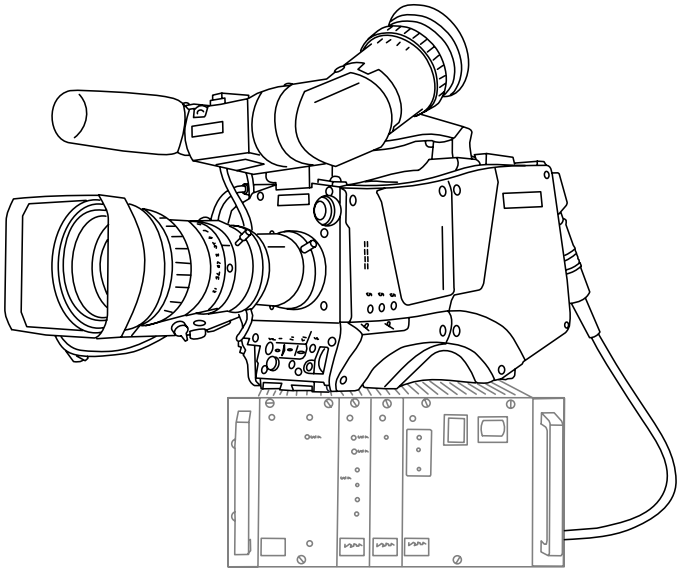
grass valley

User's Guide

3922 496 30481 February 2007 v3.0



LDK 5417 + LDK 4417

SD Digital Triax camera system

THOMSON
images & beyond

Declaration of Conformity

We, Grass Valley Nederland B.V., Kapittelweg 10, 4827 HG Breda, The Netherlands, declare under our sole responsibility that this product is in compliance with the following standards:

- EN60950 : Safety

- EN55103-1: EMC (Emission)

- EN55103-2: EMC (Immunity)

following the provisions of:

a. the Safety Directives 73/23//EEC and 93/68/EEC
b. the EMC Directives 89/336/EEC and 93/68/EEC

FCC Class A Statement

This product generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause interference to radio communications.

It has been tested and found to comply with the limits for a class A digital device pursuant to part 15 of the FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Operation of this product in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Copyright

Trademarks

Website

Visit the Grass Valley public website to download the latest user's guide updates and additional information about your broadcast product:

www.thomsongrassvalley.com

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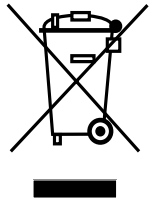
End-of-life product recycling



Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive and in the United States from the Environmental Protection Agency, individual state or local agencies.

Grass Valley's end-of-life product take back program assures proper disposal by use of Best Available Technology. This program accepts any Grass Valley branded equipment. Upon request, a Certificate of Recycling or a Certificate of Destruction, depending on the ultimate disposition of the product, can be sent to the requester.

Grass Valley will be responsible for all costs associated with recycling and disposal, including freight, however you are responsible for the removal of the equipment from your facility and packing the equipment ready for pickup.

For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the US and Canada please call 800-547-8949 or 530-478-4148. Ask to be connected to the EH&S Department. In addition, information concerning the program can be found at:

www.thomsongrassvalley.com/environment

Important information

Read this information carefully before installing this equipment and retain them for future reference. Read and comply with the warning and caution notices that appear in the manual.

Any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Safety Summary

This informaton is intended as a guide for trained and qualified personnel who are aware of the dangers involved in handling potentially hazardous electrical/electronic equipment. It is not intended to contain a complete list of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation of this equipment involves risks both to personnel and equipment and must be performed only by qualified personnel exercising due care.

During installation and operation of this equipment, local building safety and fire protection standards must be observed.

Before connecting the equipment to the power supply of the installation, the proper functioning of the protective earth lead of the installation needs to be verified.

Whenever it is likely that safe operation is impaired, the apparatus must be made inoperative and secured against any unintended operation. The appropriate servicing authority must then be informed. For example, safety is likely to be impaired if the apparatus fails to perform the intended function or shows visible damage.

Warnings

Warnings indicate danger that requires correct procedures or practices to prevent death or injury to personnel.

- Do not modify this equipment;
- Installation of this equipment must only be performed by qualified personnel;
- Only mount the unit on a tripod or pedestal and head that can carry a payload of more than 50 kg.
- Do not use any accessories other than those recommended by the manufacturer;
- In case of an emergency ensure that the power is disconnected;
- Mount equipment so that power lead can be accessed to disconnect power;
- Any interruption of the protection conductor inside or outside the apparatus, or disconnection of the protective earth terminal, is likely to make the apparatus dangerous. Intentional interruption is prohibited;
- Use only fuses of the type and rating specified;
- To prevent fire or shock hazard, do not expose the unit to rain. If the unit is used in a wet environment, a rain cover should be used for personal safety reasons;
- There are no user servicable parts inside. Refer servicing to qualified personnel only or contact your local Grass Valley representative;

- Observe local building safety, fire protection and electrical installation standards during installation and operation of this equipment;
- Before connecting the equipment to the power supply of the installation, verify the proper functioning of the protective earth lead;
- Whenever it is likely that safe operation is impaired, the apparatus must be made inoperative and secured against any unintended operation.

Cautions

Cautions indicate procedures or practices that should be followed to prevent damage or destruction to equipment or property.

- Do not subject the unit to severe shocks or vibration;
- Do not expose the unit to extremes of temperature;
- To prevent risk of overheating, ventilate the product correctly;
- Connect the product only to a power source with the specified voltage rating.

Wichtige Hinweise

Lesen Sie bitte diese Hinweise genau bevor Sie diese Apparatur installieren und erhalten Sie Sie für künftiges Nachslagen. Beachten und Lesen Sie alle mit "Achtung" und "Vorsicht" gekennzeichneten Warnhinweise.

Änderungen haben zur Folge, dass die Garantie ungültig wird und der Benutzer für etwaige durch die veränderte Ausrüstung verursachte Störungen haftbar gemacht werden könnte.

Sicherheit (Zusammenfassung)

Diese Informationen sind als Leitfaden für qualifiziertes Fachpersonal gedacht, das die Gefahren beim Umgang mit potenziell gefährlicher elektrischer/elektronischer Ausrüstung kennt. Es handelt sich dabei nicht um eine vollständige Zusammenstellung aller Sicherheitsvorkehrungen, die beim Gebrauch dieser oder anderer elektronischer Geräte zu beachten sind.

Die Montage, Wartung und Instandsetzung dieser Ausrüstung ist mit Risiken für Personal und Ausrüstung verbunden und darf nur von qualifiziertem Personal vorgenommen werden, wobei mit der nötigen Sorgfalt vorzugehen ist.

Beim Einbau und Betrieb dieser Ausrüstung müssen die örtlichen Gebäudesicherheits- und Brandschutzvorschriften beachtet werden. Vor dem Anschluss der Ausrüstung an die Stromversorgung der Anlage muss überprüft werden, ob der Schutzleiter intakt ist.

Wenn eine Beeinträchtigung des sicheren Betriebs wahrscheinlich ist, muss das Gerät außer Betrieb gesetzt und gegen ungewollten Betrieb gesichert werden. Dann muss der zuständige Kundendienst benachrichtigt werden. Eine Beeinträchtigung der Sicherheit ist zum Beispiel dann wahrscheinlich, wenn das Gerät nicht wie vorgesehen funktioniert oder einen sichtbaren Schaden aufweist.

Vorsicht

Mit "Vorsicht" wird auf eine Gefahr hingewiesen, die korrekte Arbeits- oder Verfahrensweisen erfordert, um Tod oder Verletzung zu verhindern.

- An dieser Ausrüstung dürfen keine Änderungen vorgenommen werden;
- Die Montage dieser Ausrüstung darf nur von Fachpersonal vorgenommen werden;
- Diese Ausrüstung soll nur auf einem Stativ oder Sokkel und einem Kopf aufgestellt werden die eine Last von mehr als 50 kg trägen kann.
- Es sollen nur von den Hersteller empfohlene Zubehöre verwendet werden;
- Bei Eintreten eines Notfalls unbedingt die Stromzufuhr abschalten;
- Ausrüstung so montieren, daß das Netzkabel zum Abschalten der Stromzufuhr zugänglich ist;
- Jede Unterbrechung des Schutzleiters innerhalb oder ausserhalb des Geräts oder Trennung der Schutzleiter-anschlussklemme Könnte das Gerät fefährlich machen. Eine absichtliche Unterbrechung ist untersagt;
- Es dürfen nur Sicherungen des vorgeschriebenen Typs und Nennwerts verwendet werden;

- Um Feuer oder Schlaggefahr vorzubeugen, soll das Produkt nie an Regen ausgesetzt werden. Wenn das Produkt in eine nasse Umgebung verwendet wird muss eind Regenüberzug verwendet werden.
- Dieses Produkt enthält keine Anwenderteile. Reparatur und Wartung nur von qualifiziertem Fachpersonal vornehmen lassen oder nehmen Sie Kontakt auf mit Ihrem Grass Valley Vertretene;
- Beim Einbau und Betrieb dieser Ausrüstung müssen die örtlichen Gebäudesicherheits- und Brandschutzvorschriften beachtet werden;
- Vor dem Anschluss der Ausrüstung an die Stromversorgung der Anlage muss überprüft werden, ob der Schutzleiter intakt ist;
- Wenn eine Beeinträchtigung des sicheren Betriebs wahrscheinlich ist, muss das Gerät außer Betrieb gesetzt und gegen ungewollten Betrieb gesichert werden.

Achtung

Mit "Achtung" werden Arbeitsanweisungen gekennzeichnet, die zu befolgen sind, um eine Beschädigung oder Zerstörung der Ausrüstung bzw. von Eigentum zu verhindern.

- Dieses Produkt darf nicht an extremen stöße oder Zittern ausgesetzt werden;
- Dieses Produkt darf nicht an extremen Temperaturen ausgesetzt werden;
- Um einer Überhitzungsgefahr vorzubeugen, ist das Produkt korrekt zu belüften;
- Das Produkt darf nur an eine Stromquelle mit der vorgeschriebenen Nennspannung angeschlossen werden.

Installation notices

For proper installation the following NEC articles should be noticed:

Regarding communication circuits:

- Installation of equipment (NEC article 800.18).

Regarding radio and television equipment:

- Avoid contact with conductors of other systems (NEC article 810.13);

Provide extensive, separate clearance requirements for indoor and outdoor locations (NEC article 810.18).

Mains power supply chord

General

A mains power supply chord is not shipped with the device. To connect the device to the mains the following power supply cord is advised: type H03 VV-F or H03 VVH2-F flexible wire: 1 mm², 250V / 10A minimum or 16 AWG.

When the device is installed in one of the following countries the power chord must be compliant to the indicated specifications and regulations below:

Denmark

Supply cord of single-phase equipment having a rated current not exceeding 10A shall be provided with a plug according to the Heavy Current Regulations section 107-2-D1. Class I equipment provided with socket-outlets with earth contact or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules shall be provided with a plug in accordance with standard sheet DK 2-1a or DK 2-5a.

Ireland

Apparatus which is fitted with a flexible cable or cord and is designed to be connected to a mains socket conforming to I.S. 411 by means of that flexible cable or cord and plug, shall be fitted with a 13A plug in accordance with Statutory Instrument 525:1997 - National Standards Authority of Ireland (section 28) (13A plugs and Conversion Adaptors for Domestic Use) Regulations, 1997.

Spain

Supply cords of single-phase equipment having a rated current not exceeding:

- 10A shall be provided with a plug according to UNE 20315:1994

CLASS I EQUIPMENT provided with socket-outlets with earth contacts, or which are intended to be used in locations where protection against indirect contact is required according to the wiring rules, shall be provided with a plug in accordance with UNE 20315:1994

Switzerland

Supply cords of equipment having a rated current not exceeding 10A shall be provided vwith a plug complying with SEV 1011 or IEC 884-1 and the following dimension sheet:

- SEV 6534-2.1991 Plug Type 12: L+N+PE250V 10A

UK

Apparatus which is fitted with a flexible cable or a cord and is designed to be connected to a mains socket conforming to BS 1363 by means of that flexible cable or cord and plug, shall be fitted with a "standard plug" in accordance with Statutory Instrument 1786: 1994 - The Plugs and Sockets etc. (Safety) Regulations 1994, unless exempted by those regulations.

Note: "Standard plug" is defined in SI 1786:1994 and essentially means an approved plug conforming to BS 1363 or an approved conversion plug.

US

Listed, detachable, maximum 4.5 m (14.76 ft.) long; rated minimum 125V, 10A, type SJT or type SVT flexible cord; one end terminates in NEMA 5-15P or 5-20P groundingtype attachment plug, other end in appliance coupler.

Listed, detachable, maximum 4.5 m (14.76 ft.) long; rated minimum 250V, 10A, type SJT or type SVT flexible cord; one end terminates in NEMA 6-15P or NEMA 6-20P grounding-type attachment plug, other end in appliance coupler.

1 Specifications

1.1 LDK 5417 Digital Triax Adapter

Item	Value
Power requirements	Digital Triax powered
Operating temperatures	-20°C to +45°C (-4°F to +113°F)
Storage temperatures	-20°C to +60°C (-4°F to +140°F)
Weight (approx.)	2.3 kg (5.0 lbs.)
Dimensions	180 mm (H) x 110 mm (W) x 191 mm (L) without handgrip
Digital Triax in/out	Fischer, ARD, Lemo or Trilock connector
Maximum Triax cable length	600m (1,600 ft) with 14mm cable (without teleprompter) refer to the Triax cable specifications below for other values.
Intercom	XLR-5 with PROD channel
Video EXT out	1 Vpp ~75 Ohm; BNC socket
Video VF out	1 Vpp ~ 75 Ohm; BNC socket
Rear microphone in	XLR-3, balanced, +48 Vdc
DC power out	+48 Vdc, 4-pin Lemo (12 or 24 Vdc with optional DC-DC convertor)
Scriptlight power	12 Vdc, 0.25A, 3-pin Fischer

1.2 LDK 4417 Digital Triax Base Station

Item	Value
Power requirements	Approx. 70 W with camera and viewfinder
Mains supply	100 - 125V or 200 - 240 Vac, 50 or 60 Hz
Operating temperatures	0°C to +40°C (32°F to +104°F)
Storage temperatures	-20°C to +55°C (-4°F to +131°F)
Weight (approx.)	7.0 kg (15.4 lbs.)
Dimensions	1/2 width 19-inch 3U rack
Video links	Camera to Base Station: 270 Mbits digital Base Station to camera: 2 analog links, bandpass @ 4.5 MHz
Base Station to OCP distance	max. 50m or 100m using specified serial cables
Input signals	Genlock and return video Base Station to camera
Output signals	Digital outputs 270 Mbits (3x), encoded video (2x), camera microphone output (1x)

Item	Value
Other signals	Intercom (4-wire or RTS) RS-422 link to operational control panel Power supply - ON AIR1 and ON AIR2 indications
Electromagnetic compatibility and safety devices	Conforms with CE directives (CE marking)

1.3 Triax cable specifications

Features used	Cable length (8 mm)	Cable length (14 mm)
Camera video and return signals, audio signals and control bus	300m (1,000 ft.)	600m (2,000 ft.)
including teleprompter power	100m (330 ft.)	300 m (1,000 ft.)

Note 1
Maximum cable lengths are specified with Draka cables (8 mm and 14 mm). Exact cable lengths depend on the quality of the cables and connectors used.

Note 2
Video signal rule: cable length is restricted by an attenuation of 24 dB max. at 100 MHz.

Note 3
Teleprompter power rule: maximum cable length is restricted by the conductor plus screen cable resistance which may not exceed 4Ω.

1.4 Remote control cables

1.4.1 Standard length cables

Use one of the following RS-422 remote control cables to connect the OCP 400/10 to the Base Station:

Cable type:	Product code:
RS-422 Cable (2m)	LDK 8121/02
RS-422 Cable (10m)	LDK 8121/10
RS-422 Cable (25m)	LDK 8121/25

1.4.2 Custom length cables

To create your own custom length RS-422 remote control cable use the following wiring diagrams (for cable runs up to 50m or 100m respectively):

Figure 1-1. RS-422 serial cable type 1 (twisted pair; 0 to 50 m)

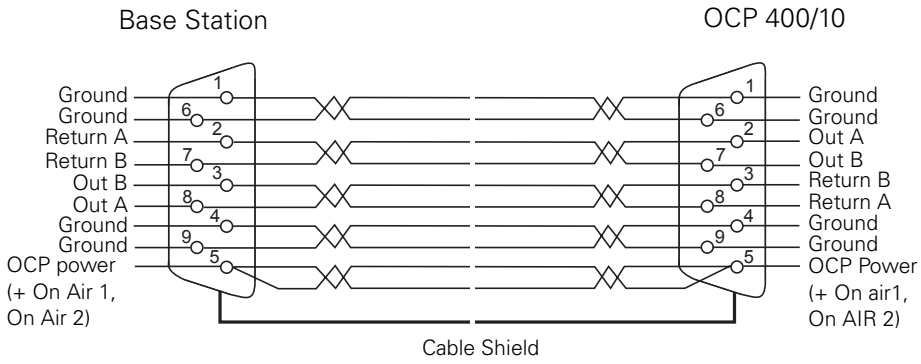
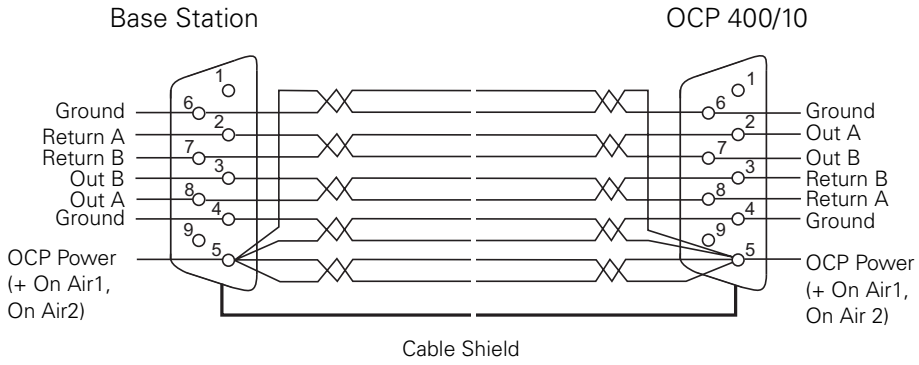


Figure 1-2. RS-422 serial cable type 2 (twisted power; 0 to 100 m)

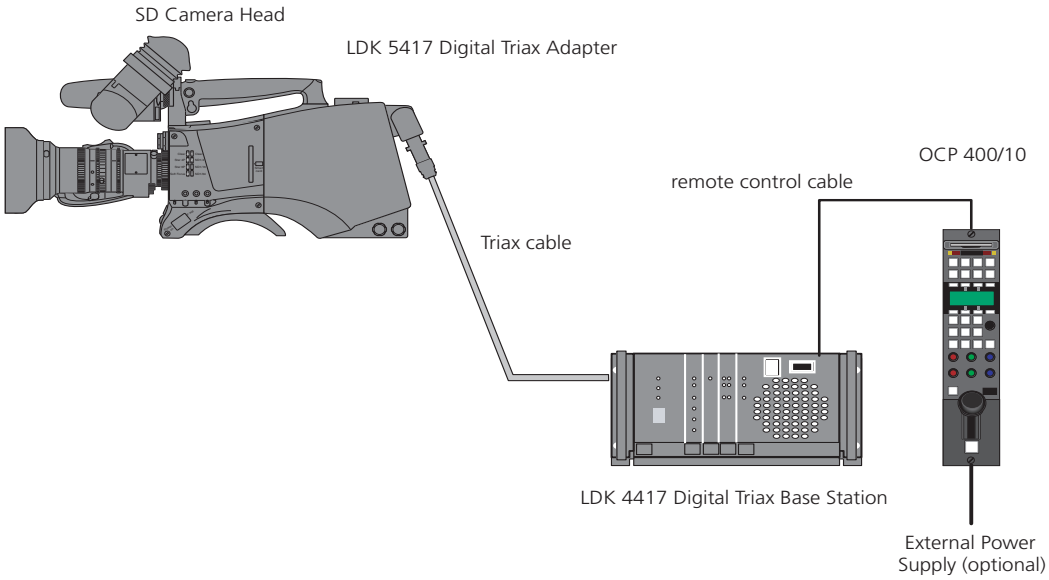


2 Configuration

2.1 Typical setup

A camera head with an LDK 5417 Triax adapter is connected to a LDK 4417 Base Station using a Triax cable. The maximum length of cable that can be used without significant degradation of the video signal is 600m (2,000 ft.) for a 14 mm Triax cable when no prompter is used (see specifications for other values). The power supply is applied to the Base Station and via the Triax cable to the camera.

Figure 1-3. Typical Digital Triax system setup



2.2 Connecting a control panel

An OCP 400/10 operational control panel can be connected to the Base Station using an serial (RS-422) link. Refer to the user's guides of your camera and the OCP 400/10 for more information about the functions that are available.

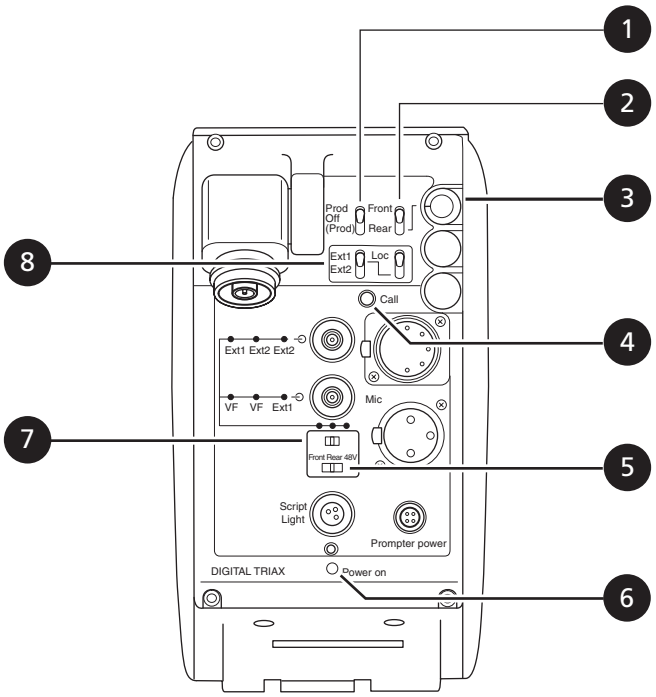
Powering the control panel

The recommend method to power the OCP 400/10 is to use a remote control cable mentioned in chapter 1.4. The control panel is powered by the Base Station via the remote control cable.

It is also possible to use an external power supply. The Grassvalley LDK 5903/00 external power supply can provide for up to five operational control panels. In this case, any standard RS-422 cable can be used to connect to the Base Station.

3 Adapter controls

Figure 1-4. Digital Triax adapter LDK 5417 controls



Intercom routing switch

. Headset production volume control selection

. Headset volume control

. Call button

5. Audio microphone switch
6. Power On indicator
7. Video output selection switch
8. Viewfinder display signal selection

3.1 Powering the camera

The power supply for the camera and Digital Triax adapter is supplied via the triax cable from the Base Station. The power on indicator (6) lights when power is supplied and the camera power switch is On.

An output power socket supplies +48 Vdc, 50W maximum for a converter (LDK 5930 or LDK 5940) to supply power for a teleprompter. Refer to chapter 11"DC/DC converters" for more information about power converters.

3.2 Selecting monitoring signals

Viewfinder display signal

The viewfinder can display local or external video signals. The viewfinder display signal selection switch (8) determines the signal that is displayed in the viewfinder.

Set the first switch to LOC to display the local camera Y signal in the viewfinder. (The Ret. button on the lens also selects this signal in parallel with this switch.) If set to the other position, then the second switch determines the signal displayed in the viewfinder.

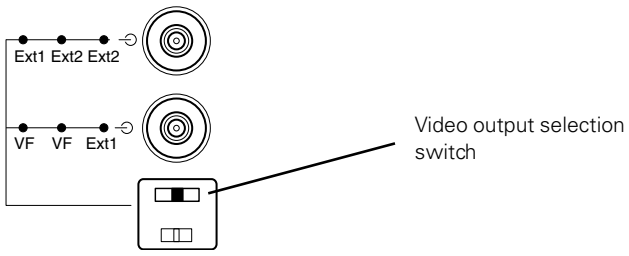
The second switch selects the signal displayed in the viewfinder when the viewfinder signal selection switch is not in the LOC position. The signal then displayed is:

- EXT 1 BS external input 1
- EXT 2 BS external input 2.

Video output signal selection

Two BNC connectors on the rear of the adapter carry viewfinder or external signals. To select the output signal for these connectors use the top switch located underneath them (the bottom switch is used for the audio microphone).

Figure 1-5. Video output switch and associated connectors



The video output signal selection switch shown above is a three-position switch which determines the output video signal on the two video output connectors as shown in the following table:

Switch position	VF/Ext1 connector	Ext1/Ext2 connector
Set to the right	External 1 signal	External 2 signal
Centered	Viewfinder signal	External 2 signal
Set to the left	Viewfinder signal	External 1 signal

3.3 Audio

A high quality audio channel is available. Set the gain levels (-22 dB to -64 dB) for this channel in the Audio section of the Install menu. A high-pass filter for the channel can also be switched on via this menu.

The microphone for channel 1 is connected either to the socket at the front-right of the camera or to the Mic 1 socket on the triax adapter. A 3-position switch (5) activates the socket at the front-right or the connector at the rear. The third position selects the rear socket with a phantom power supply (+48V). The front microphone socket always has a phantom power supply (+48V).

Switch position	Camera front-right connector	Adapter rear connector
Set to the right	No input	Active input with +48V
Centered	No input	Active Input
Set to the left	Active input with +48V	No input

3.4 Intercom

The production (PROD) intercom channel is sent from the Base Station to the camera operator's headset. The camera operator's intercom microphone signal is sent to the Base Station.

The Intercom section of the Install menu contains various settings for these channels. Signals for left and right headset muffs and sidetone levels can be selected. Intercom microphone amplification levels, phantom power supply and microphone on/off switches are also available in this menu.

Additional controls can be found on the back of the adapter.

Intercom microphone routing switch

This 3-position switch (1) routes the camera operator's intercom microphone signal to production (Prod) or turns off the intercom. The third (momentary) position also routes the intercom signal to production but operates only as long as it is held in place.

Use the VTR Start button at the front of the camera, or the VTR button on the lens, to send the camera operator's intercom microphone signal to production, regardless of the position of this switch.

Production volume control selection

Use this 2-position switch (2) to control the volume of the production signal in the intercom either at the front of the camera or at the rear of the adapter.

Intercom headset volume control

This control adjusts the volume of the production signal to the camera operator's headset when selection switch (2) is in the REAR position.

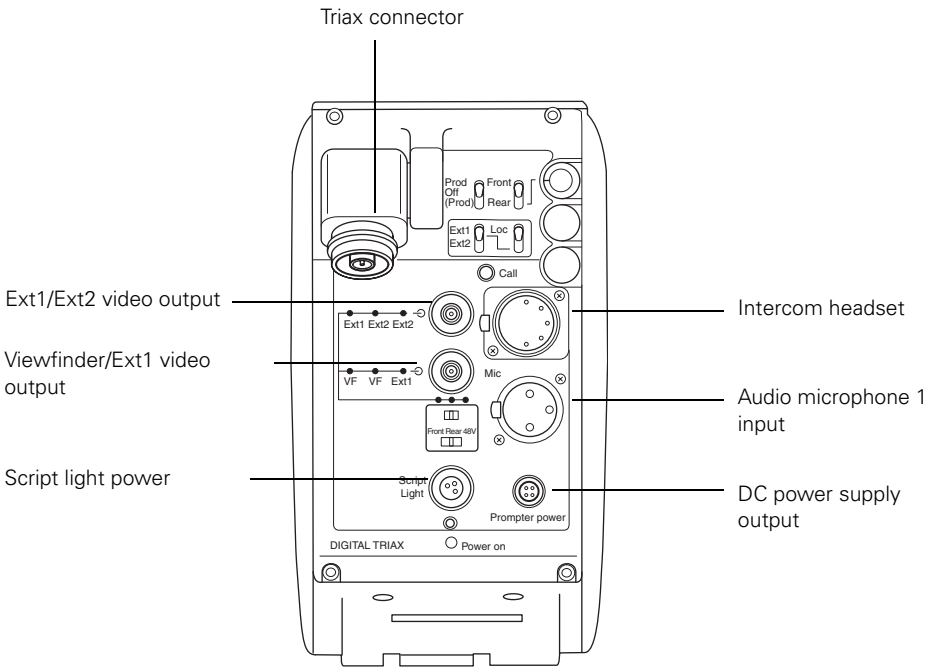
3.5 Communication

Call button

Press this momentary button (4) to send a signal to the control panels calling for attention. The ND/RE indicator in the 1.5-inch viewfinder shows when a call signal is sent or received.

4 Adapter connectors

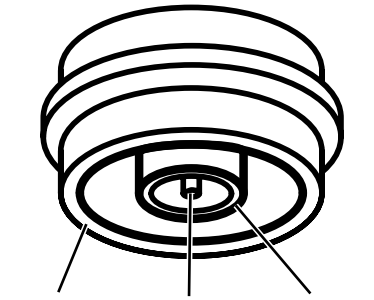
Figure 1-6. Digital Triax adapter connector location



Do not allow system earth currents to exceed 1.5A in the outer shield of the Triax cable or 0.2A in other cable shields. To avoid excessive earth currents in a Triax system, galvanically separate the power earth connection of equipment connected to the camera from the camera earth.

4.1 Triax connector

Figure 1-7. Triax connector

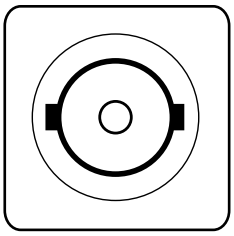


Panel view (X100)

1. Centre pin: Power and signals
2. Inner shield: Return
3. Outer shield: Camera housing GND

4.2 Ext1/Ext2 video output connector

Figure 1-8. External 1 / External 2 video output connector

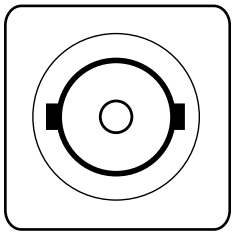


BNC connector: panel view (X105)

This socket provides a 1.0 Vpp external video signal from the Base Station (output signal is selectable).

4.3 Viewfinder / External 1 video output connector

Figure 1-9. Viewfinder / External 1 video output connector

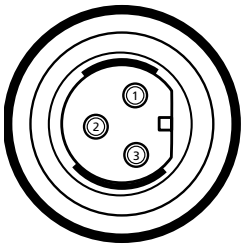


BNC connector: panel view (X106)

This socket provides a 1.0 Vpp output viewfinder signal or the external 1 video signal from the Base Station.

4.4 Script light power supply socket

Figure 1-10. Script light power supply output connector

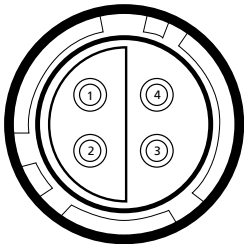


Fischer 3-pole female: panel view (X102)

1. +12 Vdc (maximum dissipation 3W)
2. Power return
3. Shield

4.5 DC power output socket

Figure 1-11. DC power output connector



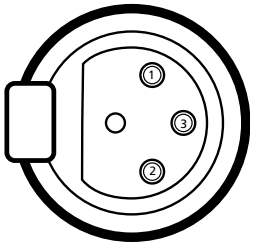
Lemo 4-pole female: panel view (X101)

1. +48 Vdc (max. 50W)
2. -5 Vdc
3. Ground
4. Ground

This connector can be used to supply a DC/DC converter (LDK 5930/5940) to supply power for a teleprompter.

4.6 Audio microphone 1 connector

Figure 1-12. Audio microphone 1 connector



XLR 3-pole female; panel view (X107)

1. Audio Screen
2. Audio In signal
3. Audio Return signal

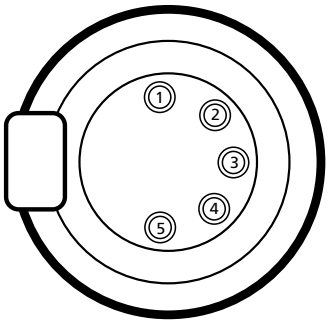
Microphone impedance >200 ohm

Sensitivity range: -64 to -24 dBu

A phantom power supply of +48 Vdc can be supplied to the microphone via this connector. To select this use the Audio Microphone switch (5) at the rear of the

4.7 Intercom headset connector

Figure 1-13. XLR intercom headset connector



XLR 5-pole female; panel view (X104)

1. Microphone return
2. Microphone
3. Telephone return
4. Telephone left
5. Telephone right

Microphone level: -60 dBu / -20 dBu switchable
Microphone impedance: >600 Ohm

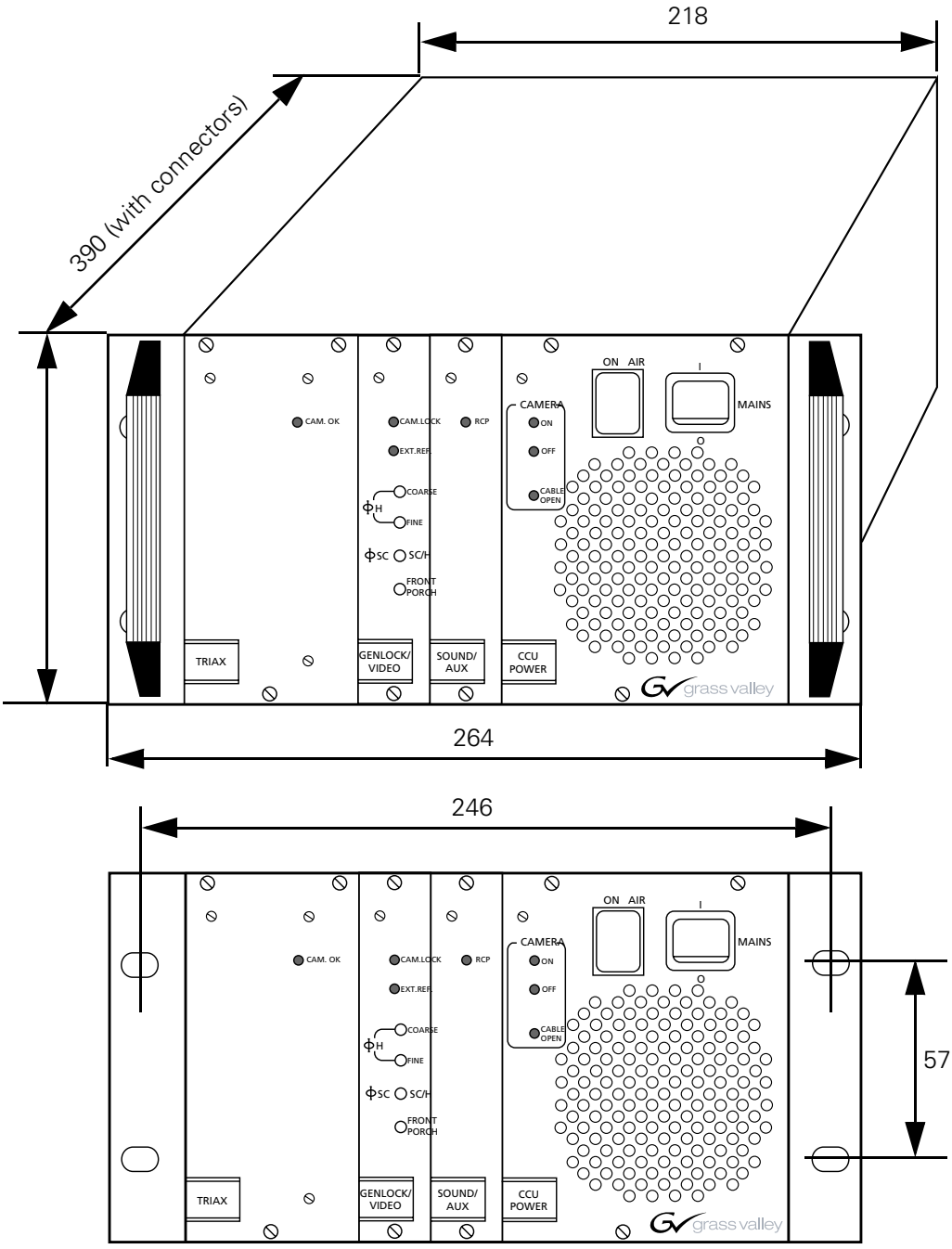
Telephone level: +6 dBu nominal
Telephone output impedance: <50 Ohm

5 Camera install menu

Main menu items	Purpose
Disable Camera	on/off
IR receiver	on/off
OnAir Lamp	on/off
Intercom	set intercom values (sidetone, gain, phantom power)
Audio	set gain and filter
Aspect ratio	select aspect ratio values
Exposure	set lighting and clear scan values
Gain preset	set gain preset values
Autowhite	set autowhite speed and gain
Quick Smart Touch	on/off
Heater	on/off switch for SuperXpander heater
Classic Mode	set on for classic control
Text insert	switches text insert on/off
Buttons	assign functions to buttons

6 Base Station

6.1 Dimensions, weight



Weight: Approximately 7 kg

6.2 Installation of Base Station in rack

The Base Station is fitted in a 19"rack:

1. Either alone or with an accessory of dimension 1/2 19" (vectorscope, oscilloscope, etc.) using the assembly kit for Base Station in 19" racks, part number LDK 5108.
2. Or two Base Stations side by side using kit part number LDK 5107.

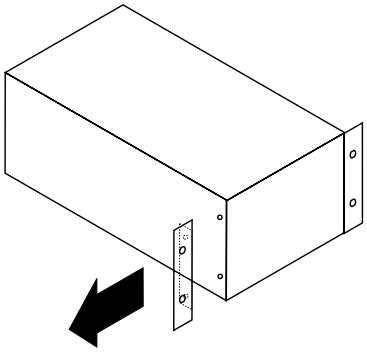
Installation of a Base Station with a 1/2 19" accessory

Equipment and tools required:

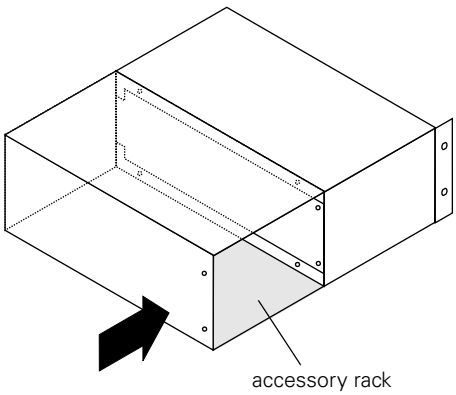
- Rack installation kit part number LDK 5108 containing various accessories,
- A screwdriver.

Fitting of accessory to the left of the Base Station

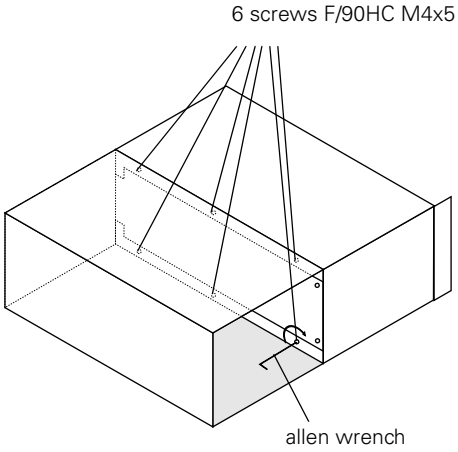
1. Remove the LH lug from the Base Station by unscrewing both attaching screws.



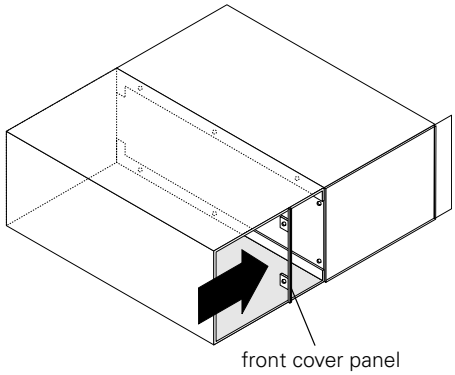
2. Couple the accessory rack to the LH side of the Base Station with the lugs located at the back of the Base Station.



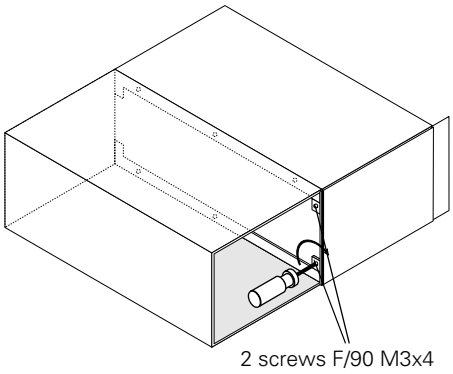
3. Tighten the six 4 mm dia. screws with the allen wrench from inside the accessory rack to attach it to the Base Station.



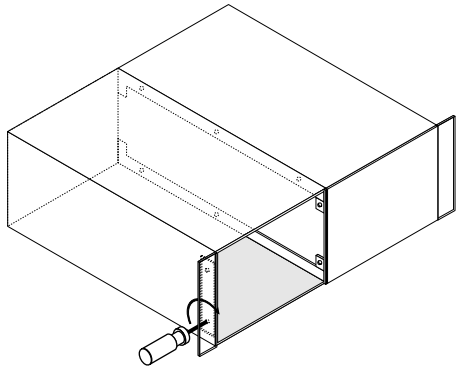
4. Place the front cover panel against the left-hand edge of the Base Station (only one position is correct).



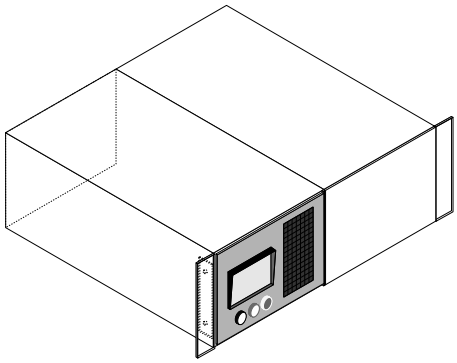
5. Tighten both the 3 mm dia. screws with the screwdriver from inside the accessory rack to fit the front cover.



6. Attach the LH lug of the Base Station (removed in 1) to the left of the accessory rack.



7. Place the accessory in the accessory rack (accessory attachment is to be adapted according to its type and brand).



8. Place the Base Station + accessory in the 19" rack at the desired location and attach by means of the two lugs.

Fitting of accessory rack to the right of the Base Station

The principle is identical to the previous procedure, but the six 4 mm dia. screws joining the two assemblies are to be fitted from inside the Base Station. This implies that the Base Station power supply unit must be removed.

1. Remove the right-hand lug from the Base Station by unscrewing both attaching screws.
2. Couple the accessory rack to the RH side of the Base Station, with the lugs located at the front of the Base Station.
3. Remove the power supply unit by unscrewing the 3 attaching screws.
4. Tighten the six 4 mm dia. screws using the screwdriver from inside the Base Station (power supply unit removed) to attach the accessory rack to the Base Station.
5. Place the front cover against the right-hand edge of the Base Station (only one position correct).
6. Tighten both 3 mm dia. screws using the screwdriver from the inside of the Base Station to attach the front cover.
7. Attach the RH lug of the Base Station (removed in step 1) to the right of the accessory rack.

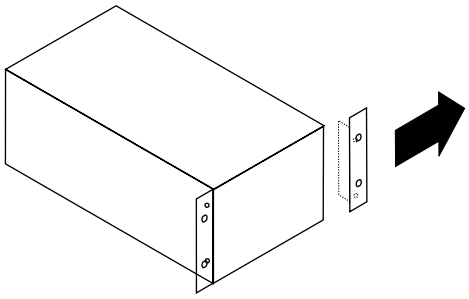
8. Place the accessory in the accessory rack (accessory attachment is to be adapted according to its type and brand).
9. Place the Base Station + accessory assembly in the 19" rack at the location required and attach it using both lugs.

Fitting two Base Stations in a rack

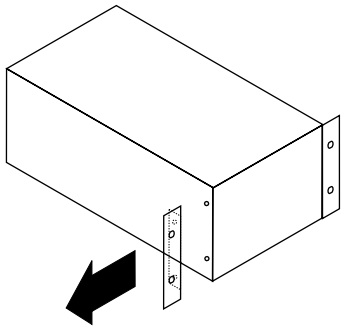
Equipment and tools required:

- Reference kit LDK 5107.
- One screwdriver.

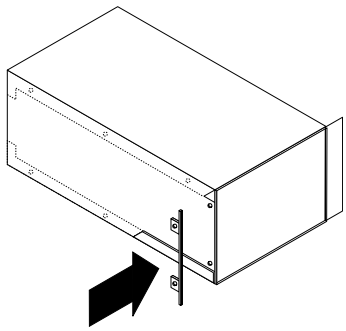
1. Remove the right-hand lug from the Base Station located to the left by unscrewing both the attaching screws.



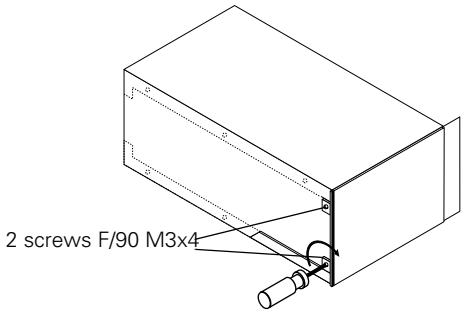
2. Remove the left-hand lug from the Base Station located on the right by unscrewing both the attaching screws.



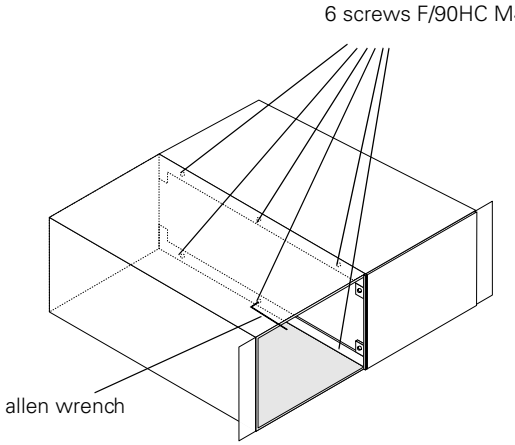
3. Remove the Base Station power supply located to the left by unscrewing the 3 attaching screws.
4. Place the front cover against the left-hand side of the Base Station located to the right (only one position correct).



5. Tighten both the 3 mm dia. screws using the screwdriver to attach the front cover.



6. Place both Base Stations side by side.
7. Tighten the six 4 mm dia. screws with the screwdriver from inside the Base Station to the left (power supply unit removed).



8. Place both Base Stations in the 19" rack at the required location and attach it using both lugs.

7 Mains power supply

7.1 Adapting the Base Station to the mains voltage

According to equipment serial number, the power supplies equipping the Base Station are:

- Bivoltage (fitted with an automatic switching system: 100 to 125 V AC **and** 200 to 240 V AC 50 or 60 Hz). In this case, no adaptations are required in terms of mains voltage.
- Or monovoltage 100 to 125V AC **or** 200 to 240V AC 50 or 60 Hz.

Caution

Before connect the Base Station to the mains, to make sure of the equipment operation voltage. This voltage is indicated on the label located on the Base Station rear panel.

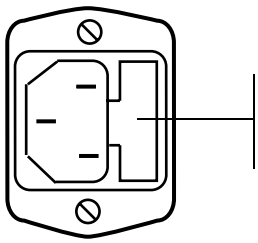
7.2 Fuse changing

The fuse is located in the mains connector on the back of the Base Station.

- Disconnect the mains plug for access to fuse.
- This connector also contains a spare fuse.

Fuse type:

110V or 220V: Value T 6,3 AH 250V Fuse reference: T9000671

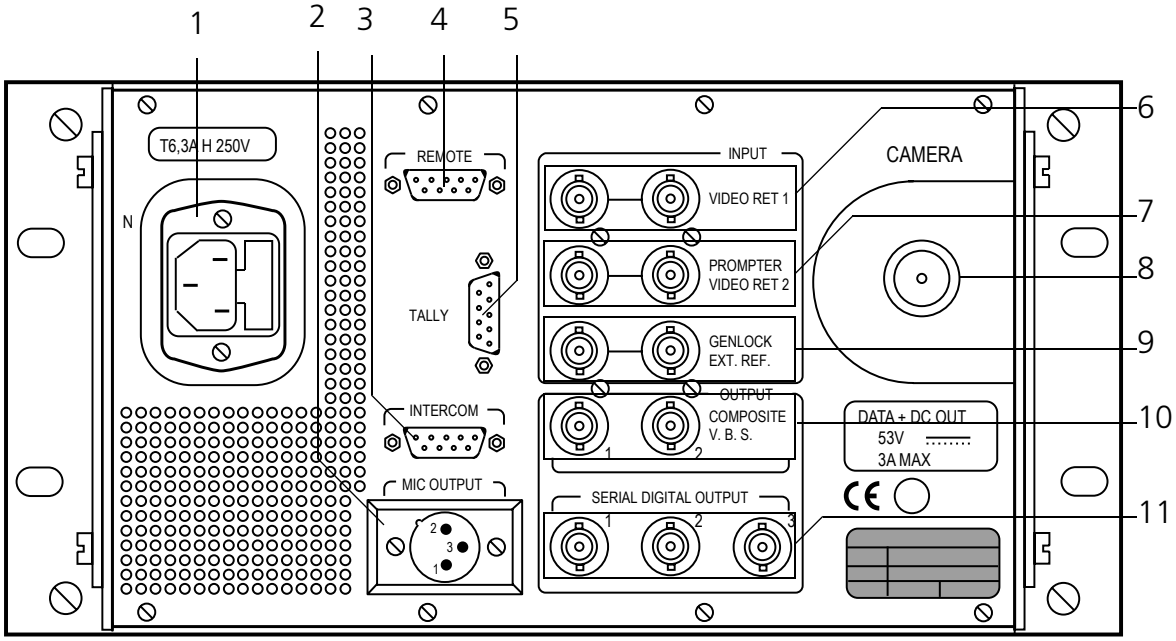


2 fuses:

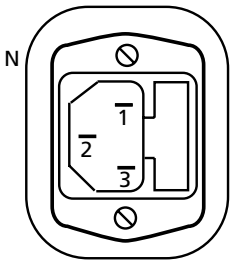
- Equipment protection fuse.
- Spare fuse.

8 Base Station connections

8.1 Back panel



1. Mains socket and fuses Connection to mains cable



2 fuses:
- Equipment protection fuse
- Spare fuse.

Fuse type:
110V or 220V: Value T 6,3 AH 250V
P/N: T9000671

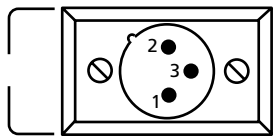
1 : Neutral
2 : Ground (connected to chassis ground)
3 : Phase

According to equipment serial number, the power supplies equipping the Base Station are:
Bivoltage (fitted with an automatic switching system: 100 to 125 V AC and 200 to 240 V AC 50 or 60 Hz). In this case, no adaptations are required in terms of mains voltage.
Or monovoltage 100 to 125V AC or 200 to 240V AC 50 or 60 Hz.
Before connecting the Base Station to the mains, to make sure of the equipement operation voltage. This voltage is indicated on the label located on the Base Station rear panel.

FUSE CHANGING
The fuse is located in the mains connector on the back of the Base Station.
Disconnect the mains plug for access to fuse.
This connector also contains a spare fuse.

2. «MIC OUT» receptacle

MIC OUTPUT



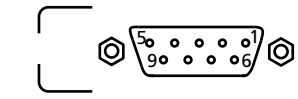
Male receptacle
Type: XLR-3-32
P/N: 91.355.161

Corresponding socket
Type: XLR-3-11C
P/N: 91.355.160

1 : GND
2 : MIC X OUT
3 : MIC Y OUT

Audio output from ambient microphone connected to camera.
The nominal output level is 0 dB. To modify this level, refer to the «INSTALLATION» Chapter 10.

«INTERCOM» receptacle
Connection of intercommunication network between the Cameraman and producer.

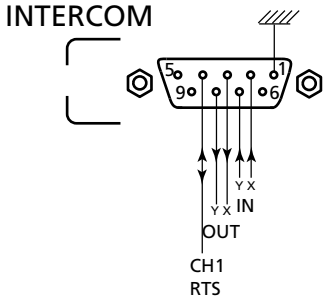


Female receptacle
Type: DEP09S400T
P/N: T9001515

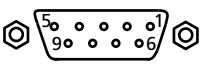
Corresponding socket
Type: PMD2T09+Z-HE5-M2
P/N: 99.155.568

1 : GND
2 : IN Y
3 : OUT X
4 : CH1 RTS
5 : CH2 RTS (Not used)
6 : Not connected
7 : IN X
8 : OUT Y
9 : GND

The nominal input and output levels are 0 dB. To alter these levels, refer to the «INSTALLATION» Chapter 10.
The link may be «4-wire» or «RTS».
Refer to the «INSTALLATION» Chapter 10.



3. «REMOTE» receptacle
Connection of remote control panel.

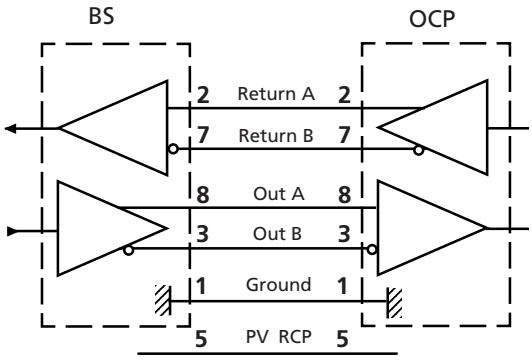


Female receptacle
Type: DEP09S400T
P/N: T9001515

Corresponding socket:
Type: PMD2T09+Z-HE5-M2
P/N: 99.155.568

1 : GND
2 : RETURN A2
3 : OUT B2
4 : GND
5 : PV RCP
6 : GND
7 : RETURN B2
8 : OUT A2
9 : GND

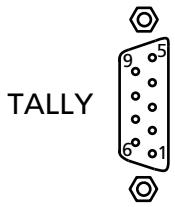
The link is an RS-422 link:



The «PV RCP» 12 V voltage is used for powering the panel (Pmax = 6W).
The «ON AIR1» and «ON AIR2» signals to the OCP and the camera are added to the «PV RCP».

4. «TALLY» receptacle
Connection of «ON AIR1» and «ON AIR2» signals.

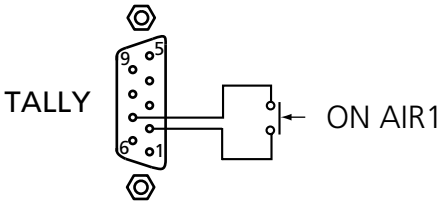
Female receptacle
Type: DEP09S400T
P/N: T9001515



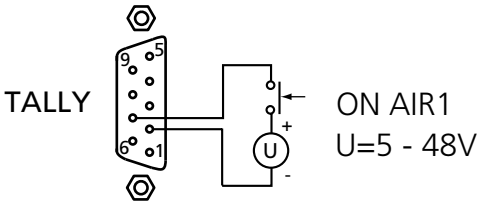
Corresponding socket
Type: PMD2T09+Z-HE5-M2
P/N: 99.155.568

1 : Not used
2 : ON AIR1 NEG
3 : ON AIR2 POS
4 : GND
5 : Not connected
6 : Not used
7 : ON AIR1 POS
8 : ON AIR2 NEG
9 : Not connected

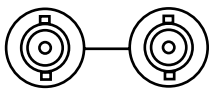
The «ON AIR1» and «ON AIR2» signals received may be «VOLTAGE» or «CONTACT» signals. Adaptation of the equipment to the various types of control is described in the «INSTALLATION» Chapter.
Example: «**CONTACT**» type ON AIR1.



Example: «**VOLTAGE**» type ON AIR1



5. «VIDEO RET 1» receptacles

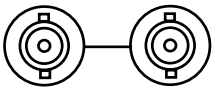


VIDEO RET 1

Receptacles
Type: P2189-A
P/N: T9003306

The «Loopedthrough» No. 1 return video input. The signal is not loaded into the Base Station. Input level is 1 Vpp ~ 75 Ohm.
Transmission of the «RET 1» video of the camera depends on the triaxial cable length. Refer to the **specifications** chapter.

6. «PROMPTER VIDEO RET 2» receptacles.

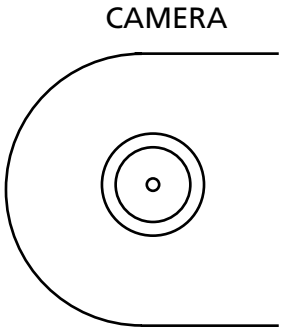


PROMPTER
VIDEO RET 2

Receptacles
Type: P2189-A
P/N: T9003306

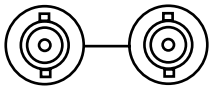
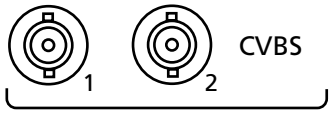
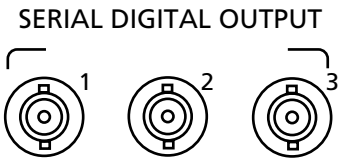
The No. 2 return video (or «PROMPTER») input is «loopedthrough». The signal is not loaded in the Base Station. Input level: 1 Vpp ~ 75 Ohm
Transmission of the «RET 2» video to the camera depends on the length of the triaxial cable. Refer to the SPECIFICATION chapter.

7. «TRIAX» receptacle
Connection of the TRIAXIAL cable connected to the camera control unit.



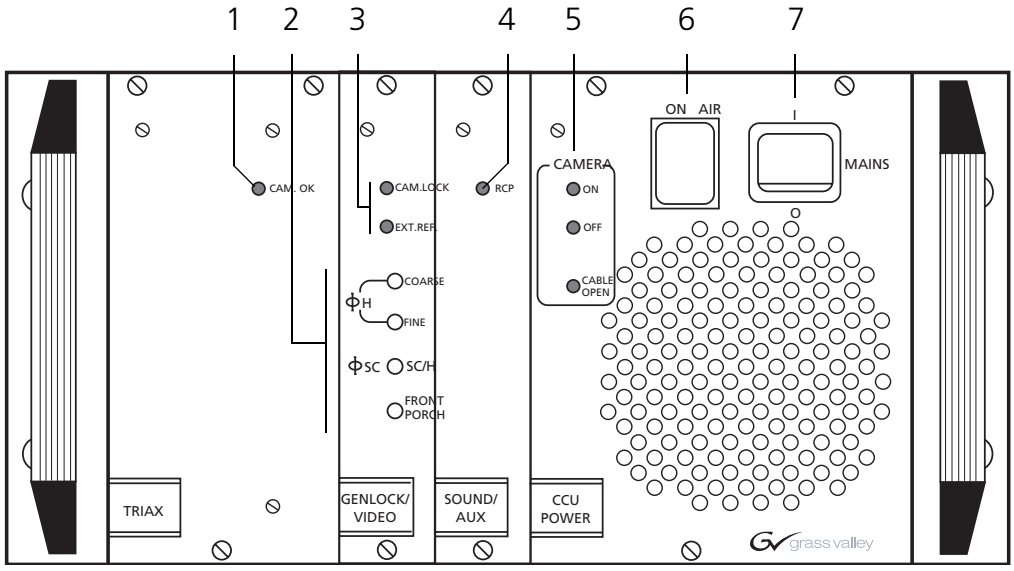
Receptacles:
- LEMO 75 Ω
- LEMO 50 Ω
- FISCHER
- KINGS
- DAMAR HAGEN

The cable transmits the various signals and the camera power supply.
Output voltage: 52 Vdc; Imax: 3 A

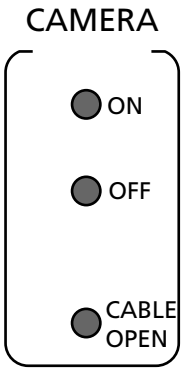
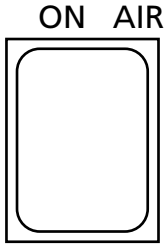
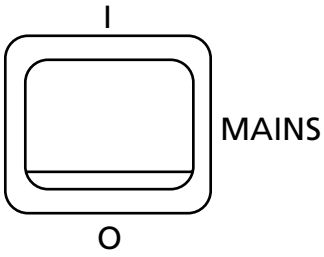
8. «GEN LOCK EXT. REF» receptacles  GENLOCK EXT. REF. Receptacles Type: P2189-A P/N: T9003306	The «looped through» reference signal input. The signal is not loaded in the Base Station. Input level: 1 Vpp ~ 75 Ohm. As a general rule, the signal must be of "composite video" type to control the composite and digital signals at the output from the Base Station (link J92 set to ON on the GENLOCK/VIDEO board. If the reference signal does not a "Burst", place link J92 on the GENLOCK/VIDEO board to OFF position. The composite signal subcarrier is then slaved with respect to the composite sync signal. Refer to the INSTALLATION Chapter 10 for equipment phase alignment.
9. «COMPOSITE V.B.S.» receptacles.  1 2 CVBS Receptacles Type: P2189-A P/N: T9003306	Encoded PAL or NTSC signal outputs. Levels: 1 Vpp ~ 75 Ohm.
10. «SERIAL DIGITAL OUTPUT» receptacles  SERIAL DIGITAL OUTPUT 1 2 3 Receptacles+cables Type: 98230x-021-009.0 P/N: T6000091	Serial digital signal outputs: **4:2:2, 270 Mbits.**

9 Base Station controls

9.1 Front panel



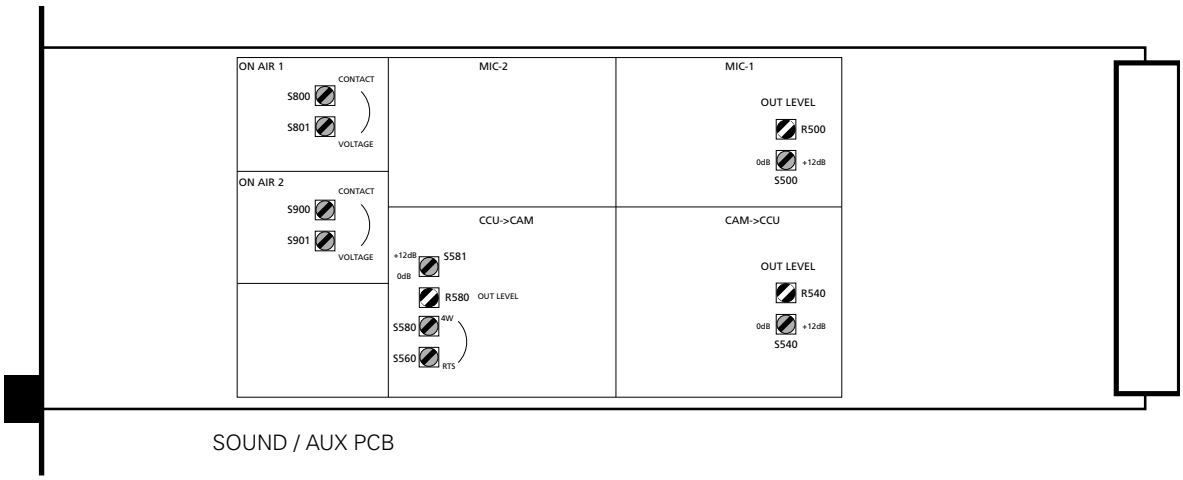
1. «CAM OK» indicator light CAM. OK	Normally lit, this indicator light indicates that the digital signal from the camera is present.
2. «H, SC, SC/H» adjustments COARSE H FINE SC SC/H FRONT PORCH	Adjustments of the digital video horizontal phase at the equipment output. Adjustment of the subcarrier and horizontal phases for encoded videos at the equipment output. «FRONT PORCH» adjustments of the encoded videos at the equipment output. Refer to the «INSTALLATION» Chapter 10 for a complete description of these adjustments.
3. «CAM LOCK, EXT. REF» indicator lights CAM.LOCK EXT.REF.	CAM LOCK: Normally lit, this indicator light indicates that the camera phase is controlled by the Base Station. EXT REF.: When lit, this indicator light indicates presence of an external sync signal on the «GEN LOCK» receptacle of the Base Station.

4. «RCP» indicator light 	This indicator light lights to indicate activity on the link between Camera and OCP connected on the «REMOTE» receptacle of the Base Station.
5. «CAMERA: ON, OFF, CABLE OPEN» indicator lights 	ON: Normally and permanently lit, this light indicates that the camera is powered. This indicator light when flashing indicates excessive consumption at the camera. The current in the triaxial cable is then between 3 A and 3.3 A. Above 3.3 A, the Base Station power supply cuts out. rearming is obtained automatically 4 times. If the overload persists, the cut-out becomes permanent. An equipment on/off is then required to start the equipment operating again. OFF: This permanently lit indicator light indicates that the camera power is off. When flashing, this indicator light indicates that the camera consumption is excessively low. The current in the triaxial cable is then between 0.1 A and 0.4 A. CABLE OPEN: This normally extinguished indicator light indicates that the triaxial cable is not connected to the camera or to the back panel of the Base Station.
6. «ON AIR» indicator light 	When lit, this light indicates that the equipment is switched to the antenna («ON AIR1»).
7. «MAINS» switch 	The equipment master on/off switch: «I»: The equipment is operating. «O»: The equipment is not operating.

10 Base Station installation

10.1 Audio

The «MIC 1» sound output level can be adjusted on the «SOUND/AUX» card over the range -6 dB to + 18 dB. This adjustment is made using selector switch S500 «0 dB + 12 dB» and «LEVEL» potentiometer R500.



SOUND / AUX PCB

10.2 Intercom

The «INTERCOM» link of the sound engineer's control room may be of the 4-wire or RTS/CLEARCOM type.

4-wire link

- Selector switches S560 and S50 on the «SOUND/AUX» board of the Base Station should be set to 4W.
- The «INTERCOM» sound output level can be adjusted on the «SOUND/AUX» board of the Base Station over the range - 6 dB to + 18 dB. The adjustment is performed using «0 dB + 12 dB» selector switch S540 and «LEVEL» potentiometer R540.
- The «INTERCOM» sound input level can be adjusted on the «SOUND / AUX» board of the Base Station over the range - 6 dB to + 18 dB. The adjustment is made using the «0 dB + 12 dB» selector switch S581 and the «LEVEL» potentiometer R580.

☞ Note

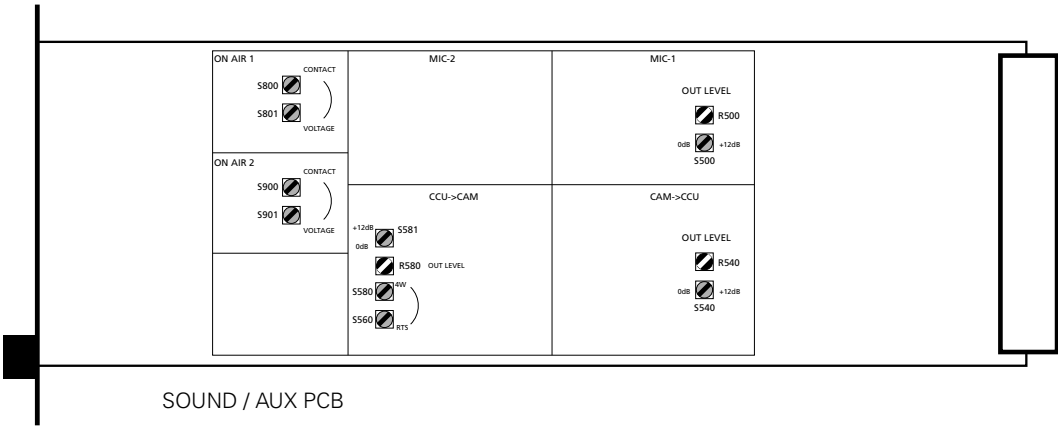
When the 4-wire link is in use, the RTS/CLEARCOM intercom link is unavailable.

RTS/CLEARCOM link

- Selector switches S560 and S580 on the «SOUND/AUX» board of the Base Station must be set to RTS
- The RTS «INTERCOM» sound input level can be adjusted on the «SOUND/AUX» board of the Base Station over the range - 6 dB to + 18 dB. The adjustment is made using the «0 dB +12 dB» selector switch S581 and «LEVEL» potentiometer R580.

☞ **Note**

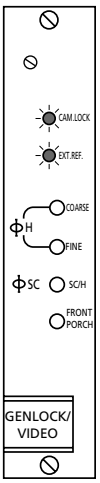
When the RTS/CLEARCOM link is in use, the 4-wire intercom link is unavailable.
The RTS/CLEARCOM link must be loaded with 200 Ohm.



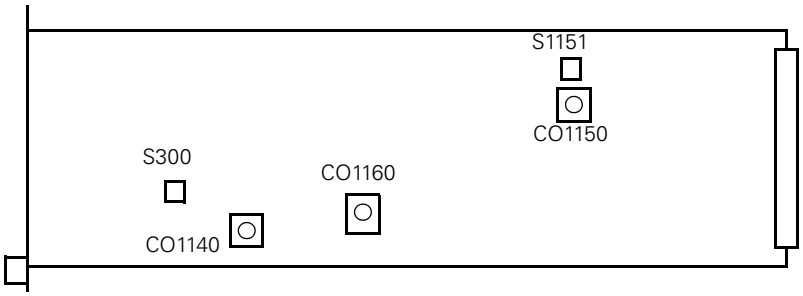
SOUND / AUX PCB

10.3 Video

The various adjustments are made on the «GENLOCK/VIDEO» board.



«GENLOCK VIDEO» board adjustments



«GENLOCK VIDEO» board switches

Factory switches

Rotary switch CO1160 is for factory testing only. For normal operation, this switch must be set to position 0.

Switch S300 is for factory use only; do not change its position.

Rotary switch CO1140 is for special applications; do not change its position.

Composite video output standard selection

This selection is made using rotary switch CO1150. Select the position corresponding to the standard you require.

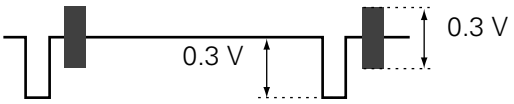
Table 0-1. Standard selection

Position	Standard
0	**NTSC**
1	**PAL M**
2	**PAL BGHI**
3	**PAL N**
4 to F	**Not used**

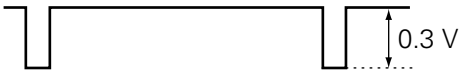
Equipment phase alignment with a digital installation

Equipment slaved to an external reference on «GENLOCK» input

The reference signal should be a black video signal with or without burst delivered by a Broadcast generator and terminated with 75 Ohm load.



Reference with Black Burst (BBS)



Reference without Black Burst

Horizontal phase alignment of the digital output signal

The horizontal phase of the digital output signal with respect to the external reference signal is adjusted using the «**ΦH COARSE**» and «**ΦH FINE**» thumbwheels. The range of variation depends on the position of the lower switch of S1151.

S1151 up position (FINE):

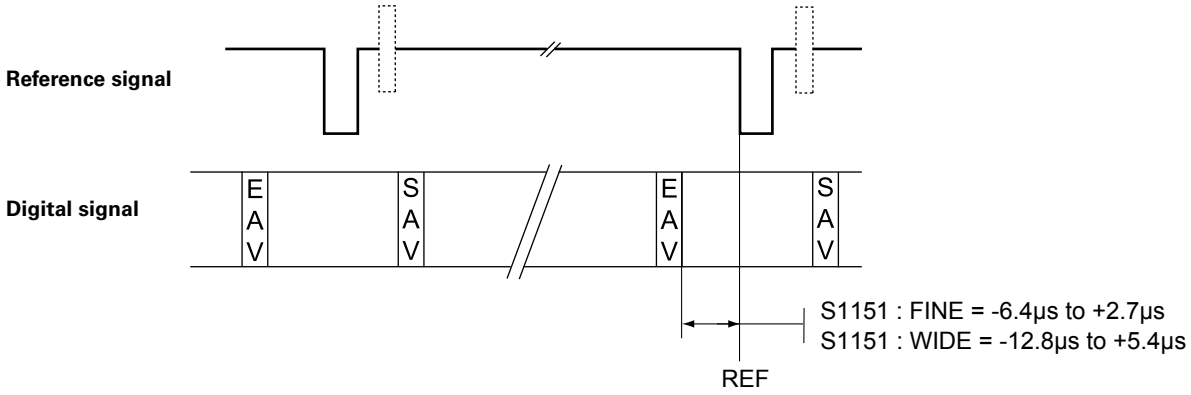
- **«ΦH COARSE»**: Adjustment in steps of 592 ns.
- **«ΦH FINE»**: Adjustment in steps of 37 ns.

The range of variation of the digital output signal with respect to the reference signal is approximately -6.4 µs + 2.7 µs.

S1151 down position (COARSE):

- **«ΦH COARSE»**: Adjustment in steps of 1184 ns.
- **«ΦH FINE»**: Adjustment in steps of 74 ns.

The range of variation of the digital output signal with respect to the reference signal is approximately -12.8 µs + 5.4 µs.



If the composite video output is used as a monitoring output, it is recommended to set the upper switch of S1151 to «OFF» to disable the Subcarrier genlock. In this case, the output composite signal carrier is internally slaved with respect to the sync signals.

If necessary, the «SC phase« and «Front porch» alignment can be adjusted using the «**SC/H**» and «**FRONT PORCH**» thumbwheels.

Equipment without external reference (free mode)

Set the upper switch of S1151 to «OFF». The «**ΦH COARSE**» and «**ΦH FINE**» thumbwheels are inactive.

If the composite video output is used as a monitoring output, and if necessary, the «SC phase« and «Front porch» alignment can be adjusted using the «SC/H» and «FRONT PORCH» thumbwheels. The output composite signal carrier is internally slaved with respect to the sync signals.

Phase alignment with a analog installation

External reference on «GENLOCK» input with blackburst

The reference signal should be a black video signal with burst delivered by a Broadcast generator (stable SC/H) and terminated with 75 Ohm load.

Set the upper switch of S1151 to «ON». In this case, the output composite signal subcarrier is slaved to the reference burst.

The horizontal phase of the composite signal with respect to the external reference signal is adjusted using the «**ΦH COARSE**» and «**ΦH FINE**» thumbwheels. The range of variation depends on the position of the lower switch of S1151.

S1151 up position (FINE):

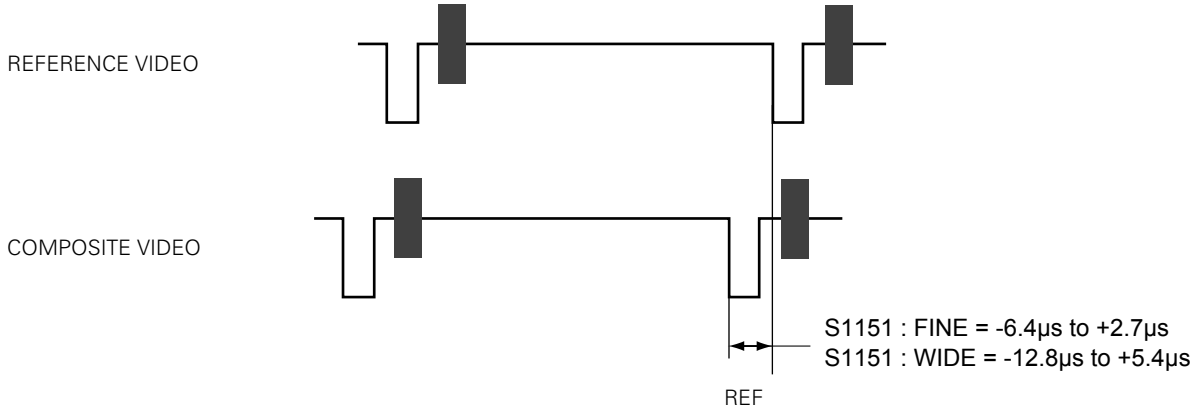
- **«ΦH COARSE»**: Adjustment in steps of 592 ns.
- **«ΦH FINE»**: Adjustment in steps of 37 ns.

The range of variation of the composite signal with respect to the reference signal is approximately -6.4 µs + 2.7 µs.

S1151 down position (COARSE):

- **«ΦH COARSE»**: Adjustment in steps of 1184 ns.
- **«ΦH FINE»**: Adjustment in steps of 74 ns.

The range of variation of the composite signal with respect to the reference signal is approximately -12.8 µs + 5.4 µs.

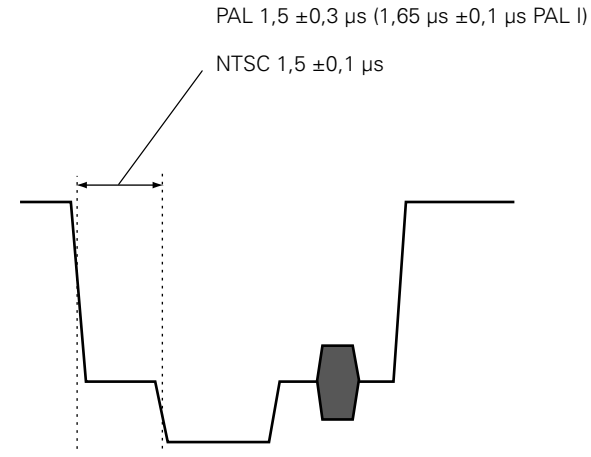


The output composite signal subcarrier phase with respect to the external reference signal (BBS) is adjusted using thumbwheel **«ΦSC»**.

Adjustment of the composite signal front porch width is made using the «**FRONT PORCH**» thumbwheel.

☞ Note

This setting has no effect on horizontal blanking width



Composite outputs 1 and 2

External reference without blackburst

The reference signal should be a black video signal and terminated with 75 Ohms load.

Set the upper switch of S1151 to «OFF». The output composite signal carrier is internally slaved with respect to the sync signals.

The horizontal phase of the composite signal with respect to the external reference signal is adjusted using the **«ΦH COARSE»** and **«ΦH FINE»** thumbwheels:

The SC/H phase alignment of the composite output signal is adjusted using the «**SC/H**» thumbwheel.

Adjustment of the front porch of the composite signal is made using the «**FRONT PORCH**» thumbwheel.

Equipment without external reference (free mode)

The **«ΦH COARSE»** and **«ΦH FINE»** thumbwheels are inactive.

The output composite signal SC/H phase alignment is adjusted using the «**SC/H**» thumbwheel.

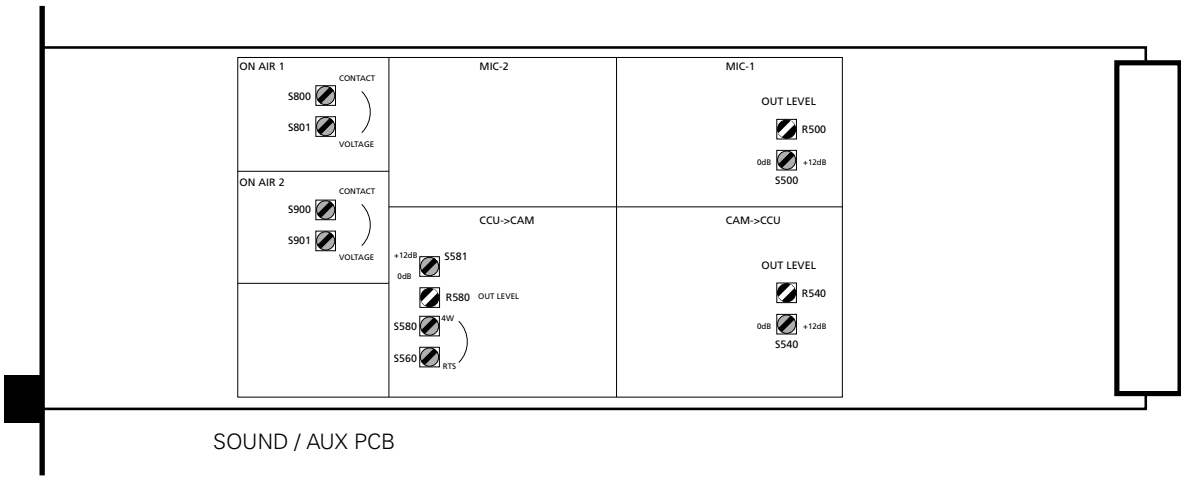
The output composite signal front porch duration is adjusted using the «**FRONT PORCH**» thumbwheel.

10.4 Adaptation of BS to external on-air signal controls from the studio

The «ON AIR 1» and «ON AIR 2» main and secondary studio commands received by the Base Station may be of two different forms:

- A DC voltage of between + 5 Volts and + 48 Volts.
- A closed loop (contact).

Adaptation is made in the «SOUND/AUX» board of the Base Station.



SOUND / AUX PCB

Depending on the type of signal from the mixer, set selector switches S800 and S801 (ON AIR 1) and S900 and S901 (ON AIR 2) to the positions indicated in the figure.

S800-S801	Control
Contact (up)	Loop (contact)
Voltage (down)	+5 V to +48 V

S900-S901	Control
Contact (up)	Loop (contact)
Voltage (down)	+5 V to +48 V

☞ Note

Selector switches S1000 and S1001 are not used.

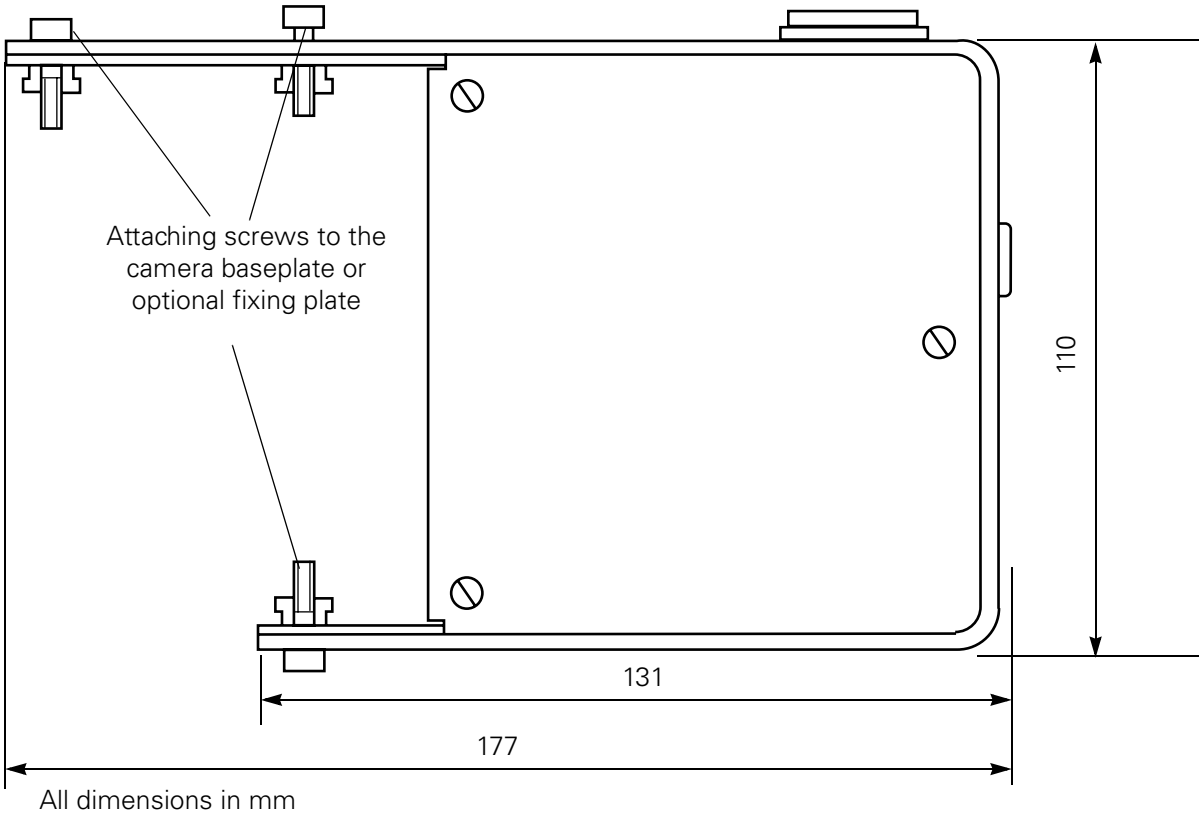
11 DC/DC converters

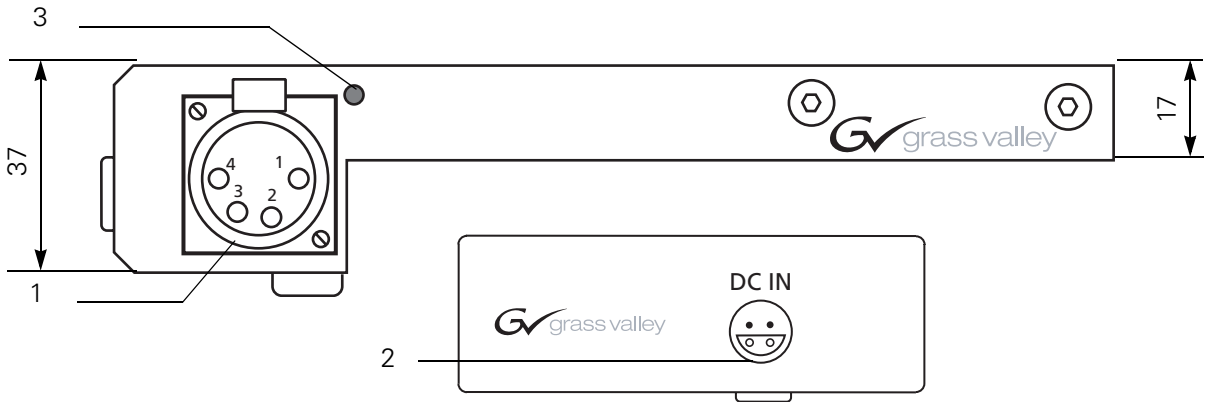
These converters, which are available as an option, are attached to the camera baseplate. The can be used to supply teleprompters for example. They provide a regulated voltage of 12 V or 24 V (depending on converter type) and a power of 50 W. The maximum power produced by the converter is ensured with a maximum triax length of :

- Type A triax (diameter 9 mm): 90 metres.
- Type B triax (diameter 13 mm): 150 metres.

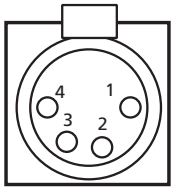
LDK 5930 is the 12V version; LDK 5940 is the 24V version.

Figure 1-14. DC/DC converter





1.
«12V/50W» or «24V/50W» receptacle
Regulated voltage output.



Receptacle
Type: XLR-4-31
P/N: 91538047
Corresponding socket
Type: XLR-4-12C
P/N: 91647565

1 : GND	3 : N.C.
2 : N.C.	4 : +V OUT (12V OR 24V(

The voltage on output 4 of the connector is 12 or 24 V depending on the type of converter. The maximum power produced is 50 Watts.

Note:
The maximum power (50W) produced by the external converter connected on the camera "DC OUT" is ensured with a maximum triaxial cable length.

2.
«DC IN» receptacle
Connection of cable connecting the converter to the camera.

DC IN

Receptacle
Type: EMD04+Z-ERNC
P/N: T9003619
Corresponding socket
Type: FFA-1S-304-CLAC52
P/N: T9003618

1 : +48V IN	3 : GND
2 : -5V IN	4 : GND

Converter supply:
The voltage received on this receptacle varies between 30 V DC and 52 V DC depending on:
- The length and type of the triaxial cable
- The power consumed by the converter.

The -5 V is used to delay starting of the converter on camera power on to prevent the Channel Control Unit power supply tripping out.
If a DC-to-DC converter (even unloaded) is connected to the camera while operating, the safety system will cause the camera to trip out.

The converter must be connected to the camera with camera power off.

3.
DC out indicator

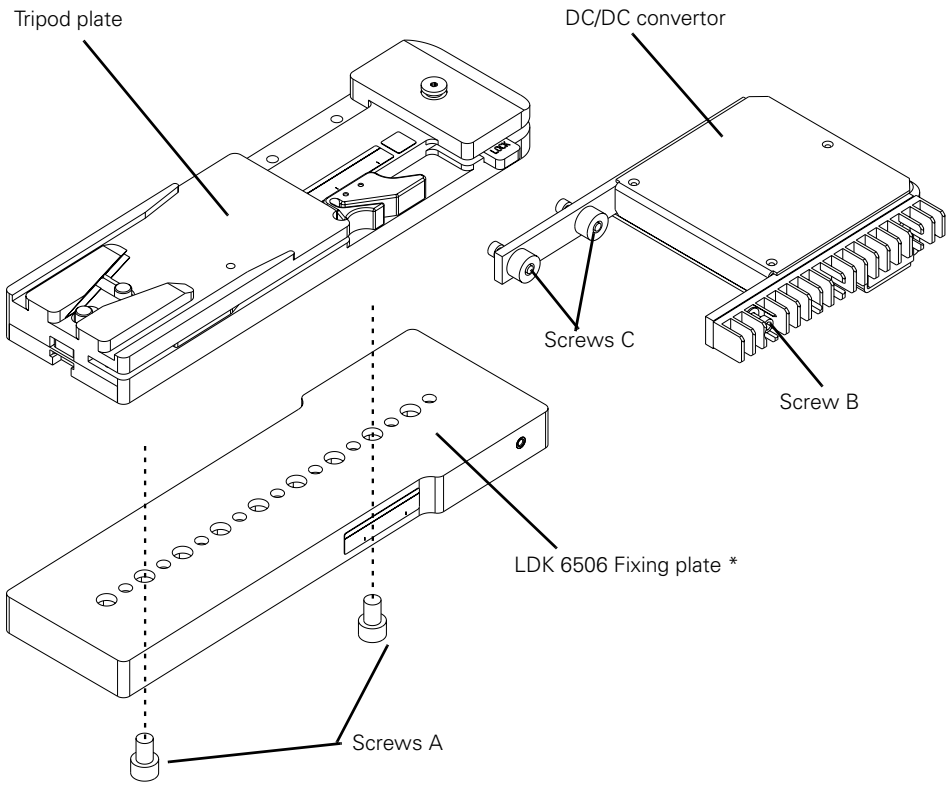
Light: the DC voltage is present on the converter output.

11.1 Installation

To attach the DC/DC convertor to the camera proceed as follows:

- Ensure power is disconnected.
- Attach the LDK6506 fixing plate to the tripod plate using the supplied bolted screws (A).
- To ensure the converter's thermal isolation from the tripod attach the screws in the exact following order:
  1. Tighten screw (B).
  2. Tighten two screws (C).
- Connect the cable from the DC IN input of the converter to the DC OUT output of the camera. This cable is supplied with the converter.
- Connect the equipment to be supplied to the "DC OUT 12V/50W" or "DC OUT 24V/ 50W"ouput depending on the converter type used.

Figure 1-15. Installing the DC/DC converter



☞ Note

The LDK 6506 Fixing Plate is always required when using the LDK5930/5940 DC/DC convertor with LDK cameras.