u> Green LED, ON if all internal voltages are OK (within +/-5% tolerance).

<u>DATA SYNC OK:</u> Green LED, ON when Basestation is locked on the Camera unit TDM signal.
<u>P.LOW DAT ALARM:</u> Red LED, ON when optical power seen by the TDM receivers are low (<-18dBm).
<u>P.LOW VID ALARM:</u> Red LED, ON when optical power seen by a HD receiver is low,
                    (< -18dBm for 3G channels 1 &2, < -13dBm for 12G channels 3 & 4).

<u>FAN ALARM:</u> Red LED, ON when a Fan in the basestation is broken or stuck.
<u>TEMP ALARM:</u> Red LED, ON when the basestation internal temperature is over 60°C.
<u>RMT PSU ALARM:</u> Red LED, ON when the source voltage of the remote power supply section is low.

2.4.2.3 <u>AUDIO LED'S</u>

Audio presence / activity at basestation level is displayed in this section.

The "AUDIO" section indicates presence of signal on the noble audios XLR's.
The "PGM" section indicates presence of signal on Program inputs of the basestation DSUB-25.
The "INCOM" section indicates presence of signal on the Intercom ports of the basestation.

For each channel the LEDs indicate audio activity on their respective input and output ports. The trigger level is set to -10dBm approximatively. Audio activity LEDs are refreshed every 500ms displaying if there was a level > -10dBm on the past 500ms period providing a smooth display.

<u>Note1</u>: "IN" means a signal entering the base station, "OUT" a signal going out of the basestation.
<u>Note2</u>: The state of each led may be affected by the audio mixing programmed in the unit.

2.4.2.4 <u>SDI LED'S</u>

This section indicates SDI presence (Reclocker Locked) on each video receiver outputs of the basestation.
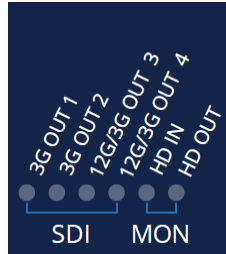
HD OUT indicates if a valid HD signal is delivered to the Monitoring output port (Means that the Internal circuitry is able to extract the signal from the TDM and re-create the corresponding clock of the signal fed at the camera unit).

HD IN indicates that a SDI signal is detected on the corresponding input whatever its data rate.
<u>Note:</u> The monitoring input will only work on a HD rate.

2.4.2.5 <u>REFERENCE LED'S</u>

All reference signals for camera are grouped in this section.

2.4.2.6 <u>CONTROL CHANNELS LED'S</u>

All control channels link/activity are grouped in this section.

The "ETH" leds are lit if the link is established with the pair device.
Any data activity on the LANC jack will lit the led regardless the protocol.
The "DATA" leds are lit if any activity on the corresponding serial channel.

2.5 REMOTE POWER SECTION

2.5.1 MAIN POWER SECTION

CAM Racer is basically remote powered from its base station. The basestation unit is able to source up to 140W of power for the camera at 450m of 9.2mm SMPTE cable. For longer runs the amount of available power will decrease as shown on the following curve.
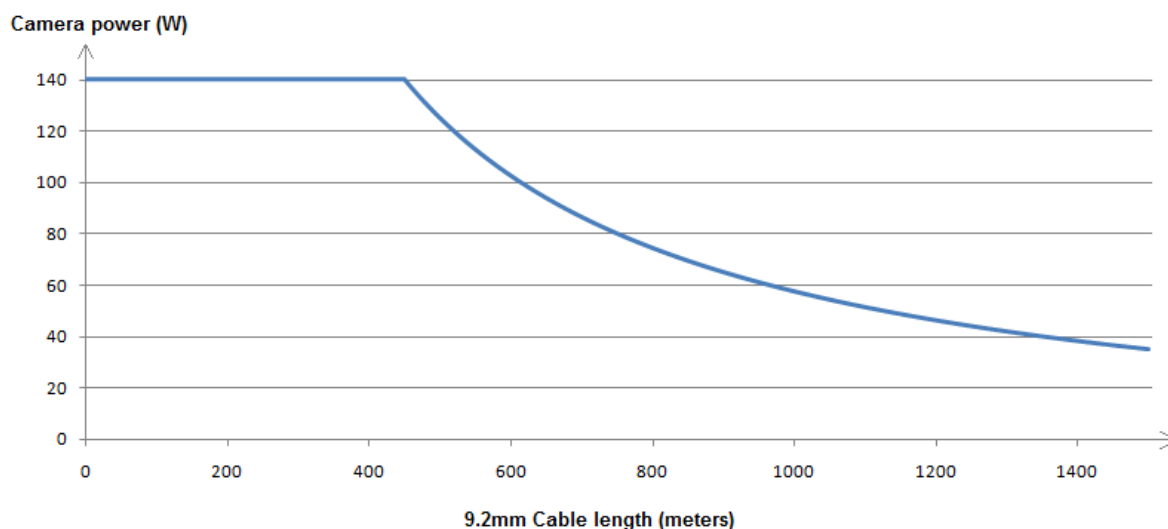
An optional battery support (V-lock or AB Gold mount) enables the CAM racer and its camera to be locally powered by a battery.

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 (camera startup, 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.

Note: The power curve above represents power dissipated by a pure resistive load, camera inrush current or accessories inrush current may exceed those limits and make the internal converter to stop briefly and restart. We improve our power section as converters with less load sensivity arrive on the market.
For this kind of application we suggest using our automatic battery backup principle.

2.5.2 8.4V REGULTATOR OPTION.

CAM racer is also designed for small power consumption devices like Canon C300/C500.
Upon request the remote power section is suppressed at both ends. The lock battery option powers the Cam racer and fits an internal hi efficiency voltage regulator to deliver 8.4Volts 32Watts for the Canon Camera over a dedicated D-Tap connector.

Upon request the 8.4V regulator can also be fitted on regular units with a dedicated D-TAP output.

2.6 <u>AUDIO MIXER</u>

The Cam racer basestation audio section provides a small mixer that enables to send to each internal audio channel transmitted to the camera (Intercom1, Intercom2, Audio1, Audio2) a mix of the 6 physical input sources (Intercom1, Intercom2, Pgm1, Pgm2, Audio1, Audio2).

Depending on the application, any user can hear the desired audio mix in his headset or earpiece.

This useful feature also avoids any complex cabling between an external audio mixer and the cam racer basestations.

This setting is done within the "volume settings" section of the settings web page. A small mixer subset is available for each audio going to the camera

To add a source to the mix, firstly tick the "reinject" box and secondly adjust the desired level.

For multiple setting, use the Download / Import configuration at the bottom of the settings pages to Save / Recover settings from your computer.

2.7 <u>INTERCOM BEHAVIOUR</u>

Intercom have 2 operation modes:
- Single headset with 2 channels (Most common).
- Separate headset with 1 channel on each headset.

The selection is done with the combo box named "Intercom mode"

The Talk / Talk latch action can be done directly on the camera unit or trough ground closures located at SERIAL 1 RJ45 or on the Hirose12 Multipin depending of the mode choosen.

Talk latch is enabled by pressing momentaneously (> 0.5 second) the talk button on the desired channel. After this delay the unit will turn to simple Push to Talk and will close the channel upon button release.

2.7.1 <u>2 CHANNELS INTERCOM</u>

Talk command sources are:
- Camera unit button (enable talk on channel1 and/or chennel2),
- Serial 1 RJ45 ground closure (enable talk on channel1),
- Ground closure on the Hirose 12 connector (enable talk on channel1).

By default or when talking on channel 1, the blue button rotation will adjust global listening level of the audio mix programmed on channel 1. When talking on channel 2 rotating the blue button will adjust the channel 2 listening level without affecting the other levels heard in the headset.

2.7.2   <u>SEPARATE INTERCOMS</u>

Talk command sources are:

- Camera unit button (enable talk on Intercom1/channel1 and/or Intercom2/channel2),
- Serial 1 RJ45 ground closure (enable talk on Intercom1/channel1),
- Ground closure on the Hirose 12 connector (enable talk on Intercom2/channel2).

By default or when talking on Intercom1, the blue button rotation will adjust global listening level of the audio mix programmed on intercom1.

When talking on Intercom2 rotating the blue button will adjust global listening level of the audio mix programmed on intercom2.

3   <u>WEB MANAGEMENT</u>

Full control and setup of the Cam racer transmission can be done trough the web server. As described in the previous sections some settings can be done directly on the units by the "blue" button, in this case the buttons settings will take precedence on the web page control. When adjusting volume with the button the corresponding fader will move on the webpage but is no more responsive to any change attempt made on the web page for a small amount of time (1 second).

3.1   <u>ESSENTIALS</u>

The CAM RACER is monitored and configured through WEB interface. (Firefox web browser preferred).

The RJ45 Ethernet ADMIN port of the basestation provides access to the embedded web server interface. Note this network have no relation with the remote camera remote Ethernet port.

The default web server interface IP add is 192.168.1.247.

A long press (5 seconds) on the **Reset** at the left of the admin Ethernet port will reset its configuration and revert the default IP add.

The home page displays Red Tabs on it is upper part, giving access the different parts of the supervision:

- <u>**Status – Alarms:**</u> Provides the status of the signals and the alarm report of the product.
- <u>**Measures:**</u> Provides the details of the technical information of the product.
- <u>**Settings:**</u> To set Internal audio mixer, MIC input gains, Intercom modes….
- <u>**Configuration:**</u> To configure the IP address of the product and supervision settings.

Camera head unit have no internal web server, the whole link is monitored trough the basestation web server. The basestation hold all the configuration, and updates the camera head module once the link is established.

3.2 STATUS PAGE

Note that the screen is splitted in two parts, with basestation on the left and camera unit on the right.
Each sub page has its own set of status (dark blue groups) and its own set of alarms (dark red groups).

3.2.1 SIGNAL ACTIVITY

The homepage displays the status of each signal transmitted by the unit, the information reflected the unit webpage is the same point of view as what happen on this unit connectors.

The signals are grouped in category easily recognizable thanks to the pictograms attached to each category.

The video section is more detailed with the detected data rate colored indication Datarate is only recognized on receiver's channels.

3.2.2 ALARMS DISPLAY

The unit global technical status / alarm are summarized in the 3 lower categories:

- Power supply alarms (Power good status, internal temperature over 60°C and fan defective indication).
- Data Fiber alarms (Optical receiver unsynchronized, Optical power monitoring on the Main and spare fiber, Defective laser on Data transmitter).
- Video Fiber alarms (Optical power monitoring and defective laser on Video transmitter).

3.3 MEASURES PAGE

The "measures" page provides the detail of the product technical information.

3.3.1 GENERAL DETAILS

Provides detailed information of internal power supplies voltages / fan currents / temperature.
Figures are displayed in purple if all is OK and become red if the value is out of range (in this example the camera module is not plugged on the basestation so its parameters are null displayed in red).

3.3.2 OPTICAL DETAILS

These two groups monitor the basestation and the camera unit optical state.
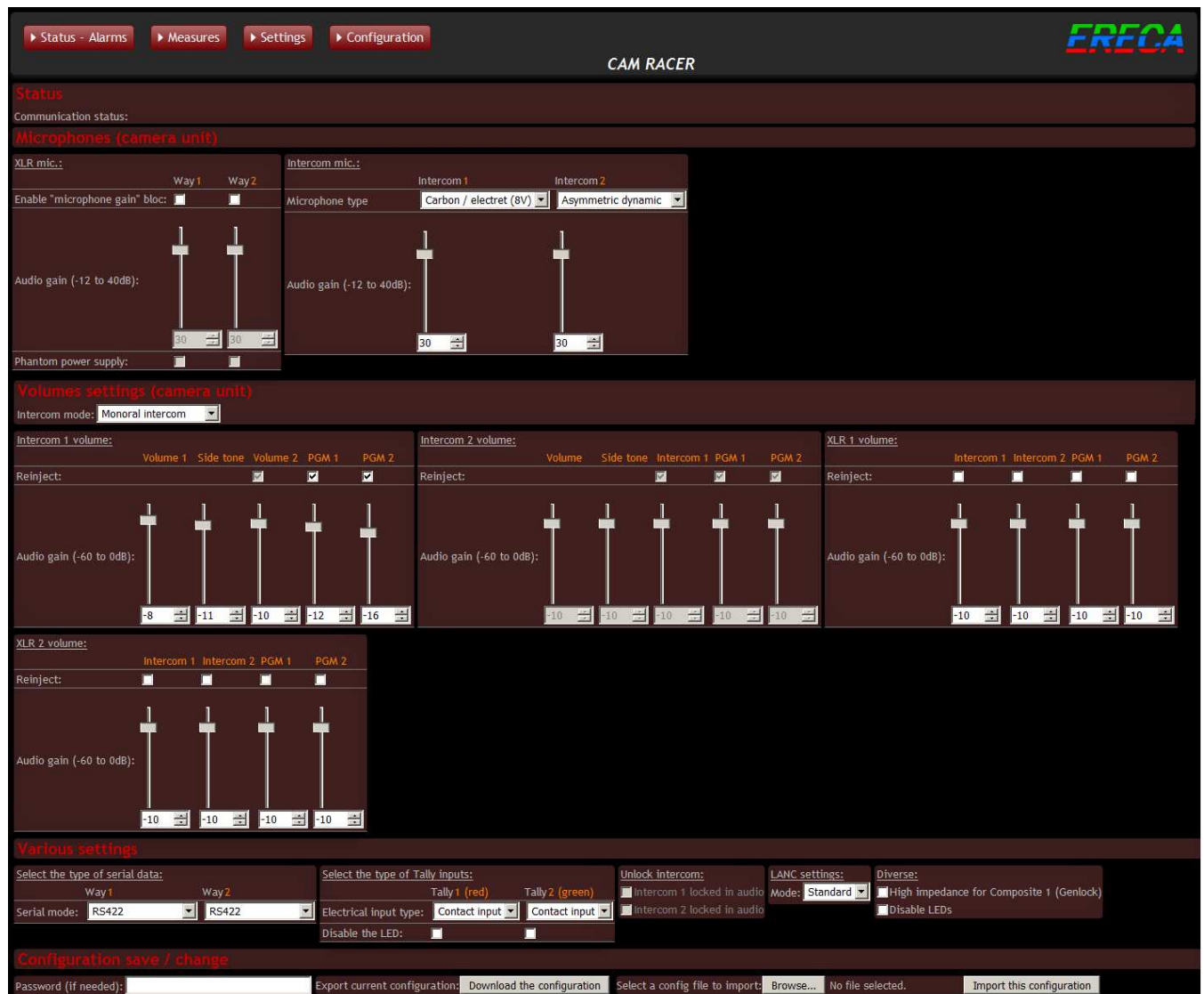
Each figure will change color if the alarm threshold is reached (60mA for the laser , < -18dBm for the 3G optical receivers and < -13dBm for the 12G optical receivers).

The optical level below -18dBm (-13dBm) warns the user against a too high fiber attenuation or a dirty connection, it does not mean that the signal will be lost (each receiver is tested to -20dBm(-15dBm)) but that a connector cleaning or fiber trouble shoot has to be done on an asap basis.

The laser overcurrent is a preventive information, it indicates something wrong and that the unit need service asap but should be still able to transmit data for the current event.

3.4   SETTINGS PAGE

The following settings page groups all the possible settings or the transmission unit.
Settings are grouped by functions.

3.4.1   MICROPHONES SUB SECTION

The *XLR/Mic* group sets the mode and the gain of the 2 noble audio inputs on the camera unit.
Use can select Line or activate an internal Mic gain bloc with or without phantom power injection by ticking the right boxes.

The *Intercom Mic* group sets the mic input gain and type from the list below:

- Dynamic,
- Asymmetric dynamic (most common),
- Electret or Carbon (8 V / 470 Ohms polarization),
- Fully static with 48V phantom power (CAUTION: Take care of your Headset MIC).

3.4.2   VOLUMES SETTINGS SUB SECTION

Please see audio mixer section (2.6) for detailed description.

3.4.3   VARIOUS SETTINGS SUB SECTION
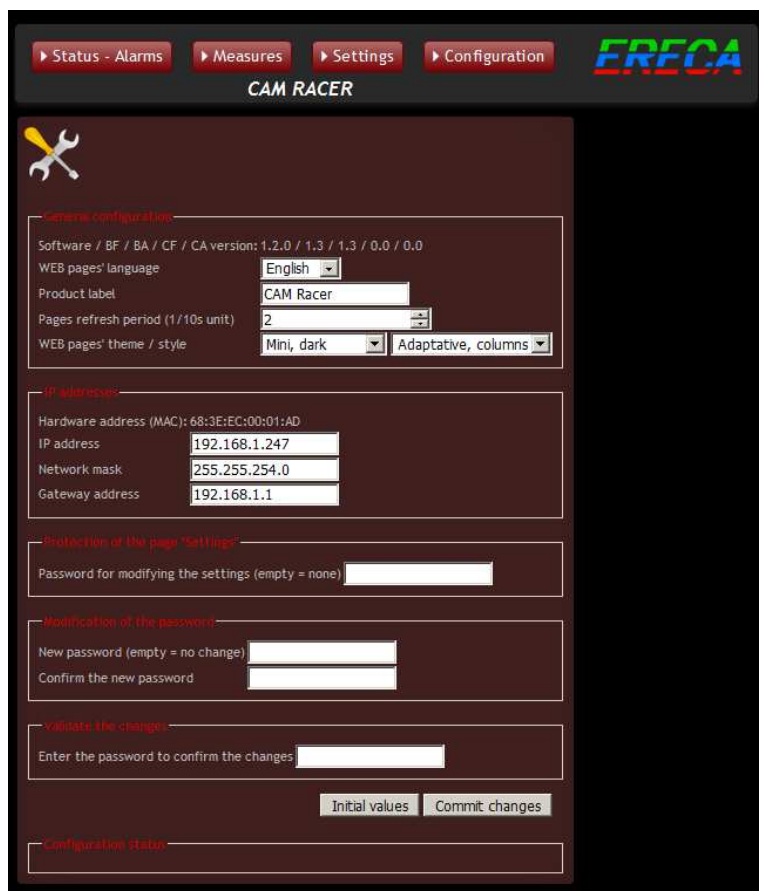
This sub section groups all the single/simple configuration commands as:

- Serial interface levels RS232/422/485.
- Tally input levels and Led disable,
- Intercom forgotten in talk position can be released here by ticking the right box,
- Lanc protocol selection (Legacy / RCV-100) – Works only with RC-V100.
- Turn Composite 1 input to high impedance,
- Disable all the leds on the cam racer unit.

3.4.4   SAVE RECALL

User can Download / Browse / Import configuration from the corresponding buttons. Files are saved on the memory of the user computer.

3.5 CONFIGURATION PAGE

3.5.1 GENERAL CONFIGURATION

Important: For the stage racer product to validate changes done on this page, it's mandatory to type in the password ("ereca" as default) in the "validate the change section" and click on "commit change" button.

To revert to default type in "ereca" password and click on "initial values".

Note: If IP add is lost, press RST switch at the rear of the unit for 5 seconds, the unit will revert to default settings, or use the rotary button to read it on the Oled display.

3.5.2 IP ADDRESS

Setup the IP address of the unit, after validation with the password the unit instantaneously switches to the new IP settings, an "internet" link route the user to the new address.

Default IP: 192.168.1.247 / NetMask 255.255.254.0.

3.5.3 SETTINGS PROTECTION

If the user wish to protect the "Settings" page setup, just type in the protection password chosen in the "protection of the page settings" and validate with the commit changes procedure.

3.5.4   CHANGE PASSWORD

Simply type twice the new general password in the "Modification of password" section and validate with the commit changes procedure.

4 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 / 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.

Composite Video / GL	
Number, connector:	2 from basestation 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 basestation.
Impedance:	Input: 10 KΩ differential (non floating), Output: 20 Ω differential (non floating).
Amplitude:	+ 18 dBm maximium.
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 bypassable.
Phantom power:	48 volts switchable, Source Impedance 6.8 KΩ.

Timecode	
Number, connector	1 from basestation to camera unit , BNC.
Impedance, Connector:	75 Ω, BNC.

LANC	
Number, connector	1 bidirectionnal, 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 Earpice 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 basestation).
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).
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.

Mechanical	
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).