

LDK 23HS MKII

High Speed Camera System



Operator's Manual

3922 496 49011 St. 44

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- EN55103-1 : EMC (Emission)
- EN55103-2 : EMC (Immunity)

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

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

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LDK 23HS MkII
Portable EFP - Studio High Speed Camera system
Operator's Manual

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About this Manual

This Operator's Manual is part of a complete documentation set for the camera system which also includes an Installation and Service Manual.

Purpose of this manual

The purpose of this manual is to present a detailed description of how to operate the LDK 23HS mkII EFP - Studio Camera. It provides the information necessary to use the camera system in different configurations and with various attachments. With this manual it is possible to discover the operating features of the camera system and so use it to its full potential. The manual should be used together with the camera system to explore and learn about the many sophisticated control functions available.

Intended audience

This Operator's Manual can be used by inexperienced camera operators who are new to Thomson Multimedia Broadcast Solutions cameras as well as those who have previous experience of operating cameras. The guide is so designed that it can be used as an introduction to those who are new to the camera system, as a simple procedural guide to those who wish to setup and start shooting immediately, and as a reference work to be consulted as required during the long life of the camera system.

Structure of this manual

The manual is divided into six sections and an appendix:

Section 1: Introduction

This section outlines the technology used in the LDK 23HS mkII camera system and how this translates into a practical, useable camera system. It lists the main features of the camera system and also the precautions that must be taken into account when using it.

Section 2: Assembling the Units

Section 2 provides information on the physical assembly of the camera system and on how accessories can be used to expand the possibilities of the camera system. The mounting of accessories and packing for transport is also explained.

Section 3: Configurations

The LDK 23HS mkII is a multi-functional camera system and this section describes the various ways that it can be used in a studio system with other cameras. Information on the cables, control panels and the control bus is also provided as is information on the main video and audio signal paths through the system.

Section 4: Location of Controls and Functions

This section shows the physical location of the controls and connectors on the camera system. These are grouped according to their function so as to provide a quick reference guide to the operation of a particular aspect of the camera system.

Section 5: Shooting

This section contains information on the practical use of the camera system using the viewfinder display and the switches at the front and front-left to control the camera.

Section 6: Operating the Menu System

Because the LDK 23HS mkII offers such a wide range of functions, this section describes the structure of the control system. It contains procedures for controlling the menu system and explains how to program the menu system for your personal preferences. The menu structure and the methods of function selection are also explained.

Appendix

The appendix contains a list of the menu functions available on the camera.

Section 1

Introduction

This section outlines the technology used in the LDK 23HS mkII camera system and how this translates into a practical, useable camera system. It lists the main features of the camera system and also the precautions that must be taken into account when using it.

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Technology

The LDK 23HS mkII is a lightweight EFP/Studio high speed camera system which uses 2/3" frame transfer sensors with Dynamic Pixel Management (DPM).

Super Slow Motion

Unique live slow motion capability. The LDK 23 HS mkII scans at three times the normal rate. Instead of scanning at 50 Hz for PAL and 60 Hz for NTSC the LDK 23HS mkII scans at 150 Hz for PAL and 180 Hz for NTSC.

Various preset settings for artificial light conditions ensure a slow motion picture without pulsing light effects.

Sensor technique

Frame Transfer Dynamic Pixel Management allows the format of the sensors to be switched between 4:3 and 16:9 aspect ratio at the touch of a switch without loss of horizontal resolution. The 1000 pixels per line in both formats ensures that there is no loss in horizontal viewing angle.

Another aspect of the 2/3" DPM sensors is that there is no loss of vertical resolution between formats. They have a highlight compression/dynamic range of 400% and a high linear sensitivity over all camera lens apertures. The frame transfer technology ensures that there is no lag nor smear.

The Intelligent Continuous Automatics facility provides automatic control of black levels and black shading. Each DPM sensor has two lines of sensor elements that are protected from incoming light and therefore give a true indication of black. The black reference signal that they provide is used in the camera preprocessor circuits to monitor temperature changes which, if not corrected, would alter the black level. In this way continuous automatic correction is applied without operator intervention.

Film-like characteristics

To achieve film-like quality it is necessary to emulate the softly limiting S-shaped transfer characteristics of film. This is done by compressing the TV camera's near linear characteristics above a certain point, the knee. The pivoting knee circuit of the LDK 23HS mkII camera system adapts both the knee point and the compression ratio according to the highlight content of the picture. Significant highlights lower the knee point to give more room for compression, while minor highlights only affect the upper part of the transfer characteristic. Signals below the knee point remain unaffected. As a result, compression is only applied where necessary and in proportion to the highlight, and the pictures obtained have true film-like quality.

Advanced Triax Features

The Triax system allows remote control of camera up to a distance of 800 meters (1000 meter with minor performance degradation). The Triax system uses YUV transmission.

The communication facilities provide for two-wire or four-wire high quality intercom signals.

The LDK 23 HS mkII is compatible with the existing Thomson Multimedia Broadcast Solutions Series 9000 Universal Camera Control system. Base station outputs include triple and normal scan serial digital video signals.

SuperXPander

The optional LDK 4482 SuperXpander enables the camera to be used with large lenses so extending the camera's use in studio and EFP situations.

Features

- Triple speed scanning for superb slow motion replay.
- Instant replay through almost any disk based slow-motion system.
- Various preset settings for artificial light conditions ensure a slow motion picture without pulsing light effects.
- DPM Frame Transfer sensors with 1000 horizontal pixels in 4:3 and 16:9 aspect ratios, and the same number of vertical lines in both formats.
- No change in horizontal viewing angle - so no wide angle convertors required.
- Simple no-compromise switching between 4:3 and 16:9 - future proof concept with no later upgrades needed for either camera or lenses.
- Automatic selection of correct viewfinder mode for 4:3 and 16:9.
- Intelligent Continuous Automatic black levels, black shading and video levels - no setup time required.
- Highlight compression with a dynamic range of up to 400%.
- International standard 2/3-inch lens interface.
- 6-position standard filter wheel cassette, exchangeable.
- Low centre of gravity and optical path for ease of production use.
- Short, lightweight portable camera with integrated triax system for EFP use.
- Extensive two-wire or four-wire intercom to international standards.
- Protected, easy-to-operate controls and switches
- Viewfinder status read-out of primary camera functions
- Clear scan feature allows capture of computer and other monitor pictures.
- Triax system allows for cable lengths up to 800 meters (1000 meters with minor performance degradation).
- Digital RS 232 data transmission over triax system for robotics and other applications.

Important Precautions

To ensure continual high performance from the LDK 23HS mkII camera take the following precautions into consideration:



Avoid very damp places. If the environment is wet or damp a raincover must be used to protect it.



Do not subject the unit to severe shocks or vibration.



Do not expose the camera to extremes of temperature.



Do not leave the unit in direct sunlight or close to heating appliances for extended periods.



Do not allow sunlight to shine into the viewfinder.



Avoid extreme highlights as these can cause various kinds of optical reflections.

Warnings

If the LDK 23HS mkII is in a wet or damp environment, a raincover must be used to protect it for personal safety reasons (EN60065). The raincover LDK6988/00 protects the camera according to safety specification EN60529 up to level IPX3 (spraying water).

Section 2

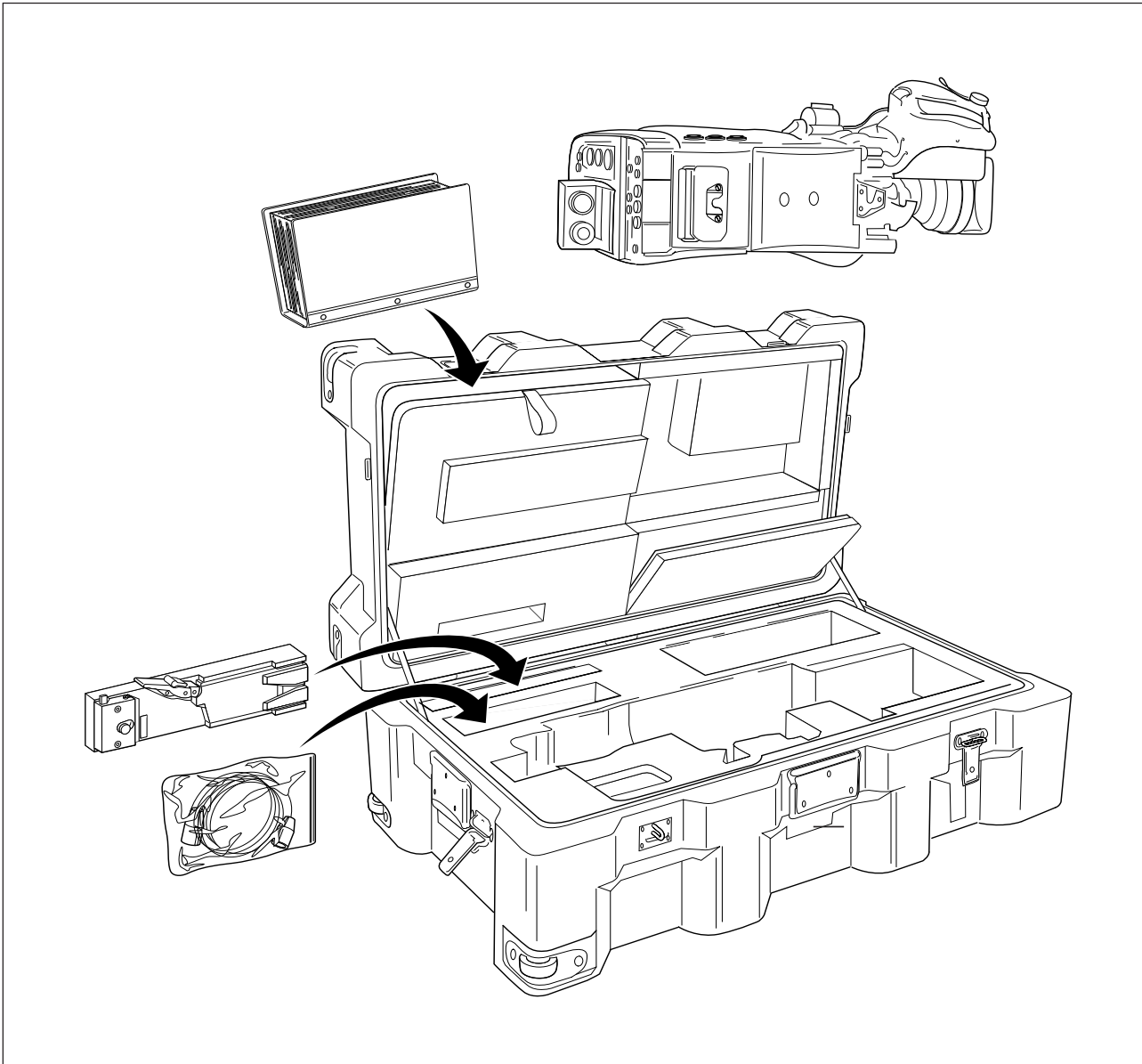
Assembling the Units

Section 2 provides information on the physical assembly of the camera system and on how accessories can be used to expand the possibilities of the camera system. The mounting of accessories and packing for transport is also explained.

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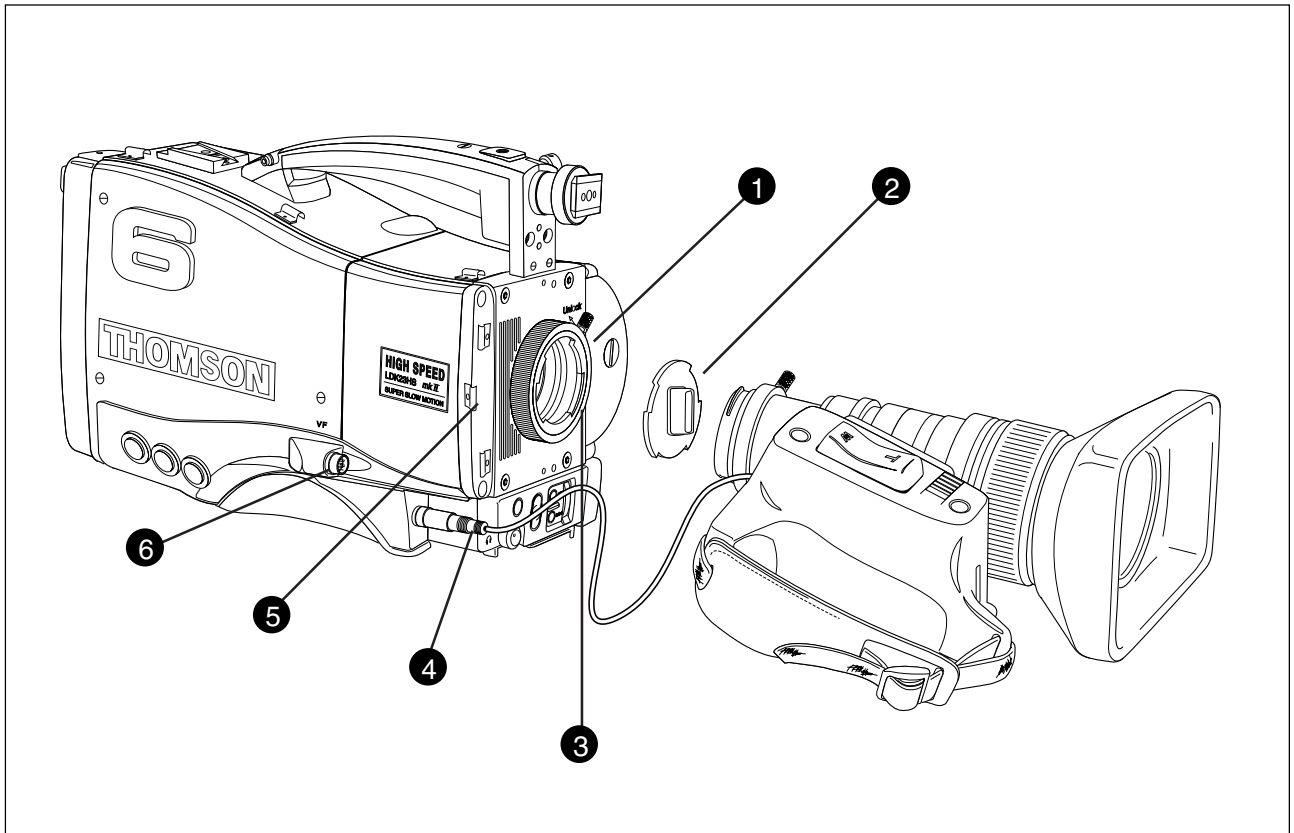
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Transport Case



It is important to protect your camera against damage when transporting it. To do this, a transport case is available for the camera, lens, viewfinder and some accessories.

The camera is packed in the transport case as shown in the figure above. This ensures that the camera is not damaged during transport. Do not forget to secure the straps around the items to keep them in place.



To attach a lens to the camera head proceed as follows:

- a. Ensure that the lens locking ring (1) is in the unlocked position - turned counterclockwise.
- b. Remove the dust protection cap (2).
- c. Slot the lens into the lens mount (3).
- d. Turn the lens locking ring (1) clockwise to lock the lens in place.
- e. Connect the lens cable to the lens connector (4) at the right side of the camera.
- f. Clip the lens cable into the clip (5) provided.

Caution

Do not attach a lens weighting more than 5 kg to the camera without a support.

Caution

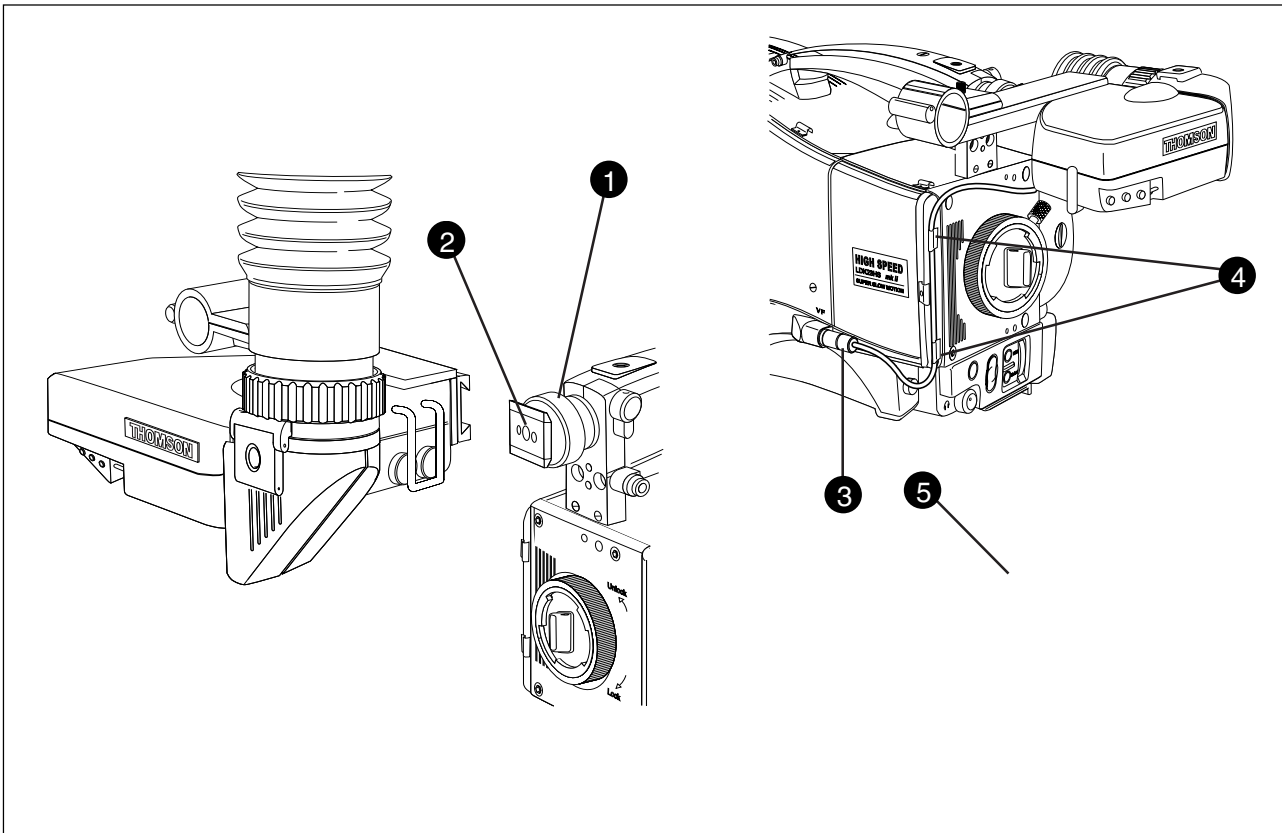
Do not attach a lens to the Viewfinder connector (6).

Note

Always mount the dust protection cap when the lens is not connected to the camera.

1.5-inch Viewfinder

Mounting the optional 1.5-inch viewfinder



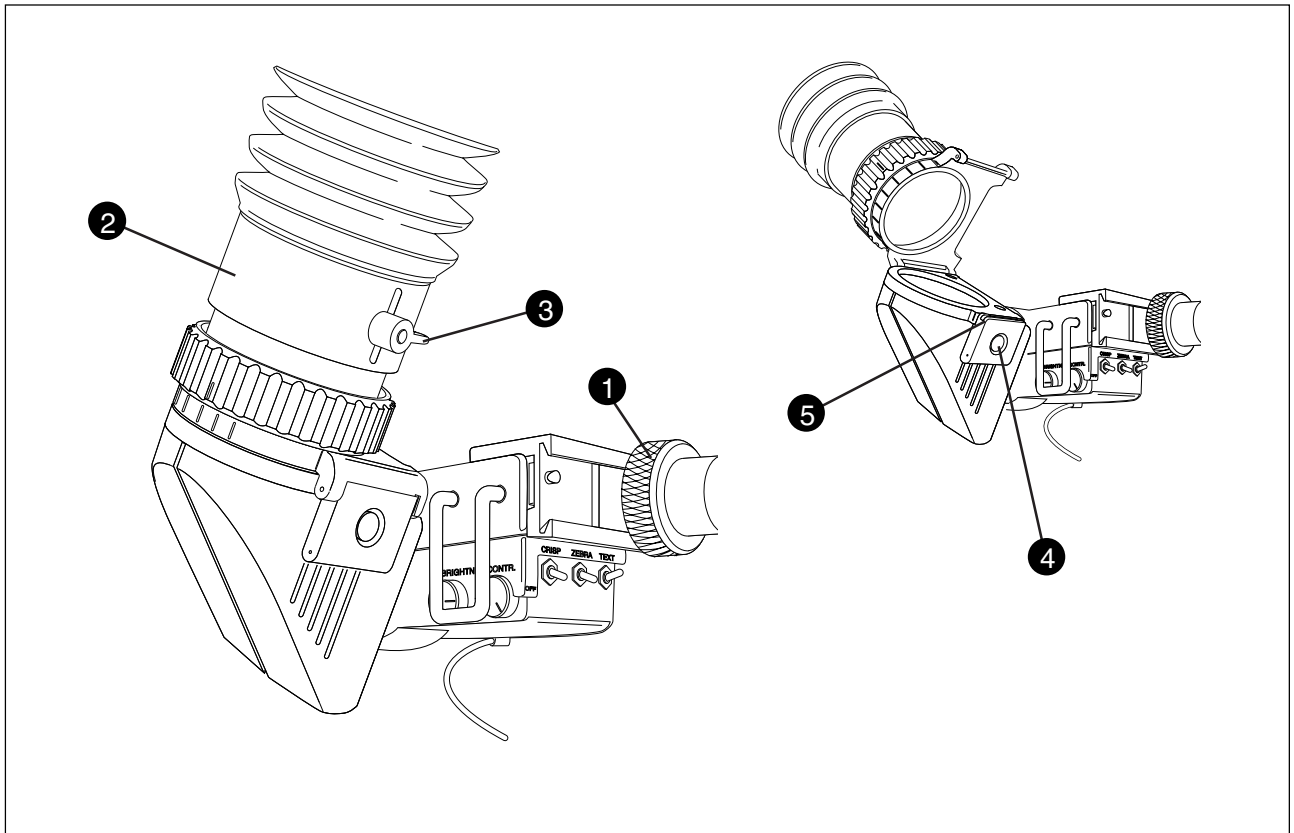
To mount the optional 1.5-inch viewfinder proceed as follows:

- Loosen retaining screw (1) of viewfinder support bracket (2) at the front of the camera handle.
- Slide the viewfinder onto the viewfinder support bracket.
- Tighten the support bracket retaining screw (1) by turning it clockwise so that the viewfinder is mounted securely to the support.
- Connect the viewfinder cable to the viewfinder connector (3) at the right side of the camera.
- Clip the viewfinder cable into the clips (4) provided.

Note

When dismantling the viewfinder push in retaining clip (5) on the slide to remove the viewfinder from the support bracket (2).

Positioning the optional 1.5-inch viewfinder



The horizontal position of the viewfinder can be adjusted to suit your requirements:

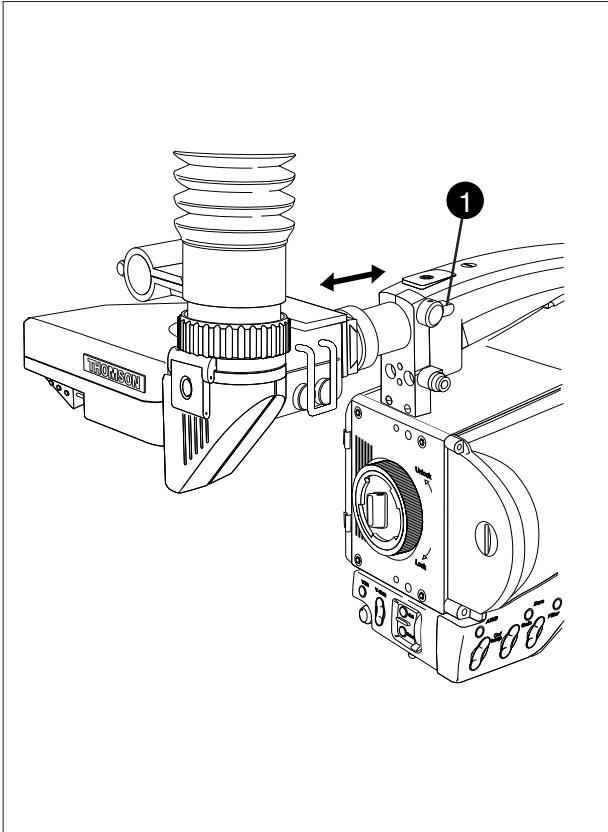
- Loosen the support bracket retaining screw (1).
- Slide the viewfinder horizontally along the rail to the desired position.
- Tighten the support bracket retaining screw (1).

The dioptre hood and eyepiece of the viewfinder can be rotated vertically.

The length of the eyepiece tube (2) can also be adjusted by loosening securing lever (3) and moving the tube back or forward.

To use the viewfinder at a distance press the button (4) below or above the eyepiece tube and swing it free of the associated clip (5). The display can now be seen from further away.

Positioning the optional 1.5-inch viewfinder

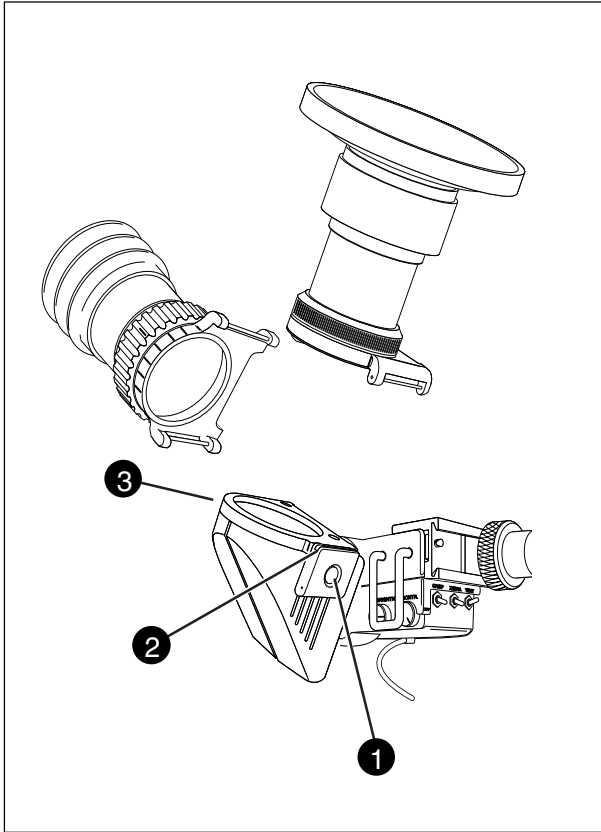


The front-back position of the viewfinder can be adjusted to suit your requirements:

- a. Loosen the viewfinder front-to-back positioning lever (1).
- b. Slide the viewfinder longitudinally to the most convenient position for viewing.
- c. Tighten the viewfinder front-to-back positioning lever (1).

Fitting accessories to the 1.5-inch viewfinder

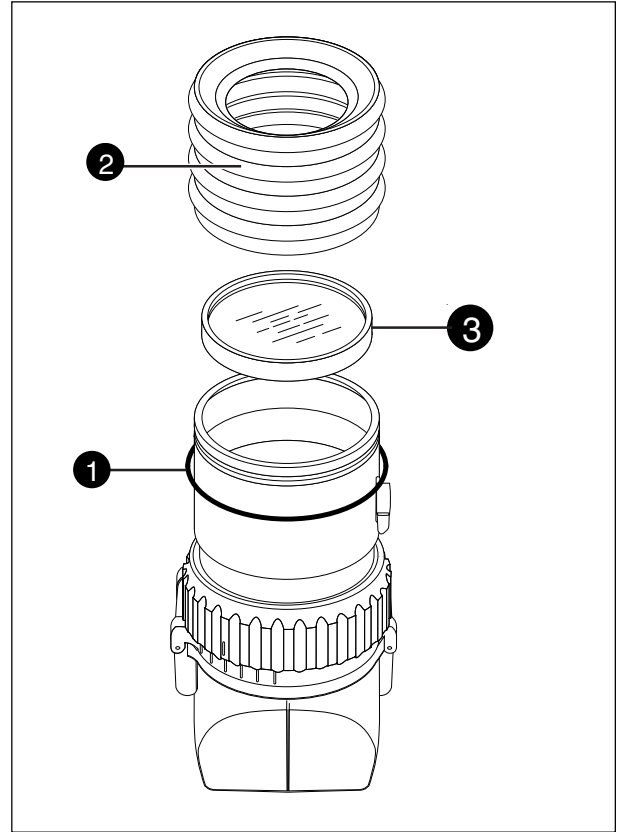
Wide angle ocular



If you regularly use the viewfinder at a distance, for example when you use the camera in the hand-held position, it is recommended that you fit the Wide Angle Ocular LDK 6108/10. To fit a wide angle eyepiece proceed as follows:

- a. Hold the eyepiece securely.
- b. Press the button (1) below the eyepiece tube and swing it free of the bottom clip (2).
- c. Press the button (3) above the eyepiece tube and remove the eyepiece.
- d. Fit the wide angle eyepiece to the two clips (2) ensuring that it clicks into place.

Anti-misting Optic

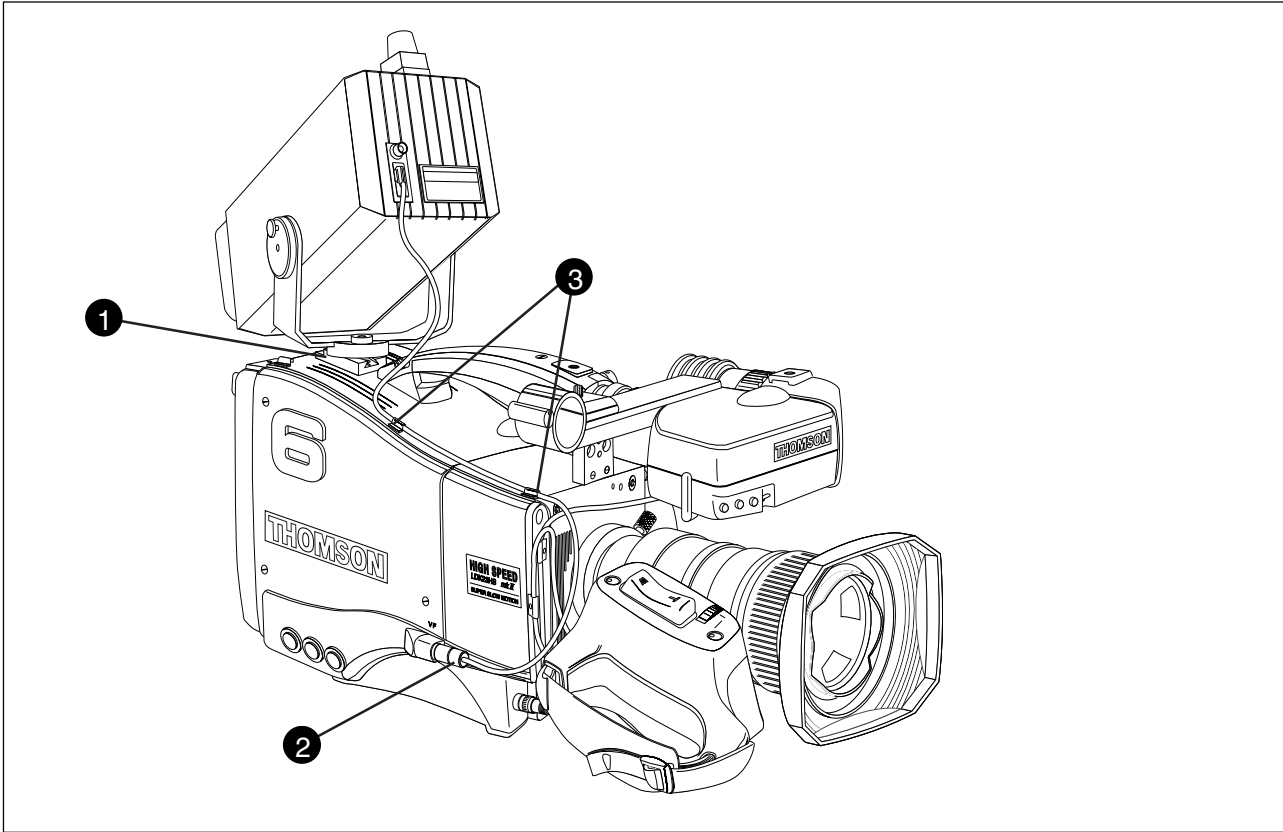


If the camera is used in damp conditions or if the viewfinder picture is obscured by condensation on the eyepiece, it is recommended that you fit the Anti-misting Optic LDK 6108/90 in front of the eyepiece. To fit an anti-misting optic proceed as follows:

- a. Remove the rubber ring (1) securing the bellows (2) to the eyepiece.
- b. Remove the bellows (2).
- c. Screw the anti-misting optic (3) onto the eyepiece.
- d. Secure the bellows (2) to the eyepiece using the rubber ring (1).

Other viewfinders

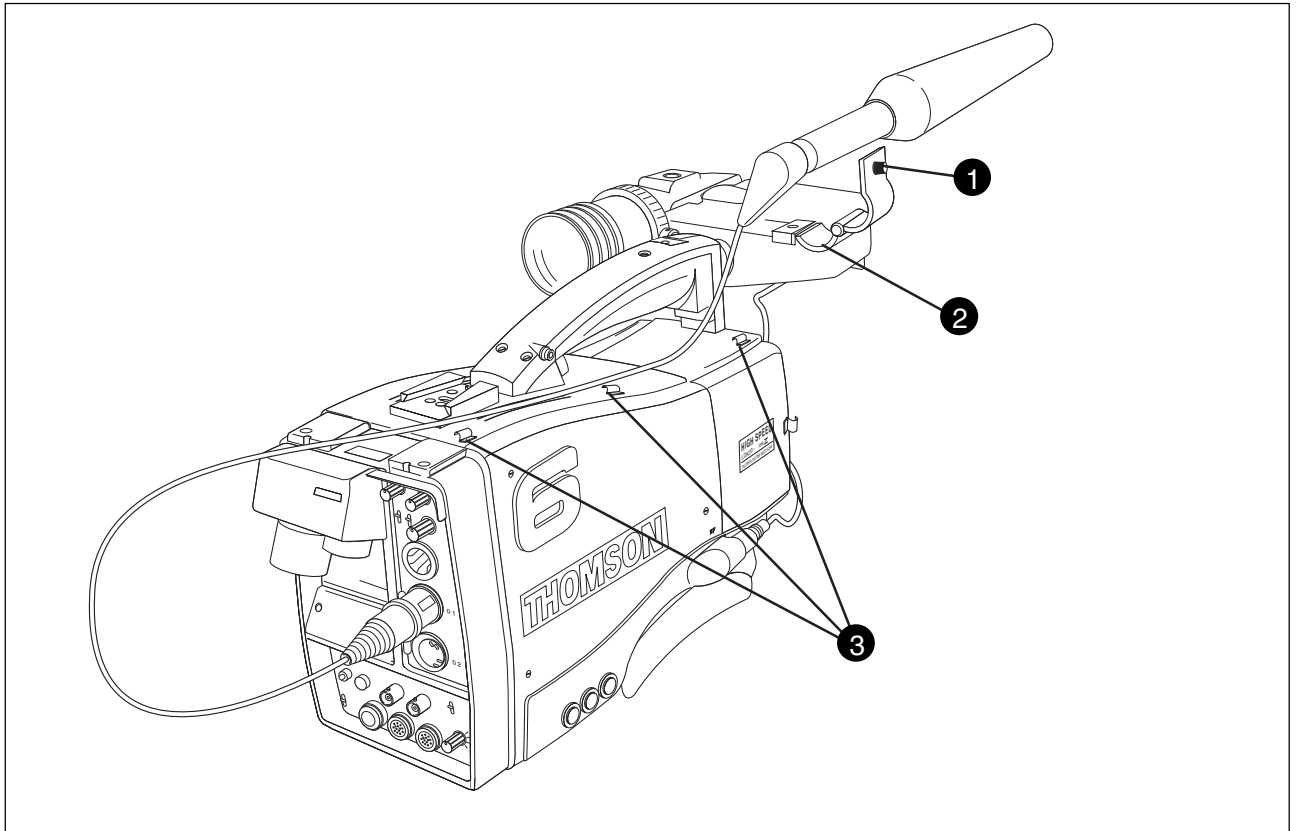
5-inch viewfinder



In many EFP and studio situations the optional 5-inch viewfinder LDK 4309/15/16/55/56 is used instead of the 1.5-inch viewfinder. The 5-inch viewfinder is mounted in the slot (1) at the top-rear of the camera head. The viewfinder cable is connected to the viewfinder connector (2) at the right side of the camera. The cable is placed in the clips (3).

For full information on the optional 5-inch viewfinder refer to the User's Guide supplied with the viewfinder.

Microphone

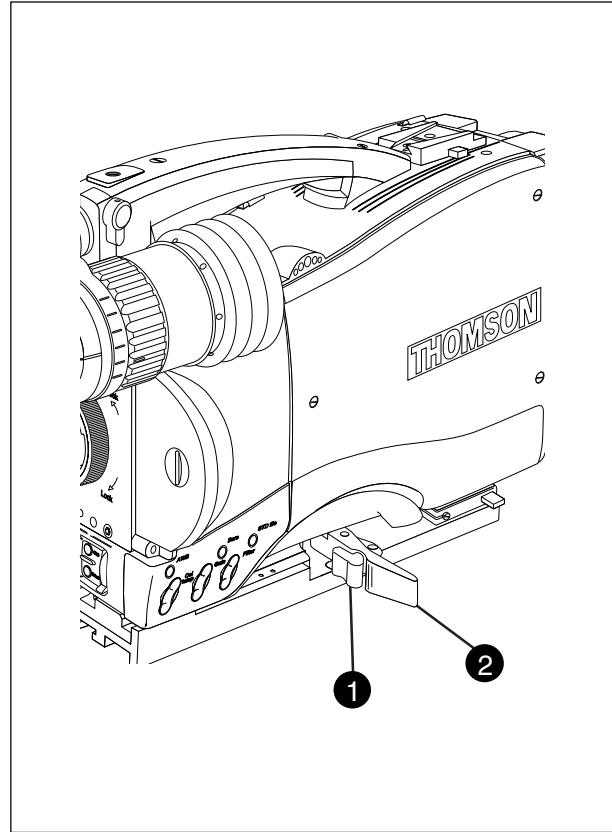
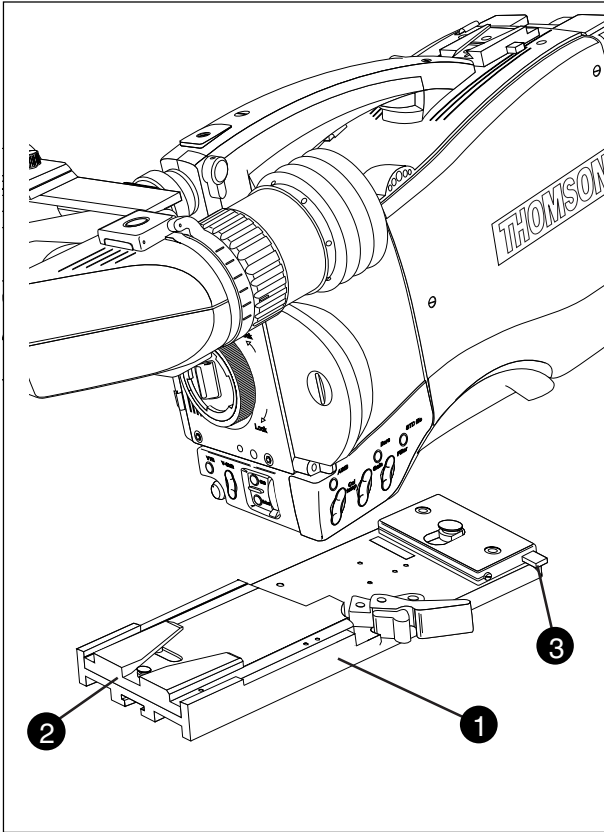


To attach a microphone, the LDK 8330/00 for example, to the camera proceed as follows:

- Loosen the retaining screw (1) of the microphone support bracket (2) on the viewfinder and open.
- Place the microphone into the support bracket (2).
- Close the bracket and tighten the microphone bracket retaining screw (1).
- Connect the microphone cable to audio connector 1 or 2 at the rear of the camera.
- Clip the microphone cable into the slot (3) in the handle of the camera.

Other microphones can also be used, however, ensure that the phantom power and the sensitivity are set correctly for the type of microphone in use. Refer to the installation manual for more information on selecting the phantom power supply. The audio level is selected using the camera control system (refer to Section 6).

Camera Tripod



To mount the optional tripod adapter LDK 5031/00 onto the tripod and the camera onto the tripod adapter proceed as follows:

- Secure the tripod adapter (1) to the tripod wedge plate using the screws supplied with the tripod. Screws with threads of 3/8 inch, M4 or M8 can be used with the tripod plate. Use two screws if possible to ensure a secure mount.
- Mount the two plates on the tripod.
- Clip the front of the camera in under the lip (2) at the front of the tripod plate and firmly push the camera downwards and forwards until it clicks into place.
- Push lever (3) in the lock direction until the camera is set firmly.

Caution

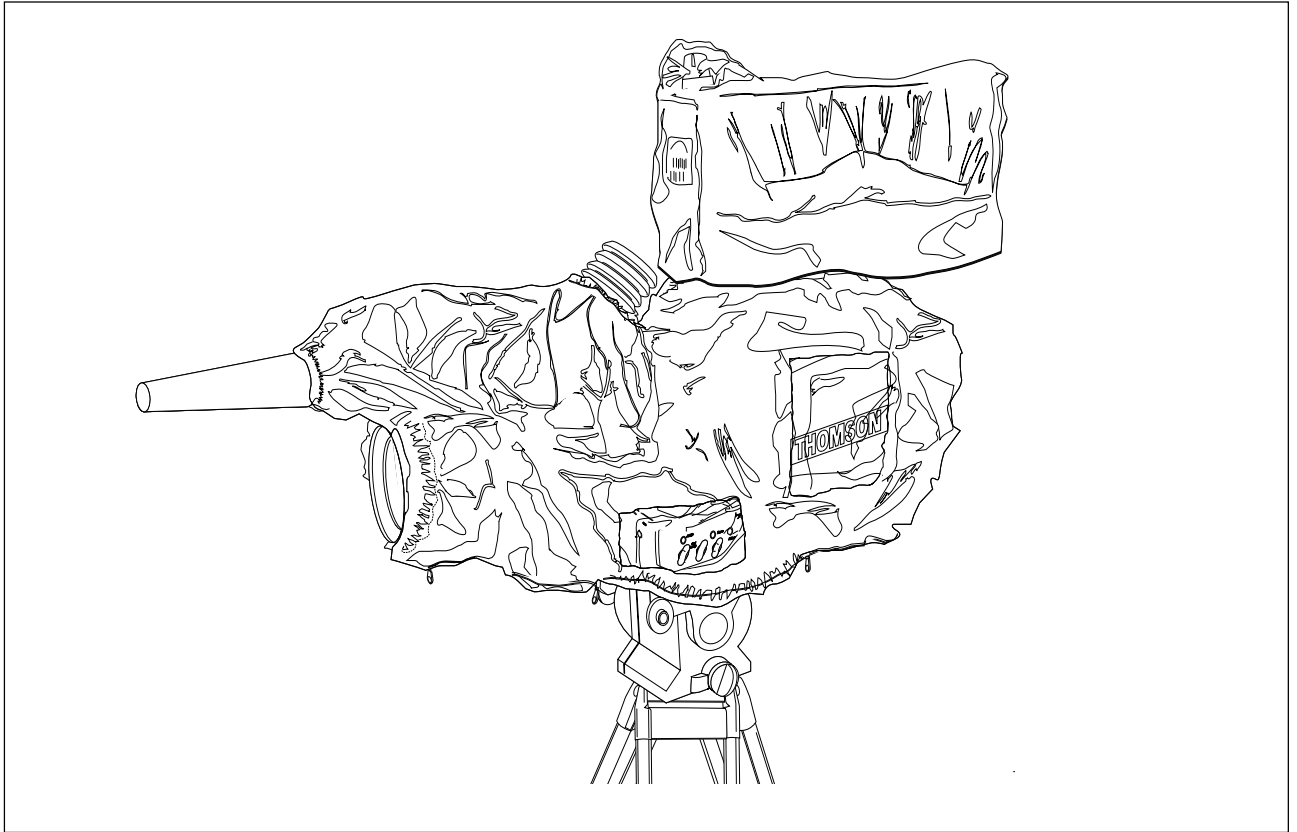
Failure to attach the camera to the tripod plate in the correct manner could result in an unsecured camera. Ensure that it

clicks into place.

To remove the camera from the tripod proceed as follows:

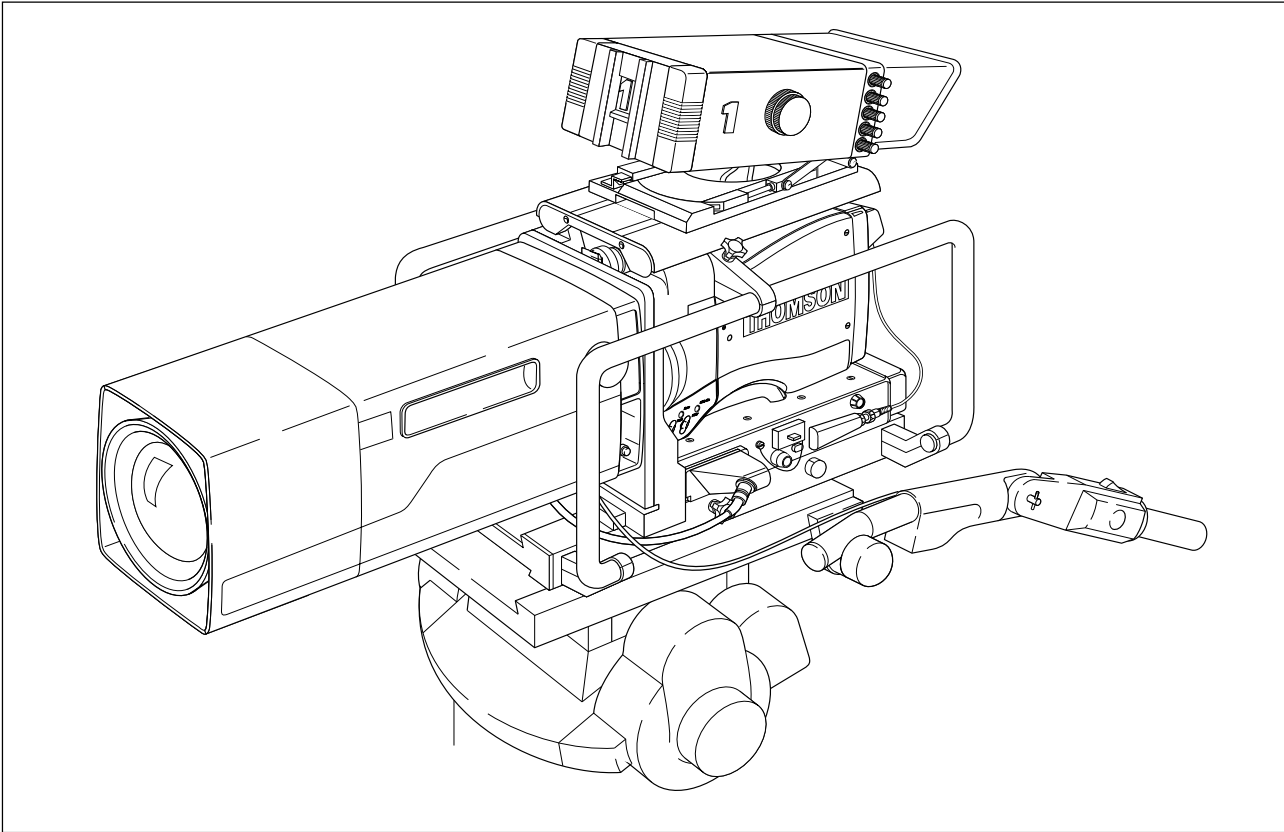
- Press the red locking lever (1) against release handle (2) on the tripod adapter and hold.
- Pull the release handle (2) forward.
- The camera will spring free of the tripod adapter.

Rain and Off-use Cover



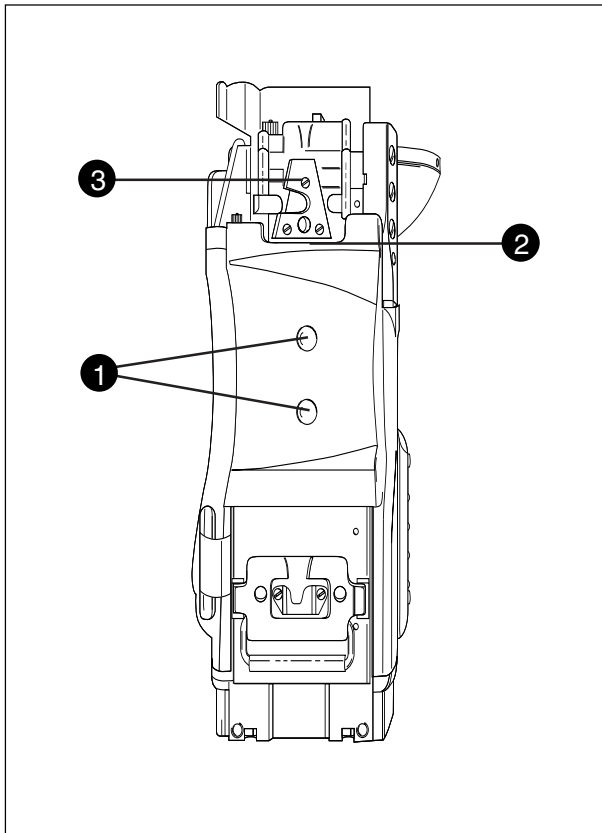
The rain and off-use cover LDK 6989/00 must be used when the camera system is in a wet or damp environment. This protection is necessary for personal safety reasons.

The cover can also be used indoors to protect the camera when it is used in dusty environments. It can also be useful if the camera is being put into storage. For more information on how to put on the cover refer to the User's Guide which is supplied with it.



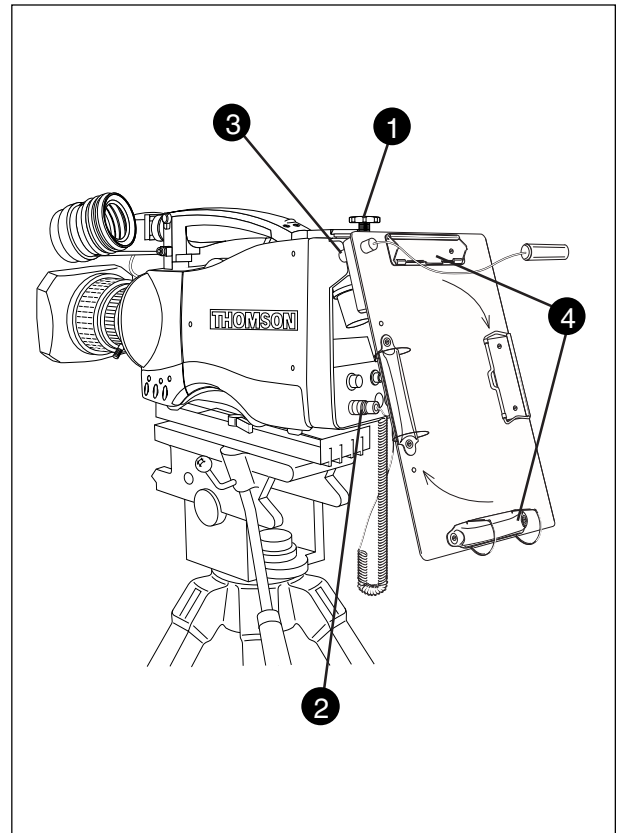
The SuperXpander (LDK 4482) for the LDK 23HS mkII extends the camera's use in studio and EFP situations. This adapter allows larger studio lenses and a 7-inch viewfinder to be used with the camera. Additional facilities provided include a utility power outlet and a rear control panel.

Refer to the User's Guide of the large lens adapter for more information on mounting the camera and other units to the large lens adapter as well as information on the additional functions of the adapter.



To mount another type of shoulder pad proceed as follows:

- a. Remove the two screws (1) securing the shoulder pad to the camera.
- b. Slide the lip (2) of the new shoulder pad under the triangular bracket (3). Use the two screws (1) to secure it in place.



To mount the scriptboard LDK 6985/15 onto the camera proceed as follows:

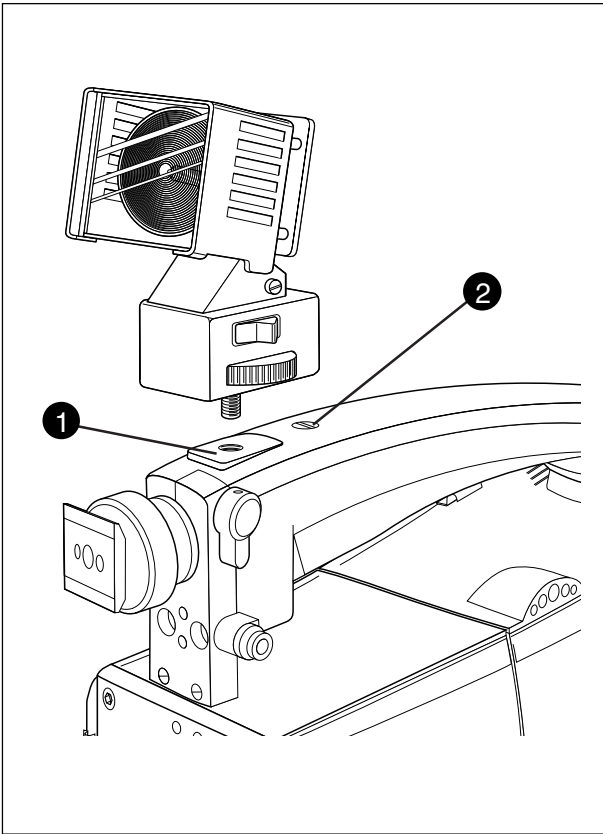
- a. Secure the scriptboard to the top-rear of the camera with the retaining screw (1).
- b. Connect scriptboard light cable to the scriptlight connector (2) at the rear of the camera.

Caution

Ensure that the scriptlight does not use more than 3W of power.

The scriptlight is switched on and off, and the intensity is varied with the knob (3) at the rear of the scriptboard. The retaining rings and clip (4) can be screwed onto the right and left side resp. if required.

Top Light



To mount a toplight on the camera, proceed as follows:

- a. Raise the recessed bracket (1) by tightening screw (2).
- b. Screw or slide the toplight onto the bracket (1) and lock the toplight.
- c. Adjust the angle of the bracket (1) by loosening or tightening the screw (2).
- d. When no toplight is mounted, loosen screw (2) to lower the bracket (1) for a smooth handgrip.

Section 3

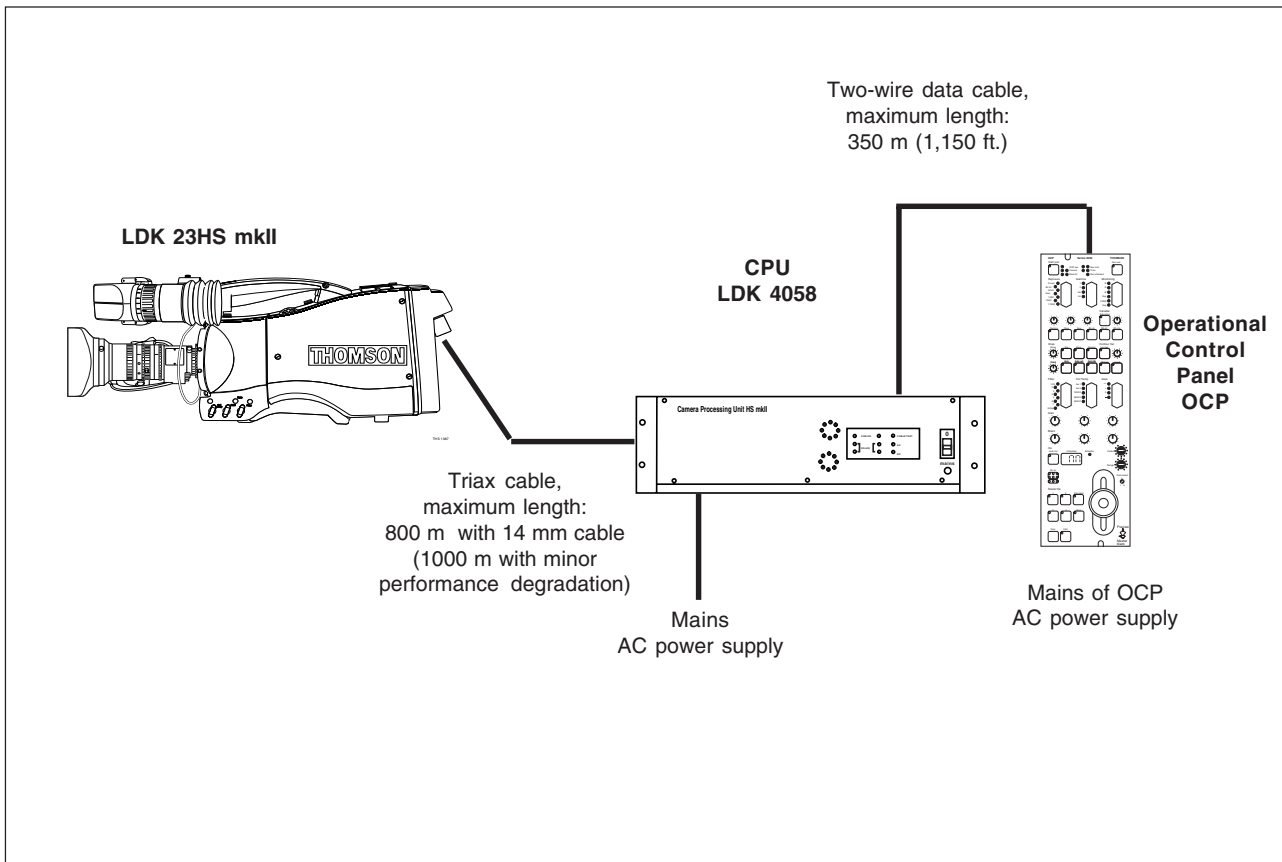
Configurations

The LDK 23HS mkII is a multi-functional camera and this section describes the various ways that it can be used in a studio system with other cameras. Information on the cables, control panels and the control bus is also provided as is information on the main video and audio/intercom signal paths through the system.

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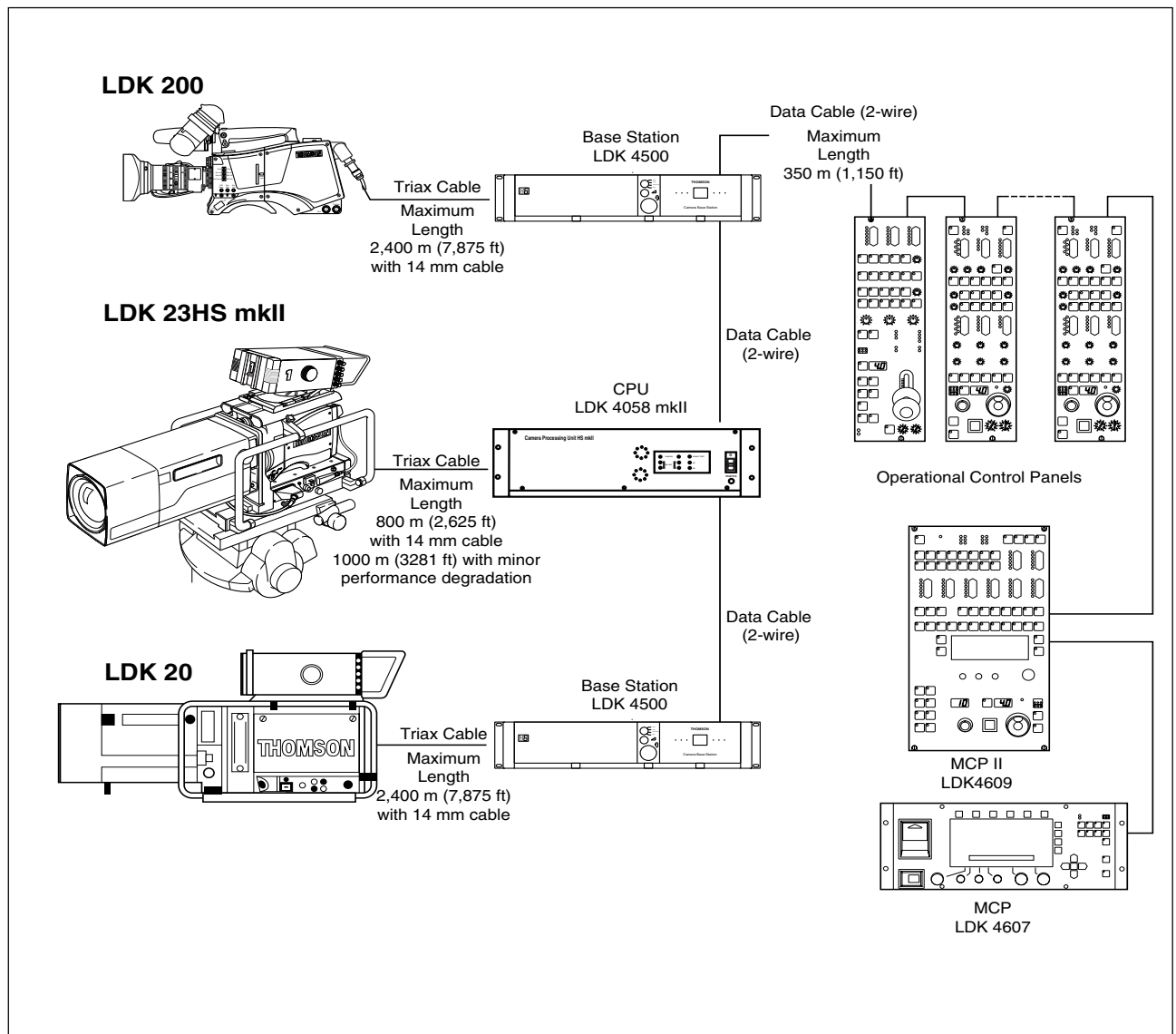
Single camera triax mode



This configuration is the single camera Triax (Remote) mode. In this case the camera is connected to a CPU via a Triax cable which can have a maximum length of 800 m with 14mm cable (1000 m with minor performance degradation). The CPU provides the power supply for the camera via the Triax cable. The CPU receives its power from the AC mains supply. The Triax cable carries R-Y, Y and B-Y video signals, two audio signals and intercom signals from the camera head to the CPU. It also carries external video signals, and intercom signals from the CPU to the camera.

Remote control of the camera when used in the Triax mode is achieved by a remote control panel of the Series 9000 Control System. This can be an operational control panel (OCP) connected to the CPU. The data communication between camera and CPU is carried over the Triax cable. The control panel can also be connected directly to the camera.

Multiple camera mode



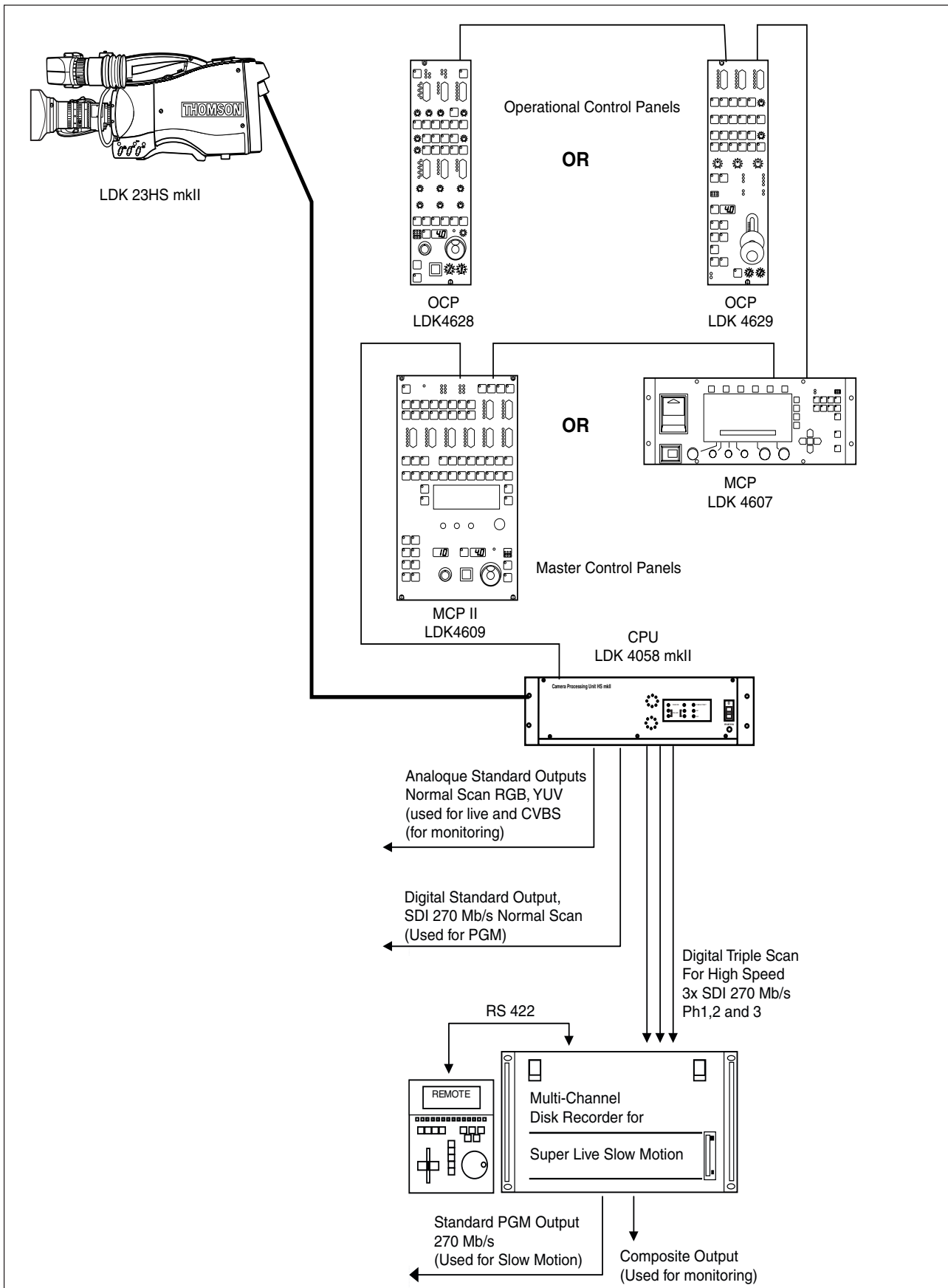
This configuration is the multiple camera Triax mode. The camera is connected to a CPU as in the single camera Triax mode. The data bus is looped-through from CPU to CPU's, Base Stations, OCP's and MCP. The OCP's (Operational Control Panels) are used to control the cameras and a MCP (master Control Panel) can also be connected to extend the control facilities.

The LDK 20 and LDK 200 studio cameras are of course ideal companions for the LDK 23HS mkII, however, other cameras of the Thomson Multimedia Broadcast Solutions family such as the LDK 10p, the LDK20P and the LDK 100 can also be included in this configuration.

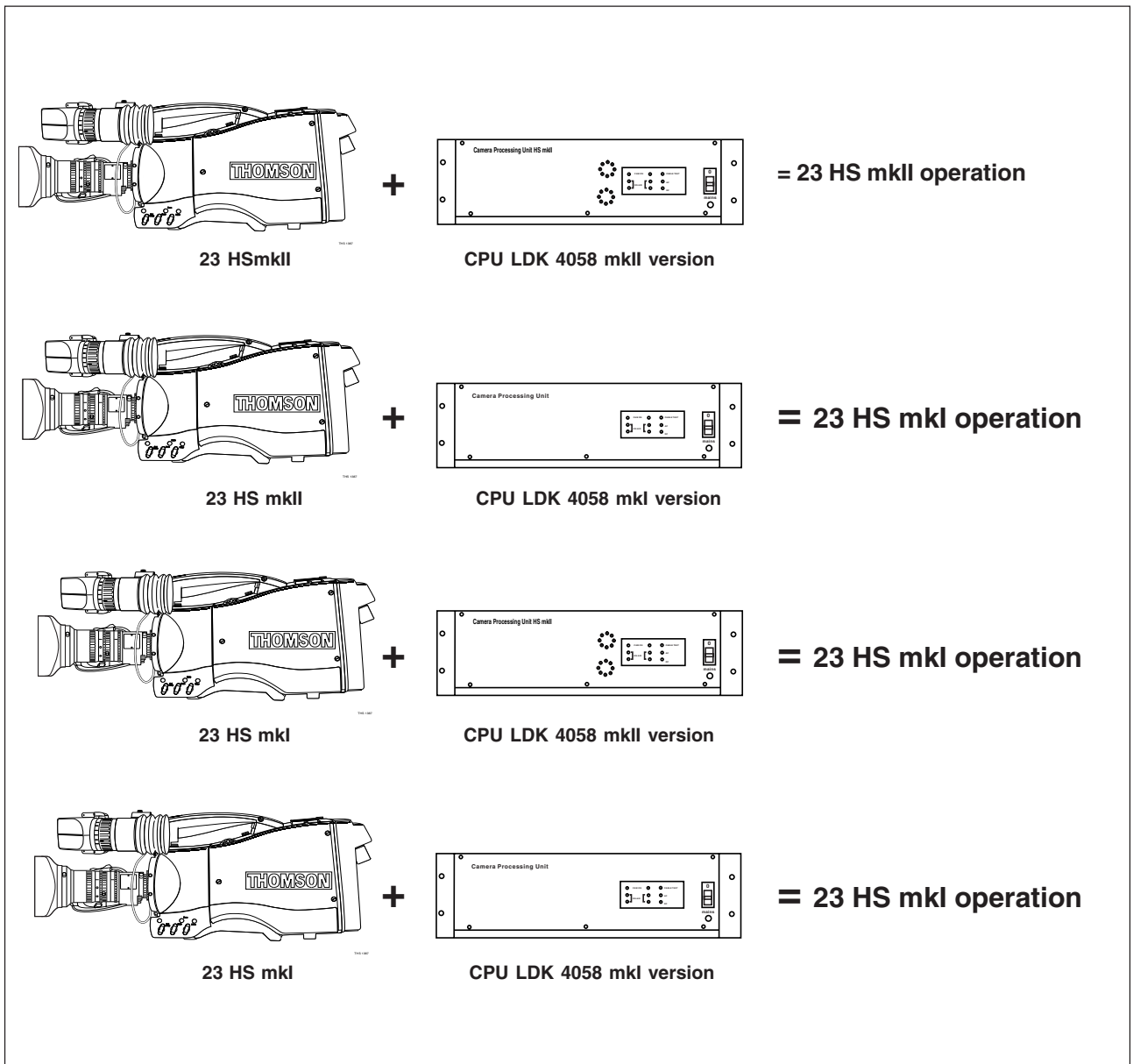
Note

A maximum of 15 looped-trough standard camera systems in one chain can be handled, however, in a multiple system the load of a LDK 23 HS (mkII) is twice the load of a standard camera so with level 1 communication software the system can handle a maximum of 8 LDK23 HS (mkII) camera's.

High Speed Recording



High speed system compatibility



Compatibility with the previous version of the LDK 23 HS is guaranteed, with some limitations of functionality and performance.

Only the combination of the LDK 23 HS mklI and the LDK 4058 mklI CPU supports the mklI flicker reduction system. The mkl Auto Lighting function is available if other combinations are used. The less sophisticated mkl Auto Lighting funktion is used for adjusting the video level of the entire image, based on the average video level of three fields.

Required Software Configurations

Minimum configuration series 9000 parts

System part	12NC software	Status software
Camera Head	3922 407 27101	44
CPULDK4058	3922 407 27121	42
OCP LDK4628	3922 407 12151	78
OCP LDK4629	3922 407 21521	78
MCP1 LDK4607	3922 407 11411	88
	3922 407 11421	88
MCP2 LDK4609	3922 407 20901	22
	3922 407 20911	22

Two-wire Data Control Bus

The two-wire data bus is used to connect all control units in the Series 9000 control system. The data cable loops-through from one unit to the other. The order of connection is not important, however, the total length of the cables must not exceed 350 metres.

Each unit connected directly to the data bus, either CPU, camera head or OCP, is identified by a number. In order to ensure, for example, that OCP 1 controls the camera connected to CPU 1, the same unique number must be assigned to both OCP 1 and CPU 1. The assignment number is set internally on the units during installation.

The assignment number of a camera head connected to a CPU is automatically set to the number of the CPU to which it is connected. The number on the CPU, which is connected to the data bus, must be set to the number of the control panel that is to control it.

A camera connected directly to the data bus must have its assignment number set to the number set on the OCP that is to control it. It is important to set a unique number for each CPU/OCP or camera/OCP group as unpredictable control situations could arise otherwise.

The MCP is also connected to the data bus, however, it is not necessary to set an internal assignment number. The camera or cameras to be controlled are selected on the MCP front panel itself when operating the unit.

Note

A maximum of 15 looped-through standard camera systems in one chain can be handled, however, in a multiple system the load of a LDK 23 HS (mkII) is twice the load of a standard camera so with level 1 communication software the system can handle a maximum of 8 LDK23 HS (mkII) camera's.

Other Control Features

Private Data

A private data channel is also available between the camera and the CPU. This is a two-way serial channel operating at 2400 B/s with TTL level. This channel can be used for digital data links (Refer to the Installation Manual for more detail).

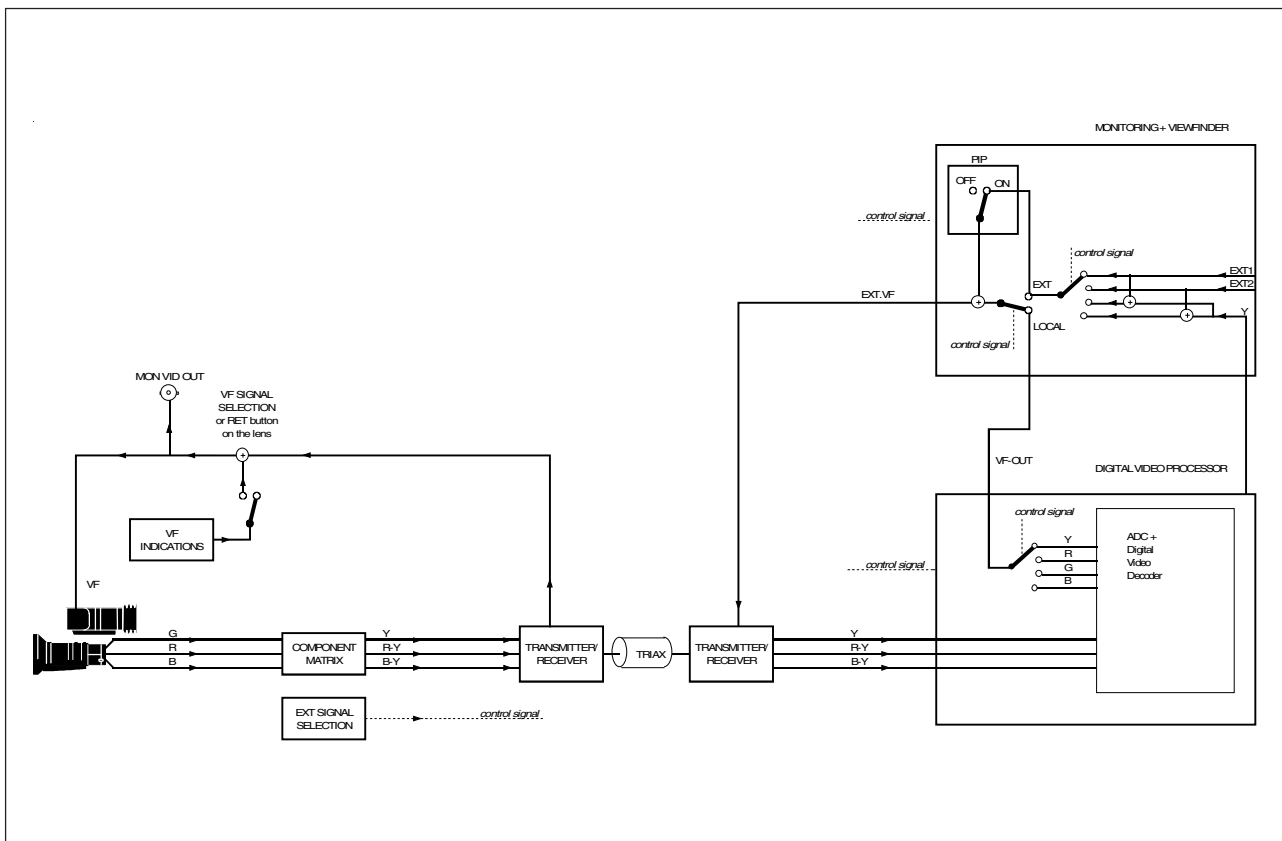
Analogue Ch0-Ch1

Two analogue control channels are available from the CPU to the camera. These provide a control voltage from 0V to +5V that can be used for pan control for example. For more information on these channels refer to the Installation Manual.

Note

If the analogue Ch1 is used to switch externally the Aspect Ratio, Ch 1 is not available for analogue signals from the CPU to the camera.

Video Routing



Main video path

When the camera is used in the triax mode, the R, G and B video signals from the sensors are first subjected to video processing and then pass to the multiplexer/transmitter section which sends Y, R-Y and B-Y to the CPU via the triax cable. The R, G and B video signals are available for the studio as outputs on the rear of the CPU.

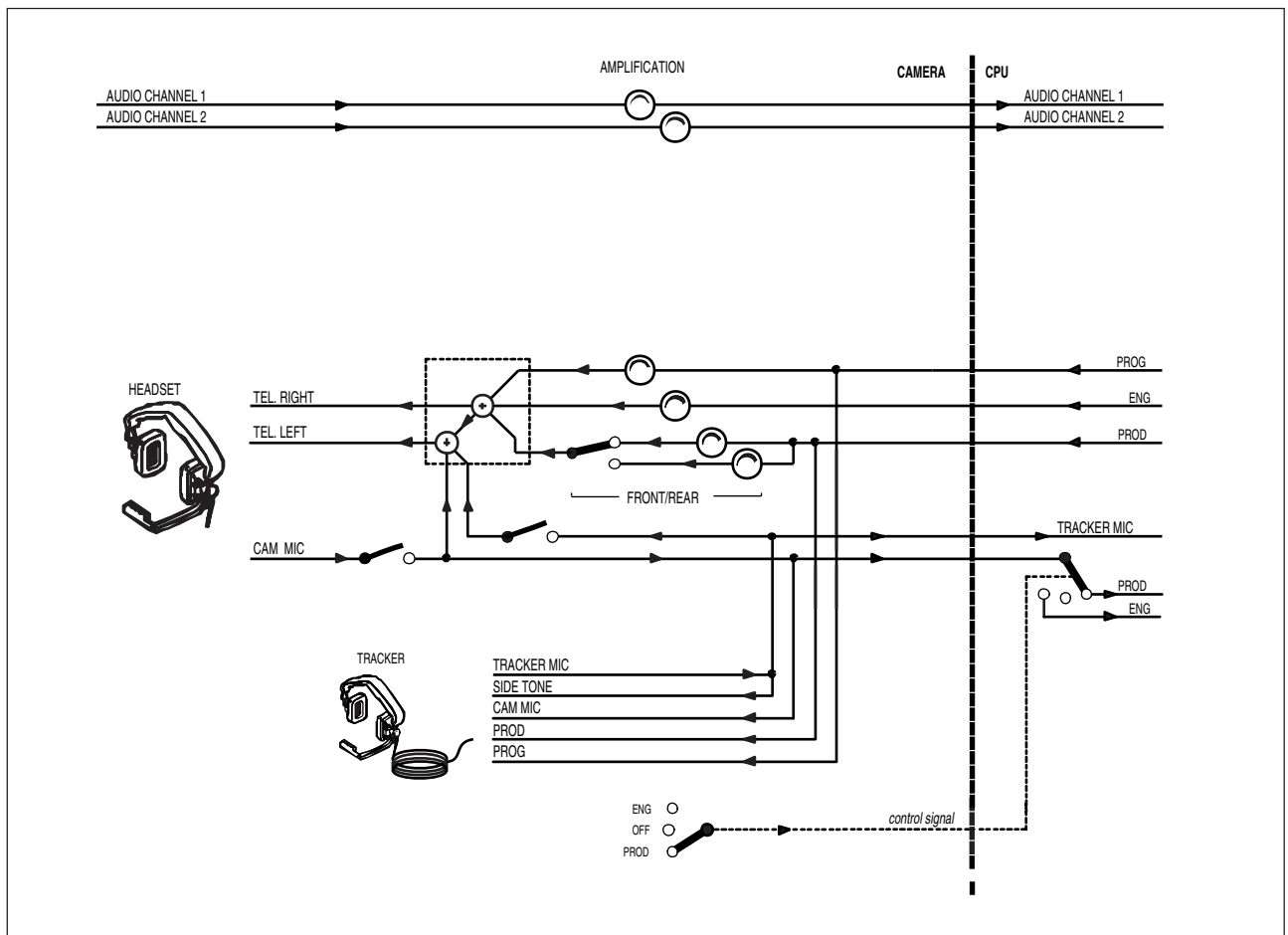
Viewfinder video

The normal signal displayed in the viewfinder is the Y signal. This is derived from the R, G and B video signals from the video processing circuits. Additional information is added to the viewfinder signal to provide superimposed text and graphics. The video signal for display in the viewfinder can be selected from the above mentioned Y signal or an external 1 or external 2 video signal. The external 1 and 2 video signal are input from the studio system to the rear of the CPU and are transmitted via the triax cable to the camera. The Y, external 1 and external 2 video signals can be viewed separately, or Y mixed with external 1 or 2.

Output signals

The camera has four video output connectors: two on its right side and two on the backpanel. The external output connector carries the external signal from the CPU. The monitoring out connector carries the signal which is displayed in the viewfinder.

Audio/Intercom Routing



Audio path

The back panel of the camera has two connectors for audio microphones. The signals applied to these connectors are amplified and passed to the multiplexer/transmitter section of the camera which sends them to the CPU via the Triax cable. The amplification factor of the audio microphone signals can be selected via the control system.

Phantom power is available for the audio microphones. The default value is +48V (refer to the installation manual for information on changing this value).

Intercom

Two intercom headsets can be connected to the camera; one for the cameraman and one for the tracker.

In the triax mode there are three intercom channels from the CPU to the camera. These carry the engineering intercom signal, the production intercom signal and the programme intercom signal. Two intercom channels from the camera to the CPU carry

the tracker and cameraman intercom microphone signals. The latter can be routed in the CPU either to engineering or to production via the intercom routing switch on the camera.

The tracker headphone receives the cameraman microphone signal, the production intercom signal, the programme intercom signal and either by default the tracker microphone sidetone signal or the engineering intercom signal.

The engineering intercom signal, the production intercom signal and the programme intercom signal from the CPU are all available for the cameraman headset. The volume of these signals can be adjusted and can be switched to either the right or left side of the headset. The tracker microphone can also be switched to the left side. The cameraman microphone sidetone signal is always present on the left side. The volume of this signal can also be adjusted.

Section 4

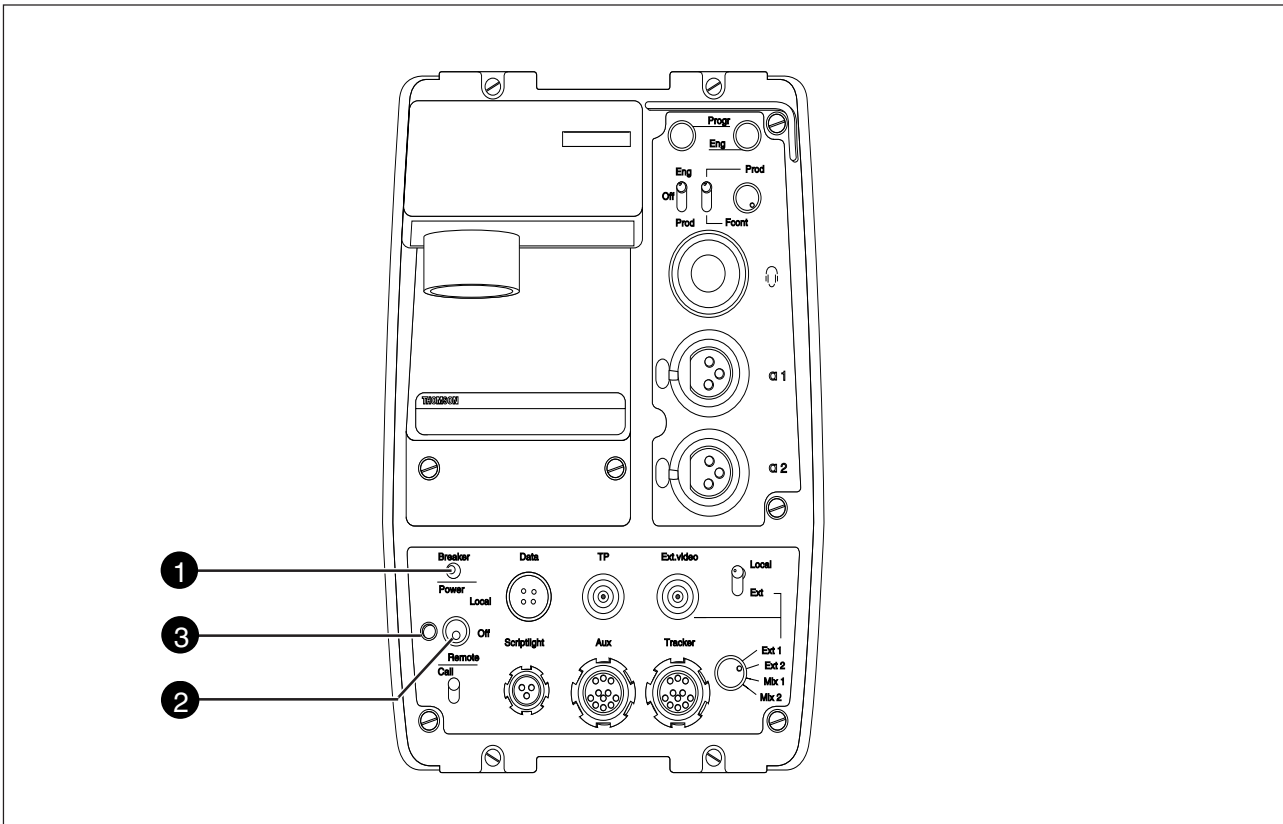
Location of Controls and Functions

This section shows the physical location of the controls and connectors on the camera. These are grouped according to their function so as to provide a quick reference guide to the operation of a particular aspect of the camera.

Contents

Power Supply	4-2	Control Functions	4-9
Video Functions	4-3	Audio / Intercom	4-10
Monitoring Functions	4-5	Auxiliary Functions	4-12
Viewfinder	4-7	CPU output Functions	4-13
Viewfinder Indicators	4-8		

Power Supply



1 Circuit breaker button (BREAKER)

The circuit breaker cuts off the power when excessive current flows in the camera. Check the units for faults and if necessary take corrective action before pressing the circuit breaker button to reset it.

2 Power switch

The power switch has three positions:

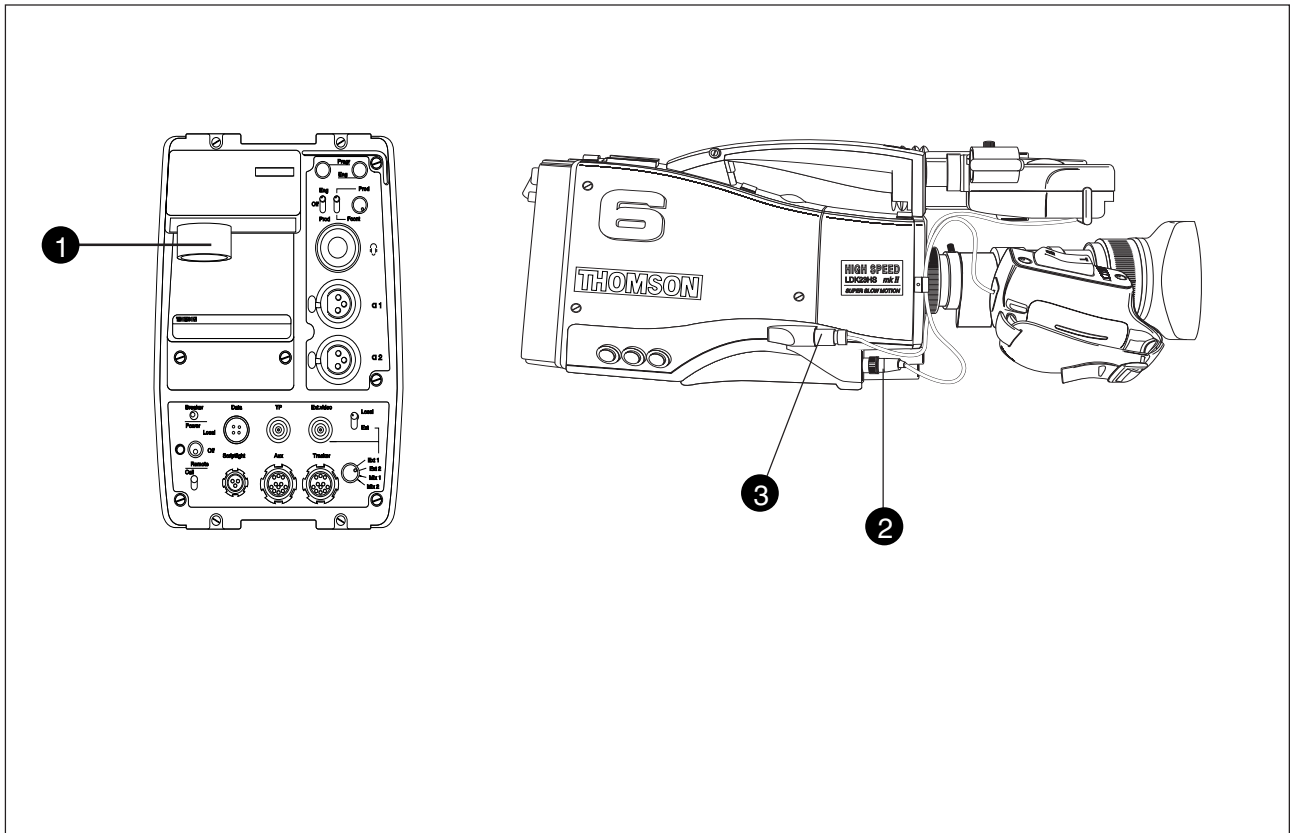
- Remote : Power is supplied via the Triax cable.
- Off : Power to camera is switched off.
- Local : Power to camera is switched off.

Note

Local power supply is not possible with the LDK 23 HS mkII.

3 Power indicator

Power on indication is not available with the LDK 23 HS mkII.



1 Triaxial cable connector

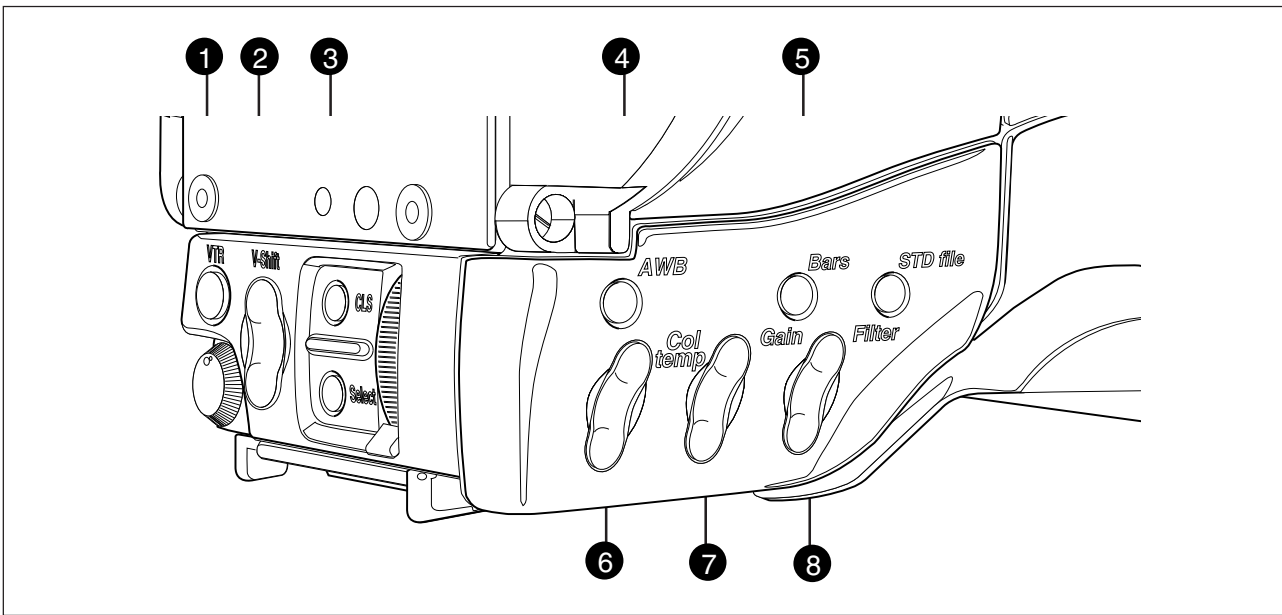
The triaxial cable which connects the camera to the CPU is connected to this socket. The triax cable carries all the video and control signals, and the power supply for the adapter and camera head.

2 Lens connector

The flying lead from the lens is connected to this socket.

Caution

Do not attach the Viewfinder to the lens connector (3).



1 VTR switch

The VTR switch is disabled in this mode. In triax mode however, it will switch the microphone of the headset to the production intercom channel.

2 Vertical Shift switch (V-Shift)

The V-Shift switch is disabled in this mode.

3 Clean Scan button (CLS)

The camera does not have a 'clean scan' facility. Although it is possible to select a variable exposure time between 151/181 to 829 Hz, it is not possible to increase it above the nominal setting (1/150 of 1/180).

Therefore, it is not possible to eliminate the horizontal bars when shooting monitors with this camera because their refresh rates are below 150Hz.

4 Auto White Balance button (AWB)

The AWB button is a momentary switch, used to start the automatic white balance process. The camera, when pointed at a white area in the centre of the picture, measures and stores a colour temperature setting in the AW1 or AW2 memory position.

The AWB button only operates if the colour temperature switch is in the AW1 or AW2 position. Refer to Section 5 for more information on how to use the AWB.

5 Colour Bars button (Bars)

The Bars button is used to switch the colour bar test signal on and off. (The lens iris closes automatically when the colour bars are switched on.)

6 Colour Temperature switch (Col. temp)

This up/down scroll switch allows a choice between three preset colour temperatures:

- 3200K (3.2K) - for studio lighting conditions
- 5600K (5.6K) - for outdoors, clouded conditions
- 7200K (7.2K) - for outdoors, clear blue skies

and two memory settings AW1 and AW2. These two memory settings can be filled with measured values using the AWB button (4).

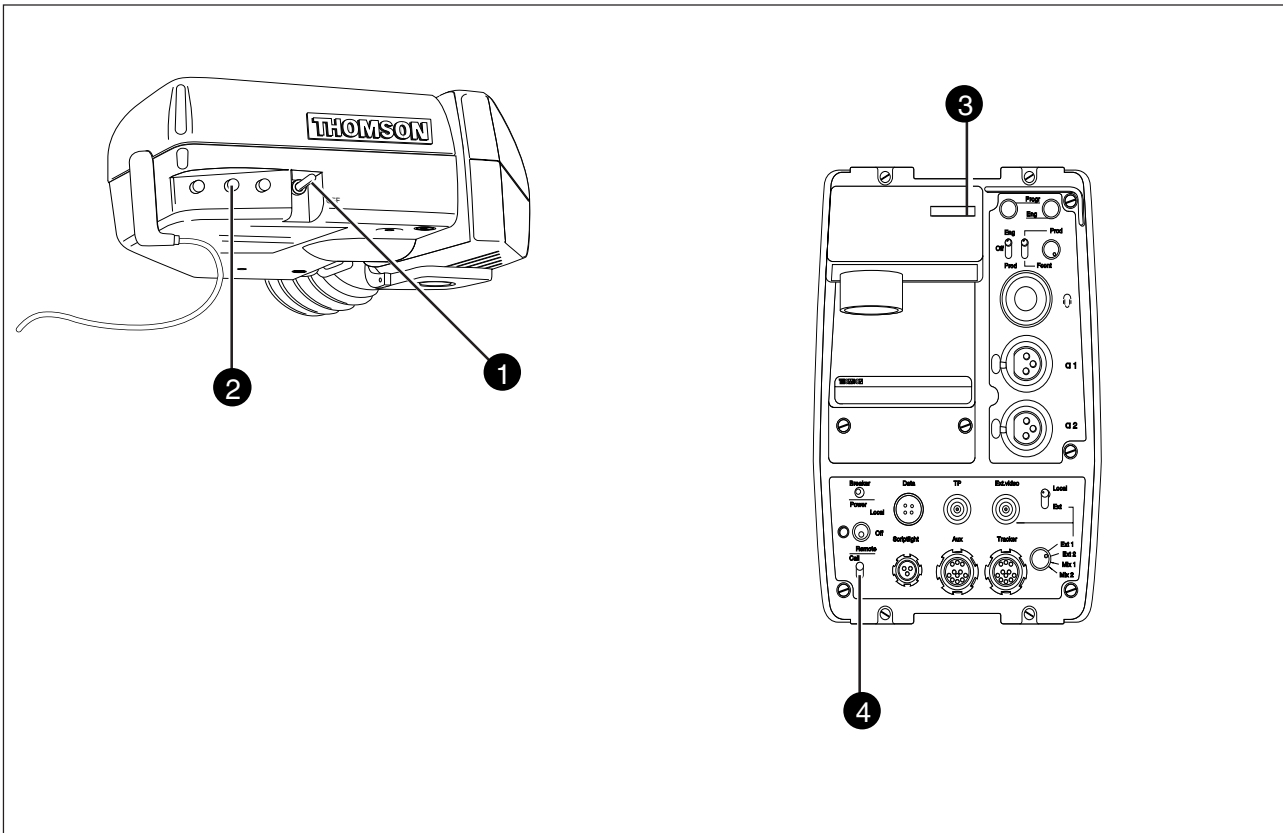
7 Gain switch

This up/down scroll switch gives a choice between four gain settings that, except for the 0dB setting, can be set in the install menu (refer to section 6).

8 Filter switch

When this up/down scroll switch is pressed the filter wheel moves to its next position. The filter switch has seven positions:

- | | | |
|---|---|---------------------|
| 1 | : | Clear |
| 2 | : | ND 0.6 filter |
| 3 | : | ND 1.2 filter |
| 4 | : | ND 1.8 filter |
| 5 | : | 4 Point Star filter |
| 6 | : | 6 Point Star filter |
| 7 | : | Cap (lens closed) |



1 On-air indicator switch

The on-air indicator switch disables (OFF position) or enables the on-air LED indicator on the viewfinder.

2 On-air indicators (red)

The red on-air LED indicator light to indicate that the camera is on-air or recording.

3 On-air / ISO indicators (red / yellow)

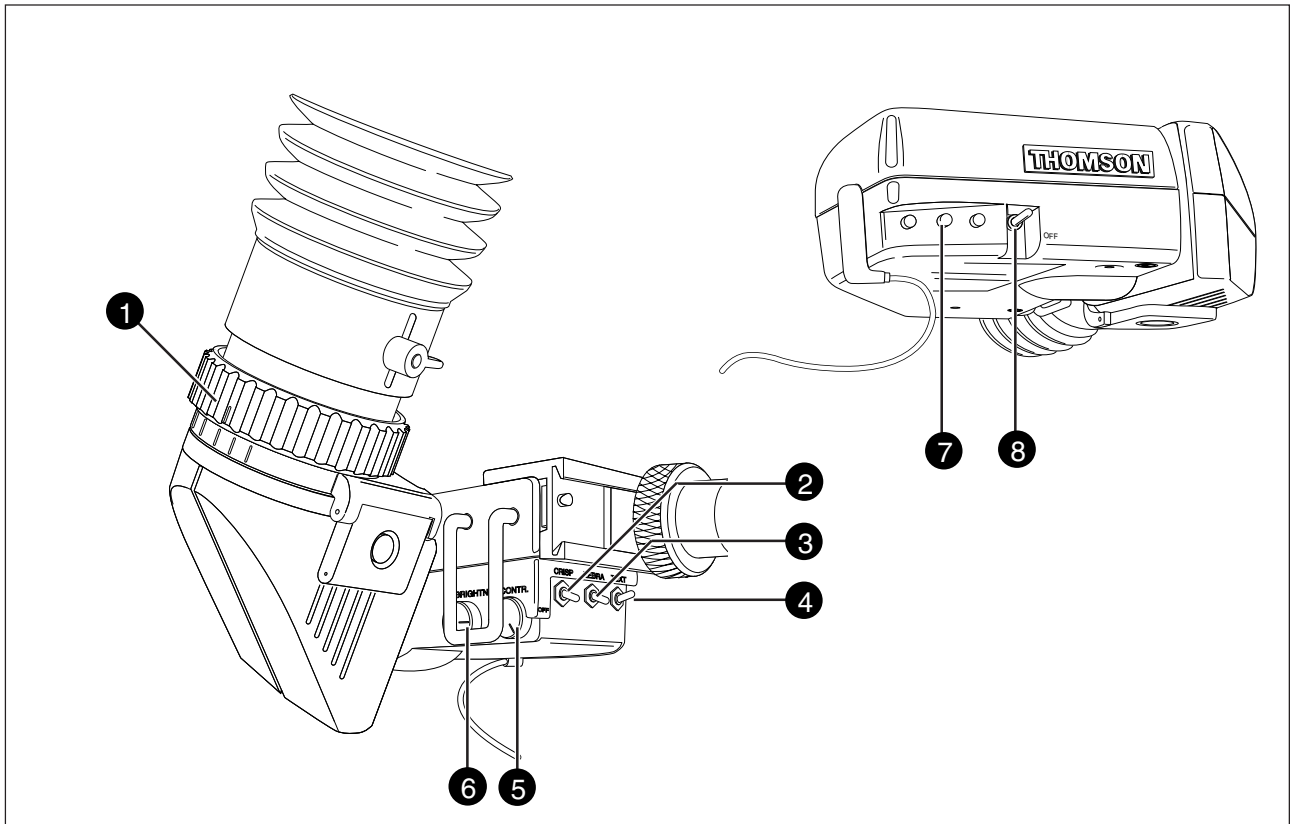
These LED indicators light red to indicate that the camera is on-air or recording.

They are also used as ISO-indicators (yellow). This is a secondary indicator which is controlled by a signal applied to the signalling connector of the CPU. It indicates that the camera signal is being used for recording purposes but is not on-air.

On-air indication will override ISO.

4 Call switch

Operating this momentary switch sends a signal to the control panels calling for attention.



1 Dioptic adjustment ring

Turn this ring to obtain the image that is best suited to your eyesight.

2 Crispening switch

This switch, when switched on, increases the sharpness of the picture displayed in the viewfinder.

3 Zebra switch

This switch disables (OFF position) or enables the zebra pattern in the viewfinder which indicates high video levels.

4 Text switch

To prevent the on-screen text from appearing in the viewfinder set this switch to the OFF position. When in the OFF position, this switch also disables the menu selection function of the front rotary switch.

5 Contrast control

Use this rotary control to adjust the contrast of the viewfinder display to suit your needs.

6 Brightness control

Use this rotary control to adjust the brightness of the viewfinder display to suit your needs.

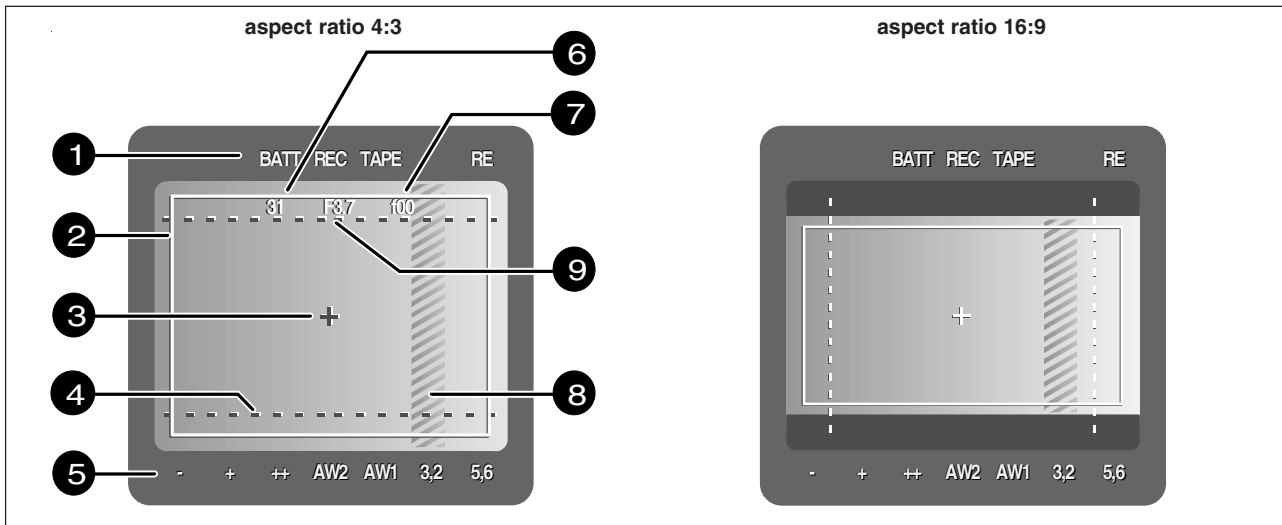
7 On-air indicators

The red on-air LED indicators light to indicate that the camera is on-air or recording. The indicators can be disabled by switch 8.

8 On-air indicator switch

The on-air indicator switch enables and disables the on-air LED indicators on the viewfinder.

Viewfinder Indicators



1 Top indicators

BATT Function disabled.

REC This red indicator lights to indicate that the camera is on-air. It flashes when any irregularity in the recording system occurs (function depends on the type of recorder).

TAPE Yellow, when in triax (remote) mode: ISO-indication.

RE This green indicator lights when the range extender is selected or toggles when a call switch is used.

2 Safe area marker

Indicates the safe area which represents 80% of the whole viewfinder picture area. This is the minimal area which will be seen on a TV-set.

3 Centre marker

This cross marks the centre of the picture.

4 Cadre marker

These dotted white lines represent the limits of the 16:9 picture in the 4:3 mode and the limits of the 4:3 picture in the 16:9 mode. The area outside the cadre will be cut off when the picture is displayed on a monitor with an other format. The dotted lines can be switched to a low contrast area, see Installation Manual.

5 Bottom indicators

The following green indicators light when:

- gain is -
- + gain is +
- ++ gain is ++
- AW2** colour temperature stored in memory position 2 is selected
- AW1** colour temperature stored in memory position 1 is selected
- 3,2** colour temperature of 3200 K is selected
- 5,6** colour temperature of 5600 K is selected

6 Zoom indication

Indicates the degree to which the lens has been zoomed in or out. This indicator only works when the zoom signal is available from the lens.

7 Focus indication

Indicates where the lens has been focused. This indicator only works when the focus signal is available from the lens.

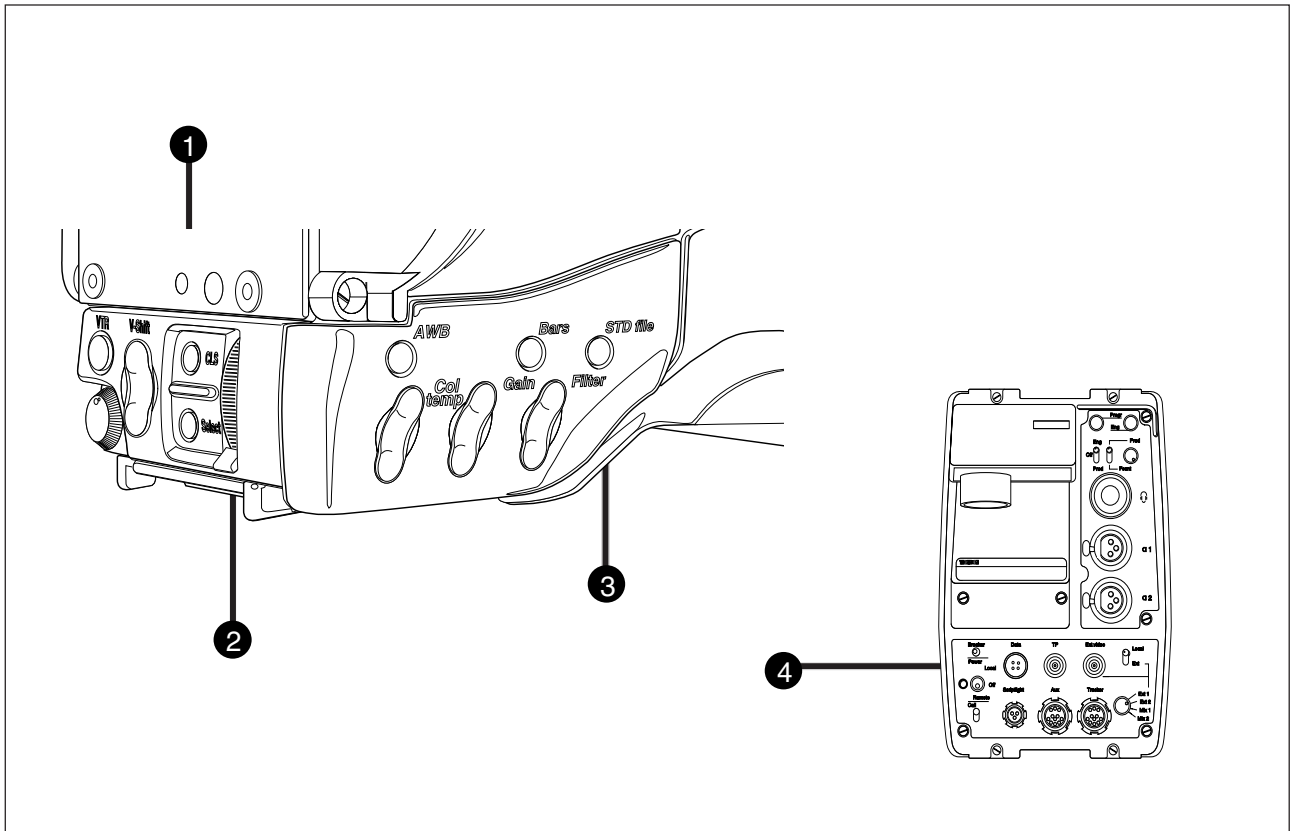
8 Zebra pattern

This diagonal line pattern warns the operator that the area affected has risen above a predetermined level of the full scale video exposure value. Level and range are selectable via the menu control system.

9 Iris indication

Indicates the diafragm position. This indicator only works when the iris signal is available from the lens.

Control Functions



1 Select switch

This switch, when pressed, selects the particular menu that is pointed out by the cursor in the display or sets an on/off function.

2 Rotary control

This up/down scroll switch is used to move through the various menus of the control system or to set a particular value for a function. The menu selection function of the switch is disabled when the viewfinder text is set to OFF.

3 Standard File button

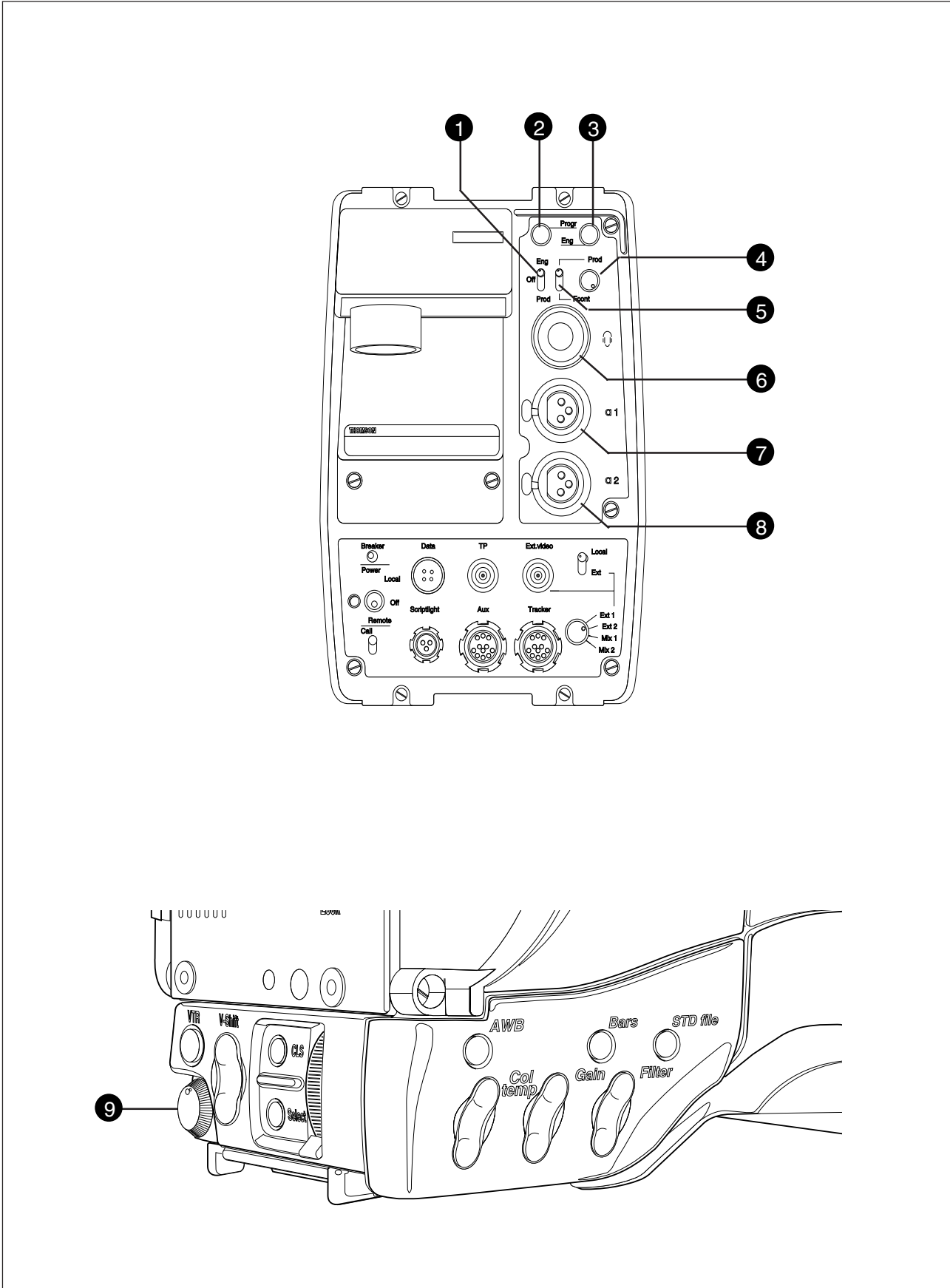
This green button, when pressed and held for 3 seconds, initiates the recall of the standard set-up parameters (Refer to the appendix). These parameters only take effect if the camera is not "On Air".

Note

The MCP can select the standard file parameters as a factory or customer standard file.

4 Data connector

This connector allows the direct connection of the Operational Control Panel (OCP) or the Master Control Panel (MCP) from the Series 9000 in order to control camera functions.



1 Intercom routing switch

A 3-position switch which routes the cameraman's intercom microphone signal to engineering (ENG) or production (PROD), or turns off the intercom.

If the camera is used in triax mode, the momentary VTR switch at the front of the camera, on the lens or on a shot box can be used to route the cameraman's intercom microphone signal to production regardless of the position of this switch.

2 Headset Programme volume control

This control varies the volume of the programme intercom signal to the cameraman's headset.

3 Headset Engineering volume control

This control varies the volume of the engineering intercom signal to the cameraman's headset.

4 Headset Production volume control

This control varies the volume of the production intercom signal to the cameraman's headset when the selection switch (5) is not in the FRONT position.

5 Production volume control selection

A 2-position switch for the production intercom which selects control of the volume at the front of the camera (9) or control of the volume at the rear (4).

6 Cameraman intercom connector

Headsets with dynamic or carbon type microphones can be connected to this socket (see installation manual).

7 Audio Ch. 1 microphone connector

Balanced input for high quality microphone. A phantom power supply (48V) can be internally selected (see installation manual). The gain of this audio channel can be controlled from the CPU.

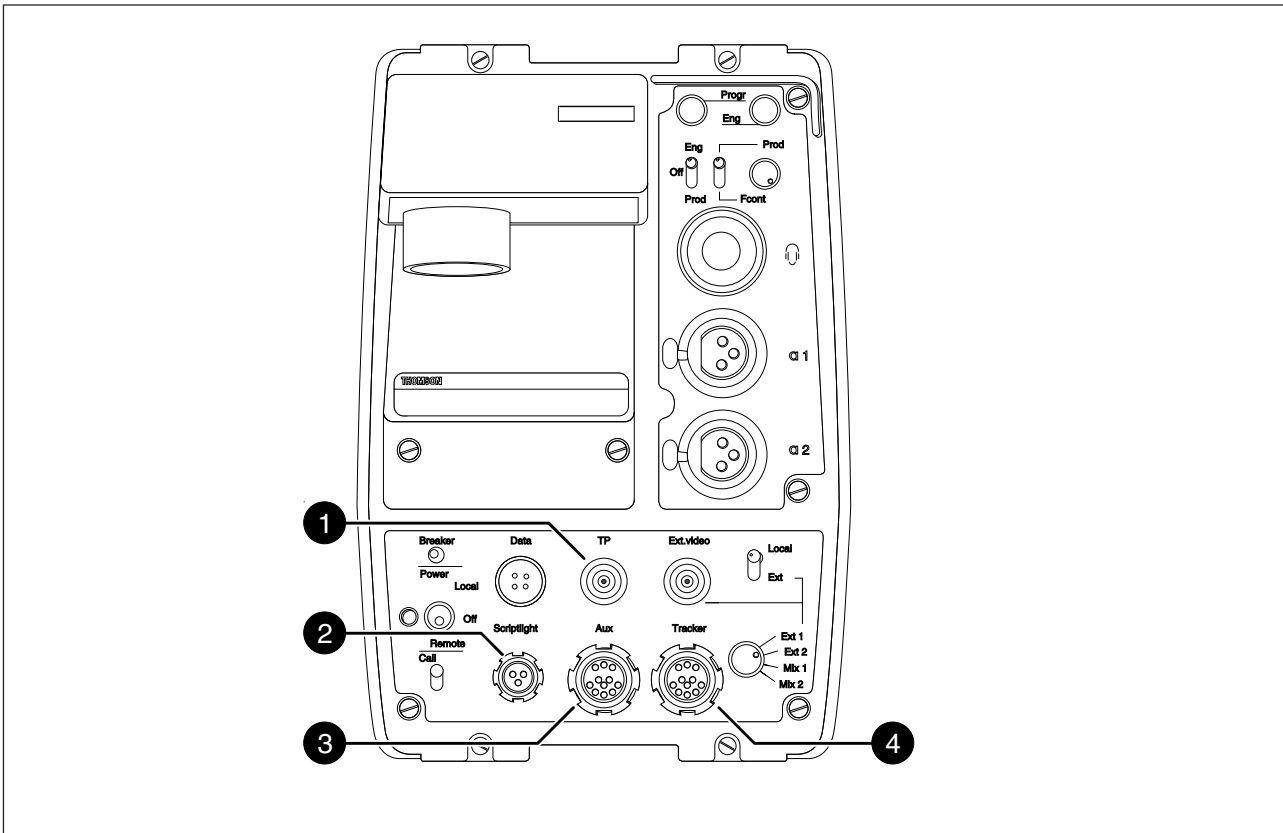
8 Audio Ch. 2 microphone connector

Balanced input for high quality microphone. A phantom power supply (48V) can be internally selected (see installation manual). The gain of this audio channel can be controlled from the CPU.

9 Headphone volume

This control varies the volume of the production intercom signal to the cameraman's headset when the selection switch (5) is in the FRONT position.

Auxiliary Functions



1 Teleprompter output connector

This BNC connector is disabled in this mode.

2 Script Light connector

A 3-pole socket which supplies +12 Vdc for a script light (maximum dissipation 3W). Scriptboard LDK 6985/15 is connected to this socket.

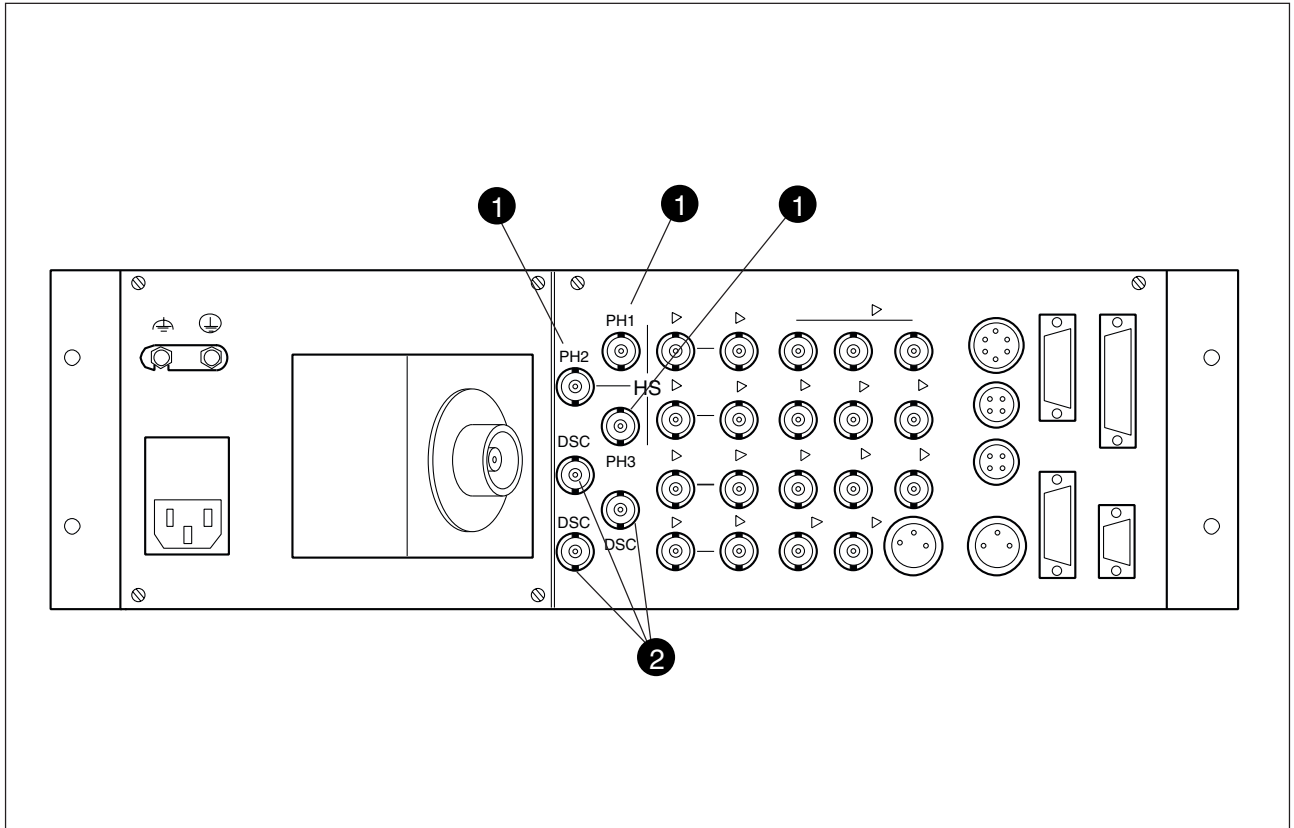
3 Auxiliary connector

This 11-pole female socket provides analogue control signals and facilities for the connection of a private data channel (see installation manual).

4 Tracker connector

This 11-pole female socket provides full intercom and signalling facilities for the dolly or crane driver (see installation manual).

CPU output Functions



1 Triple scan Serial Digital video outputs

The PH1, PH2 and PH3 BNC connectors provide combined a triple scan serial digital video signal to the Multi Channel disk recorder for Super Live Slow Motion. (Consult the Installation Manual of your disk recorder as required for detailed information).

2 Normal Scan Serial Digital video outputs

The three DSC BNC connectors provide a normal scan serial digital video output.

Section 5

Shooting

This section contains information on the practical use of the camera using the viewfinder display and the switches at the front to control the camera system.

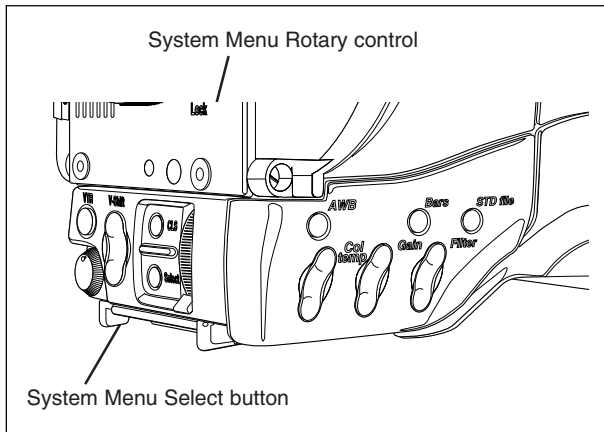
Contents

Using the Camera	5-2	Colour temperature selection	5-4
Standard settings	5-2	Auto-White Balance	5-5
Colour Bar	5-3	Clean Scan	5-5
Gain selection	5-3	Artificial light conditions	5-6
Optical filter selection	5-4		

Using the Camera

Standard settings

This section describes the operational functions that are directly available, via the viewfinder display and the switches at the front and front-left.



The rotary control and select button at the front of the camera offer a convenient way of accessing the menu system which provides full control of the camera. But there are a number of steps that must be carried out before satisfactory shot can be obtained:

- The camera must be set up and powered.
- The standard settings must be recalled.
- Adjustments must be made for ambient lighting.
- Shots of TVs or monitors must have special consideration.
- In Artificial light conditions use preset lighting settings to ensure a slow motion picture without pulsing light effects.

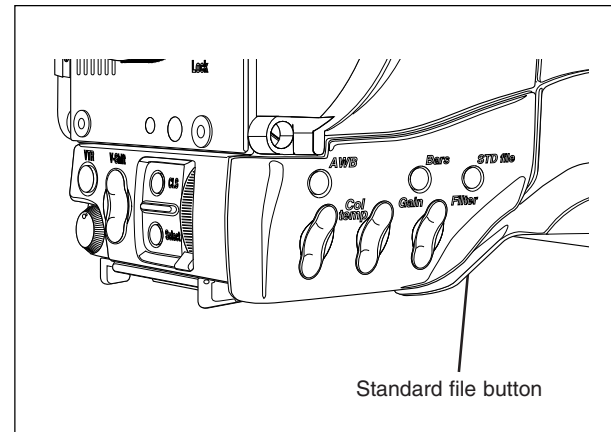
Physical set-up and power supply

Attach lens, viewfinder and microphone to the camera as described in 'Assembling the Units' in Section 2. If required mount the camera on a tripod.

For remote operation connect the triax cable to the triax connector and the camera operator's headset to the headset socket on the rear panel of the camera. Connect the audio microphone to either the audio 1 or 2 socket on the rear panel of the camera. For remote operation the camera is powered by the CPU via the triax cable. Set the power switch on the rear of the camera to the position REMOTE.

The camera is now ready for use, however, the ambient conditions must now be taken into account and the appropriate adjustments made.

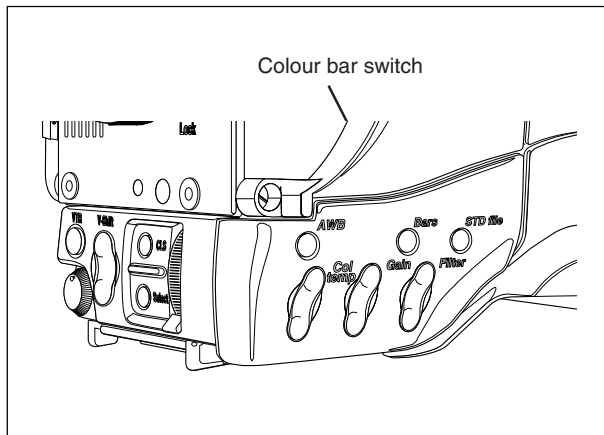
To ensure that some of the camera functions are not set to unusual values a standard file has been defined in the factory which contains the normal values for most functions. The table in the appendix lists the values that are set when the standard file is recalled.



Press the green STD File button on the left side panel of the camera and hold it for 3 seconds to recall the standard values for the various functions. The standard values only take effect when the camera is not On Air.

Note

The MCP can be used to set the standard scene file to either the factory standard or a customer defined standard.

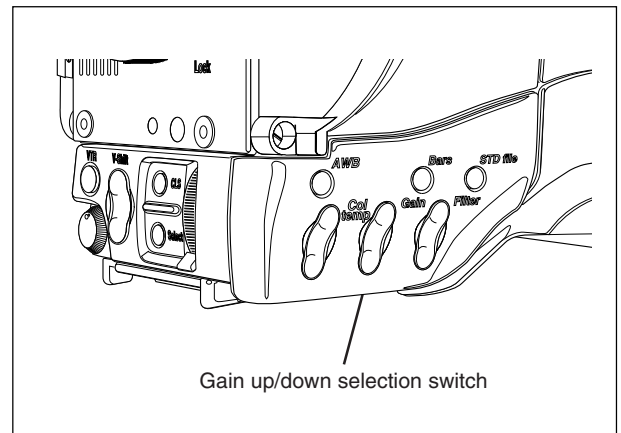


The front/left side panel also contains a button for switching on the colour bar test signal. The colour bar is a standard test signal which is used to set up and check the camera before use.

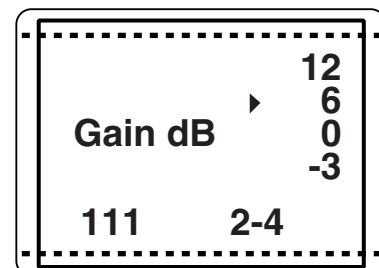
When the colour bar is selected the following functions are temporarily set to the values listed below:

- Black stretch : Off
- White limiter : Off
- Zebra : Off
- Safe area (VF) : Off
- Cadre (VF) : Off
- Filter wheel : Cap

Depending on the available light levels it may be necessary to adjust the gain of the camera.



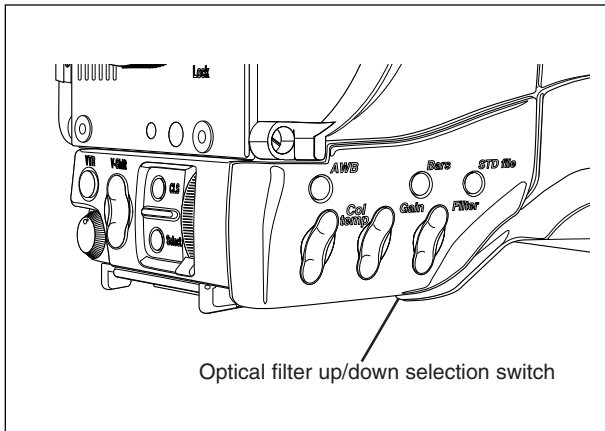
The gain is selected via the Gain up/down switch on the front/left side panel. When this switch is pressed initially, a list of the available values for the gain is displayed in the viewfinder. The cursor marks the current value. A new value is chosen by scrolling up or down through the available values. The viewfinder display is as follows:



The selection is made when the cursor is moved to a new value. The display disappears 1 second after the release of the button.

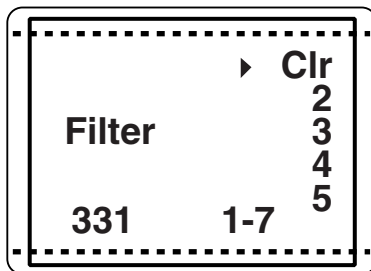
Optical filter selection

A filter can be placed in the path of the optical signal to restrict the incoming light or for artistic effect.



Optical filter up/down selection switch

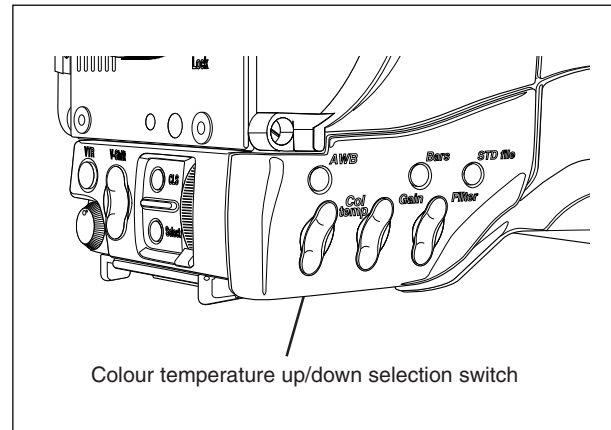
The filter is selected via the Filter up/down switch on the front/left side panel. When this switch is pressed initially, a list of the available positions of the filter wheel is displayed in the viewfinder. The cursor marks the current value. A new position can be chosen by scrolling up or down through the available choices. The viewfinder display is as follows:



The selection is made instantaneously when the cursor is moved. The display disappears after 1 second when the button is released. There are more choices available than are visible in the display. Scroll up or down to see all the options. The standard position is clear (CLR).

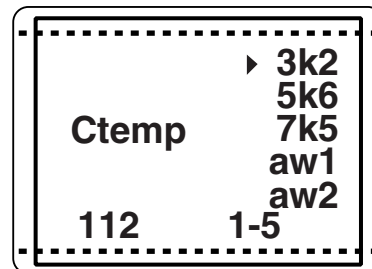
Colour temperature selection

For true colour reproduction the ambient lighting conditions must be compensated for by selecting a value for the colour temperature. The standard file setting is 3200K (normally used for tungsten light). Two other reference colour temperatures are available; 5600K (for outdoors, clouded conditions) and 7500K (for outdoors, clear blue skies). Two similar memory positions (AW1 and AW2) are available to store the results of the auto-white measurement process.



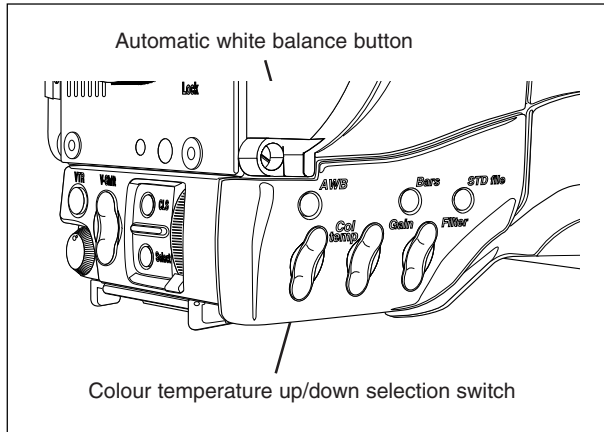
Colour temperature up/down selection switch

The colour temperature is selected via the Col. Temp. up/down switch on the front/left side panel. When this switch is pressed initially, a list of the five values is displayed in the viewfinder. The viewfinder display is as follows:



The cursor marks the current value. A new value is chosen by scrolling up or down through the available values. The selection is made when the arrow is moved. The display disappears after 1 second when the button is released.

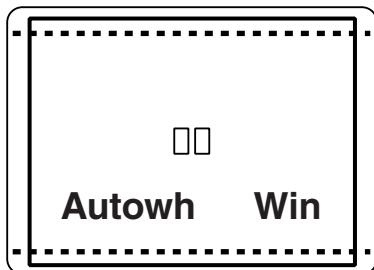
If the three preset colour temperatures do not match your lighting conditions then the auto-white procedure must be carried out as follows:



The camera does not have a 'clean scan' facility. Although it is possible to select a variable exposure time between 151/181 to 829 Hz, it is not possible to increase it above the nominal setting (1/150 of 1/180).

Therefore, it is not possible to eliminate the horizontal bars when shooting monitors with this camera because their refresh rates are below 150Hz.

- a. First select one of the memory positions AW1 or AW2 in which to store the measured colour temperature value with the colour temperature up/down switch.
- b. Press the AWB button on the front/left side of the camera to start the automatic white balance procedure. The autowhite window appears in the viewfinder.



- c. Point the camera to fill the window with a reference white object.
- d. Press the AWB button again to start the actual automatic white balance measurement procedure. The Autowh indicator in the viewfinder is now On.
- e. When the process is completed (within a few seconds) the Autowh indicator in the viewfinder changes to Off. The measured colour temperature is now stored in the selected memory position and can be recalled as required. The camera is now ready for use.

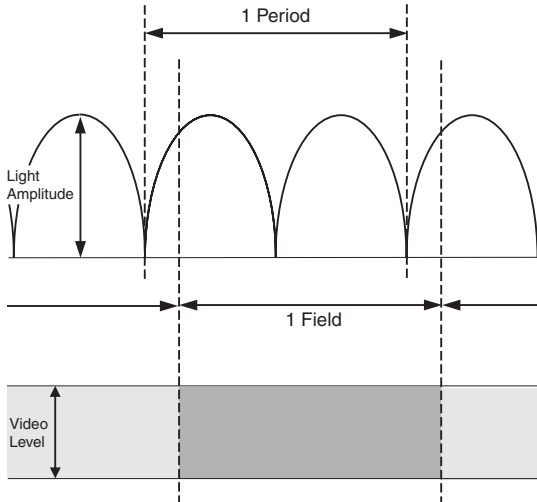
Note

Iris is set to 90% during the auto-white process and knee is turned off automatically.

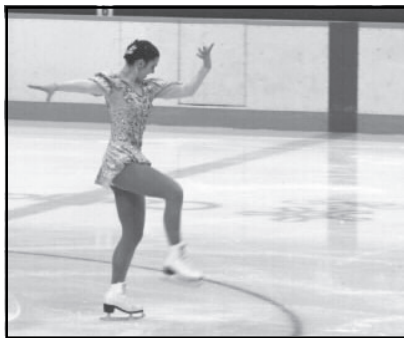
Artificial light conditions

In artificial light conditions it is recommended to examine the lighting conditions.

Standard Camera

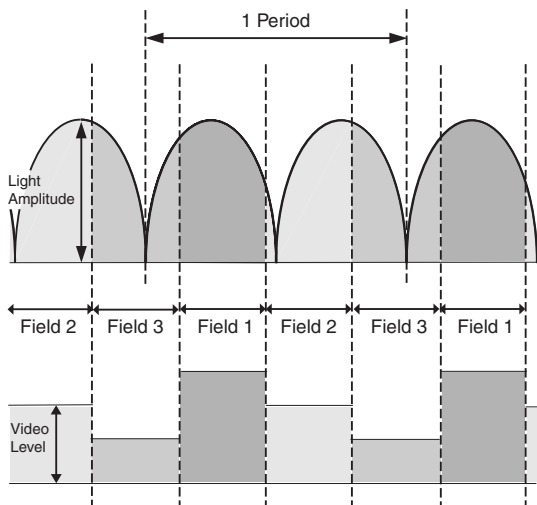


The exposure time of a standard camera corresponds with twice the lighting period.



Although the Light is alternating each field has the same video level.

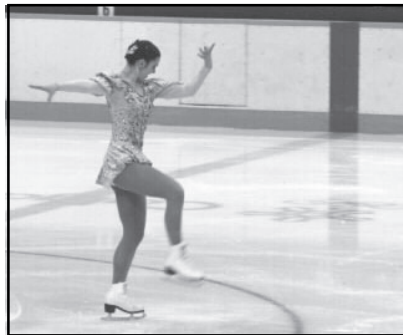
Triple Scan Mode



The exposure time of a Triple Scan high speed camera is a third of the exposure time of a standard camera.



Field 1



Field 2



Field 3

The alternating light amplitude causes different video levels for the three fields. This effect is only visible during slow motion replay. The field flickering will not appear in the Normal Scan output. The LDK 23HS mkII uses various preset settings to accommodate various artificial lighting conditions.

Presets for artificial lighting conditions

The alternating light amplitude may cause flickering in at the Triple Scan output. There are 5 presets to accommodate different artificial lighting conditions.

There are two ways to set the lighting presets; The camera systems menu and the MCP (Master Control Panel). The camera systems submenu Install\Lighting contains the item Advanced. Set the Advanced item to the required preset to accommodate the artificial lighting condition. The MCP (Master Control Panel) gives access to the preset settings. Consult the Operator's Manual of your MCP as required for detailed information how to set these presets.

Use the 5 presets are tuning the high speed camera to accommodate 5 gradations of lighting conditions as follows:

Optimal

Optimal (Opt) is the default preset. This preset is used in daylight and in non-alternating or high-frequency artificial lighted environments. Each field has the same video level and Flicker reduction is not necessarily.

Good

Use the Good (Goo) preset in artificial lighting conditions with minor amplitude changes. Examples are environments lighted with incandescent or well-balanced 3-phase light. Use also this preset in daylight if additional artificial light with an alternating effect is used.

Fair

The Fair (Fai) preset is used in artificial light conditions with significant light amplitude changes. For example, fluorescent lighted environments.

Poor

This preset (Poo) is used with artificial light, which has a major light amplitude change. Examples are environments lighted with HMI, MHD, gas discharge lamps or neon light.

Switching to the Poor preset results in a almost flicker free picture. In most cases this will be the preset to start with if flicker is visible in the Optimal preset. Fine-tune the light accommodation by switching to the Poor or Fair presets if other artifacts become noticeable.

Extreme

This preset (Ext) results in a 100% flicker free picture with an increased amount of motion blur. Use only this setting in lighting conditions with extreme light amplitudes. This preset activates a flicker reduction technique different from technique used in the Good, Fair and Poor presets. Its drawback is that it has an increased amount of motion blur.

Note

For fundamental reasons, it is not recommended that a PAL camera (50Hz) is used in conjunction with 60Hz lighting. Similarly, it is not recommended that an NTSC camera (60Hz) is used in conjunction with 50Hz lighting.

Section 6

Operating the Menu System

Because the LDK 23HS mkII offers such a wide range of functions, this section describes the structure of the control system. It contains procedures for controlling the menu system and explains how to program the menu system for your personal preferences. The menu structure and the methods of function selection are also explained.

Contents

Introduction	6-2	Systems Menu	6-3
--------------------	-----	--------------------	-----

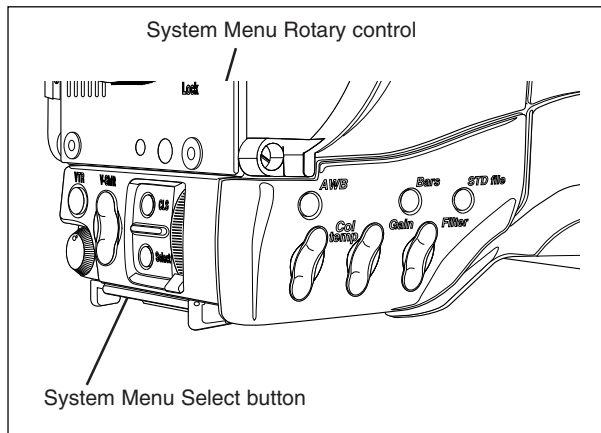
Introduction

Operationally, the camera is very easy to use. However, because of the large number of functions available and the large number of set-up options, it may require some time for you to become familiar with them all. We recommend that you spend time using the various controls and displays in order to discover the wide range of possibilities.

Read the instructions in this section carefully but also feel free to examine the various menus in detail. In this way you will learn quickly to intuitively operate the camera.

Systems Menu

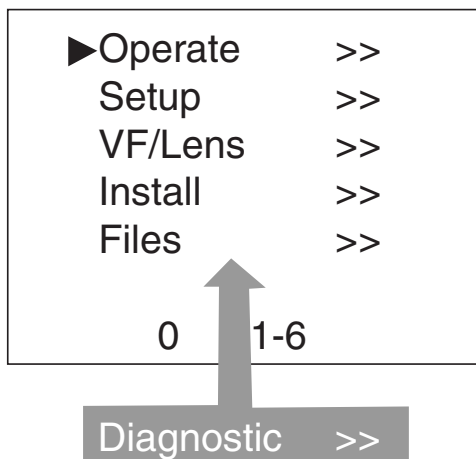
The system functions of the camera are grouped into menus and sub-menus.



The systems menu is viewed in the viewfinder and navigated by means of the Rotary control and the Select button which are both located at the front of the camera.

Entering the Systems menu

Press the Select button after the camera is switched on. The MAIN menu screen shows five items. One more item is hidden but becomes visible when you scroll down using the rotary control. (Some of these items may not appear if the user level is not set to 4.)



A cursor shows your position in the menu. The Rotary control moves the cursor up and down.

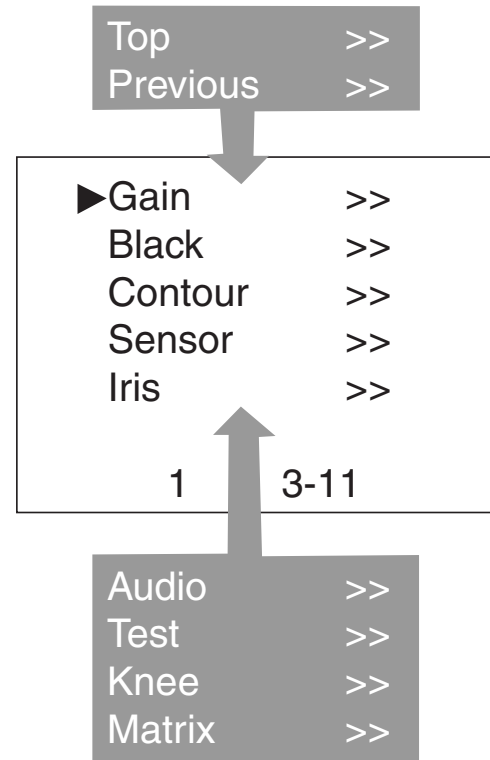
Finding your way

Use the Rotary control to move the cursor through the menu items. If a double arrow (>>) is visible, then pressing the Select 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.



The Operate 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.

Leaving the Systems Menu

If you do not use the menu it disappears after a few seconds. (This delay can be set at the VF / Txt Time item in the Install menu.) However, when you press the Select button again you enter the System menu at the last position of the cursor and not at the top of MAIN menu. Set the menu item at the VF / Txt Time item in the Install menu to On and the menu will not time out. Set this item back to Tim to let the menu disappear after time out.

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).

Making changes

To find out where you have to go to change a function, consult the appendix to discover under which menu group or subgroup the function you want to change 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 Select 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 Select button places the cursor in a list menu indicating the value currently selected. Use the Rotary control to point to a new value. Press the Select button to return the cursor to the function list.

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

Undoing changes

If you make changes to the video settings in the Systems menu and you decide not to keep them, use the Std. File button at the side of the camera to recall a standard set of values for the video parameters.

Menu Structure

There is one top menu which contains six main menus. The numbering scheme and the reasons for grouping the functions under these heading is explained below. For a full list of menu functions refer to the table in the appendix.

Menu numbers

The main menus are numbered from 1 to 6. Each main function under the main menu is given a second digit (for example, the Gain under the Operate menu is given number 11, the Black function 12). In some cases a third level number is given. For example, the skin function of the contour function of the Setup menu has number 256.

The first digit refers to the main menu

- 1 for Operate
- 2 for Setup
- 3 for VF/Lens
- 4 for Install
- 5 for Files
- 6 for Diagnostics

The second digit refers to the function under the main menu. A third digit, if present, refers to the sub-function. This numbering system is used to assign particular functions to the programmable user switches when they are being customized.

The menu number appears under and to the left of the menu display.

Note

Do not confuse the menu number with the line numbers. Because of the TOP and PREVIOUS menu items, the menu numbers are 2 less than the line numbers. This is not the case for the Main menus as there are no TOP and PREVIOUS items available in the TOP menu itself. The TOP menu shows five main menu items initially. If you scroll through the display, one additional menu appears.

To see how many lines a menu has, look at the number under and to the right of the menu. This number, for example, 1-7 indicates that the cursor is at line 1 and that there are 7 lines altogether.

Menu logic

Operate menu

This menu contains the functions which are normally used during the operation of the camera.

Setup menu

The setup menu contains those functions which are initialized before starting shooting. In many cases these are the individual (R, G and B) analogue setup parameters of functions which are switched in the operate menu.

VF/Lens menu

As the name indicates, the functions contained under this menu control various aspects of the viewfinder and the lens.

Install menu

This menu contains functions which are used to install the camera into a particular configuration. It also contains controls which can be used to customize the LCD and viewfinder displays and to assign particular switches on the camera according to your preferences.

Files menu

This menu allows function values to be stored in scene files and recalled as required.

Diagnostic menu

The diagnostic menu is designed to provide information on the current status of the camera.

Menu Install Features

User level

The user level function in the Install menu determines what is displayed in the menus. For example, for user level 4, the Top menu contains 6 Main menus. However, for user level 1 the Top menu only shows the VF/Lens and Install menus.

The purpose of the four user levels is to restrict the set of functions which can be changed by whoever is using the camera. In this way a more centralized and uniform control can be achieved and the danger of the camera operator accidentally changing critical functions while shooting is reduced.

The division of the levels was decided using the following criteria:

1. Video related functions blocked.
2. All video related functions that can be checked on a black & white monitor can be controlled.
3. All video related functions that can be checked on a colour monitor can be controlled.
4. All functions can be controlled.

The maximum user level set on the MCP, restricts the number of user levels available on the camera.

Gain

The gain can be selected in four steps: -, 0, + and ++. The actual value of the gain in dB can be assigned to these symbols. This is done in the Install menu.

The "-" can be set to -6dB or -3dB.

The '0' is always 0dB.

The '+' can be set in steps of 3dB between 0dB and the value of '++'.

The '++' can also be set in steps of 3dB between the value of '+' and 30dB.

Note

The '+' and '++' steps can not have the same value.

Files

The files menu enables four different scene files to be stored and recalled. If the message NOK is displayed then the old values are restored. If the camera is on-air when a scene file is recalled then the recalled values do not become active until the camera switches off-air.

Appendix

Contents

Menu Structure	A-3	Install Menu	A-7
Operate Menu	A-3	Diagnostic Menu	A-8
Setup Menu	A-4	Files Menu	A-8
VF/Lens Menu	A-6	List of Menu Functions	A-9

The appendix contains two tables listing the contents of the menu system.

The first table presents the functions ordered in the logical divisions of the menu system itself. The table is colour coded to represent the functions that are available with different user levels. All available choices are listed for a function. The default (Def) column lists the values of the functions when a camera is delivered. If the requirements listed in the column 'Available if...' are not met, the value of the particular function will be displayed as a triple dash (---) or a value can not be set.

The second table contains an alphabetical list of the menu functions. This table is used to find the menu number of a function to assist in navigating to that function.

Menu Structure

Menu	UL	Available Choices	Def	Available if ...	Explanation
Operate	2	>>			
Gain	2	>>			
Gain dB	2	-6,-3,0,3,6,9,12,15,18,21,24,27,30	0	Gain presets	Gain switch -see the Install menu for values
Ctemp	2	3k2,5k6,7k5,aw1,aw2	3k2		Colour temperature
Autowh	2	Off,Win,On,Fai	Off	Ctemp aw1,aw2	Automatic white balance; Off when ready 1)
Black	2	>>			
MBlack	2	00 to 99	50		Master black
Blackstr	2	On,Off	Off	Colourbar Off	Black stretch switch
level	2	00 to 99	50	Blackstr On	Black stretch level
Contour	2	>>			
Contour	2	On,Off	On		Contour switch
Contour Src	2	R,G,Y,R+G	Y		Contour source
Contour Lev.	2	00 to 99	50	Contour On	Contour level
V-cont	2	00 to 99	50	Contour On	Vertical contour level
Noise sl	2	00 to 99	05	Contour On	Noise slicer level
Softcont	2	On,Off	On	Contour On	Soft contour switch
Soft lev	3	00 to 99	70	Softcont On	Soft contour level
Sensor	2	>>			
Shutter	2	>>			
Exp.time	2	Nom,200,500,1k,Var	Nom		Exposure time switch
Exp. Var	2	151 to 829	151	Exp Time Var	Clean scan in Hz
Asp Ratio	2	>>			
Asp Ratio	2				
input	2	Loc,Ext	Loc		Aspect ratio switch source (Ext= Analogue Ch1)
select	2	4:3,169	4:3	input is Loc	Aspect ratio switch
Iris	2	>>			
Auto Iris	2	On,Off	On		Automatic Iris switch
Audio	2	>>			
Audio1	2	-22,-28,-34,-40,-46,-52,-58,-64	-64	Triax mode	Audio 1 level select
Audio2	2	-22,-28,-34,-40,-46,-52,-58,-64	-64	Triax mode	Audio 2 level select
Test	2	>>			
Cbar	2	On,Off	Off		Colour bar switch 2)
Sawt	2	On,Off	Off		Sawtooth switch 3)
Knee	2	Off,Aut,Var	Var		Knee switch
Matrix	2	1, 2	2		Matrix switch

- 1) Autowh temporarily switches Knee to Off and Iris to approx. 80%
- 2) Cbar temporarily switches to Off: Blackstr, Wh.Limit, Zebra, Cent crs, Save ar, Cadre
- 3) Sawt temporarily switches to Off: Shading, Flare, Cent crs, Save ar, Cadre and Filter to Cap

Menu	UL	Available Choices	Def	Available if ...	Explanation
Setup(1)	2	>>			
Gain	2	>>			
Gain dB	2	-6,-3,0,3,6,9,12,15,18,21,24,27,30	0	Gain presets	Gain switch -see the Install menu for values
Red	3	00-99	50		Red gain (limited to colour temp setting)
Green	3	00-99	50		Green gain (limited to colour temp setting)
Blue	3	00-99	50		Blue gain (limited to colour temp setting)
Black	2	>>			
Black	2				function identification text
Auto	2	On,Off	Off		Automatic black level
Red	3	00-99	50		Red black level
Green	3	00-99	50		Green black level
Blue	3	00-99	50		Blue black level
Gamma	2	>>			
Gamma	2	Lin,1,2,Var	1		Gamma switch
Red	4	00-99	76	Gamma Var	Red gamma level
Master	2	00-99	76	Gamma Var	Master gamma level
Blue	4	00-99	76	Gamma Var	Blue gamma level
Knee	2	>>			
Knee	2	Off,Aut,Var	Var		Knee switch
Slope R	4	00-99	50	Knee is Var	Red knee slope
Slope M	3	00-99	00	Knee is Var	Master knee slope
Slope B	4	00-99	50	Knee is Var	Blue knee slope
Point R	4	00-99	50	Knee is Var	Red knee point
Point M	3	00-99	10	Knee is Var	Master knee point
Point B	4	00-99	50		Blue knee point
Limit	4	00-99	-	Knee is Var	Knee limit level
Contour	2	>>			
Contour	3	Off,On	On		Contour switch
Cont Src	3	R,G,Y,R+G	Y		Contour source
Lev.dep	3	00-99	50	Contour On	Contour level dependence
Co / Fine	3	00-99	25	Contour On	Contour coarse / fine level
Wh. Limit	4	>>			
Wh. Limit	4	On,Off	On		White limiter switch
Master	4	00-99	60	Wh. Limit On	White limiter master level
Flare	2	>>			
Flare	2	On,Off	On	Sawtooth Off	Flare switch
Red	4	00-99	15	Flare On	Red flare level
Green	4	00-99	15	Flare On	Green flare level
Blue	4	00-99	15	Flare On	Blue flare level
Intercom	2	>>			
Cam.mic	2	On,Off	Off		Cam mic switch
Tr.mic	2	On,Off	On		Tracker mic switch
Cam prod	2	Off,L,R,L+R	L+R		Cam headphone prod switch
Cam prog	2	Off,L,R,L+R	L+R		Cam headphone prog switch
Cam eng	2	Off,L,R,L+R	L+R		Cam headphone eng switch
Sidetone	2	00-99	50	Audio If present	Cam headphone side tone level

Menu	UL	Available Choices	Def	Available if ...	Explanation
Setup(2)	2	>>			
Shading	4	>>			
Shading	4	On,Off	On		White shading switch
Shad R	4	>>			
H saw R	4	00-99	50	Shading On	Horizontal saw Red
H par R	4	00-99	0	Shading On	Horizontal par Red
V saw R	4	00-99	50	Shading On	Vertical saw Red
V par R	4	00-99	0	Shading On	Vertical par Red
RE saw R	4	00-99	0	RE & Shading On	Range Extender Offset Red
Shad G	4	>>			
H saw G	4	00-99	50	Shading On	Horizontal saw Green
H par G	4	00-99	0	Shading On	Horizontal par Green
V saw G	4	00-99	50	Shading On	Vertical saw Green
V par G	4	00-99	0	Shading On	Vertical par Green
RE saw G	4	00-99	0	RE & Shading On	Range Extender Offset Green
Shad B	4	>>			
H saw B	4	00-99	50	Shading On	Horizontal saw Blue
H par B	4	00-99	0	Shading On	Horizontal par Blue
V saw B	4	00-99	50	Shading On	Vertical saw Blue
V par B	4	00-99	0	Shading On	Vertical par Blue
RE saw B	4	00-99	0	RE & Shading On	Range Extender Offset Blue

Menu	UL	Available Choices	Def	Available if ...	Explanation
Vf/Lens	0-1	>>			
Vf Inst	0-1	>>			
Vf mon	0-1	Y,R,G,B	Y		Viewfinder monitor select
Vf Ext	0-1	Ex1,Ex2,YE1,YE2	Ex1		Viewfinder external select
Vf Cont	0-1	>>			
Vf Cont	0-1	On,Off,Bst	On		Viewfinder contour select
Level	0-1	00-99	50	Cont Sel On,Bst	Viewfinder contour level
Zebra	0-1	>>			
Zebra	0-1	On,Off,Win	Off		Viewfinder zebra switch
level	3	00-99	50	Zebra is On, Win	Viewfinder zebra level
contr	3	00-99	50	Zebra is On, Win	Viewfinder zebra contrast
Indicat.	0-1	>>			
Zoom Ind	0-1	On,Off	Off	LLA present	Zoom level visible in VF
Iris Ind	0-1	On,Off	Off		Iris follow level visible in VF
Focus Ind	0-1	On,Off	Off	LLA present	Focus level visible in VF
Markers	0-1	>>			
Wh. Ind	0-1	00-99	50		Viewfinder marker white level
C cross	0-1	On,Off	On		Centre cross switch
Safe Ar	0-1	On,Off	On	Colourbar off	Safe area switch
Cadre	0-1	On,Off	On	Sawtooth off	Cadre switch
PIP	0-1	>>			
PIP	0-1	On,Off	Off		PIP On/Off switch
Location	0-1	1,2,3,4	1	PIP On	Location of PIP
Reverse	0-1	On,Off	Off	PIP On	PIP Reverse mode
Size	0-1	S,L	S	PIP On	PIP Size (Small or Large)
Border	0-1	On,Off	Off	PIP On	Border around PIP
Iris	3	>>			
Iris	3				function identification text
Setpnt	4	00-99	50		Iris set point level
Peak/av	3	00-99	50	Auto iris is on	Iris peak/average level
Lens	4	>>			
Filter	4	Clr,2,3,4,5,6,Cap	Clr		Lens filter select
Zoom	4	00-99	50		Lens zoom indication
Focus	4	00-99	50		Lens focus indication
Range Ext	4	On,Off	Off	dep of type of lens	Lens range extender indication
Heater	4	On,Off	Off	LLA present	Lens heater switch
Man Id	4	Ang,Fuj,Can	Ang	LLA present	Lens manufacturer id
Remote	4	On,Off	On	LLA present	Enable remote lens indication

Menu	UL	Available Choices	Def	Available if ...	Explanation
Install	0-1	>>			
User Lev	0-1	0,1,2,3,4	4	Max user level	User level select
Cam Nr	2	1-15	0		Camera number indication
Timing	2	>>			
Timing	2	CPU,On	CPU		
Subc Crs	2	0,90,180,270	0	Timing On	Subcarrier timing coarse
Subc Fine	2	00-99	50	Timing On	Subcarrier timing fine
H-Phase	2	00-99	50	Timing On	Horizontal phase
Notch	2	On,Off	Off	Colour bar Off	Notch switch
Vf	0-1	>>			
Txt Mode	0-1	On,Tim	Tim		Menu display mode
Txt Time	0-1	00-99	10	VF-Disp is Tim	Menu display time in 0.1 sec
Dual PIP	0-1	On,Off	Off		Support for 2 PIPs in VF
Gain	2	>>			
Gain	2				function identification text
-=	2	-6,-3	-3		Gain value for - indication
0	2				
+=	2	3,6,9,12,15,18,21,24,27	6	<+=	Gain value for + indication
++=	2	6,9,12,15,18,21,24,27,30	12	>+	Gain value for ++ indication
Combine	2	On,Off	On		Interpolation Mode
Diskrec	2	EVS, STD	STD	MKII	Set diskrecorder to EVS or Standard
Lighting	2	>>			Artificial lighting accomodation settings
Advanced	2	Opt,Goo,Fai,Poo,Ext	Opt	MKII	See Section 3 "Artificial light conditions"
Basic	2	On, Off	Off	No MKII	Basic artificial lighting accomodation

Menu	UL	Available Choices	Def	Available if ...	Explanation
Files	2	>>			
Filenr	2	1-4,Std,Ins			Scene file number select
Recall	2	Ok,Nok,Exe			Scene file recall switch
Store	2	Ok,Nok,Exe			Scene file store switch

Menu	UL	Available Choices	Def	Available if ...	Explanation
Diagn	2	>>			
Software	2	>>			
Camera	2	>>			Shows 12NC and status software
Battery	2	>>			
Memory	2	Ok,Nok,Low			Shows status of memory battery
Power	2	Ok,Nok,Low			Shows status of power battery
Comm	2	>>			
CPU	2	Yes,No,Illegal			Shows connectivity to CPU
OCP	2	Yes,No			Shows connectivity to OCP
MCP	2	Yes,No			Shows connectivity to MCP
Boards1	2	>>			
Video1	2	>>			Shows 12NC, status, serialnumber and production date of specific module
Video 2	2	>>			
SyncShad	2	>>			
Data Cam	2	>>			
Vid Misc	2	>>			
Boards 2	2	>>			
VideoMux	2	>>			Shows 12NC, status, serialnumber and production date of specific module
AudioTxR	2	>>			
Audio Lf	2	>>			
Pulse Pat	2	>>			
ShutFilt	2	>>			
CntlUnit	2	>>			
Boards 3	2	>>			
BckPanel	2	>>			Shows 12NC, status, serialnumber and production date of specific module
DC Conv	2	>>			
LLA	2	>>			
5" VF	2	>>			
7" VF	2	>>			

List of Menu Functions

Function	Path in Menu
Aspect ratio	Operate \ Sensor
Select switch	Operate \ Sensor \ Asp Ratio
Source switch input	Operate \ Sensor \ Asp Ratio
Audio	Operate \ Audio
Audio 1 level select	Operate \ Audio
Audio 2 level select	Operate \ Audio
Auto lighting	Operate \ Sensor \ Shutter
Auto white balance	Operate \ Gain
Battery status	
Memory	Diagn \ Battery
Power	Diagn \ Battery
Black	Setup \ Black
Auto level	Setup \ Black
Blue level	Setup \ Black
Green level	Setup \ Black
Red level	Setup \ Black
Master	Operate \ Black
Black stretch	
Level	Operate \ Black
Switch	Operate \ Black
Boards	Diagn \ Boards
Cadre	Vf/Lens \ Vf Inst \ Markers
Camera number	Install \ CamNr
Centre cross	Vf/Lens \ Vf Inst \ Markers
Clean scan	Operate \ Sensor \ Shutter
Colour bar switch	Operate \ Test
Colour temperature	Operate \ Gain
Communication	Diagn \ Comm
Contour	
Coarse/fine level	Setup \ Contour \ Contour
Level	Operate \ Contour
Level dependence	Setup \ Contour \ Contour
Noise slice level	Operate \ Contour
Soft level	Operate \ Contour
Soft switch	Operate \ Contour
Source	Operate \ Contour
Source	Setup \ Contour
Switch	Operate \ Contour
Switch	Setup \ Contour
Vertical level	Operate \ Contour
Exposure time	Operate \ Sensor \ Shutter
Filter	Vf/Lens \ Lens
Flare	
Switch	Setup \ Flare
Level Blue	Setup \ Flare
Level Green	Setup \ Flare
Level Red	Setup \ Flare
Focus	
Indication	Vf/Lens \ Lens
Indication switch	Vf/Lens \ Vf Inst \ Indicat.

Function	Path in Menu
Gain	Setup \ Gain
Blue gain	Setup \ Gain
Red gain	Setup \ Gain
Green gain	Setup \ Gain
Switch	Operate \ Gain
Values	Install \ Gain
Gamma	
Switch	Setup \ Gamma
Blue level	Setup \ Gamma
Master level	Setup \ Gamma
Red level	Setup \ Gamma
H-phase	Install \ Timing
Intercom	
Cam headph. eng	Setup \ Intercom
Cam headph. prod	Setup \ Intercom
Cam headph. prog	Setup \ Intercom
Cam mic	Setup \ Intercom
Sidetone	Setup \ Intercom
Tracker mic	Setup \ Intercom
Interpolation mode	Install \ Combine
Iris	
Auto	Operate \ Iris
Indication switch	Vf/Lens \ Vf Inst \ Indicat.
Peak/average	Vf/Lens \ Iris
Set point	Vf/Lens \ Iris
Knee	Setup \ Knee
Limit level	Setup \ Knee
Point Blue	Setup \ Knee
Point Master	Setup \ Knee
Point Red	Setup \ Knee
Slope Blue	Setup \ Knee
Slope Master	Setup \ Knee
Slope Red	Setup \ Knee
Switch	Operate \ Knee
Lens	
Filter	Vf/Lens \ Lens
Focus indication	Vf/Lens \ Lens
Heater	Vf/Lens \ Lens
Manufacturer id	Vf/Lens \ Lens
Range extender ind.	Vf/Lens \ Lens
Remote indication	Vf/Lens \ Lens
Zoom indication	Vf/Lens \ Lens
Matrix switch	Operate \ Matrix
Menu display	
Mode	Install \ Vf
Time	Install \ Vf
Notch filter switch	Install \ Timing

Function	Path in Menu
PIP	
Border	Vf/Lens \ Vf Inst \ PIP
Dual PIP switch	Install \ Vf
Location	Vf/Lens \ Vf Inst \ PIP
Reverse mode	Vf/Lens \ Vf Inst \ PIP
Size	Vf/Lens \ Vf Inst \ PIP
Switch	Vf/Lens \ Vf Inst \ PIP
Range extender	Vf/Lens \ Lens
Safe area	Vf/Lens \ Vf Inst \ Markers
Sawtooth switch	Operate \ Test
Sidetone	Setup \ Intercom
Scene file	
Number select	Files
Recall switch	Files
Store switch	Files
Shading	
Blue	Setup \ Shading
Green	Setup \ Shading
Red	Setup \ Shading
White	Setup \ Shading
Software camera	Diagn \ Software
Subcarrier timing	
Coarse	Install \ Timing
Fine	Install \ Timing
User level	Install \ User Lev
Viewfinder	
Contour level	Vf/Lens \ Vf Inst
Contour select	Vf/Lens \ Vf Inst
External select	Vf/Lens \ Vf Inst
Monitor select	Vf/Lens \ Vf Inst
White level marker	Vf/Lens \ Vf Inst \ Markers
Zebra contrast	Vf/Lens \ Vf Inst
Zebra level	Vf/Lens \ Vf Inst
Zebra switch	Vf/Lens \ Vf Inst
White balance	Operate \ Gain
White limiter	
Switch	Setup \ Wh.Limit
Master level	Setup \ Wh.Limit
White shading	Setup \ Shading
Zebra	Vf/Lens \ Vf Inst
Zoom	
Indication	Vf/Lens \ Lens
Indication switch	Vf/Lens \ Vf Inst \ Indicat.

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