grass valley

User's Guide

Camera Base Station

LDK 4502

TriaxHD Base Station

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:

- EN60065 : Safety

- EN55103-1: EMC (Emission)

- EN55103-2: EMC (Immunity)

following the provisions of:

a. the Low Voltage directive 2006/95/EC
b. the EMC directive 2004/108/EC

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.

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Website

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www.grassvalley.com

Table of contents

Chapter 1 – Introduction

Chapter 2 – Installation

Chapter 3 – Setup

Chapter 4 – Maintenance

Chapter 5 – Menu structure and contents

Chapter 6 – Connectors

Chapter 7 – Specifications

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.grassvalley.com/environment

Important information

Read these instructions carefully and retain them for future reference.

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, 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. 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.

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

Cautions and Warnings

Read and comply with the warning and caution notices that appear in the manual.

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

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

Warnings

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not remove covers or panels. Refer servicing to qualified personnel only.

In case of an emergency ensure that the power is disconnected.

Use only fuses of the type and rating specified.

Connect the product only to a power source with the specified voltage rating.

The Base Station must always be connected to protective earth. Do not interrupt the protection conductor inside or outside the unit. Do not disconnect the protective earth terminal. Intentional interruption is prohibited and is likely to make the unit dangerous.

To prevent risk of overheating, ventilate the units correctly.

For safety reasons the Base Station must be mounted in a 19-inch rack which has safety covers according to IEC65. When two Base Stations are mounted above each other, the minimum distance between them must be 50 mm or the rack must be force-air cooled.

Triax cable systems

⚠ Only connect a Triax cable from the same LDK camera family to the unit.

⚠ 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.

⚠ It is strictly prohibited to short circuit the inner and outer shields of a Triax cable used to connect a camera to a Base Station.

Galvanic separation

Because of the nature of Triax systems, with long distances between camera and Base Station, the risk of earth currents flowing is greater. These earth currents can result in damage to the equipment.

For example, a monitor connected directly to the CVBS output of the camera is powered locally. The earthing point of the monitor's power supply can be at a different potential with respect to the earthing point of the Base Station. If the power earth of the monitor is also the video earth, then this earth potential is transferred to the camera via the shield of the BNC connector. The difference in earth potential between the camera and the Base Station results in an earth current in the Triax system.

To prevent earth currents from flowing in the Triax system, we recommend galvanic separation of earthed equipment connected to the camera. This separation can be achieved by using an isolation transformer between the local power outlet and the equipment connected to the camera. Alternatively, use equipment that has a double insulation and therefore does not require an earth connection.

Base Station earthing

The rear of the unit has two separate screw terminals for protective earth ⊕ (PE) and video earth ⊕ (VE). These are normally connected by a metal strap.

The protective earth terminal is internally connected to the protective earth conductor of the power cable. In normal circumstances the connection between the protective earth and the video earth should **not** be broken. If required, the central earth connection wire of the studio can be connected to terminal PE in accordance with VDE regulation 0800/part2.

Only if the studio (or OB van) is equipped with separate protective and video earth systems may the metal strap be removed. Under these circumstances the video earth terminal must be connected to the central functional earth potential (video earth) of the studio. This earth potential should have functional protective and noiseless earth (FPE) qualities as stated in the VDE regulation 0800/part2. A low impedance interconnection of both earth conductors must be provided at the central studio earthing point.

Mains lead wiring for UK users

The wires in the mains lead are coloured in accordance with the following code:

GREEN and YELLOW- EARTH

BLUE-   NEUTRAL

BROWN- LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

*   The wire coloured GREEN AND YELLOW must be connected to the terminal on the plug marked with the letter E or by the safety earth symbol ⊕ or coloured GREEN or GREEN AND YELLOW.

*   The wire coloured BROWN must be connected to the terminal marked with the letter L or coloured RED.

*   The wire coloured BLUE must be connected to the terminal marked with the letter N or coloured BLACK.

Ensure that your equipment is connected correctly - if you are in any doubt consult a qualified electrician.

Chapter 1

Introduction

1.1   Technology

The LDK 4502 Camera Base Station is the perfect interface between your HDTV camera and the rest of your system. The heavy-duty Base Station provides state-of-the-art technology in a compact package. The high level of modularity guarantees ideal matching with any type of application; you can use the system in a studio or for mobile field production, for HDTV or for SDTV production. Optional modules can be inserted or removed at any time, making it possible to change the configuration on a day-to-day basis.

The Base Station is only 2U high yet offers full broadcast functionality and quality. The low height means that rack space is saved. Its low power consumption and efficient internal cooling eliminate the need for space between adjacent units. Sliding rails are additionally available for easy access to the back panel. The wings on either side of the back panel protect all connectors from damage, including the Triax connector. The Triax connector itself can easily be mounted at different angles to suit all mounting requirements.

Operational controls

You can access the Base Station menu, which contains all operational settings, from an Operational Control Panel. In addition to the operational menu, the installation and service menus can be activated from the Base Station by pressing a switch behind the front panel. The Base Station is compatible with all existing control system components.

1.1.1   TriaxHD features

The advanced TriaxHD transmission system, which is a further development of the Emmy Award winning Triax transmission system, makes the Base Station and camera compatible with industry standard Triax cables. This allows the reuse of existing, reliable and valuable cable inventories. TriaxHD offers video transmission and remote control of cameras up to a distance of 1,200 m (4,000 ft) and beyond, using standard 14 mm (0.55 in) Triax cables.

The TriaxHD system is based on 30 MHz full-bandwidth 4:2:2 transmission (Y/Cr/Cb components). The double sideband modulation technique used in combination with Y/Cr/Cb transmission ensures linearity, resolution and an optimal signal-to-noise ratio over the maximum cable length. Bandwidth efficient channel combining and equalization techniques minimize cross-talk and interference. Teleprompter and viewfinder signals maintain high performance with relatively long cable lengths.

1.1.2   Modular construction

The modular concept makes it easy to expand the functionality by simply adding new modules. Quick exchange of the modules for servicing or the ability to swap modules between Base Stations is another benefit.

The LDK 4530/10 External video input module provides two analog video inputs and loop-through analog outputs. The signal can be PAL or NTSC, and does not need to be clamped. It can also be non-synchronized. The external video input module can be replaced in the future by a digital one.

HDTV and simultaneous high-end SDTV

Besides standard high-definition outputs, the Base Station can be optionally equipped with simultaneous high-end SDTV outputs. This offers ultimate flexibility: produce in SDTV one day, and in HDTV the next, or do both simultaneously. Having both SDTV and HDTV outputs facilitates a gradual and managed transition from STDV to HDTV. Three 1.5 Gb/s HD-SDI outputs are available on the Base Station. The high quality SDTV Module adds three 270 Mb/s SDI and three analog outputs (these can be programmed to be either R, G, B, or Y, Pr, Pb or three CVBS outputs).

Monitoring

Monitoring in the analog HD video domain requires the monitoring module. The outputs on this module provide four switchable signals (R, G, B and Y), which are simultaneously available on a WFM and PXM connector. The switching is done in the digital video domain and can be controlled from an OCP or MCP. The PXM output can be used for analog picture monitoring, and the WFM output for monitoring on a waveform monitor. An additional conventional VGA connector, which is also provided by this module, contains R, G, B, H-sync, and V-sync signals for relative low-cost analog HD monitoring using an appropriate computer monitor. For monitoring in the SD video domain, one of the SDI outputs or analog outputs of the High Quality SDTV module can be used.

Audio and intercom

The audio and advanced intercom module provides 4-channel intercom and 2-channel audio from the camera. The high-quality audio from the camera head is passed to the different outputs via balanced line drivers on the module for clean transparent sound. The gain levels can be remotely controlled.

In the installation menu of the Base Station, a choice is provided between a 4-wire or a 2-wire intercom system. An intercom channel can be assigned as a data channel for private data. A 1 kHz test-tone generator and voicemail extend the functionality even further. The voicemail stores messages from a combination of sources like Program, Production or Engineering for the camera operator. By adding the engineering intercom module, a 5-channel full-featured intercom is possible.

The engineering intercom module provides a 2-channel intercom between camera operator and engineering. The module fits into the front of the unit and facilitates the plugging in of a headset and level adjustment for both ear muffs. It is ideal for a simple intercom facility in a standalone mode of operation, or to expand the 4-channel advanced intercom to a 5-channel intercom.

1.2   Features

- Low height: only 2U high, 19-inch rack unit.

- Flexible due to its modular construction.

- Teleprompter, color bar, digital HDTV outputs standard on board.

- The digital transmission backbone and power module meet the most demanding broadcasting needs.

- Heavy-duty concept with low power consumption, ideal for Outside Broadcast (OB) vans.

- TriaxHD allows video transmission and remote control of cameras up to a distance of 1,200 m (4,000 ft) and beyond, using industry standard 14 mm (0.55 in) Triax cables.

- Full camera control via the C2IP Ethernet-based network

- Two-wire or four-wire intercom compatible with international standards.

- HDTV and simultaneous high-quality SDTV outputs (optional).

- High-end simultaneous SDTV outputs (both digital as well as analog) for a gradual and managed transition from SDTV to HDTV.

1.3   Packing/unpacking

Inspect the shipping container for evidence of damage immediately after receipt. If the shipping container or cushioning material is damaged, it should be kept until the contents of the shipment have been checked for completeness and the units have been checked mechanically and electrically. The shipping container should be placed upright and opened from the top. Remove the cushioning material and lift out the contents. The contents of the shipment should be checked against the packing list. If the contents are incomplete, if there is mechanical damage or defect, or if the units do not perform correctly when unpacked, notify your sales or service centre within eight days. If the shipping container shows signs of damage or stress, notify the carrier as well.

If a unit is being returned to for servicing, try to use the containers and materials of the original packaging. Attach a tag indicating the type of service required, return address, model number, full serial number and the return number which will be supplied by your service centre. If the original packing can no longer be used, the following general instructions should be used for repacking with commercially available materials:

1. Wrap unit in heavy paper or plastic.

2. Use strong shipping container.

3. Use a layer of shock-absorbing material around all sides of the unit to provide firm cushioning and prevent movement inside container.

4. Seal shipping container securely.

5. Mark shipping container FRAGILE to ensure careful handling.

Chapter 2

Installation

2.1 Control bus

The Base Stations are each connected to the control network hub or router via an Ethernet cable (straight-through, not cross-over). The OCP 400 Operational Control Panels and, if required the MCP 400 Master Control Panel, are also connected to the Ethernet network via a hub or router.

An OCP 400 operational control panel can also be connected directly to the Base Station using a cross-over Ethernet cable.

The IP address and other options for the Ethernet connection can be set up in the Base Station System menu. These items can also be set up remotely using a network configuration tool such as Grass Valley's NetConfig.

☞ Note

By default the Ethernet connection is set up for Auto IP.

2.2 Power supply

⚠ Caution

Connect the Base Station only to a power source with the specified voltage rating. Use only fuses of the type and rating specified.

The Base Station must always be connected to protective earth. Do not interrupt the protection conductor inside or outside the unit. Do not disconnect the protective earth terminal. Intentional interruption is prohibited and is likely to make the unit dangerous.

Before connecting your unit to the power supply check the fuse type (230 or 115) on the IEC power connector at the rear of the Base Station.

If the fuse type shown corresponds to your power supply voltage, connect the power supply for the Base Station to the IEC connector at the rear.

If the fuse type does **not** correspond to your power supply voltage you must change the fuses before connecting the supply as follows:

1. Insert a small screwdriver into the slot above the pins of the IEC connector and unclip the fuse holder unit.

2. Insert you finger under the indication unit and pull it out.

3. Rotate the indication unit 180° so that the correct indication for you voltage supply is displayed at the back of the Base Station (230 or 115).

4. Slide the indication unit securely back into its slot.

5. Insert the appropriate fuses into the alternative fuse holder which is delivered separately with the Base Station (4 AT fuses are 22 mm long and fit into the 230 fuse holder; 10 AT fuses are 32 mm long and fit into the 115 fuse holder). The type of fuse holder is marked on the holder.

6. Slide the fuse holder securly back into the IEC connector until it clips into place.

7. Check again that you have used the correct fuses and that the corresponding indication is shown.

8. Connect the power supply for the Base Station to the IEC connector at the rear.

Figure 2-1. Base Station fuses
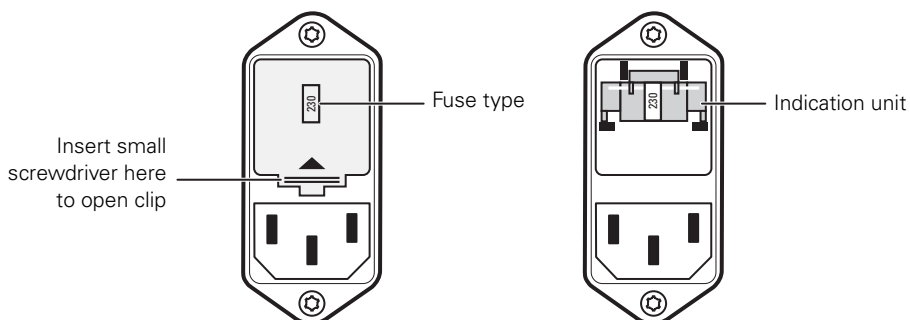
Function	Value
Mains input voltage	230 VAC or 115 VAC
Fuses	4AT (230 VAC) or 10AT (115 VAC)
Mains frequency	47 to 63 Hz
Power consumption	270 W (470 VA)

2.2.1 Base Station earthing

The rear of the unit has two separate screw terminals for protective earth ⏚ (PE) and video earth ⏚ (VE). These are normally connected by a metal strap.

Figure 2-2. Base Station earthing

The protective earth terminal is internally connected to the protective earth conductor of the power cable. In normal circumstances the connection between the protective earth and the video earth should **not** be broken. If required, the central earth connection wire of the studio can be connected to terminal PE in accordance with VDE regulation 0800/part2.

Only if the studio (or OB van) is equipped with separate protective and video earth systems may the metal strap be removed. Under these circumstances the video earth terminal must be connected to the central functional earth potential (video earth) of the studio. This earth potential should have functional protective and noiseless earth (FPE) qualities as stated in the VDE regulation 0800/part2. A low impedance interconnection of both earth conductors must be provided at the central studio earthing point.

2.3 Connecting the studio intercom system

Connect the studio intercom system to the rear of the Base Station. The wiring of the panel connector is shown below for two-wire and four-wire systems.

Figure 2-3. Intercom connection
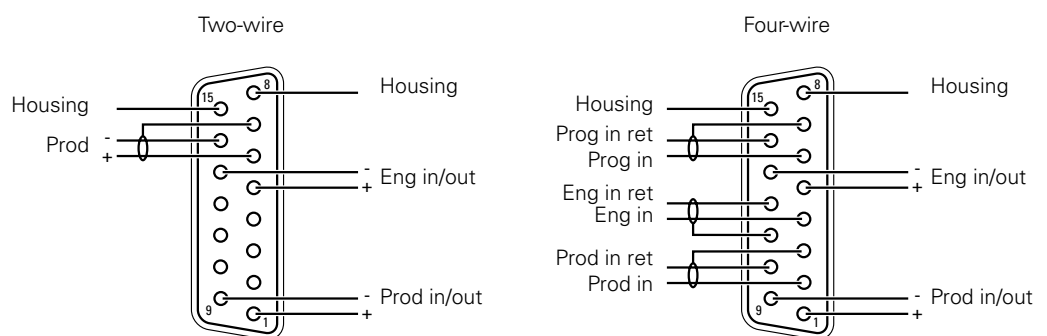
Function	Value
2-wire	
Signal level	0 dBu (RMS)
Load impedance	200 Ω
DC level	40 VDC (max.)

Function	Value
4-wire	
Output signal level	+6 or 0 dBu (RMS) selectable
Output impedance	50 Ω (max.), symmetrical
Input signal level	+6 or 0 dBu (RMS) selectable
Impedance	9 KΩ (min.), symmetrical

2.4 Connecting the studio signalling

Connect the studio signalling system to the rear of the Base Station. The wiring of the signalling connector is shown below:

Figure 2-4. Signalling connector
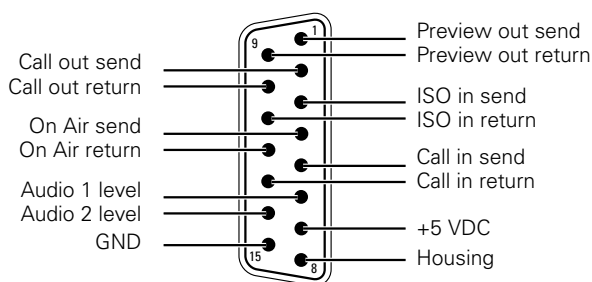
There are several connection methods for the ISO (On-Air Yellow), On-Air and Call signalling functions: **dry contact**, **common ground**, **voltage level** and **open circuit/voltage level.**

A selection in the SYSTEM > SIGNALLING menu allows you to make the activity state of the function (Active or Inactive) correspond to a particular input signal. There are two leads for each connection - Send and Return.

Signalling function	Send pin	Return pin
ISO	3	11
On-Air	4	12
Call	2	10

2.4.1 Dry contact

Figure 2-5. Dry contact
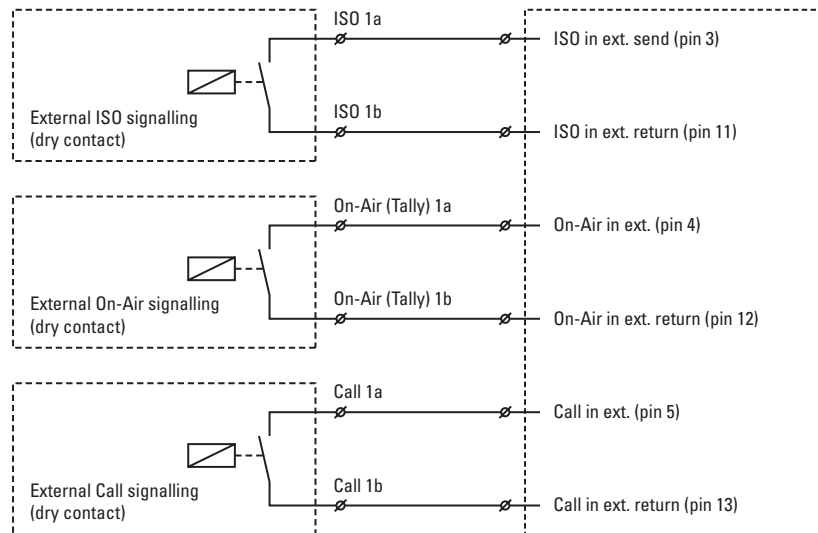
☞ **Note**

A common return (not ground!) can be used for all three functions (ISO, On-Air and Call)

If a contact is closed, the corresponding function is Active or Inactive, depending on the selection the SYSTEM > SIGNALLING menu:

Menu setting	Input is shorted:	Input is open:
LH (low-high)	Function is Active	Function is Inactive
HL (high-low)	Function is Inactive	Function is Active

Dry contact with multiple Base Stations

This is an example of an On-Air signalling with multiple Base Station using a common contact.

Figure 2-6. Dry contact with common contact
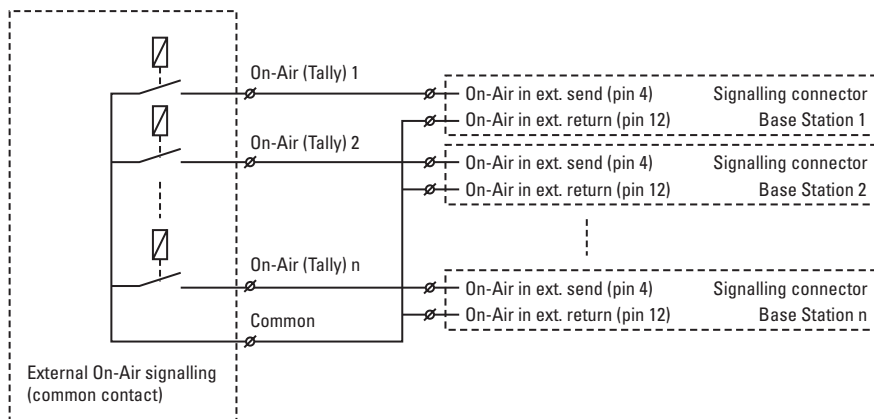
☞ Note

Use either Send or Return only, but do not mix.

If a contact is closed, the corresponding function is Active or Inactive, depending on the selection the SYSTEM > SIGNALLING menu:

Menu setting	Input is shorted:	Input is open:
LH (low-high)	Function is Active	Function is Inactive
HL (high-low)	Function is Inactive	Function is Active

2.4.2   Common ground

Figure 2-7. Common ground
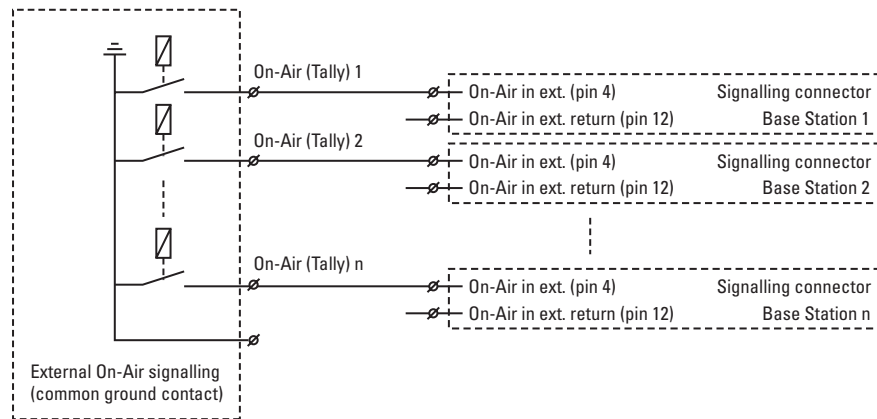
Figure 2-8. Common ground using returns
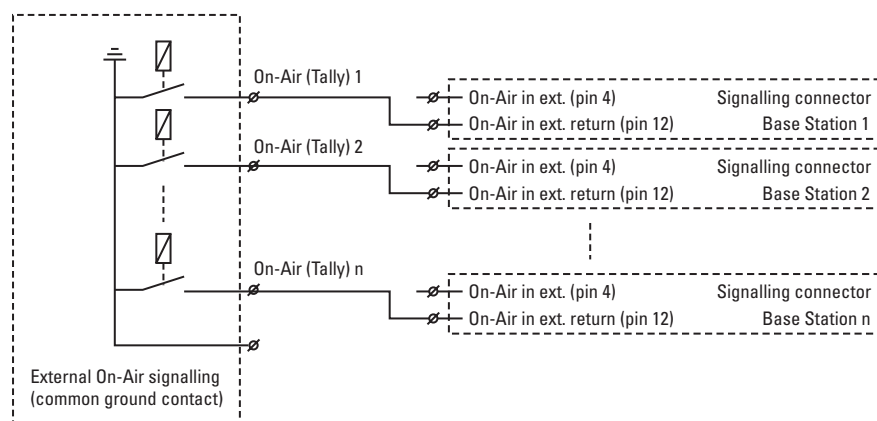
☞ **Note**

Ensure that a reliable ground coupling exists between the control device ground and the Base Station ground.

If a contact is closed, the corresponding function is Active or Inactive, depending on the selection the SYSTEM > SIGNALLING menu:

Menu setting	Input is shorted:	Input is open:
LH (low-high)	Function is Active	Function is Inactive
HL (high-low)	Function is Inactive	Function is Active

2.4.3 Voltage level

Figure 2-9. Voltage level
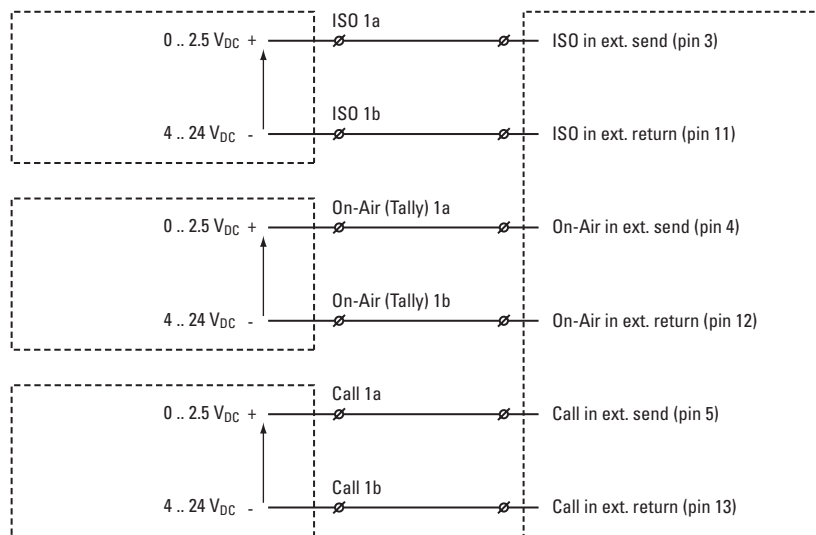
Apply a DC voltage to the inputs (respect polarity). If the voltage is low (0 to 2.5 VDC), the function is Active (or Inactive). If the voltage is high (4 to 24 VDC) the function is Inactive (or Active). The function state depends on the selection the SYSTEM > SIGNALLING menu:

Menu setting	Input is 0 to 2.5V:	Input is 4 to 24V:
LH (low-high)	Function is Active	Function is Inactive
HL (high-low)	Function is Inactive	Function is Active

2.4.4   Open circuit/Voltage level

Figure 2-10. Open circuit/Voltage level
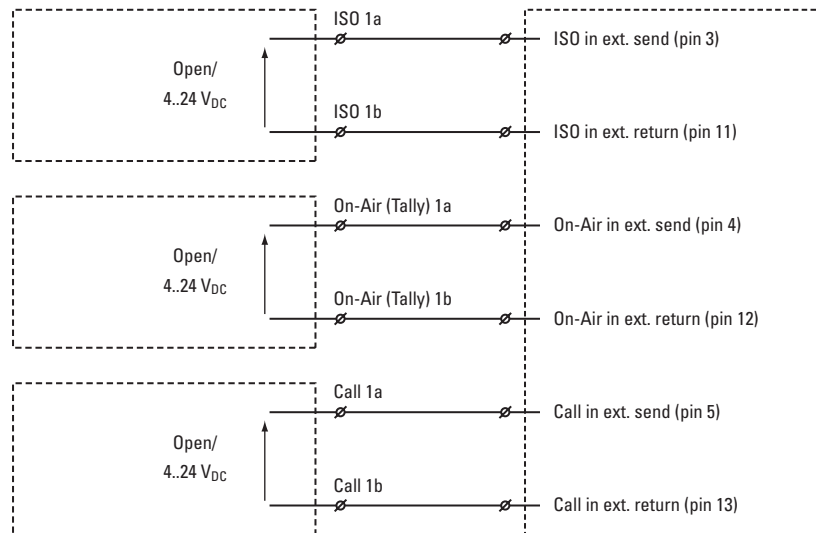
Leave the circuit open or apply a DC voltage to the inputs (respect polarity). If the circuit is open, the function is Active (or Inactive). If the voltage is high (4 to 24 VDC) the function is Inactive (or Active). The function state depends on the selection the SYSTEM > SIGNALLING menu:

Menu setting	Input is open:	Input is 4 to 24V:
OH (open-high)	Function is Active	Function is Inactive
HO (high-open)	Function is Inactive	Function is Active

2.5 External audio level control

The camera audio level for channel 1 and 2 can be externally controlled by the Base Station. In the camera menu, go to the INSTALL > AUDIO > AUDIO GAIN MODE item and select **Ext**.

On the OCP 400, push the **SETUP** button and choose the Cam(era) submenu. Use the **NEXT** button to scroll to the REM AUDIO menu and select **Rem**.

Apply a DC voltage to pins 6 and 14 of the signalling connector to control the levels of audio channels 1 and 2 respectively, as shown in the figure below:

Figure 2-11. Audio level control
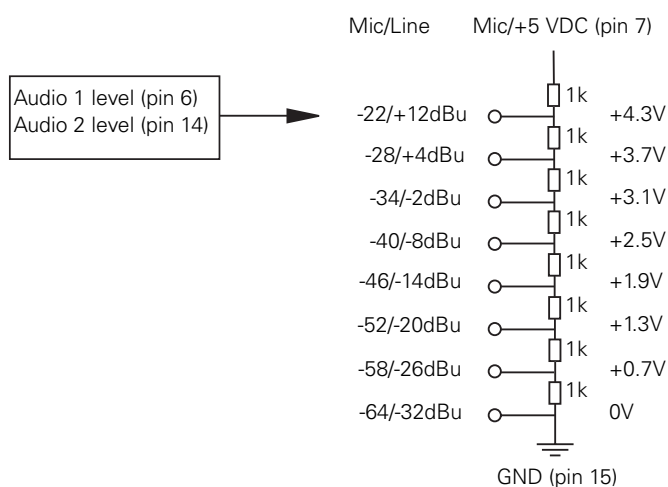
The actual audio level depends on the setting of the selection switches at the back panel of the camera adapter. When Mic is selected, the maximum gain level is -64 dBu, while maximum Line level is -32 dBu.

2.6 Auxiliary connections

2.6.1 Private data

Private data channels can be used for the transmission of serial data via the transmission cable. For example, electronic scriptboard or character data for a video display unit or pan and tilt data can be transmitted to the camera.

The tracker microphone intercom channel is used for the data channel from camera head to Base Station. The program intercom channel is used for the data channel from Base Station to camera head. The input and output signals are available on the auxiliary connectors of the camera and Base Station. If a channel is used for private data, then of course the original functions are no longer available.

Figure 2-12. Private data on auxiliary connector
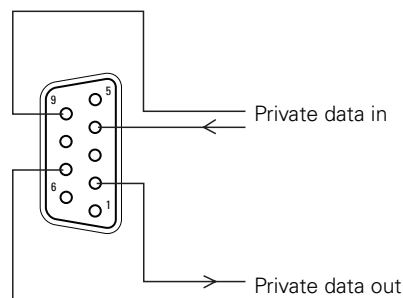
To select the function of the Base Station to camera channel set the Base Station menu item AUDIO > INTERCOM > INTERCOM > PRIVATE DATA > PROG CHANNEL to **Private**.

To select the function of the Camera to Base Station channel set the Base Station menu item AUDIO > INTERCOM > INTERCOM > PRIVATE DATA > TRACKER CHANNEL to **Private**.

Remember that the propagation-delay times are different for different cable lengths, especially if a return signal is involved. At maximum lengths of 2,400 metres the total delay is at least 25 µs and can be more than 30 µs depending on the type of cable.

The duty cycle difference between input and output is max. 5%.

Function	Value
Baudrate	2,400 bits/sec typical; 4,800 bits/sec max.
Input level	TTL, possible RS-232 ("0"= 0V +/- 0.5V; "1"= 5V +/- 0.5V)
Input impedance	100 kΩ
Output impedance	150 Ω
Max. load	approx. 1 kΩ

Chapter 3

Setup

3.1 Base Station controls and indicators

Figure 3-1. Base Station controls

Control or indicator	Description	
Display	During normal operation the display shows the number of the camera connected to the Base Station. When the set-up control (located behind the left front cover) is activated, the display shows a two letter code to identify the setup function . The display can be switched on or off via the Base Station menu system.	
Intercom volume control	Adjusts the volume of the selected intercom channel being monitored on the connector below.	Only available when the optional LDK 4541 2-channel Engineering intercom module is installed.
Intercom selection switch	Use this switch to select the intercom channel that is monitored on the connector below.	
Camera communication indicator	This green LED lights when the communications between Camera and Base Station are OK.	
On Air and ISO indicators	The red LED lights when the Camera is On Air. If the Camera is selected as ISO Camera the yellow LED lights.	
Power switch	Switches the power supply to the Base Station on and off. A built-in light lights to indicate that the power is On.	

Control or indicator	Description
Base Station indicator	This green LED lights when the Base Station is operationally ready.
Camera indicators	These bi-colour Test LEDs lights red or yellow to indicate the camera and transmission status.

Refer to the chapter "Base Station diagnostic indicators" on page 41 for more information about these indicators.

3.2   Setting up the Base Station

The Base Station is set up using either:

1.   The internal Base Station (BS) menu behind the front cover of the Base Station or

2.   An OCP 400 attached to the Base Station

3.2.1   Using the internal BS menu to set up the Base Station

Push the clasp at the bottom of the left front cover to the left and remove the front cover to access the Rotary/Push button on the Data Board:

Left front   Open
cover   clasp
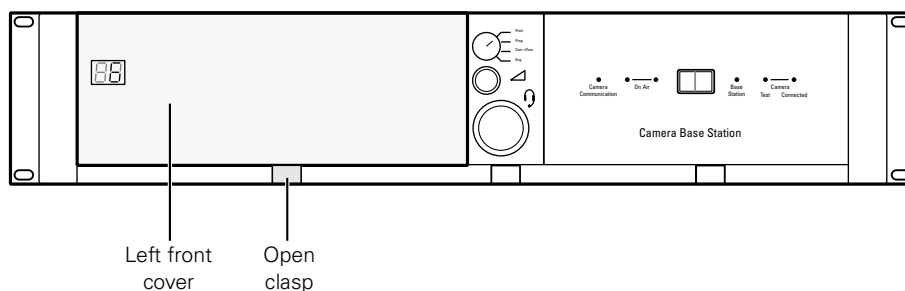
Rock the button to the left or right to select the required item. The display shows the abbreviation of the selected item.

Segment   Rotary /
display   Push button
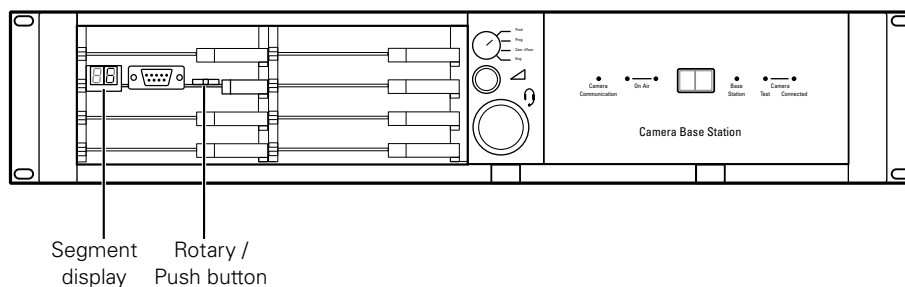
There are four items that can be accessed via the internal menu:

System menu

When "NN" is displayed, push the Rotary/Push button twice to enter the System Menu. The Rotary/Push button can be used to navigate through the menu system, however, it is more convenient to use the OCP 400 connected to the Base Station.

☞ Note

When accessed from the internal menu, the Base Station user level is set to **Operator**.

Camera number

When "CA" is displayed, push the Rotary/Push button to enter the selection mode. Rock the button to the left or right to select an available camera number. Push the Rotary/Push button to set the new camera number. The Base Station automatically resets and the new camera number is shown in the display.

Subcarrier Phase adjusment

When "SC" is displayed, push the Rotary/Push button to enter the subcarrier adjustment mode. Rock the button to the left or right to shift the subcarrier phase. If you continue to rock the button, the shift change occurs in bigger steps. Push the Rotary/Push button to leave the subcarrier adjustment mode.

☞ Note

This item is only available when a reference signal is present.

H-Phase adjustment

When "HP" is displayed, push the Rotary/Push button to enter the H-Phase adjustment mode. Rock the button to the left or right to shift the H-Phase. If you continue to rock the button, the shift change occurs in bigger steps. Push the Rotary/ Push button to leave the H-Phase adjustment mode.

☞ Note

This item is only available when a reference signal is present.

3.2.2 Using the OCP 400 to set up the Base Station

The OCP 400 can be used to set up the Base Station instead of the Rotary/Push button.

1. Push the **Setup Menu** button on the OCP to open the menu.

2. Push the selection button to choose the BS submenu.
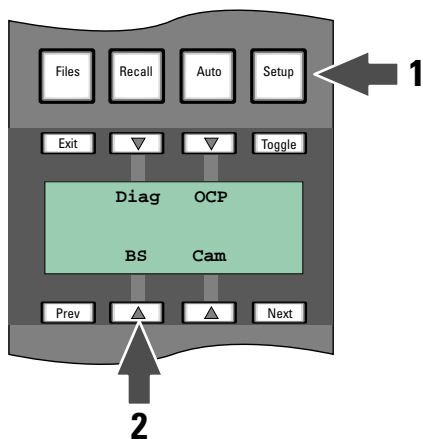
The BS submenu appears. Use the **Next** button to view subsequent pages.

Table 3-2. Base Station set-up menu

Menu	Selections	Function	Level	Possible values
BS	MONITORING	Picture monitor selection	S	CVBS, R,G,B, Y, EXT1, EXT2, Y/EXT1, Y/EXT2
	-			
	-			
	MENU	BS internal menu enable	S	
Next	H PHASE	Adjustment H-Phase	B	0..99
	SC COARSE	Adjustment Subcarrier phase (coarse)	B	0, 90, 180, 270
	-			
	SC FINE	Adjustment Subcarrier phase (coarse)	B	0..99
Next	NOTCH LVL	Notch Depth (composite out only)	B	0..99
	NOTCH	Notch function (composite out only)	B	On, Off
	-			
	-			

Select the **MENU** item of the BS menu to access the internal menu of the Base Station. The internal menu appears on the Base Station Text output and CVBS output (if switched on).

Table 3-3. Base Station internal menu

Menu	Selections	Function	Level
BS internal menu	UP*	UP menu	S
	-		
	DOWN*	DOWN menu	S
	SELECT	Select item	S

* Or use the rotary contol on the OCP to move up or down through the menu.

☞ Note

When accessed from the OCP 400, the Base Station user level is set to **Operator**.

3.3   Using the Base Station system menu

The menu system is used for configuring the Base Station. As there are a large number of functions and set-up options available, it may require some time for you to become familiar with them all.

The System Menu video signal is available on the Text output of the Base Station. The System Menu text can also be superimposed on the CVBS output if desired.

3.3.1   Entering the system menu

Use the Rotary/Push button behind the left front cover to control some basic set-up functions and to navigate through the menu system. The system functions of the Base Station are grouped into menus and sub-menus. Rotate the Rotary/Push button to the left or right to select the Systems Menu. The display shows the abbreviation "NN". Push the Rotary/Push button twice to enter. The Main menu appears on the monitor.

Figure 3-4. Main menu
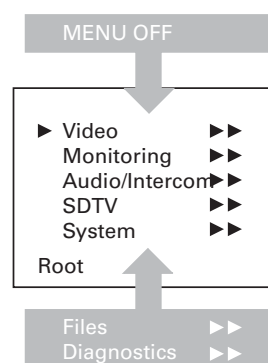
The main menu screen shows five items and the name of the menu. One more item is hidden but becomes visible when you scroll down. A cursor shows your position in the menu. The Rotary/Push button moves the cursor up and down.

3.3.2 Finding your way

Use the Rotary/Push button to move the cursor through the menu items. If a double arrow (>>) is visible, then pressing the Rotary/Push button brings you one level lower in the menu system. Only five items are visible in each menu. Scroll up or down to see any additional items.

When you first enter a menu (other than the main menu) the cursor is positioned next to the first item. The TOP and PREVIOUS entries are not immediately visible but are located above the first item. Use the Rotary control to scroll up to them.

• Select TOP to bring you back to the MAIN menu.

• Select PREVIOUS to go back to the menu that you were in before the current one.

Figure 3-5. System menu
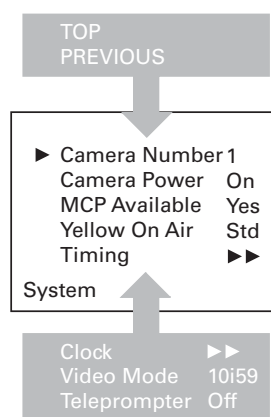
The SYSTEM menu above shows the items displayed when you first enter the menu and the other items that are available by scrolling up or down with the Rotary control.

3.3.3 Leaving the Systems Menu

If you are deep within the menu structure, follow these steps to leave:

• If necessary move the cursor to the left most column with the Rotary/Push button.

• Scroll upwards until the cursor points to TOP (this is the main menu).

• Press the Rotary/Push button. The cursor now points to the Menu off item of the MAIN menu.

• Press the Rotary/Push button to leave the system menu.

This is the recommended way of leaving the system menu. The menu system disappears after a few seconds when you stop navigating. This delay can be set in the MONITORING > MENU menu. However, when you enter the system menu again you enter at the last position of the cursor and not at the top of main menu. To prevent confusion the next time you enter the system menu, it is advisable to leave the system menu by returning to the main menu (TOP) and selecting MENU OFF.

3.3.4 Making changes

To find out where to change a function, consult the List of System Menu Functions at the end of this section to find out under which menu group or subgroup the function is located. If the cursor points to an item (and there are no double arrows to indicate a sub-menu) then the item pointed to has a value. The value can be:

- a toggle value (only two values)

- a list value (more than two values)

- an analogue value (variable from 00 to 99)

- or unavailable (---).

If the value is unavailable it cannot be changed. This is indicated by three dashes (---). This can occur, for example, when a function is switched off. The analogue values associated with that function are then unavailable. If there are only two values associated with the function, then pressing the Rotary/Push button toggles between these two values. If a value is displayed next to a function that is one of several possible values, then pressing the Rotary/Push button places the cursor in a list menu indicating the value currently selected. Use the Rotary/Push button to point to a new value.

Press the Rotary/Push button to return the cursor to the function list. If an analogue value is displayed next to a function name, then pressing the Rotary/Push button places the cursor in front of the value and the Rotary/Push button is used to change the analogue value. Press the Rotary/Push button to return the cursor to the function list.

3.3.5 Using the Recall File to undo changes

If you make changes to the settings in the Systems menu and you decide not to keep them, use the Recall File function to recall a standard or stored set of values for the parameters. These files are available in the FILES menu.

3.3.6 Base Station user levels

The menu items are divided into two user levels. The operator level (O) is default accessible. Menu items with user level Install (I) are only accessible if the menu level is set to **Install**. To enter the Install level proceed as follows:

1. Enter the menu.

2. Navigate to the MONITORING > MENU > MENU LEVEL item.

3. Set the Menu level to **Inst**.

The purpose of the user levels is to restrict the set of functions which can be changed by whoever is using the Base Station. In this way a the danger of the operator accidentally changing critical functions while shooting is reduced.

The chapter ' indicates which functions are available at each user level.

☞ Note

When accessed from the internal BS menu, the Base Station user level is set to **Operator** while the user level is set to **Install** when accessed from the OCP 400.

3.4 Reference and timing set up

3.4.1 Basic signal processing

The Base Station can be synchronized with HD Trilevel or SD Black Burst. Both references can be adjusted to match the SD and HD output signals. This is an overview of the Base Station output signal paths:
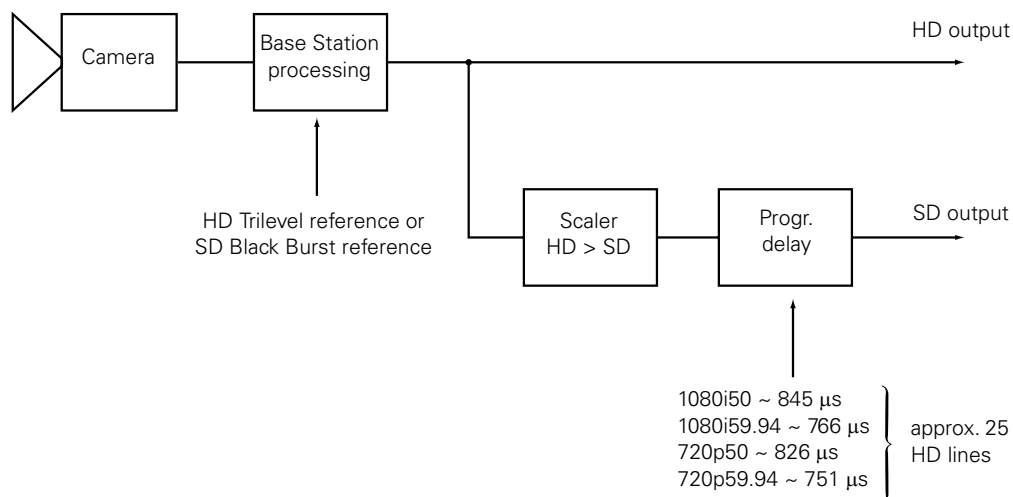
The default settings for the Base Station reference signals are:

• The 1st reference is HD Trilevel: the HD output is in time with the HD Trilevel while the SD output signal is delayed.

• The 2nd reference is SD Black Burst: the SD output is in time with the SD Black Burst while the HD output signal is advanced.

☞ Note

There is always a processing delay in the SD output with respect to the HD video outputs.

3.4.2   Adjustment procedure for HD timing
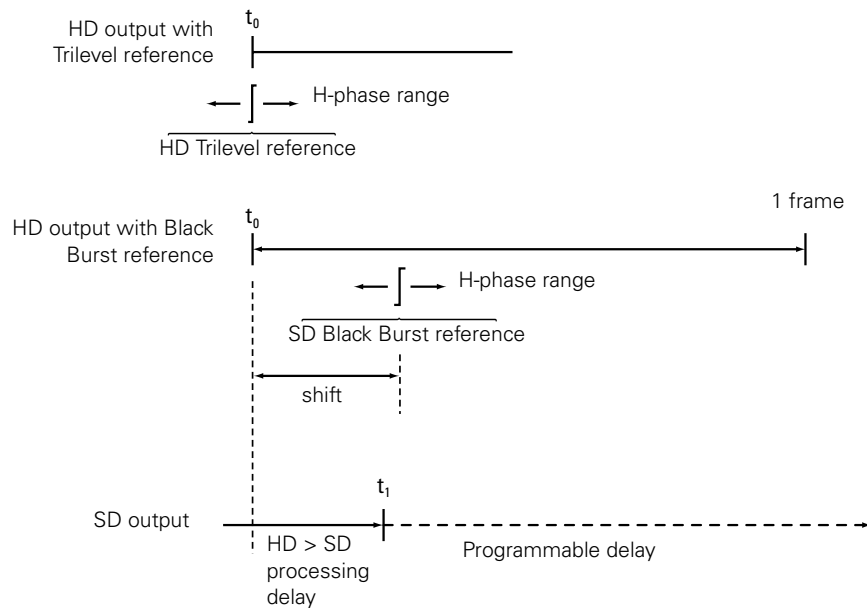
✎ Tip

If HD Trilevel reference is used, the HD output is in sync with the HD Trilevel reference. A timing offset can be set with the SYSTEM > TIMING > H PHASE COARSE and H PHASE COARSE items of the base statio menu.

HD output with Black Burst reference

The SD output is in sync with the Black Burst reference. The HD output signal is ahead in time with respect to the Black Burst reference. The HD signal can be shifted with respect to the Black Burst reference, until it is in time with the HD output. The delay between HD and SD outputs remains the same after this adjustment.

1.   Enter the Base Station menu in service mode:
     MONITORING > MENU > MENU LEVEL > INST > SERVICEMODE > EXEC > YES

2.   Adjust the Black Burst timing with the following items:
     SYSTEM > TIMING > SHIFT > PIXEL HIGH ,PIXEL LOW ,LINES HIGH ,LINES LOW

☞ Note

This adjustment must be done for each video mode. The last setting for each of these modes will be memorized.

3.4.3 Adjustment procedure for SD timing

The SD output is delayed with respect to the HD output. The SD output can be further delayed until both outputs are synchronous, but shifted over a single frame. The adjustment of the delay ranges from the minimal processing time to more than 1 frame.

1. Enter the Base Station menu in service mode:
    MONITORING > MENU > MENU LEVEL > INST > SERVICEMODE > EXEC > YES

2. After factory delivery there is a fixed minimum delay between HD and SD outputs:
    SDTV > TIMING > COMP

3. Set the SDTV Timing to Variable:
    SDTV > TIMING > VAR

4. Adjust the SD output delay using the following items:
    SDTV > TIMING > SYNC SHIFT PIXELS and SHIFT LINES

☞ **Note**

This adjustment must be done for each video mode. The last setting for each of these modes will be memorized.

☞ **Note**

The CVBS viewing output is a non-standard output and the SD output delay adjustment does not apply to this output.

✎ **Tip**

HD-Trilevel sync does not contain 4-field (NTSC) or 8-field (PAL) sequence information and therefore will be random. If this is required Black Burst reference should be used.

3.5 Intercom set up

The studio camera systems offer extensive intercom facilities between cameraman, tracker (floor man), Base Station and studio. To help you set up and operate the intercom system, the following controls are available:

- Base Station menu system

- Camera head menu system

- Base Station front panel selection switch (optional)

- Camera head adapter rear panel

- Camera head switches

When setting up a system it is usually more convenient to use an OCP 400 to select your preferences in both the Base Station and camera head menu systems.

☞ Note

For a fully-featured intercom system, the Base Station must be fitted with an LDK 4540/10 2 channel audio & 2/4-wire intercom module and an LDK 4541/10 2 channel Engineering intercom module, both of which are optionally available. If either of these modules is absent, the associated features outlined below are not available.

3.5.1 Base Station - studio interface set-up

A four-wire or a two-wire studio system can be connected to the Base Station. In the Base Station AUDIO > INTERCOM menu, select the Wire Mode for engineering (ENG), production (PROD) and programming (PROG). By default these values are set to four-wire.

Isolate

The isolate function completely disconnects the Base Station intercom from the studio system. The function can be switched locally or remotely via the OCP 400.

Levels

In the four-wire mode the menu gives you a choice of either a 0dBu or a +6dBu signal level. In the two-wire mode this level is set to 0dBu.

- Set the input and output intercom levels for the PROD and ENG channels. The range is 00 to 99; default is 50.

- Set the input level for the PROG channel.

- Set the levels for the sidetone in a two-wire system in this menu.

3.5.2 Base Station headset set-up

☞ Note

The headset facilities are only available on Base Stations fitted with the LDK 4541/10 2 channel Engineering intercom module which is optionally available.

A headset connected to the front of the Base Station is set-up via the AUDIO > INTERCOM menu of the Base Station using the ENG headset submenu. In this menu you can select a 12 VDC phantom supply for the headset microphone and set the microphone level to 0 dB or +20 dB.

The cameraman microphone signal and the tracker (floor) microphone signal can be individually switched on for the headset and the levels for each can be set. You can switch on a sidetone from the Base Station microphone and set its level.

The Base Station microphone signal is added to the ENG channel. Use the MIC ENG-OUT function in the menu to send it to the studio engineering channel. Use the MICTOENG-CAM function to send it to the camera.

Operation

The signal to the headset is controlled with a switch in the front of the Base Station which selects the intercom signal to be heard in the Base Station headset. The choices are:

- PROD (production)

- PROG (programming)

- CAM+FLOOR (cameraman and tracker)

- ENG (engineering)

If CAM+FLOOR is selected, the signal that is heard depends on the values set in the ENG Headset submenu for the CAMERAMIC and TRACKERMIC signals in the AUDIO > INTERCOM menu of the Base Station.

☞ Note

If you have selected to operate a bi-directional private data channel between the Base Station and the camera in the AUDIO > INTERCOM menu of the Base Station, then the tracker microphone signal is not available in the Base Station and the Program signal is not available in the camera.

3.5.3   Voice mail

Voice Mail is an intercom message storage function.

☞ Note

Voice mail is only available if the AUDIO > INTERCOM > CALL item is set to **voice**.

Recording

Recording starts automatically at the start of a message. A new message erases the previous recorded message. The maximum message length is 16 seconds. Longer messages are recorded in a retroloop. Only the last 16 seconds are available for playback. Select the intercom channels to be recorded via the Base Station menu items
AUDIO > INTERCOM > VOICE MAIL > RECORD ENG, PROD and PROG.

☞ Note

The voice mail box can only contain one message. If voice mail recording starts from an other intercom channel the previous message is erased.

Listening to the message

Push the camera call button to start playing out the recorded voice mail to the camera headset. Push the call button again to stop playing the voice mail message.

Chapter 4

Maintenance

4.1 Diagnostics

4.1.1 Base Station diagnostic indicators

Figure 4-1. Base Station indicators
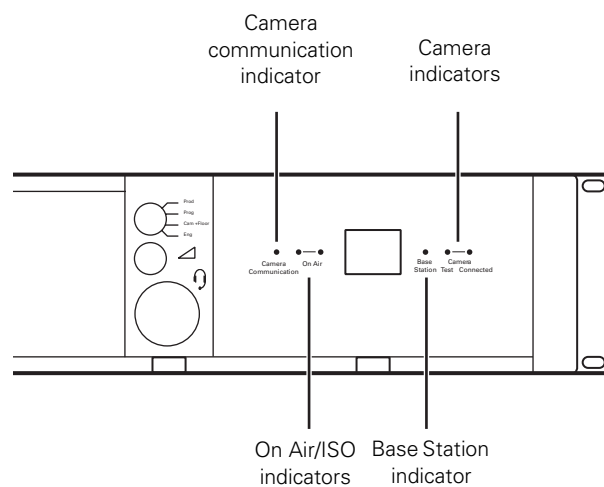
Camera communication indicator

This green LED lights when communication between camera and Base Station is OK.

On Air indicator

This red LED lights when the camera is On Air.

ISO indicator

This yellow LED light when the camera is selected as ISO camera.

Base Station indicator

This green LED lights when the Base Station is operationally ready.

Camera Test indicator

This bi-colour LED lights red or yellow to indicate the Camera and transmission status:

- Red lights continuously – cable short circuit OR an interrupted core. Other indicators of this condition are:
    - OCP: Cable LED red (continuously)
    - MCP: `DIAGNOSE > TRIAX – SHORT`
    - Menu: `DIAGNOSTICS > BOARD DIAGNOSTICS > POWER BOARD > TRIAX STATUS`
    - The interpretation of these messages is given below.
- Red flashes – Cable open circuit (no camera is connected). Other indicators of this condition are:
    - OCP: Cable LED Flashes red
    - MCP: `DIAGNOSE > TRIAX – OPEN`
    - Menu: `DIAGNOSTICS > COMMUNICATIONS > CAMERA CONNECTED – NO`
- Yellow – Camera power switched off with the OCP 400 or MCP 400.

Camera connected indicator

This green LED lights when the camera is connected (and camera power is not switched off by the OCP 400, MCP 400 or Base Station menu)

Communication indicator	Camera Test indicator	Camera Connected indicator	Remark
off	off	green	Camera power is switched off by the camera power switch.
off	yellow	off	Camera power is switched off by the OCP 400, MCP 400 or Base Station menu.

4.1.2   Triax diagnostic indications

The Camera **TEST** LED lights red during these fault conditions.

General precautions to avoid Triax problems

- Only use Triax cable (with three conductors).

- Ensure that all Triax connectors (camera, Base Station and extension cables) fit snugly into each other.

- Verify that there is no interruption in all three conductors of the Triax cable before deploying (including extension Triax cables).

- When using Triax connectors be sure to always make swift and firm connections to avoid unintended fault conditions.

- Verify that there is no short circuit between the outer and inner shield or core.

Core Open

Figure 4-2. Fault conditions for <Core_Open> message
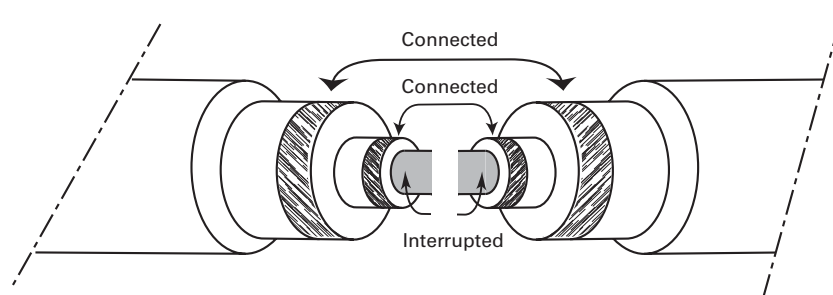
1. Indicates an interrupted core when both shields are connected correctly while the camera is connected.
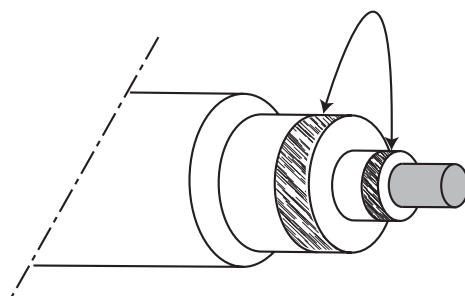
2. Indicates a short circuit between the outer and inner shield while the camera is NOT connected.

Base Station diagnostic message:

DIAGNOSTICS > BOARD DIAGNOSTICS > POWER BOARD > TRIAX STATUS – COPEN

Core Short

Figure 4-3. Fault conditions for <Core_Short> message
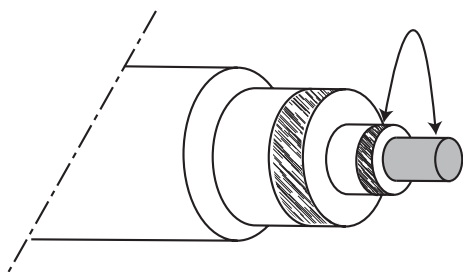
Indicates a short circuit between the core and the inner shield while the camera is NOT connected.
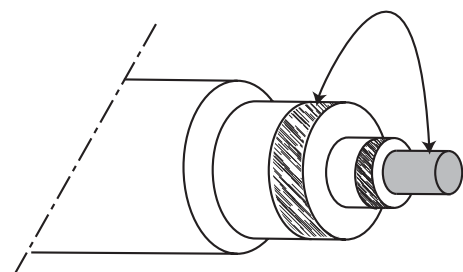
Indicates a short circuit between the core and the outer shield while the camera is NOT connected.

Base Station diagnostic message:

`DIAGNOSTICS > BOARD DIAGNOSTICS > POWER BOARD > TRIAX STATUS – CSHRT`

Shield Open

Figure 4-4. Fault conditions for <Shield_Open> message
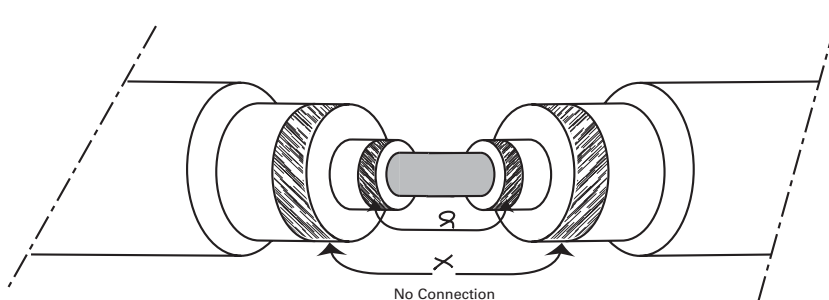
Indicates an interrupted outer shield.

Base Station diagnostic message:

`DIAGNOSTICS > BOARD DIAGNOSTICS > POWER BOARD > TRIAX STATUS – SOPEN`

Total Short

Figure 4-5. Fault conditions for <Total_Short> message
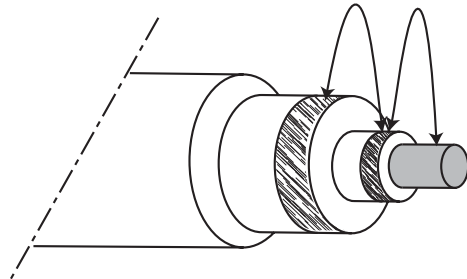
Indicates a short circuit between the inner shield, the outer shield and the core.

Base Station diagnostic message:

DIAGNOSTICS > BOARD DIAGNOSTICS > POWER BOARD > TRIAX STATUS – TSHRT

4.1.3 Sync/Encoder HD board diagnostics

The LED indicators on the Sync/Encoder board show the status of the board and the signal locking as follows:

Figure 4-6. Sync/Encoder HD board
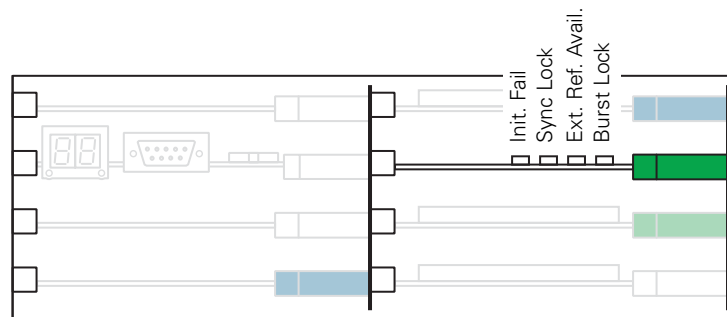
Indicator	Description
Init. Fail	Lights (red) when a configuration or initialisation error occurs or when the bus clock or video synchronization pulses are missing.
Sync Lock	Lights (green) when horizontal and vertical lock are OK.
Ext. Ref. Avail.	Lights (green) when an external synchronization signal is present.
Burst Lock	Lights (green) when the subcarrier/H-phase lock is OK.

4.2 Replacements

4.2.1 Board locations

Figure 4-7. Base Station board locations
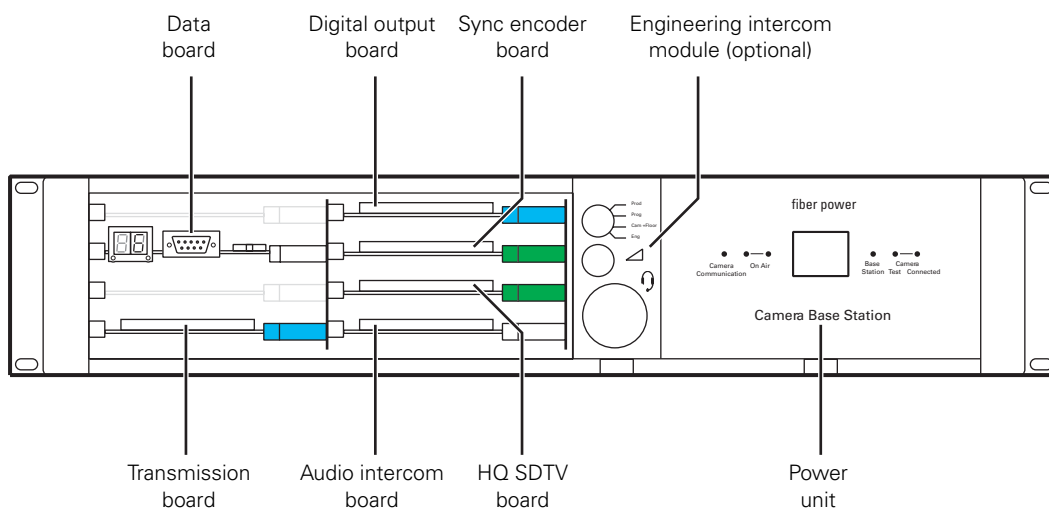
4.2.2 Replacing the power unit

Removing the power unit

- Loosen the screw at the rear of the power unit.

- With your thumb push up the lever, as shown below, and pull the power unit out of the Base Station.

Figure 4-8. Removing the power unit
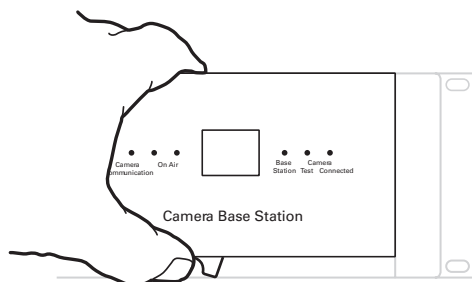
Installing the Power Unit

- Put the power unit into the guides and push until the lock clicks.

- Check that the power unit is correctly locked.

- Tighten the screw at the rear of the Power Unit.

⚠ WARNING

Make sure that the power unit is firmly placed and that the locking lever is in the correct vertical position as indicated below.

Figure 4-9. Locking the power unit
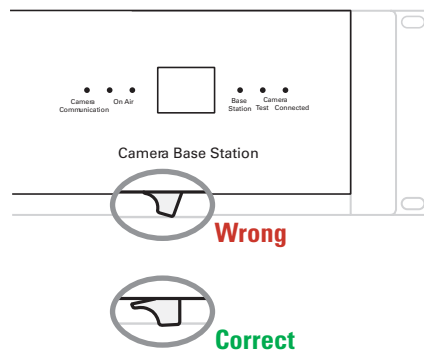
4.2.3   Replacing dust filters

Side-inlet

1.   Remove 4 screws.

2.   Slide back support with dust filter out of Base Station.

3.   Remove dust filter.

4.   Place clean dust filter in back support.

5.   Slide back support with dust filter into Base Station.

6.   Fix support with 4 screws.

Figure 4-10. Replacing side dust filters
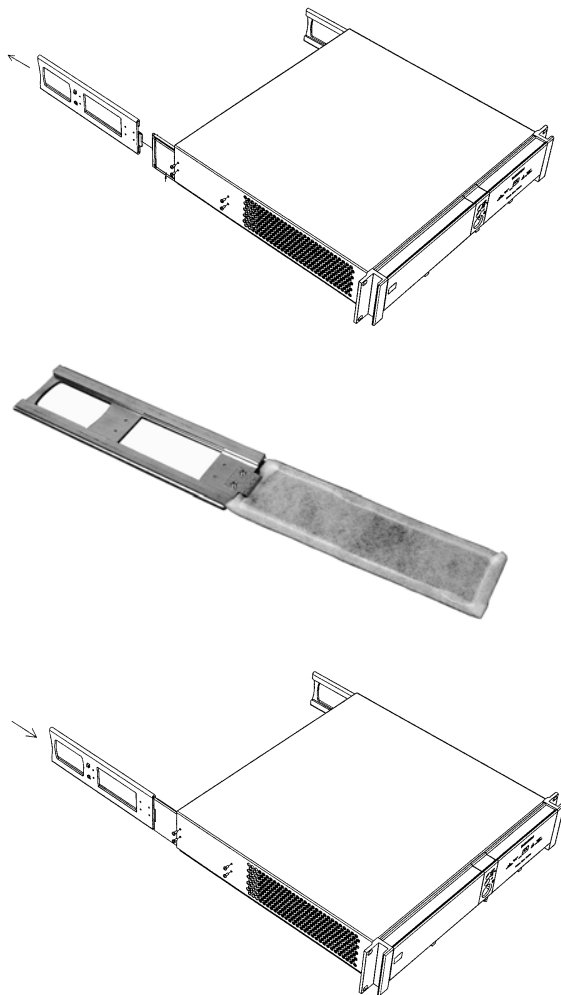
Front-inlet

1. Remove PCB front cover.

2. Remove dust filter.

3. Place clean dust filter.

4. Put back PCB front cover.

5. Remove front cover Power Unit.

6. Remove dust filter.

7. Place clean dust filter.

8. Return front cover Power Unit to its position.

Figure 4-11. Replacing front dust filters

PCB front cover

Power Unit cover
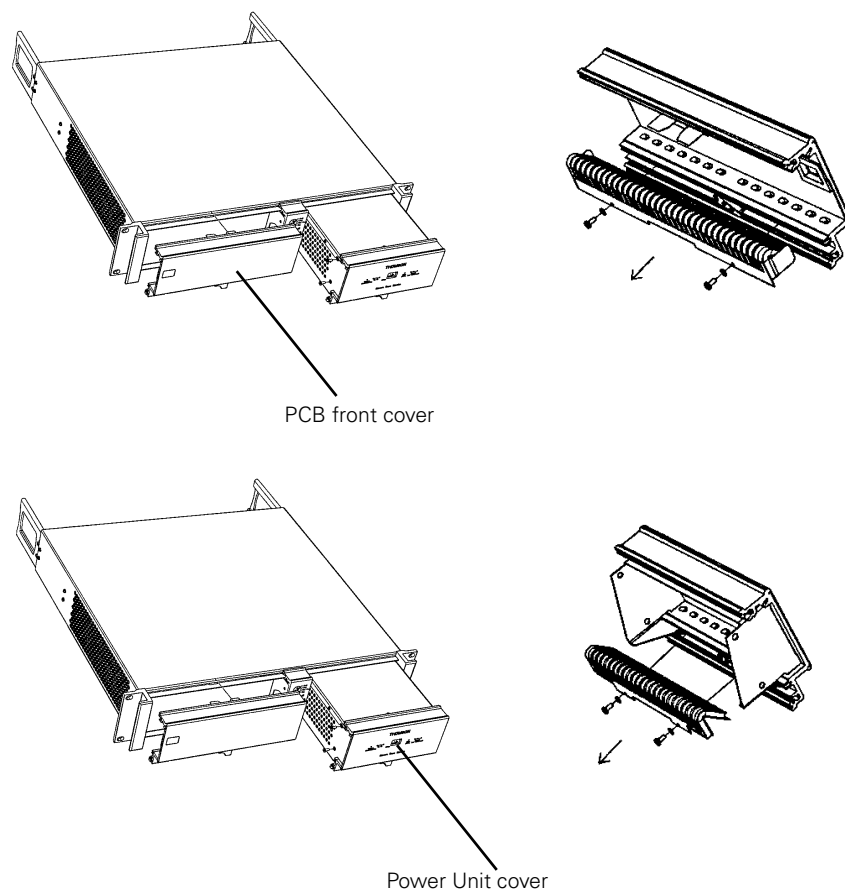
Chapter 5

Menu structure and contents

5.1   Menu structure

The structure of the main menus and their submenus are shown on the following pages. The first column shows the user level: Install ("I") or Operator ("O"). You only see menu functions whose user level is equal to or less than the user level set on your unit. Where appropriate, the default value of the function in the standard factory file is shown after the function.

5.1.1   Top menu structure

Video menu	>>
Monitoring menu	>>
Audio/Intercom	>>
SDTV menu	>>
System menu	>>
Files menu	>>
Diagnostics menu	>>

Video menu - contains those functions which affect the picture quality.

Monitoring menu - contains the functions which determine how items in the video monitor are displayed.

Audio/Intercom - contains those functions which control various aspects of audio and intercom.

SDTV menu - settings related to the SDTV outputs of the Base Station.

System menu - contains functions that are used to set up the general configuration and for carrying out adjustments and calibrations of the Base Station.

Files menu - this menu allows values to be stored in system and operator files, and allows these files to be recalled as required.

Diagnostics menu - is designed to provide information on the current status of the Base Station.

5.1.2   Video menu structure

	Colour Bar	>>
I	Ext Black Clamp	50

O	Colour Bar	Off
I	Colour Bar Type	SMP

5.1.3   Monitoring menu structure

O	Monitoring Source	Y
O	Menu	>>
O	Status bar	>>

O	Display	Time
O	Menu Time	10
O	Menu Level	Oper
O	Service Mode	exec

O	Studio	>>
O	Operator	>>
O	Camera number	Off
O	Cable length	Off

O	Studio	Off
O	Name	-

O	Operator	Off
O	Name	-

5.1.4 Audio/Intercom menu structure

I	Audio Level 1	6dB
I	Audio Level 2	6dB

I	Tracker Channel	Inter
I	Prog Channel	Inter

I	Audio	>>
O	Intercom	>>

	Private Data	>>
	Isolate	>>
	Eng	>>
	Prod	>>
	Prog	>>
	Eng Headset	>>
	Call	Call
	Voice Mail	>>

O	Source	Local
I	Isolate	Syst

I	Wire Mode	4wire
O	Side Tone	50
O	Level	6dB
I	In Ref Level	50
I	Out Ref Level	50

I	Wire Mode	4wire
O	Side Tone	50
O	Level	6dB
I	In Ref Level	50
I	Out Ref Level	50

I	Wire Mode	4wire
O	Level	50
I	In Ref Level	6dB

O	Phantom Power	Off
O	Mic Level	20dB
O	Side Tone	50
O	Mic to Headset	On
O	Cam to Headset	On
O	Cam Volume	50
O	Tracker to Headset	On
O	Tracker Volume	50
O	Mic Eng-Out	On
O	Mic to Eng-Cam	On

O	Record Eng	On
O	Record Prod	On
O	Record Prog	On

5.1.5   SDTV menu structure

O	Chroma	On
I	Level	50

O	Contour	On
O	Source	Y
O	Level	10
O	Vertical Level	50
O	Noise Slicer	6
O	Coarse/Fine	25
O	Level Depend.	25
O	Soft Contour	On
O	Soft Cont. Level	70

Chroma	>>
Contour	>>
Notch	>>
Video Output	CVBS
Aspect Ratio	16:9
NTSC Pedestal	On
Letterbox	Off
Extern Video	>>

I	Notch	Off
I	Level	50

I	SDI Amplitd Ext1	50
I	SDI Amplitd Ext2	50

5.1.6   System menu structure

O	% Max.Spec.Att.	128
O	Size	8mm
O	Remain. Length	5

I	CamComm.Mode	Auto
I	CamComm.Type	Serial

O	IP Config Mode	Auto
O	IP digit 1	169
O	IP digit 2	254
O	IP digit 3	1
O	IP digit 4	1
O	Subnet Mask	24
O	Apply IP settings	exec

	Cable	>>
	Camera Comm	>>
O	Camera Number	99
	IP Address	>>
	Ethernet	>>
	Serial	>>
O	Camera Power	On
I	Control Mode	C2IP
O	No Signal	C.Bar
I	MCP Available	Yes
	Signalling inputs	>>
	Extern Video	>>
	Timing	>>
I	Teleprompter	Off
I	OCP Cont. Mode	hdtv

I	Ethernet Speed	10Mb
I	Ethernet Duplex	Auto

I	Serial Speed	115k2
I	Serial Compress.	Off

O	Yellow On Air	Std
O	Yellow On/Off	Lo/Hi
O	On Air On/Off	Lo/Hi
O	Call On/Off	Lo/Hi

I	Ext. Aspect Ratio	16:9
I	Ext. Video Input	Digit.
I	Ext. Video Source	SDI
I	SDI Chroma Ext1	Off
I	SDI Chroma Ext2	Off

O	H Phase Coarse	50
O	H Phase Fine	50
O	Subcarrier Coarse	180
O	Subcarrier Fine	50
I	Subc H Ph. Coars.	180
I	Subc H. Ph. Fine	50

5.1.7   Files menu structure

```
                                      ┌───┬──────────────────────────┐
                                      │ O │ Operator File      obs1  │
                                      │ O │ Recall             exec  │
                                      │ O │ Store              exec  │
                                      └───┴──────────────────────────┘

                                      ┌───┬──────────────────────────┐
                                      │ O │ Operator File      CUST  │
                                      │ O │ Recall             exec  │
   ┌──┬──────────────────────┐        │ I │ Store              exec  │
   │  │ User Oper. Files  >> │        └───┴──────────────────────────┘
   │  │ Std. Oper. Files  >> │
   │  │ User System Files >> │        ┌───┬──────────────────────────┐
   │  │ Std. System Files >> │        │ I │ System File        sbs1  │
   └──┴──────────────────────┘        │ I │ Recall             exec  │
                                      │ I │ Store              exec  │
                                      └───┴──────────────────────────┘

                                      ┌───┬──────────────────────────┐
                                      │ I │ System File        CUST  │
                                      │ I │ Recall             exec  │
                                      │ I │ Store              exec  │
                                      └───┴──────────────────────────┘
```

5.1.8   Diagnostics menu structure

O	Triax Status	tshrt
O	Local Power St.	NtOK
O	Power Overheatd	Yes
O	Fan	OK

O	Ref. Available	None
O	Burst Lock	No
O	Sync Lock	No
O	Ext1 Input	None
O	Ext2 Input	None

	<Info Board 1>	-
	...	
	<Info Board n>	-

O	Firmware Status	-
O	Boot Software Id	Id
O	Base Station 12nc	3307
O	Software Status	-
O	Eth. MAC	-
O	Eth. Link Type	Unk.
O	Eth. Link State	Conn.

	Camera Type	LDK
	BS Type	LDK
	Board ID	>>
	Board Diagnostics	>>
	Transm. Diag.	>>
	Comm. Diag.	>>

	Power Board	>>
	Sync/Enc. Board	>>
	Data Board	>>
	Audio/Iintercom	>>
	Eng Headset	>>
	Ext Video Input	>>

O	Self Test	exec
O	Eng T. Tone Int.	-
O	Prod T. Tone Int.	-
O	Prog T. Tone Int.	-
O	Eng T. Tone Stu.	-
O	Prod T. Tone Stu	-

O	Transm. System	Unkn
O	Carrier Detected	No
O	DataICom Muted	No

O	Self Test	exec
O	Test Intern	-
O	Test Studio	-
O	Test Tone Mic. BS	Off
O	Test Tone Tr/Fr Mi	Off
O	Test Tone Cam Mi	Off

O	Cam Connected	No
O	C2IP Panels	1

O	Carrier Eq. Ext1	No
O	Carrier Rcve Ext1	No
O	SDI Lock Ext1	No
O	SDI TV Sys Ext1	625
O	Carrier Eq. Ext2	No
O	Carrier Rcve Ext2	No
O	SDI Lock Ext2	No
O	SDI TV Sys Ext2	625
O	BS TV System	PAL

5.2   Menu contents

All items in the table are visible at the install user level. However, if an item is not relevant it is not shown.

The *Oper* in the Level column indicates that this item is visible at the Operator user level; the *Inst*all indicates that this item is visible at the Install user level.

The *Scene* in the File column indicates that the value of this item is stored in the Scene file; the *Sys* indicates that the value of this item is stored in the System file; the *Oper* indicates that the value of this item is stored in the Operator file.

In the Values column, the default values of the item are shown in **bold**.

5.2.1   Video menu

Menu item	Values	Description	Level	File
Colour Bar				
Colour Bar	On, **Off**	Turns colour bar on or off (when no camera signal is present/detected)	Oper	Scene
Colour Bar Type	**SMPTE**, Full	Selects the colour bar type.	Install	Sys
Ext Black Clamp	0..99 **(50)**		Install	Sys

5.2.2   Monitoring menu

Menu item			Values	Description	Level	File
Monitoring source			R, G, B, **Y**	Selects signal on monitoring HDTV analog output.	Oper	Scene
Menu						
	Display		On, **Time**	Selects the menu display to be permanently on (visible) or to disappear after set time.	Oper	Oper
	Menu Time		5..99 **(10)**	Sets the length of time the menu is displayed when the Display mode is set to Time.	Oper	Oper
	Menu Level		**Oper**, Inst, (Serv)	Sets the user access level for the menu.	Oper	-
	Service Mode		Exec > Are your sure?	Enter the service access level.	Oper	-
Status bar						
	Studio					
		Studio	On, **Off**	Displays the studio name in the status bar.	Oper	Oper
		Name	<studio name>	Edit the studio name string value.	Oper	-
	Operator					
		Studio	On, **Off**	Displays the operator's name in the status bar.	Oper	Oper
		Name	<operator name>	Edit the operator's name string value.	Oper	-
	Camera Number		On, **Off**	Displays the camera number in the status bar.	Oper	Oper
	Cable Length		**Off**, Perc, Lngth	Displays the cable length in percentage used or length left.	Oper	Oper

5.2.3 Audio/intercom menu

Menu item			Values	Description	Level	File
Audio						
	Audio Level 1		0dB, **6dB**	Selects studio audio attenuation for input 1.	Install	Sys
	Audio Level 2		0dB, **6dB**	Selects studio audio attenuation for input 2.	Install	Sys
Intercom						
	Private Data					
		Tracker Channel	**Inter**, Priva	Private data channel from camera to Base Station.	Install	Sys
		Prog Channel	**Inter**, Priva	Private data channel from Base Station to camera.	Install	Sys
	Isolate					
		Source	**Local**, Rmote	Local = settings are available in the Base Station menu; Rmote = settings are available in the MCP	Oper	Oper
		Isolate	Isol, **Syst**	Isol = Isolate PRGM and PROD intercom to camera head with EGNG available; Syst = isolate is off	Install	Install
	Eng					
		Wire Mode	2wire, **4wire**	Selects studio intercom wiring mode.	Install	Sys
		Side Tone	0..99 **(50)**	Sets side tone (headset feedback) volume level.	Oper	Oper
		Level	0dB, **6dB**	Selects intercom channel attenuation.	Oper	Oper
		In Ref Level	0..99 **(50)**	Sets input reference level.	Install	Sys
		Out Ref Level	0..99 **(50)**	Sets output reference level.	Install	Oper
	Prod					
		Wire Mode	2wire, **4wire**	Selects studio intercom wiring mode.	Install	Sys
		Side Tone	0..99 **(50)**	Sets side tone (feedback) volume level.	Oper	Oper
		Level	0dB, **6dB**	Selects intercom channel attenuation.	Oper	Oper
		In Ref Level	0..99 **(50)**	Sets input reference level.	Install	Sys
		Out Ref Level	0..99 **(50)**	Sets output reference level.	Install	Oper
	Prog					
		Wire Mode	2wire, **4wire**	Selects studio intercom wiring mode.	Install	Sys
		Level	0dB, **6dB**	Selects intercom channel attenuation.	Oper	Oper
		In Ref Level	0..99 **(50)**	Sets input reference level.	Install	Sys
	Eng Headset					
		Phantom Power	On, **Off**	Turns microphone phantom power (+12 VDC) on or off.	Oper	Oper
		Mic Level	0dB, **20dB**	Sets headset microphone sensitivity level.	Oper	Oper
		Side Tone	0..99 **(50)**	Sets headset side tone (feedback) level.	Oper	Oper
		Mic to Headset	**On**, Off	Turns headset side tone on or off.	Oper	Oper

Menu item			Values	Description	Level	File
		Cam to Headset	**On**, Off	Turns camera ENG channel to headset routing on or off.	Oper	Oper
		Cam Volume	0..99 **(50)**	Sets camera ENG channel to headset level.	Oper	Oper
		Tracker to Headset	**On**, Off	Tracker ENG channel to headset.	Oper	Oper
		Tracker Volume	0..99 **(50)**	Sets tracker ENG channel to headset level.	Oper	Oper
		Mic Eng-Out	**On**, Off	Headset to Base Station ENG output	Oper	Oper
		Mic to Eng-Cam	**On**, Off	Headset to camera ENG channel	Oper	Oper
	Call		**Call**, Voice	Selects action for the Call function.	Oper	Oper
	Voice Mail					
		Record Eng	**On**, Off	When turned on, intercom messages from the Engineering channel are recorded.	Oper	Oper
		Record Prod	**On**, Off	When turned on, intercom messages from the Production channel are recorded.	Oper	Oper
		Record Prog	**On**, Off	When turned on, intercom messages from the Program channel are recorded.	Oper	Oper

5.2.4   SDTV menu

Menu item	Values	Description	Level	File
Chroma				
Chroma	**On**, Off	Turns chroma on or off (only for CVBS output).	Oper	Oper
Level	0..99 **(50)**	Sets chroma level (only for CVBS output).	Install	Syst
Contour				
Contour	**On**, Off	Turns contour on or off.	Oper	Scene
Source	G, R, **Y**, R+G	Selects the source to be used for contour generation.	Oper	Scene
Level	0..99 **(10)**	Sets contour level.	Oper	Scene
Vertical Level	0..99 **(50)**	Sets the level of the vertical component in the contour signal.	Oper	Scene
Noise Slicer	0..99 **(6)**	Sets the level of the noise slicer.	Oper	Scene
Coarse/fine	0..99 **(25)**	Sets the coarseness of the contour (0 = very fine)	Oper	Scene
Level Dependence	0..99 **(25)**	Sets the dependency level for the noise slicer.	Oper	Scene
Soft Contour	**On**, Off	Turns soft contour on or off. This function reduces the amount of contour added for large transitions.	Oper	Scene
Soft Contour Level	0..99 **(70)**	Sets the upper limit level for soft contour.	Oper	Scene
Notch				
Notch	On, **Off**	Turns notch filter on or off (only for CVBS output).	Install	Scene
Level	0..99 **(50)**	Sets notch filter level (only for CVBS output).	Install	Scene
Video Output	GRB, YPrPb, **CVBS**, Off	Select signal type for the options outputs	Install	Scene
Aspect Ratio	**16:9**, 4:3	Selects aspect ratio for SDTV signal.	Install	
Letterbox	**Off**, 16:9	Selects letterbox function (only when aspect ratio = 4:3)	Install	
NTSC Pedestal	**On**, Off	Turns NTSC pedestal on CVBS output on or off.	Install	
Extern Video				
SDI Amplitude EXT1	0..99 **(50)**	Sets the video signal amplitude for EXT1 (only when External video input module is installed)	Install	
SDI Amplitude EXT2	0..99 **(50)**	Sets the video signal amplitude for EXT2 (only when External video input module is installed)	Install	

5.2.5   System menu

Menu item	Values	Description	Level	File
Cable				
% of max. Spec. Att.	0..255 (**128**)	Show the percentage of attenuation that is occuring with respect to the maximum specified value.	Oper	
Size	**8mm**, 11mm, 14mm, 3/8", 1/2", 5/8"	Selects the diameter of Triax cable in use.	Oper	
Remaining Length (mtr)	0..5000 (**5**)	Displays the length of Triax cable that still can be attached (in meters).	Oper	
Camera Comm				
CamComm.Mode	**Auto**, Manual		Install	
CamComm. Type	Serial, GSC		Install	
Camera Number	1..99 (**99**)	Selects the camera number.	Oper	
IP Address				
IP Config Mode	Man, **Auto**	Selects manual or automatic IP configuration mode.	Oper	
BS IP digit 1	1..250 (**69**)	Select IP address digit 1 (for manual IP configuration mode.)	Oper	
BS IP digit 2	0..255 (**254**)	Select IP address digit 2 (for manual IP configuration mode.)	Oper	
BS IP digit 3	0..255 (**1**)	Select IP address digit 3 (for manual IP configuration mode.)	Oper	
BS IP digit 4	1..254 (**1**)	Select IP address digit 4 (for manual IP configuration mode.)	Oper	
CAM IP digit 1	1..250 (**69**)	Select IP address digit 1 (for manual IP configuration mode.)	Oper	
CAM IP digit 2	0..255 (**254**)	Select IP address digit 2 (for manual IP configuration mode.)	Oper	
CAM IP digit 3	0..255 (**1**)	Select IP address digit 3 (for manual IP configuration mode.)	Oper	
CAM IP digit 4	1..254 (**1**)	Select IP address digit 4 (for manual IP configuration mode.)	Oper	
Subnet Mask	0..31 (**24**)	Select the subnet mask value (for manual IP configuration mode.)	Oper	
Apply IP Settings	**exec** > busy > exec	Select Exec to apply the new manually set IP settings.	Oper	
Ethernet				
Ethernet Speeds	10Mb, 100Mb, **Auto**	Selects the Ethernet network speed.	Install	
Ethernet Duplex	Half, Full, **Auto**	Selects the Ethernet duplex mode.	Install	
Serial				
Serial Speed	9600, 19200, 38400, 57600, **115200**		Install	
Serial Compress	On, **Off**		Install	
Camera power	**On**, Off	Turns the power the camera on or off	Oper	Oper

Menu item	Values	Description	Level	File
Control Mode	**C2IP**, Serial		Install	
No Signal	**Col.Bar**, Black	Selects the type of video signal the Base Station generates when no camera signal is present/detected: Col.Bar = Colour bar is generated Black = Black video signal is generated	Oper	-
MCP Available	Yes, No			
Signalling inputs				
Yellow On Air	**Standard**, Independent	Standard: use to switch off the yellow on-air signal (ISO) when a red On Air tally signal is active. Independent: use to leave the yellow On Air signal (ISO) unchanged when a red On Air tally signal is active.	Oper	
Yellow On/Off	**Low/High**, High/Low, Open/High, High/Open	Selects switching behaviour for the yellow On Air (ISO) signalling inputs.	Oper	
On Air On/Off	**Low/High**, High/Low, Open/High, High/Open	Selects switching behaviour for the red On Air (Tally) signalling inputs.	Oper	
Extern Video (this submenu is only available when the External video input module is installed)				
Extern Aspect Ratio	**16:9**, 4:3	Selects aspect ratio for Video Input	Install	Sys
Extern Video Input	Analog, **Digital**	Selects Video input mode	Install	Sys
Extern Video Source	CVBS, **SDI**	Selects type of Video Input	Install	Sys
SDI Chroma Ext1	On, **Off**	Turns chroma on Video Input 1 on or off	Install	Sys
SDI Chroma Ext2	On, **Off**	Turns chroma on Video Input 2 on or off	Install	Sys
Timing				
H Phase Coarse	0..99 (**50**)		Oper	Sys
H Phase Fine	0..99 (**50**)		Oper	Sys
Subcarrier Coarse	0, 90, **180**, 270		Oper	Sys
Subcarrier Fine	0..99 (**50**)		Oper	Sys
Subc H Phase Coarse	0, 90, **180**, 270		Install	Sys
Subc H Phase Fine	0..99 (**50**)		Install	Sys
Teleprompter	**On**, Off	Turns teleprompter channel on or off.	Install	Sys
OCP Contour mode	**SDTV**, HDTV	Selects type of Contour that is controlled with the Operational Control Panel (OCP 400)	Install	Sys

5.2.6   Files menu

Menu item	Values	Description	Level	File
User Operator Files				
Operator File	**O_BS1**, O_BS2, O_BS3, O_BS4	Selects Operator file to use.	Oper	
Recall	**exec** > run > exec	Recalls selected Operator file.	Oper	
Store	**exec** > run > exec	Stores selected Operator file.	Install	
Std Operator Files				
Operator File	**Cust**, Fact	Selects standard Operator file to use: Cust(omer) or Fact(ory).	Install	
Recall	**exec** > run > exec	Recalls selected standard Operator file.	Install	
Store	**exec** > run > exec	Stores selected standard Operator file.	Install	
User System Files				
System File	**S_BS1**, S_BS2, S_BS3, S_BS4	Selects System file to use.	Install	
Recall	**exec** > run > exec	Recalls selected System file.	Install	
Store	**exec** > run > exec	Stores selected System file.	Install	
Std. System Files				
System File	**Cust**, Fact	Selects standard system file to use: Cust(omer) or Fact(ory).	Install	
Recall	**exec** > run > exec	Recalls selected standard system file.	Install	
Store	**exec** > run > exec	Stores selected standard system file.	Install	

5.2.7   Diagnostics menu

Menu item	Values	Description	Level	File
Camera Type	<camera type>	Identifies Camera type	Oper	
BS Type	<Base Station type>	Identifies Base Station type	Oper	
Board ID				
Power	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
HP/LP Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
Sync/Enc Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
Data Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
Video Rec Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
Front End Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
Audio/Intercom Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
FM Transc. Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
Aux Rec Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
DSC Interf. Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
Local Power Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
Digital output Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
HQ SDTV output Board	<12nc>, <status>,<date>	Displays 12nc, status and production date.	Oper	
Board Diagnostics				
Power Board				
Triax Status	DCPWR, **TSHRT**, ACPWR, COPEN, SOPEN, CSHRT, NOCAM, ERROR, OVRLD, ACODC, PWOFF, UKNOW	Refer to the Diagnostics section in this user's guide for a description of the Triax Status.	Oper	
Local Power Status	**Ok**, NotOK	Displays status of the power board.	Oper	
Power Overheated	Yes, **No**	Displays status of power overheating	Oper	
Fan	**Ok**, NotOK	Displays status of the internal cooling fan.	Oper	
Sync/Encoder Board				
Reference Available	**None**, SDTV, HDTV		Oper	
Burst Lock	Yes, **No**		Oper	
Sync Lock	Yes, **No**		Oper	
Ext1 Input	**None**, HDSDI, SDI	Selects input type for External video input 1 (only when External Video input Board is installed)	Oper	
Ext2 Input	**None**, HDSDI, SDI	Selects input type for External video input 2 (only when External Video input Board is installed)	Oper	
Data Board				
Firmware Status	<status>	Firmware status	Oper	
Boot Software Id	<id>	Boot software identification	Oper	
Base Station 12NC	<12nc>	Base Station 12NC	Oper	

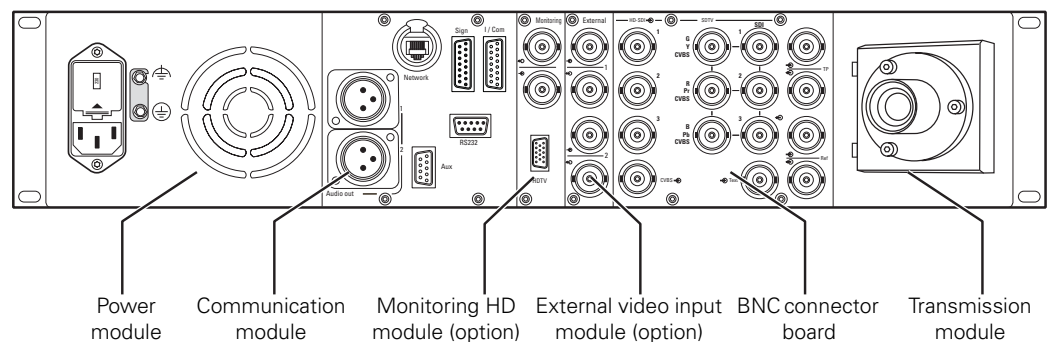| Menu item	Values	Description	Level	File
Software Status	<status>	Base Station software status	Oper	
Eth MAC	<MAC address>	Displays the Ethernet MAC address of the network adapter.	Oper	
Eth Link Type	**Unknown**, 10Mb/Half, 10Mb/Full, 100Mb/Half, 100Mb/Full	Displays the Ethernet link type for the C2IP network.	Oper	
Eth Link State	**Connected**, disconnected	Displays the Ethernet link state.	Oper	
Audio/Intercom Board				
Self test	**exec** > run	Select exec to run the diagnostic self test.	Oper	
ENG Test Tone Intern	**run** > ok (error)		Oper	
PROD Test Tone Intern	**run** > ok (error)		Oper	
PROG Test Tone Intern	**run** > ok (error)		Oper	
ENG Test Tone Studio	**run** > ok (error)		Oper	
PROD Test Tone Studio	**run** > ok (error)		Oper	
ENG Headset Board				
Self test	**exec** > run	Select exec to run the diagnostic self test.	Oper	
Test Intern	**run** > ok (error)		Oper	
Test Studio	**run** > ok (error)		Oper	
Test Tome Mic.BS	On, **Off**		Oper	
Test Tone Tr/Flr.Mic	On, **Off**		Oper	
Test Tone Cam.Mic	On, **Off**		Oper	
Ext Video Input Board				
Carrier Eq Ext1	**Yes**, No		Oper	
Carrier Rcve Ext1	**Yes**, No		Oper	
SDI Lock Ext1	**Yes**, No		Oper	
SDI TV system Ext1	**625**. 525		Oper	
Carrier Eq Ext2	**Yes**, No		Oper	
Carrier Rcve Ext2	**Yes**, No		Oper	
SDI Lock Ext2	**Yes**, No		Oper	
SDI TV system Ext2	**625**. 525		Oper	
BS TV system	**PAL**, NTSC		Oper	
Transmission Diag.				
Transmission System	**Triax**, Mobox, Fib_A, Fib_D, Unkno, FibHS	Displays the transmission system in use.	Oper	
Carrier detected	**Yes**, No		Oper	
Datalcom Muted	Yes, **No**		Oper	
Communications Diag.				
Camera Connected	Yes, **No**	Displays whether the camera is connected.	Oper	
C2IP panels	0..10 **(1)**	Amount of Control Panels (MCP or OCP) that is set up to control this camera system.	Oper	

LDK 4502 TriaxHD Base Station User's Guide (v1.0)

Chapter 6

Connectors

6.1 Base Station connectors

Figure 6-1. Base Station connector location

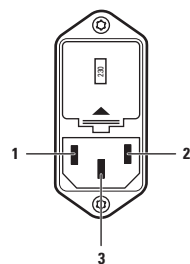| Power module | Communication module | Monitoring HD module (option) | External video input module (option) | BNC connector board | Transmission module |

⚠ **Caution**
Do not allow system earth currents to exceed 0.2 A in any cable shields.

6.1.1 Power module

Mains power connector

IEC style 3-pin male

Pin	Description
1	Neutral
2	Line
3	Earth

Mains input voltage:
230 VAC or 115 VAC

Fuses:
4AT (230Vac) or 10AT (115 Vac)
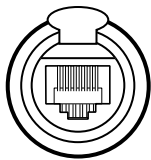
Mains frequency:
47 to 63 Hz

Power consumption:
270 Watt (470 VA)

6.1.2   Communication module

Connector locations

Ethernet connector

Audio output connector 1

Audio output connector 2

Signalling connector

Intercom connector

RS-232 connector (not used)

Auxiliary connector
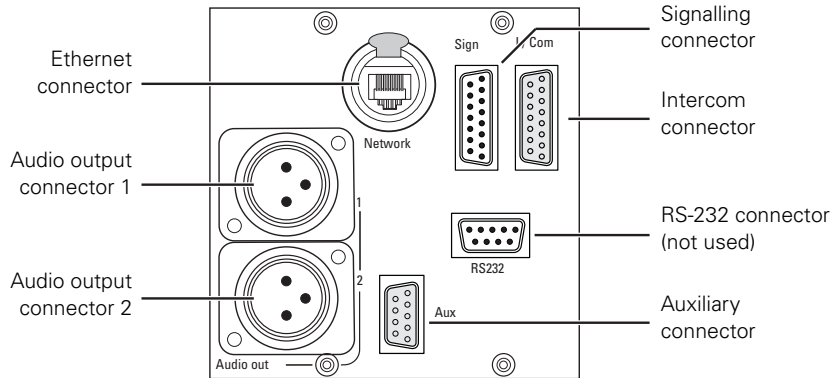
Ethernet connector

8-pin standard RJ-45 ethernet connector

Pin	Description
1	TX+
2	TX-
3	RX+
4	no connection
5	no connection
6	RX-
7	no connection
8	no connection

10Base-T, 100Base-TX compliant with IEEE-802.3 (edition 2000)

Signalling connector
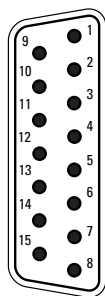
SubD 15-pin male

Pin	Description
1	Preview output ext. (relay contact < 10 Ω)
2	Call output ext. (relay contact < 10 Ω)
3	ISO input ext. (dry contact)
4	On-Air input ext. (dry contact)
5	Call input ext. (dry contact)
6	Audio 1 level (analog input voltage 0 to +5 VDC)
7	+5 VDC; OCP 400

Pin	Description
8	Housing
9	Preview output ext. return
10	Call output ext. return
11	ISO input ext. return
12	On-Air input ext. return
13	Call input ext. return
14	Audio 2 level (see pin 6)
15	GND

Microphone impedance >200 Ω
Sensitivity range: -70 to -28 dBm

Signal at pin 2 of audio input is in phase with signal at pin 2 of audio output. Connect cable shield to pin 8

Intercom connector
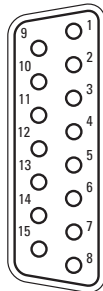
SubD 15-pin male

Pin	Description
1	Prod out (4-wire out, 2-wire in/out)
2	Prod in (4-wire only)
3	Prod in shield (4-wire only)
4	Eng in (4-wire only)
5	Eng out (4-wire out, 2-wire in/out)
6	Prog in (4-wire only)
7	Prog in shield (4-wire only)

Pin	Description
8	Housing
9	Prod out return (4-wire out, 2-wire in/out)
10	Prod in return (4-wire only)
11	Eng in shield (4-wire only)
12	Eng in return (4-wire only)
13	Eng out return (4-wire out, 2-wire in/out)
14	Prog in return (4-wire only)
15	Housing

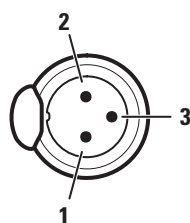Shield of cable to the pin marked housing.

Auxiliary connector
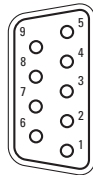
SubD 9-pin female connector

Pin	Description
1	+5 VDC
2	AN 0 (0 to +5 VDC input)
3	Private data out
4	Private data in
5	Housing (attach cable shield to this pin)
6	GND
7	AN 1 (0 to +5 VDC input)
8	Private data out return
9	Private data in return

Shield of cable directly to the connector housing.

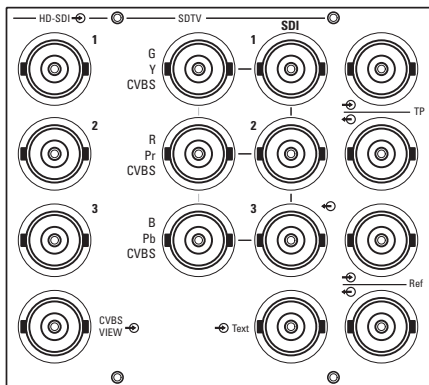## Audio output (1 & 2) connectors

XLR 3-pin male

Pin	Description
1	Audio shield
2	Audio Out
3	Audio Return

Sensitivity range: -64 dBu to -22 dBu

Signal at pin 2 of audio output is in phase with signal at pin 2 of audio input.

6.1.3   BNC connector board
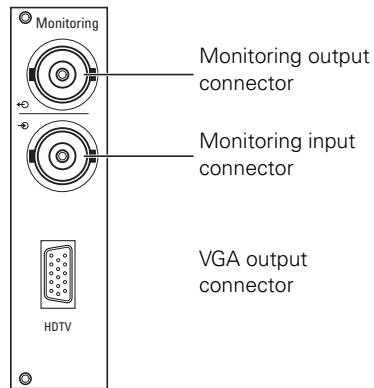
Figure 6-2. BNC connectors

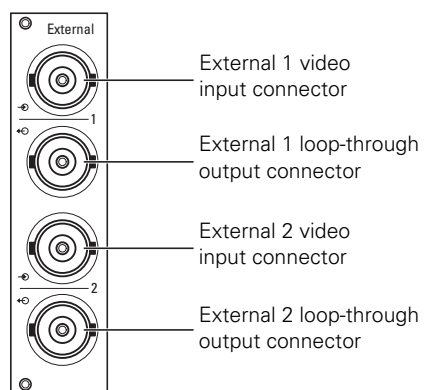| Connector	Signal or function
HD-SDI 1	Standard HD-SDI output signal
HD-SDI 2	Standard HD-SDI output signal
HD-SDI 3	Standard HD-SDI output signal
CVBS VIEW out	Viewfinder CVBS viewing signal
G, Y, CVBS	Selectable green, luminance or CVBS signal
R, Pr, CVBS	Selectable red, component or CVBS signal
B, Pb, CVBS	Selectable blue, component or CVBS signal
SDI 1	Standard SDI (SD) output signal
SDI 2	Standard SDI (SD) output signal
SDI 3	Standard SDI (SD) output signal
Text out	Viewfinder text output signal
TP (in)	Teleprompter input signal
TP (out)	Teleprompter looped-through signal
REF (in)	Reference input signal
REF (out)	Reference looped-through signal

6.1.4 LDK 4620/20 Monitoring HD module (option)

Figure 6-3. Monitoring HD module connectors

Monitoring output
connector

Monitoring input
connector

VGA output
connector

Connector	Signal or function
Monitor out	Monitoring looped-through signal
Monitor in	Monitoring input signal
VGA out	Standard VGA output signal

### 6.1.5 LDK 4530/40 Digital/Analog external video input module (option)

Figure 6-4. Digital/Analog external video input module connectors

External 1 video
input connector

External 1 loop-through
output connector

External 2 video
input connector

External 2 loop-through
output connector

Connector	Signal or function
External 1 in	External 1 input signal (C)VBS or SDI
External 1 out	External 1 active loop-through output
External 2 in	External 2 input signal (C)VBS or SDI
External 2 out	External 2 (looped-through signal)

6.1.6   LDK 4541/10 Engineering intercom module (option)
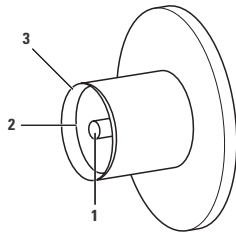
Headset connector (front side)
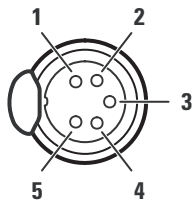
XLR 5-pin female

Pin	Description
1	Microphone return
2	Microphone
3	Telephone return
4	Telephone left
5	Telephone right

Microphone level -64 dBu
Microphone impedance 200 Ω
Telephone level +6dBm nominal
Telephone output impedance < 50 Ω

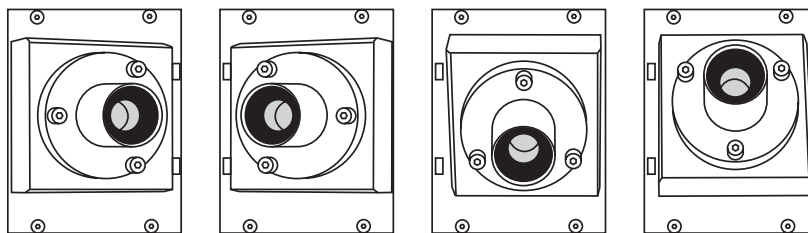Shield of cable directly to the connector housing.

6.1.7   Transmission module

Triax connector

Pin	Description
1	Inner pin: Signals + power
2	Inner shield: Return
3	Outer shield: Base Station housing

Various types of Triax connector are available by request

The transmission connector can be mounted to suit your cable run.

Chapter 7

Specifications

7.1   Specifications for the LDK 4502

Item	Value
General	
Dimensions (W x H x D)	438 x 88 x 510 mm (17.2 x 3.5 x 20.1 in)
Weight (approx.)	17 kg (37.5 lbs) fully equipped
Operating temperatures	0 to +50 °C (+32 to +122 °F)
Storage temperatures	-40 to +70 °C (-40 to +158 °F)
Operating humidity	max. 90% relative humidity (non condensing)
Power	
Power requirements	115 VAC / 230 VAC +/- 15%, 47 to 63Hz
Power consumption	270 W (470 VA) max. fully equipped
Power connection	IEC type, 3-pin male
Transmission	
Typical cable length	1,200 m (4,000 ft) using 14 mm (0.55 in) Triax cable
Bandwidth	30/15/15 MHz, Y/Cr/Cb
Video inputs	
Teleprompter	BNC (loop-through), 1.0 Vpp, 75 Ω
Reference	BNC (loop-through), 1.0 Vpp, 75 Ω HD tri-level sync or SD Black Burst
Video outputs	
HD-SDI	3x BNC, 0.8 Vpp, 75 Ω, SMPTE 292M, 1080i or 720p at 59.94 or 50Hz
Text out	BNC, 1.0 Vpp, 75 Ω VBS (monochrome)
Composite video	BNC, 1.0 Vpp, 75 Ω CVBS (for viewing purposes)
Audio outputs	
Audio out	2 x XLR-3, 0/+6 dBu (+/-1.5 dB, max. 18 dBu, 600 Ω, max. gain 70 dB)
Frequency response	40 Hz to 15 kHz, (+1/-3 dB, 1 kHz, -10 dBu output level)

Item	Value
Distortion	< 0.5% (100 Hz / 1 kHz, +6 dBu out, 600 Ω)
S/N ratio	58 dB (unweighted RMS)
Intercom	
Intercom in/out	D-subconnector 15- pin, female (Program in, Production in/out, Engineering in/out)
Input	0 or 6 dBu (max. 6 or 12 dBu), 9 kΩ
Output	0 or 6 dBu (+/ -2dB, max 12 dBu), 600 Ω
Frequency response	150 Hz to6 kHz (1 kHz, -10 dBu output level)
Distortion	< 2% (1 kHz, +12 dBu output level)
External and control connections	
C2IP camera control	Ethernet RJ-45 connector
Signalling in/out	D-sub 15-pin, male
Auxiliary in/out	D-sub 9-pin, female

7.2   Specifications for Base Station modules

Item	Value
LDK 4530/40 Digital/Analog external video input module	2x BNC SDI in, 0.8 Vpp, 75 Ω, SMPTE 259M, ITU-R, BT.601 + 2x loop-through connector or: 2x BNC CVBS, 1.0 Vpp, 75 Ω + 2x loop-through connector
LDK 4531/11 SDTV output module	3x BNC SDI out, 0.8 Vpp, 75 Ω, SMPTE 259M, ITU-R, BT.601 3x BNC analog out, R, G, B or Y, Pr, Pb, or 3x CVBS (menu selection): - RGB out: 3 x 0.7 Vpp (+/- 1%), 75 Ω - Y, Pr, Pb: 3 x 0.7 Vpp (+/- 1%), 75 Ω - CVBS out: 3 x 1.0 Vp p (+/- 1%), 75 Ω
LDK 4531/30 High Quality SDTV output module	3x BNC SDI out, 0.8 Vpp, 75 Ω, SMPTE 259M, ITU-R, BT.601 3x BNC analog out, R, G, B or Y, Pr, Pb, or 3x CVBS (menu selection): - RGB out: 3 x 0.7 Vpp (+/- 1%), 75 Ω - Y, Pr, Pb: 3 x 0.7 Vpp (+/- 1%), 75 Ω - CVBS out: 3 x 1.0 Vp p (+/- 1%), 75 Ω Frequency response: 0.1 to 5.75 MHz (+0.5 dB/-1 dB) K-factor less than 2%

Item	Value
LDK 4541/10 2-channel XLR-5 engineering intercom module	Audio in/out XLR-5 connector 6 dBu, +/- 2 dB, max 12dBu, 25 to 400 Ω Frequency response: 150 Hz to 6 kHz, +/- 3 dB (0 dB, 1 kHz, -10 dBu output level) S/N ratio: 46 dB (unweighted RMS) Phantom power +12 VDC (+/ -1 VDC), menu selectable
LDK 4560/20 Monitoring HD module	PXM video out BNC 1x 1.0 Vpp, 75 Ω, SMPTE 274M or SMPTE 296M (depending on acquisition format); R, G, B or Y (menu selection) with HD tri-level Sync. WFM video out BNC, 1.0 Vpp, 75 Ω, SMPTE 274M or SMPTE 296M (depending on acquisition format); R, G, B or Y (menu selection) with HD tri-level sync. Analog HDTV out VGA-type D-connector, 15-pin, female, with R, G, B, H-sync and V-sync Frequency response 0.1 to 30 MHz (+0.5 dB/- 1 dB)

7.3   Dimensions

Figure 7-1. Dimensions