

LDK 20(S)

Studio Camera



Operator's Manual

3922 496 48631 St.37

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- EN60065 : Safety
- 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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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 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.

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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About this Manual

This user guide is part of a complete documentation set for the camera which also includes an Installation & 1st Line Service Manual, and a 2nd Line Service Manual.

Purpose of this manual

The purpose of this manual is to present a detailed description of how to operate the LDK 20(S) Studio Camera. It provides the information necessary to use the camera in different configurations and with various attachments. With this manual it is possible to discover all the operating features of the camera and so use it to its full potential. The manual should be used together with the camera to explore and learn about the many sophisticated control functions available.

Intended audience

This user's guide 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, as a simple procedural guide to those who wish to set-up and start shooting immediately, and as a reference work to be consulted as required during the long life of the camera.

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 20(S) camera and how this translates into a practical, useable camera. It lists the main features of the camera 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 and on how accessories can be used to expand the possibilities of the camera. The mounting of accessories and packing for transport is also explained.

Section 3: Configurations

The LDK 20(S) is a multi-functional camera and this section describes the various ways that it can be used; on its own or 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. 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.

Section 5: Shooting

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

Section 6: Operating the Menu System

Because the LDK 20(S) 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 functions available on the camera.

Section 1

Introduction

This section outlines the technology used in the LDK 20 camera and how this translates into a practical, useable camera. It lists the main features of the camera and also the precautions that must be taken into account when using it.

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LDK 20(S)

The *HiRes* Digital LDK 20(S) is a Studio camera which uses 2/3" frame transfer sensors. The advanced *HiRes* Digital processing of the camera is based on 12-bit A/D converters, 14-bit DSP circuits and more than 20-bit internal processing. Two DSPs combine all major camera functions in the digital domain, including knee, gamma, contour, matrix and colour correction. A software programmable video path enables the sequence of the matrix and gamma function to be selected for precise colour matching of different cameras.

The Intelligent Continuous Automatics facility provides automatic control of black levels and black shading. Each sensor has two lines of 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 pre-processor 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.

To emulate the softly limiting S-shaped transfer characteristics of film, the TV camera's near linear characteristics are compressed above a certain point, the knee. The pivoting knee circuit of the LDK 20(S) camera 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. The 12-bit A/D processing of a 600% video level assures high levels of accuracy for this advanced dynamic handling.

Digital True Colour Knee circuitry maintains the correct hue for 600% compressed video highlights. With this system colours are faithfully reproduced, even overexposed skin tones.

The digital contour processing uses full amplitude 600% video RGB signals via an extended dynamic range contour circuit. It enables the optimum levels of contour control at highlights (in knee) and at sharp edges, without first having to compress the highlight signal. The dual auto skin tone contour circuitry handles 360° of the colour vector.

Colorimetry is selected by means of a variable 6-point digital matrix or via preset matrices (1:1, EBU, RAI, BBC and Skin).

Digital gamma circuits as well as providing a wide range of standardised gamma curves also enable soft contrast in black scenes to be enhanced, together with hard contrast and saturated colour in bright scenes.

Digital contrast circuitry provides a black stretch function for more detail in black areas and a black press function for improving the contrast impression by simulating the S-curve of film.

The LDK 20(S) camera uses Dynamic Pixel Management (DPM). This new technology enables the format of the sensors to be switched between 4:3 and 16:9 aspect ratios 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 600% and a high linear sensitivity over all camera lens apertures. The frame transfer technology ensures that there is no lag nor smear. The 2/3-inch DPM sensor has been designed so that vertical pixels are addressable in groups of 3 or 4, for operating in 16:9 and 4:3 aspect ratios respectively. Switching from the basic 4:3 sensor format to 16:9 gives no loss of horizontal or vertical resolution. In fact, 1000 pixels per line with both aspect ratios ensures high resolution in the red, green and blue camera channels.

Features

LDK20(S)

- 3 x 2/3-inch Thomson Frame Transfer CCD sensors ensure no vertical smear.
- 12-bit *HiRes* Digital processing with unique software programmable video path.
- Superior all digital highlight handling with a dynamic range of up to 600%.
- Unique circuitry for pivoting knee and True Colour Knee.
- Wide range of presets and variable 6-point digital matrix assure accurate colour matching.
- Digital gamma with unique standard preset values and highest accuracy.
- Digital contour with an extensive range of parameters.
- Advanced contour correction includes two automatic skin settings.
- Intelligent Continuous Automatics black levels, black shading and video levels - no set-up time required.
- Digital contrast with standard black stretch and black press.
- International standard 2/3-inch lens interface.
- 6-position standard filter wheel cassette, exchangeable.
- Extensive two-wire or four-wire intercom to international standards including RTS.
- Protected, easy-to-operate controls and switches with read-out of all settings.
- 7-inch viewfinder status read-out of primary camera functions
- Clean scan feature allows capture of computer and other monitor pictures.
- Series 9000 Universal Camera Control System from the Base Station.
- Optional 4:2:2 serial digital outputs from the Base Station.
- Triax system allows for cable lengths up to 2,400 meters (7,875 feet).
- Digital Modem channel data transmission over triax system for robotics and other applications
- 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 - futureproof concept with no later upgrades needed for either camera or lenses.
- Automatic selection of correct viewfinder mode for 4:3 and 16:9.

Aspect ratio

The two aspect ratios that can be selected are the conventional 4:3 and the widescreen 16:9. Because of the dynamic pixel management (DPM) used in the LDK 20(S) camera, there is no loss of either vertical or horizontal resolution between these two modes.

Letterbox mode

When the conventional 4:3 mode is selected, there is the additional choice of a letterbox format providing a 16:9, 16:10, or 16:11 blanked display. In the letterbox format the number of vertical lines is reduced because

of the blanking. The signal, however, is fully compatible with the conventional 4:3 standard. The use of the letterbox mode therefore, is dictated by the requirement of providing a widescreen shot while remaining compatible with the present 4:3 standard.

True widescreen mode

The widescreen 16:9 aspect ratio is selected when there is a need for shots that can take full advantage of the picture performance of EDTV (extended definition TV) systems such as PALplus.

Important Precautions

To ensure continual high performance from the LDK 20(S) 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 flections.

Warnings

If the LDK 20(S) 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 IPX2 (spraying water).

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Operation of this equipment 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.

Section 2

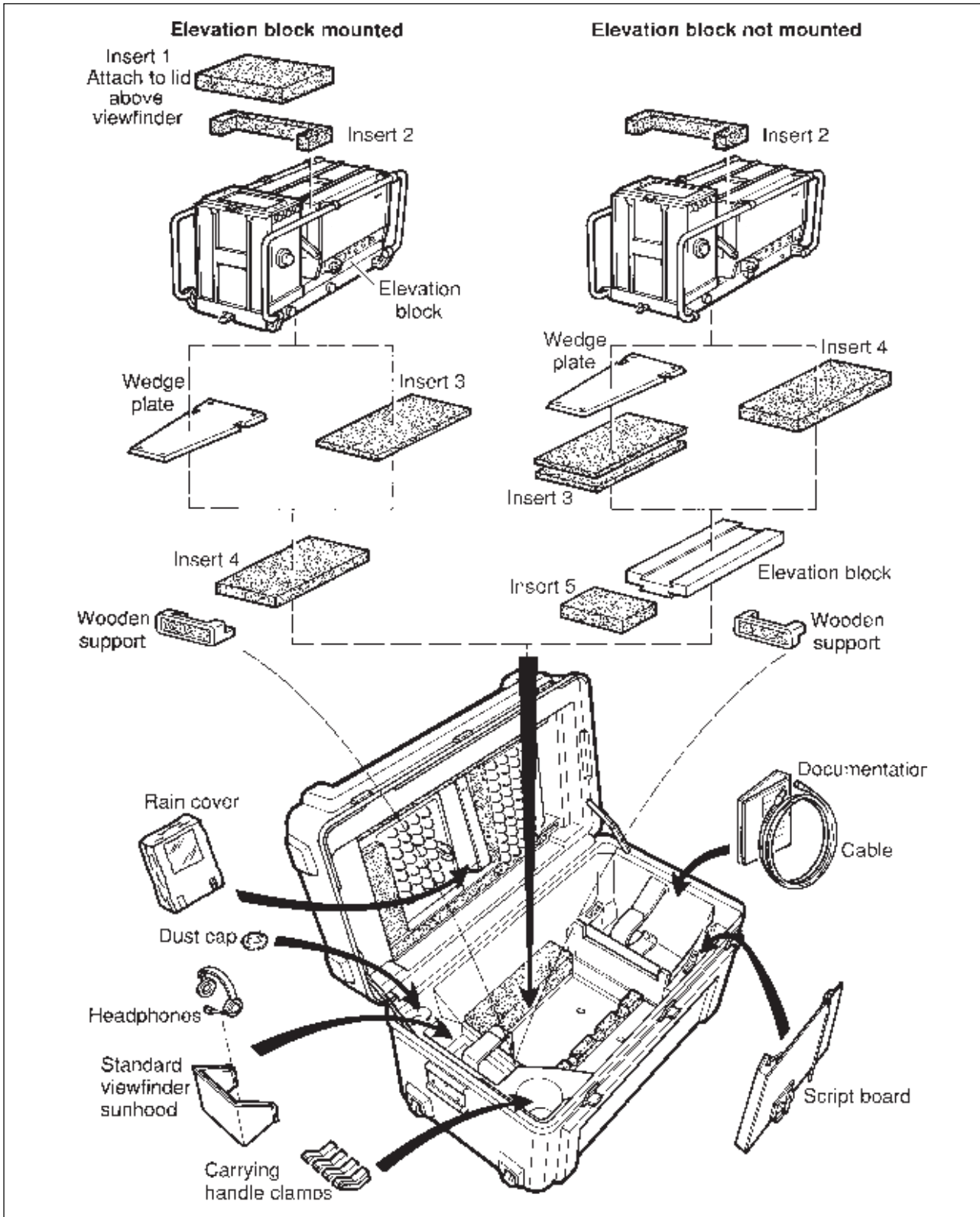
Assembling the Units

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

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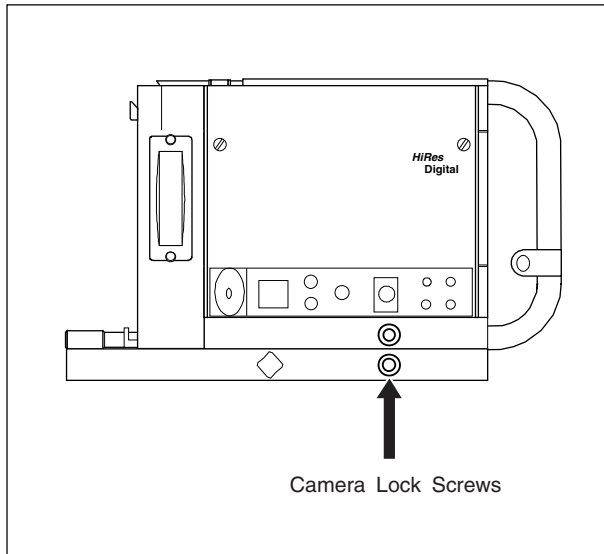
Transport Case



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.

Rain and Off-use Cover



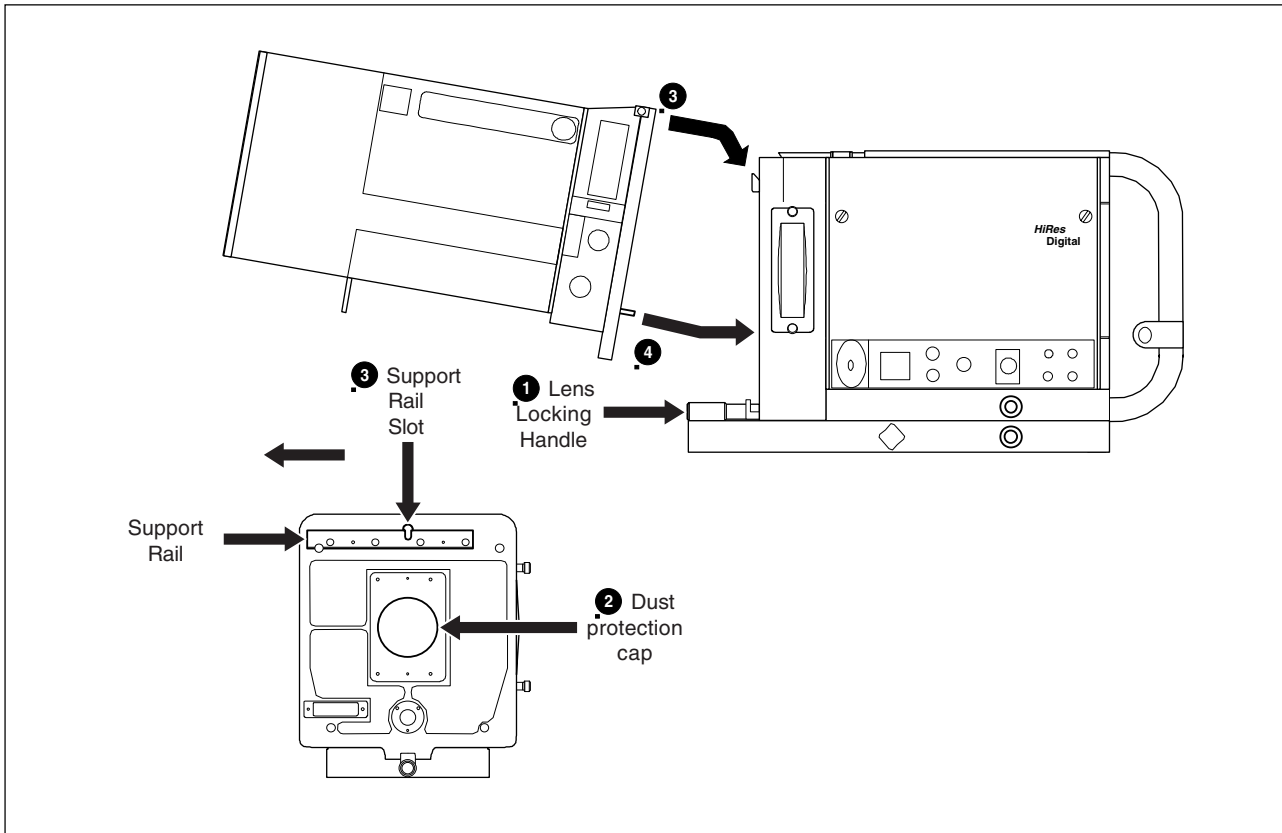
The rain and off-use cover LDK 6988/00 must be used when the camera system is in a wet or damp environment. This protection is necessary for personal safety reasons.

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.

CAUTION

Do not use the camera outdoors without a rain cover

Lens



To mount a standard size lens to the camera head proceed as follows:

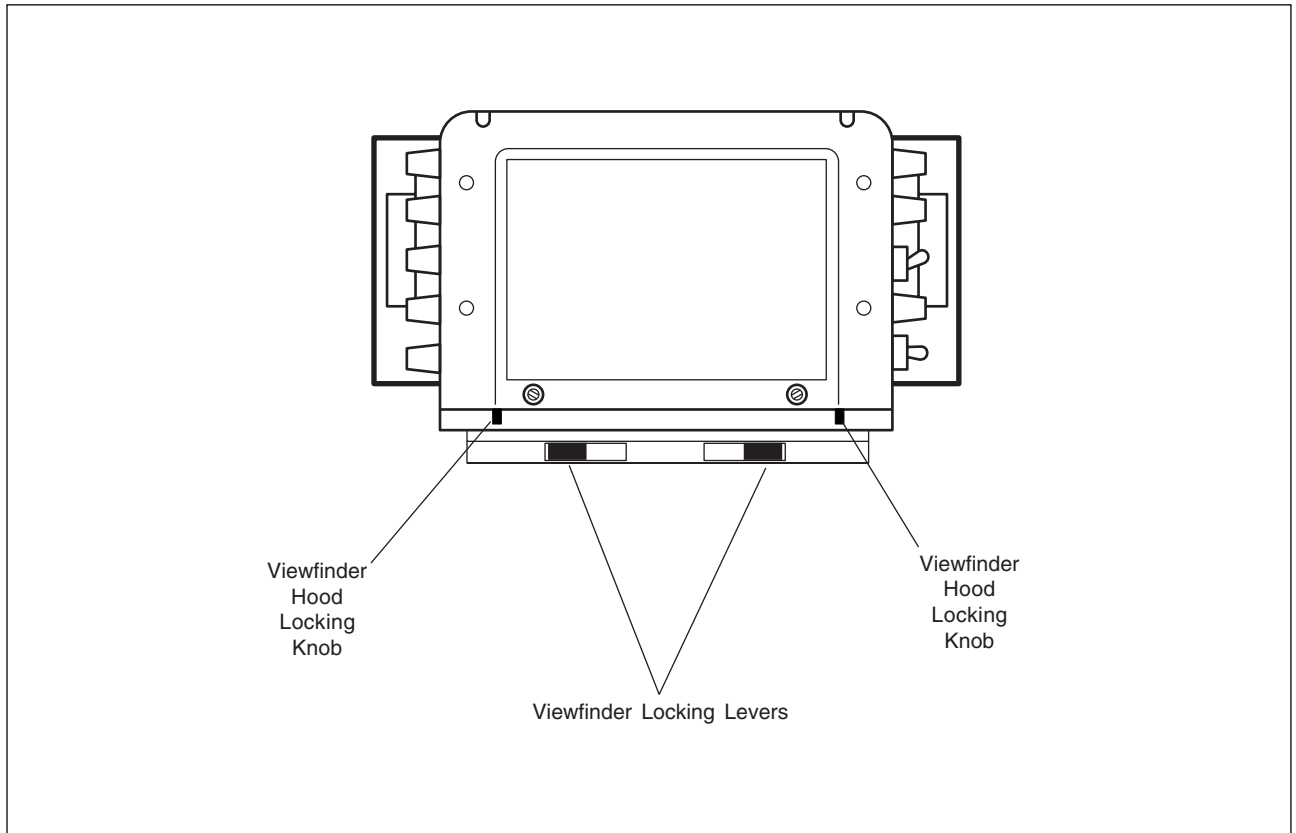
- Ensure that the lens locking handle **1** is in the unlocked position.
- Remove the dust protection cap **2**.
- Hook the lens onto the support rail ensuring that the upper lens pin **3** fits into the slot in the support rail.
- Swing the lens downwards so that the lower lens pin **4** fits into the hole in the front of the camera.
- Turn the lens locking handle clockwise to secure the lens in place.

Note

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

To remove the lens follow this procedure in reverse.

Viewfinder



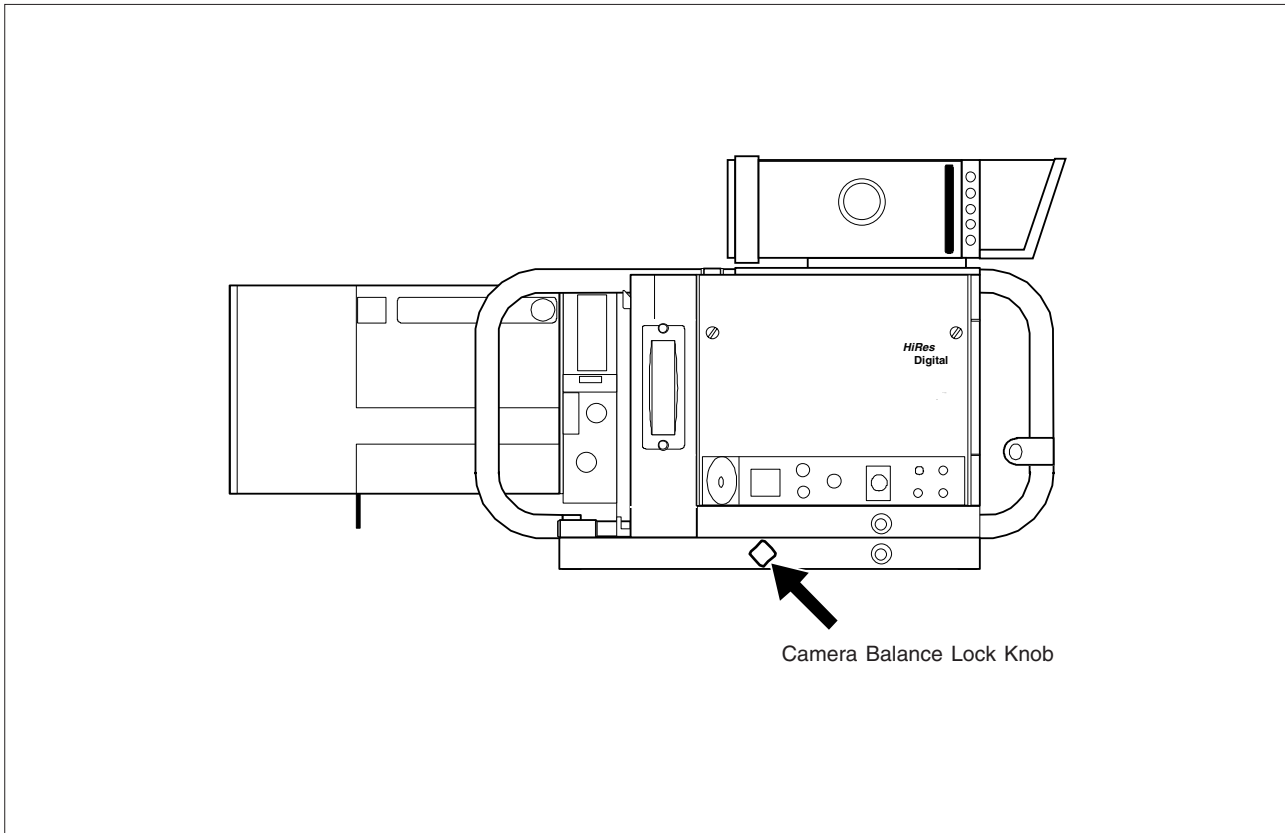
The viewfinder is normally delivered separately. To mount the viewfinder on to the top of the camera proceed as follows:

- a. Slide the viewfinder along the rails on top of the camera until it can go no further.
- b. Push both locking levers inwards and slide the viewfinder until it firmly engages the connector.
- c. Release the locking levers and ensure they click into the lock position.

To attach the viewfinder hood to the viewfinder proceed as follows:

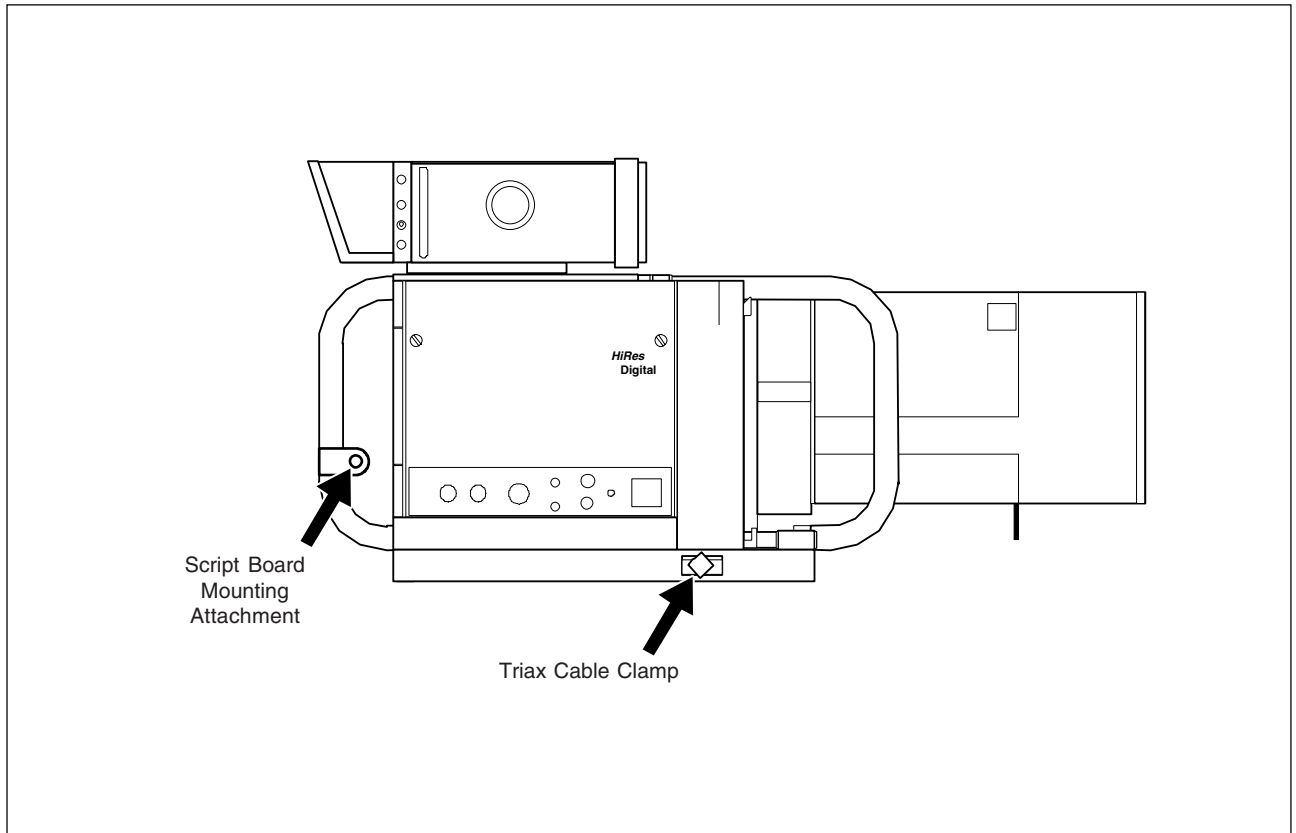
- a. Clip the hood onto the slots on top of the viewfinder.
- b. Swing it down and attach it to the front of the viewfinder by pushing the two hood locking knobs outwards.
- c. Let go of the hood locking knobs and ensure that the hood clips into place.

Camera Balance



When the lens is mounted on the camera it may be necessary to balance the camera on the tripod. Proceed as follows:

- a. Loosen the balance lock knob on the side of the footbed by turning it counterclockwise.
- b. Move the footbed back and forth along the tripod until the best balance is achieved.
- c. Tighten the balance lock knob on the side of the footbed by turning it clockwise.



To attach the script board to the carrying bars of the camera proceed as follows:

- a. Turn the tightening lever on the script board fully counterclockwise so as to reduce the diameter of the spindle.
- b. Insert the spindle into the attachment on the carrying bars.
- c. Tighten the lever.
- d. Connect Scriptboard light cable to one of the two the scriptlight connectors at the rear of the camera.

Section 3

Configurations

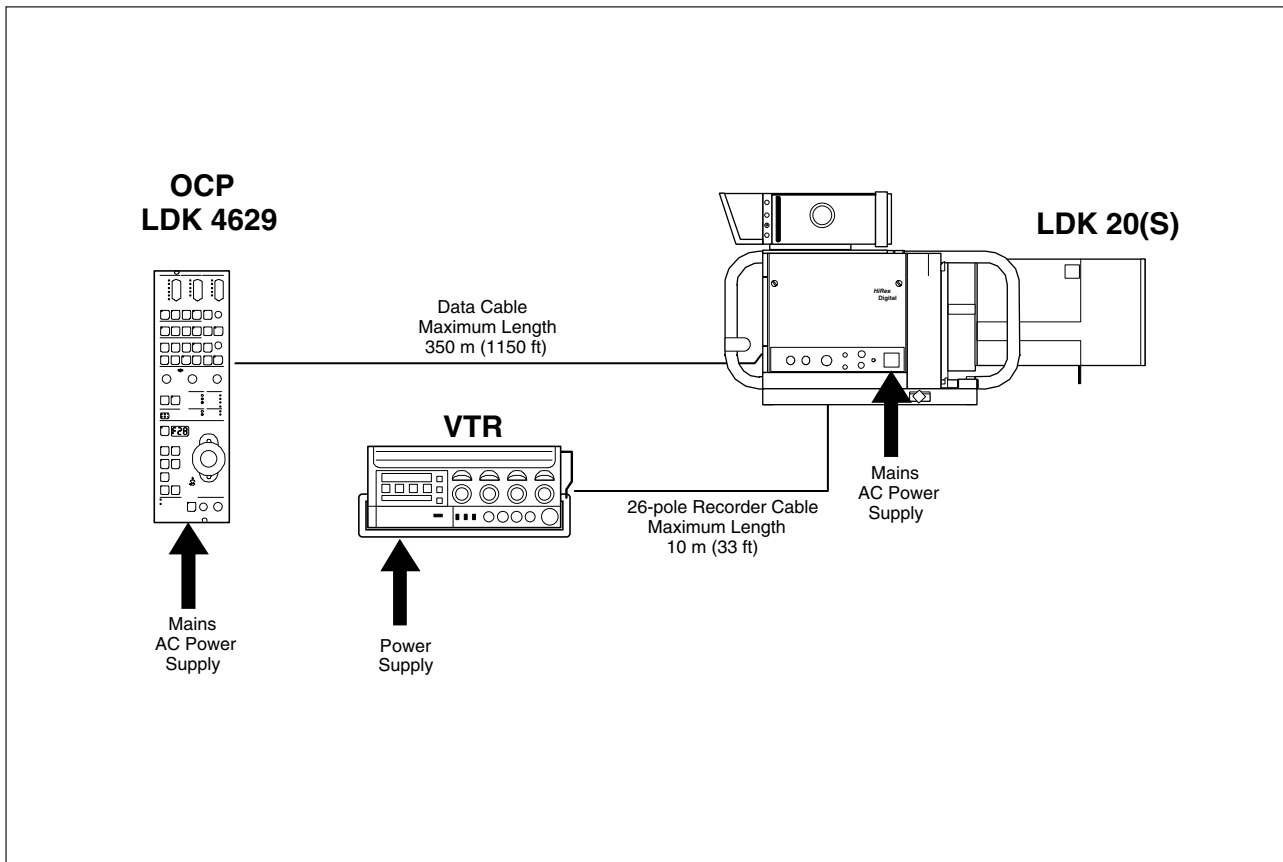
The LDK 20(S) is a multi-functional studio camera and this section describes the various ways that it can be used; on its own or with other cameras. Information on the cables, control panels and the control bus is also provided as is information on the main video and audio/intercom signal paths through the system.

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Basic Configurations

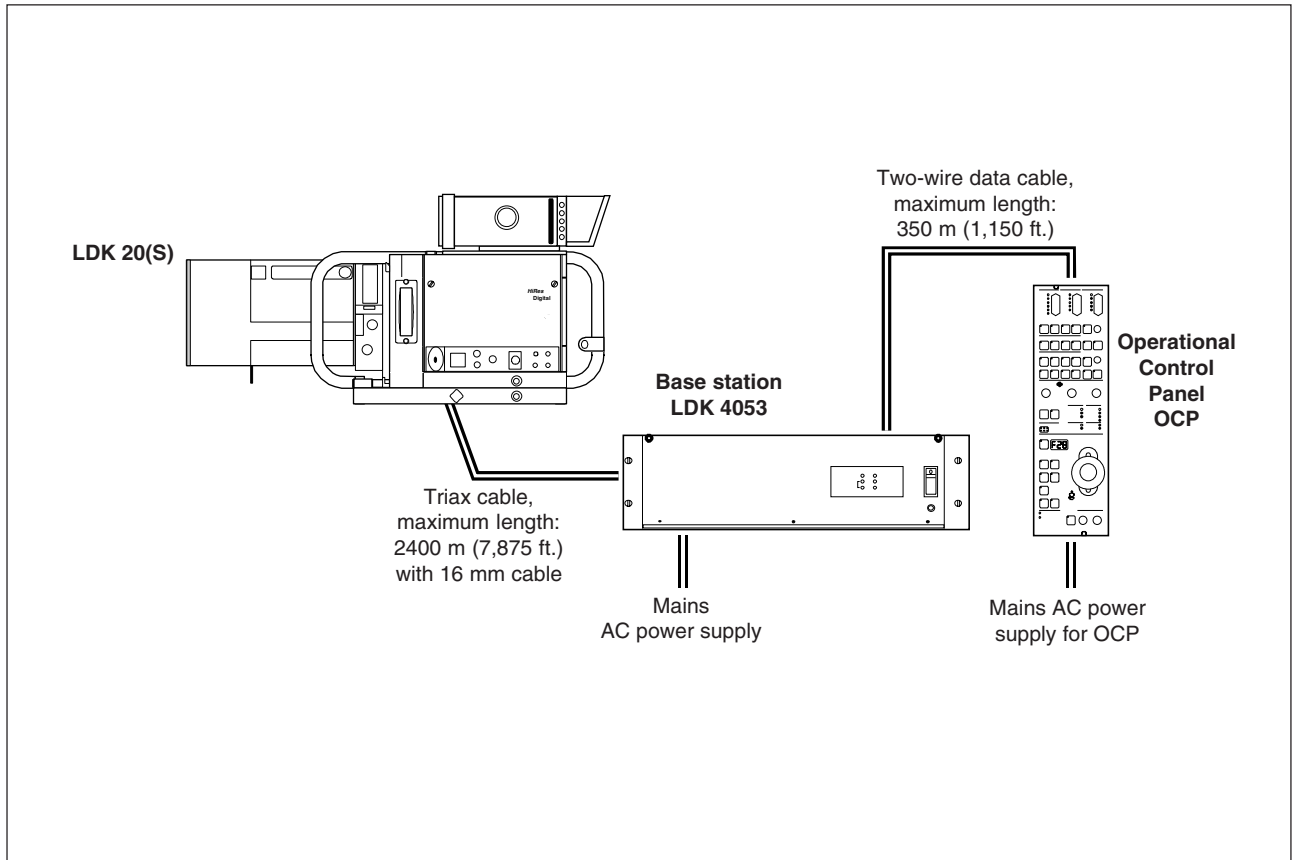
Stand-alone mode



The LDK 20(S) is a studio camera that can be used in various configurations. The first configuration is the stand-alone mode where the camera is connected to a separate VTR. The LDK 20(S) camera is delivered ready to operate in the remote mode. If the camera has been switched to the local (stand-alone) mode, follow the instructions to switch it back to the remote mode in Section 2 of the installation manual. The power supply is now provided to the camera via the mains AC power supply at the right side of the camera. The VTR is connected to the 26-pole

connector on the rear of the camera by means of the optional VTR cable LDL 2110. The camera connector provides SMPTE/EBU video component signals for the VTR. The playback signal from the VTR can be monitored in the viewfinder. The camera controls are all operated locally on the camera or via a single OCP/MCP connected to the data connector. It is also possible to connect a VTR to the camera when it is operating in the Triax (Remote) mode for parallel recording. In this case power is supplied via the Triax cable.

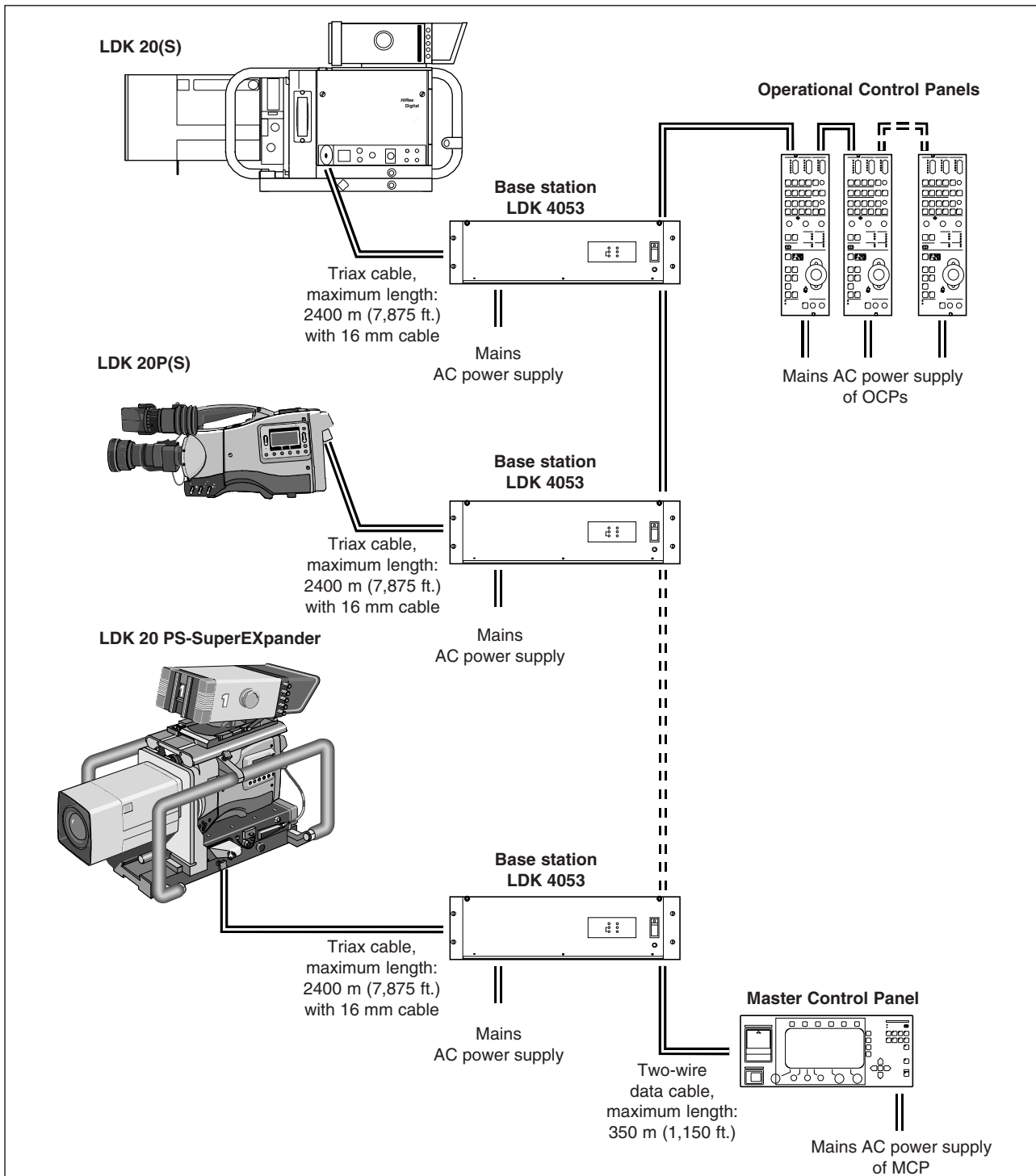
Single camera triax mode



The second configuration is the single camera Triax (Remote) mode. In this case the camera is connected to a base station via a Triax cable which can have a maximum length of 2,400m (7,875 ft). The base station provides the power supply for the camera via the Triax cable. The base station receives its power from the AC mains supply. The Triax cable carries R, G and B video signals, two audio signals and intercom signals from the camera head to the base station. It also carries teleprompter and external video signals, and intercom signals from the base station 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 base station. The data communication between camera and base station is carried over the Triax cable. The control panel can also be connected directly to the camera.

Multiple camera mode



The third configuration is the multiple camera Triax mode. The camera is connected to a base station as in the single camera Triax mode, however, in an environment with up to fifteen cameras the data bus is looped-through from base station to base station. The OCPs used to control the cameras are also connected to the same data bus. A master control

panel (MCP) can also be connected to this data bus to extend the control facilities. The LDK 20P(S) portable camera and the LDK 20P(S) with SuperEXpander are of course the ideal companions for the LDK 20(S).

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

The assignment number of a camera head connected to a base station is automatically set to the number of the base station to which it is connected. The number

on the base station, 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 base station/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.

Other Control Features

Private Data

A private data channel is also available between the camera and the base station. 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 base station 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

Analogue Ch1 can also be used to switch Aspect Ratio externally.

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 them to the base station via the triax cable. The R, G and B video signals are available for the studio as outputs on the rear of the base station.

The R, G and B video signals from the video processing circuits are used to produce R-Y and B-Y signals. These signals are passed to the video recorder via the 26-pole cable.

Viewfinder video

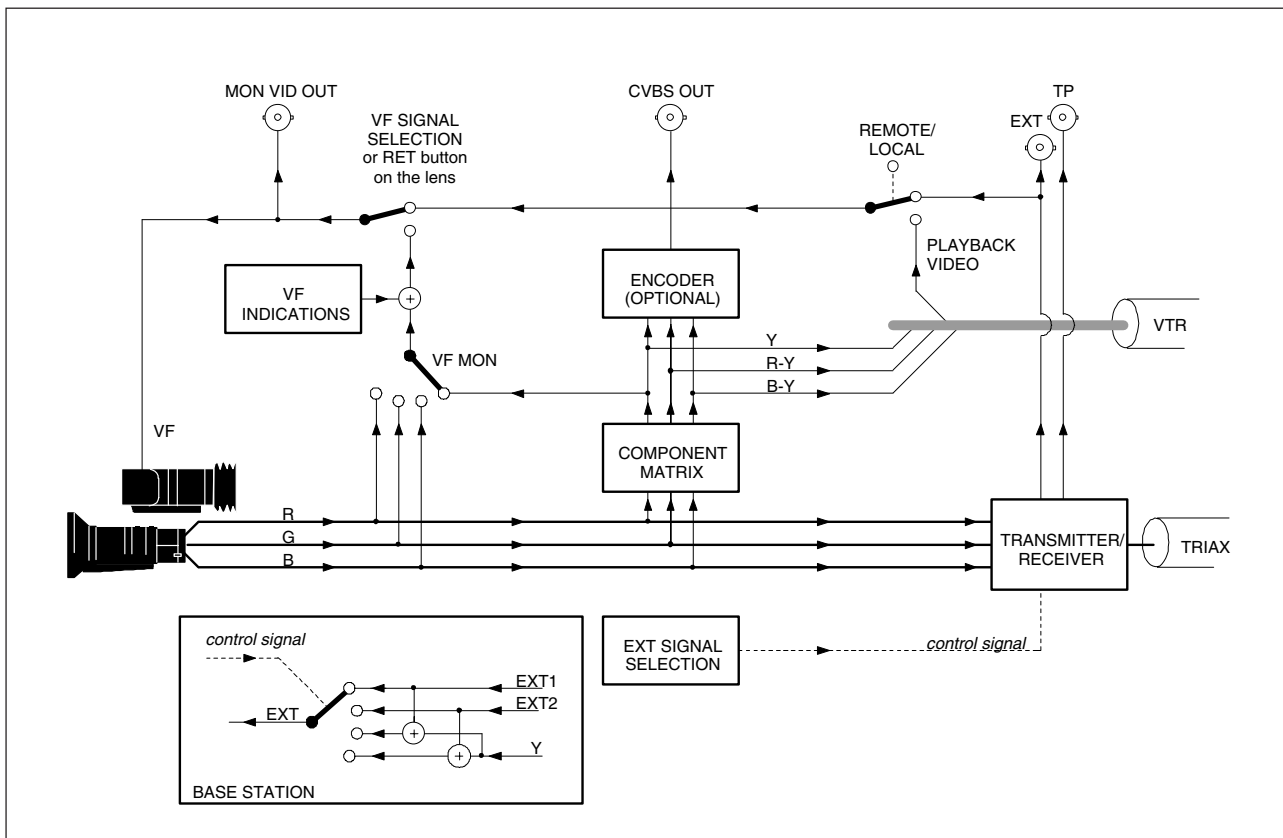
The normal signal displayed in the viewfinder is the Y signal. This is derived from the R, G and B video signals from the video processing circuits. Additional information is added to the viewfinder signal to provide superimposed text and graphics. In the triax mode the video signal for display in the viewfinder can be selected from the above mentioned Y signal, the R, G and B video signals, the inverted G 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 base station and are transmitted via the triax cable to the camera. The external 1 and external 2 video signals can be viewed separately, or mixed with internal signals.

Output signals

The camera has three video output connectors: two on the left side and one on the right side. A teleprompter output connector carries the signal which is input to the teleprompter input on rear of the base station. The VF output connector carries the signal which is displayed in the viewfinder. The CVBS output connector carries a signal which is derived from the R, G and B video signals from the video processing circuits (with encoder option only).

Playback

When the camera is used with a recorder, the viewfinder can display the playback signal from the recorder for monitoring purposes. This signal is passed to the camera via the 26-pole cable and it appears in the viewfinder when the play function of the recorder is started and the VF signal selection switch is set to external.



Audio/Intercom Routing

Audio path

The right 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 base station via the Triax cable. The amplification factor of the audio microphone signals can be selected via the control system. When the camera is used in the Local mode these connectors are not used as the audio microphones are connected directly to the recorder.

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 floorman. An additional intercom signal is available for the tracker.

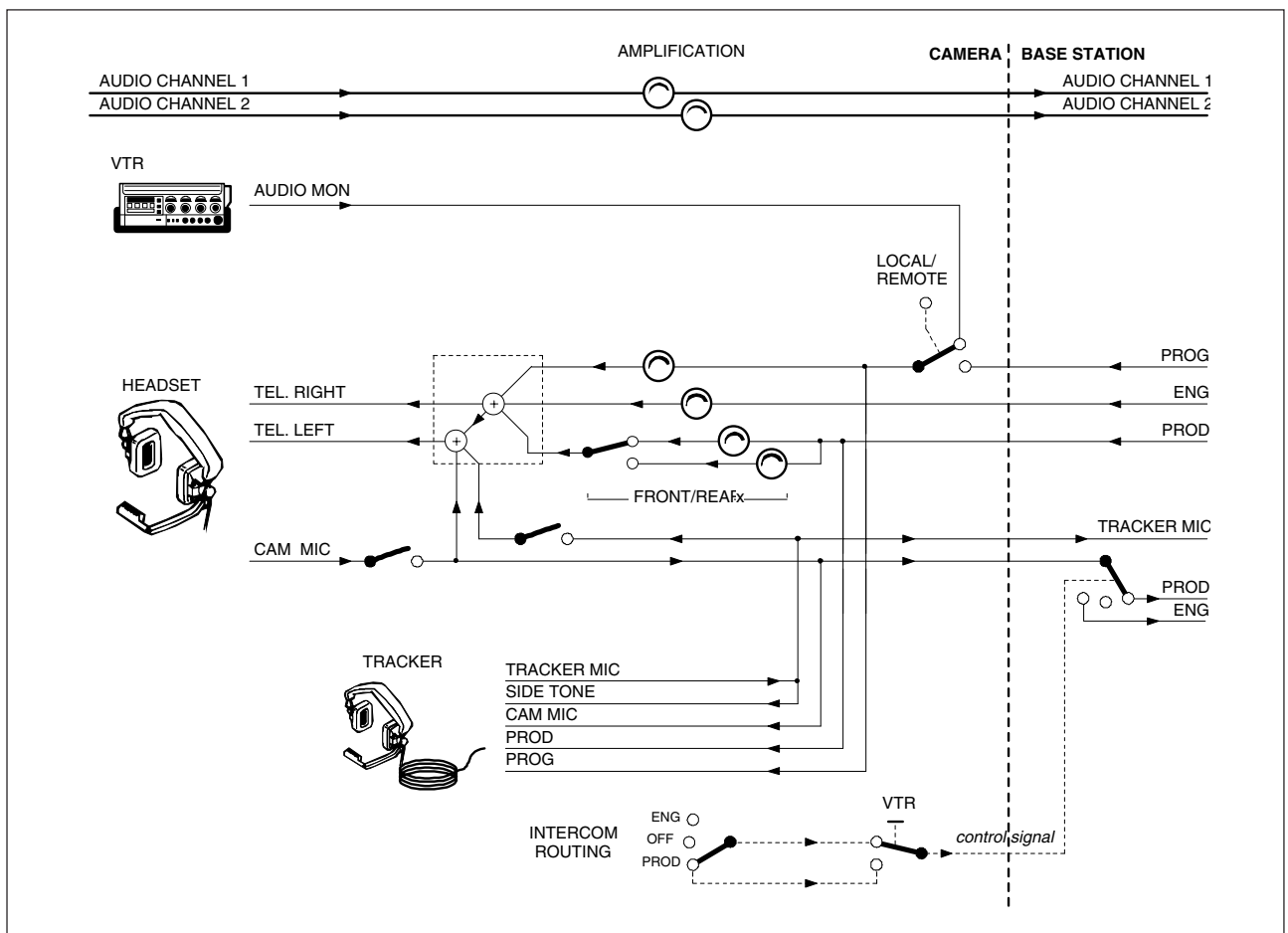
In the triax mode there are three intercom channels from the base station to the camera. These carry the engineering intercom signal, the production intercom signal and the programme intercom signal. Two

intercom channels from the camera to the base station carry the floorman and cameraman intercom microphone signals. The latter can be routed in the base station either to engineering or to production via the intercom routing switch on the camera.

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

The engineering intercom signal, the production intercom signal and the programme intercom signal from the base station 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 floorman 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.

In the local mode the audio monitoring signal from the VTR is substituted for the programme audio signal from the base station.



Section 4

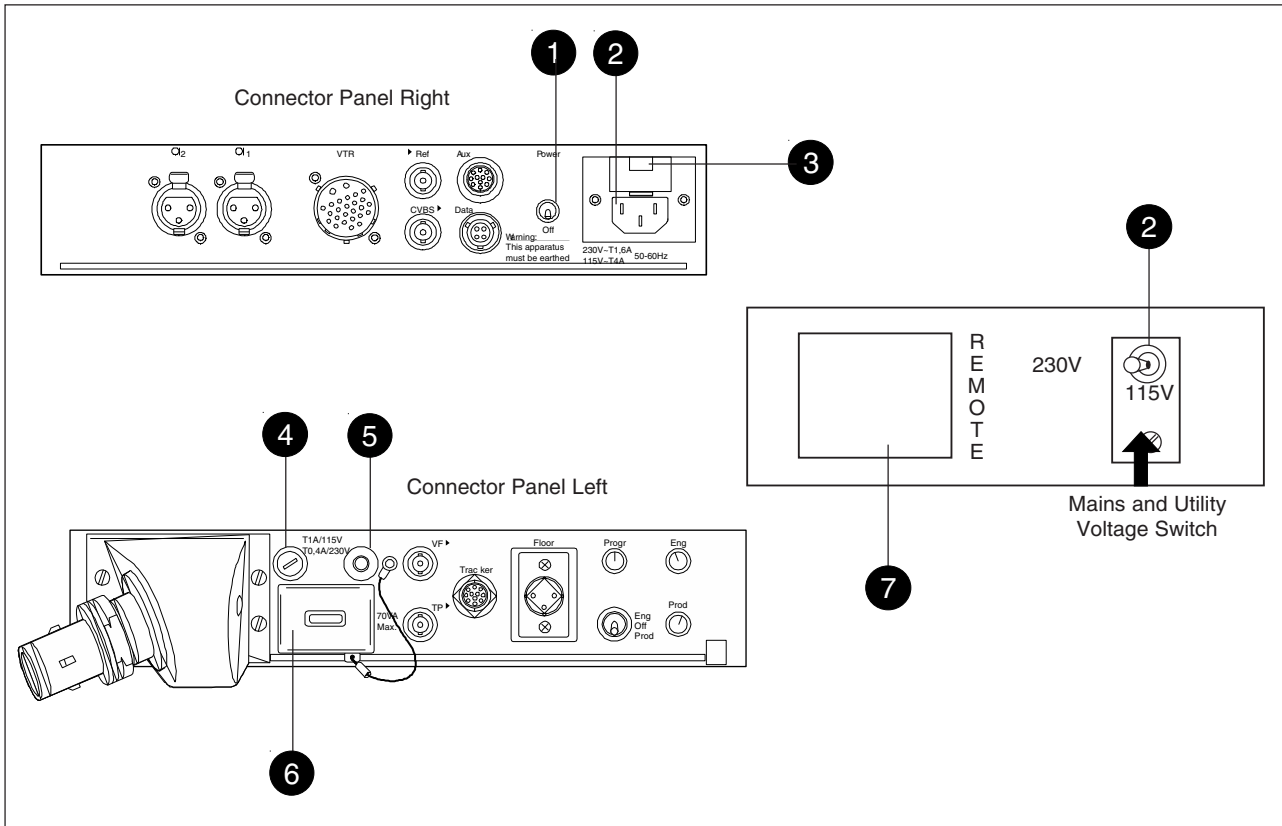
Location of Controls and Functions

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.

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Power Supply



1 Mains power supply On/Off switch

Switches the mains power supply to camera and viewfinder on or off.

2 Mains power supply input connector

Input Voltage

for NTSC version: 115 Vac ($\pm 15\%$)

for PAL version: 230 Vac ($\pm 15\%$)

The frequency of the mains power supply must be between 47Hz and 63Hz. The input voltage can be selected using the mains and utility voltage switch located behind the rear connector panel.

3 Mains power supply fuses

For 115 Line voltage:- 4A Slow, 250 Vac

For 230 Line voltage:- 1.6A Slow, 250 Vac

4 Utility outlet fuse

This fuse is for the utility outlet. Replace only with the same type - T1A/115V or T0.4A/230V.

5 Utility outlet power indicator

Lights when power is available at the utility outlet.

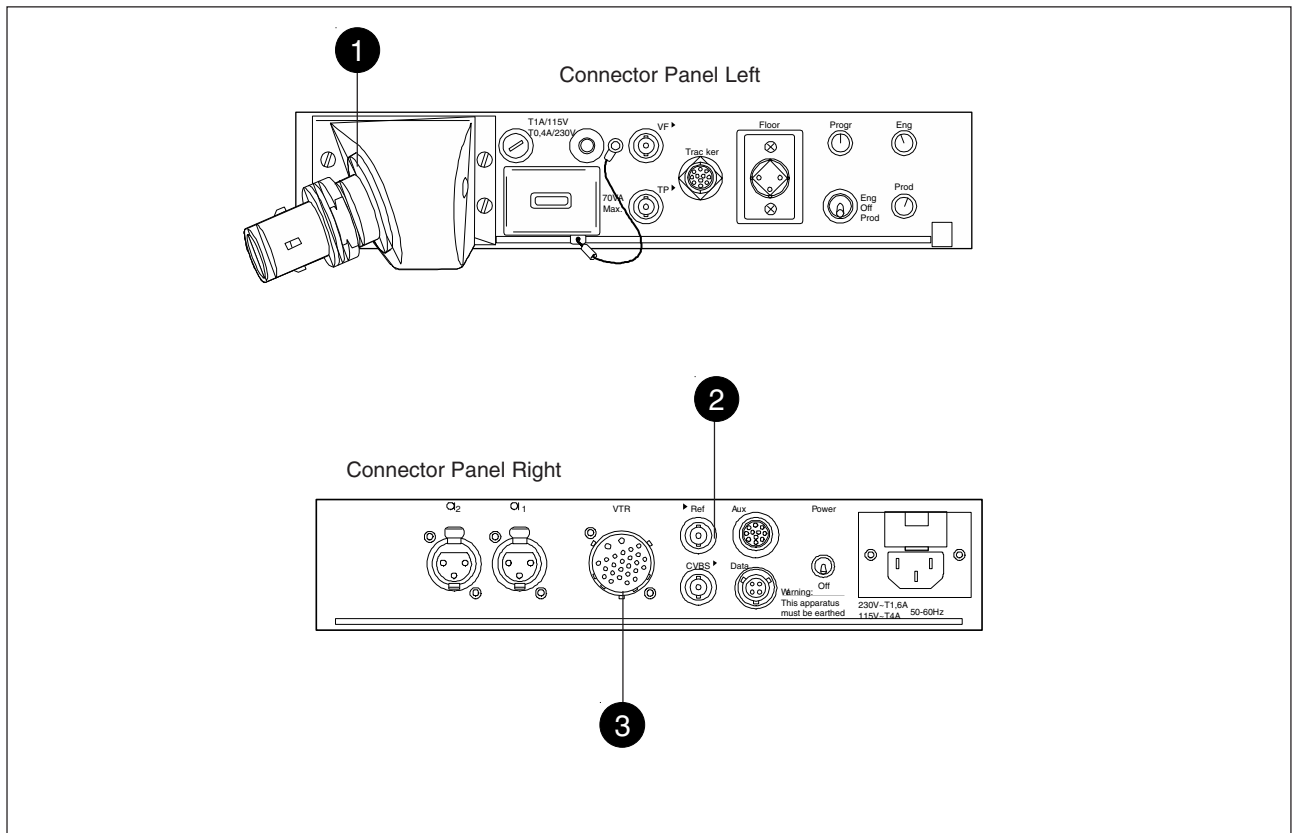
6 Utility outlet

Supplies power (maximum 70W) at the mains supply voltage and frequency. (Loading or unloading this outlet could interrupt camera operation.)

7 Local / Remote switch

The local/remote switch behind the rear connector panel is used to determine how the camera receives its power. In the Local position power is supplied via the mains power supply input connector (2). In the Remote position the camera is supplied via the Triax cable.

Video Functions



1 Triaxial cable connector

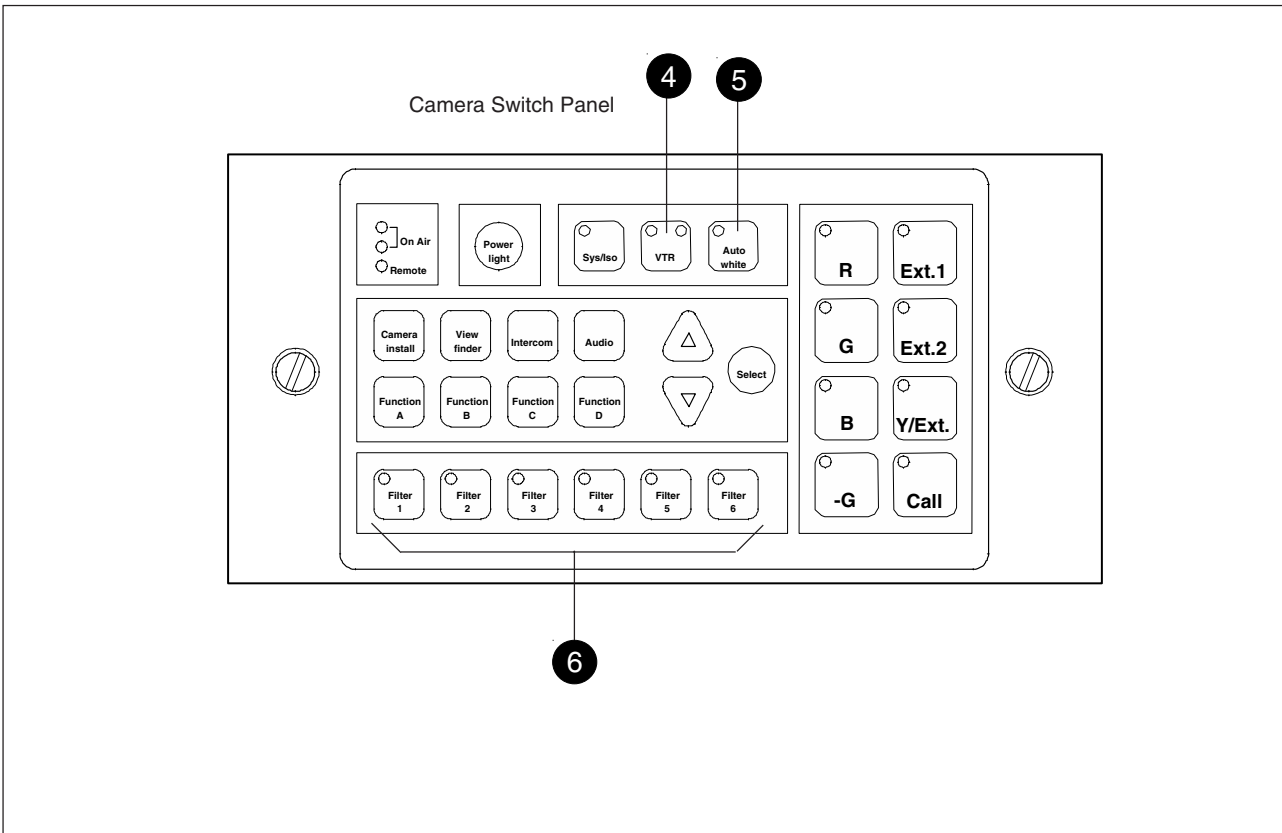
The triaxial cable which connects the camera to the base station is connected to this socket. The triax cable carries all the video and control signals, and the power supply for the camera head.

2 Genlock input connector

This socket accepts a 1Vpp nominal CVBS or black burst external reference signal for genlocking the camera.

3 VTR connector

This 26-pole connector for a separate VTR provides SMPTE/EBU video component Y, R-Y, and B-Y signals.



4 VTR start/stop switch

The yellow LED lights to indicate that the video recorder connected to the camera head is in the stand-by mode. When the video recorder is in this position it can be started by touching the VTR switch. The green VTR LED then lights when the VTR starts. Touching the VTR SWITCH again stops the video recorder.

When the camera is in the stand-alone mode the ENG/PROD switch on the pan bar works as a VTR start/stop switch in parallel with this VTR switch.

When the switch is pressed once the measurement window is displayed in the camera viewfinder. The LED in the switch lights. When the switch is pressed a second time the measurement process starts. The LED in the switch flashes.

If the measurement is successful the red and blue gains are automatically adjusted and stored in memory position AW1 or AW2 depending on which was selected on the OCP or MCP. The LED in the switch and the measurement window are switched off.

If the measurement is unsuccessful, the LED in the switch flashes continually. Press the switch again to cancel the process and restore the previous value.

5 Automatic White Balance button

This switch only operates if the camera head is in the stand-alone mode.

The auto white switch is used to start the automatic white balance process. The camera measures a white area in the middle of the picture and stores a colour temperature setting in the AW1 or AW2 memory positions. The auto white switch only operates if the colour temperature switch is in position AW1 or AW2, the colour bars are switched off, the camera is not on-air and the auto white function is enabled on the MCP.

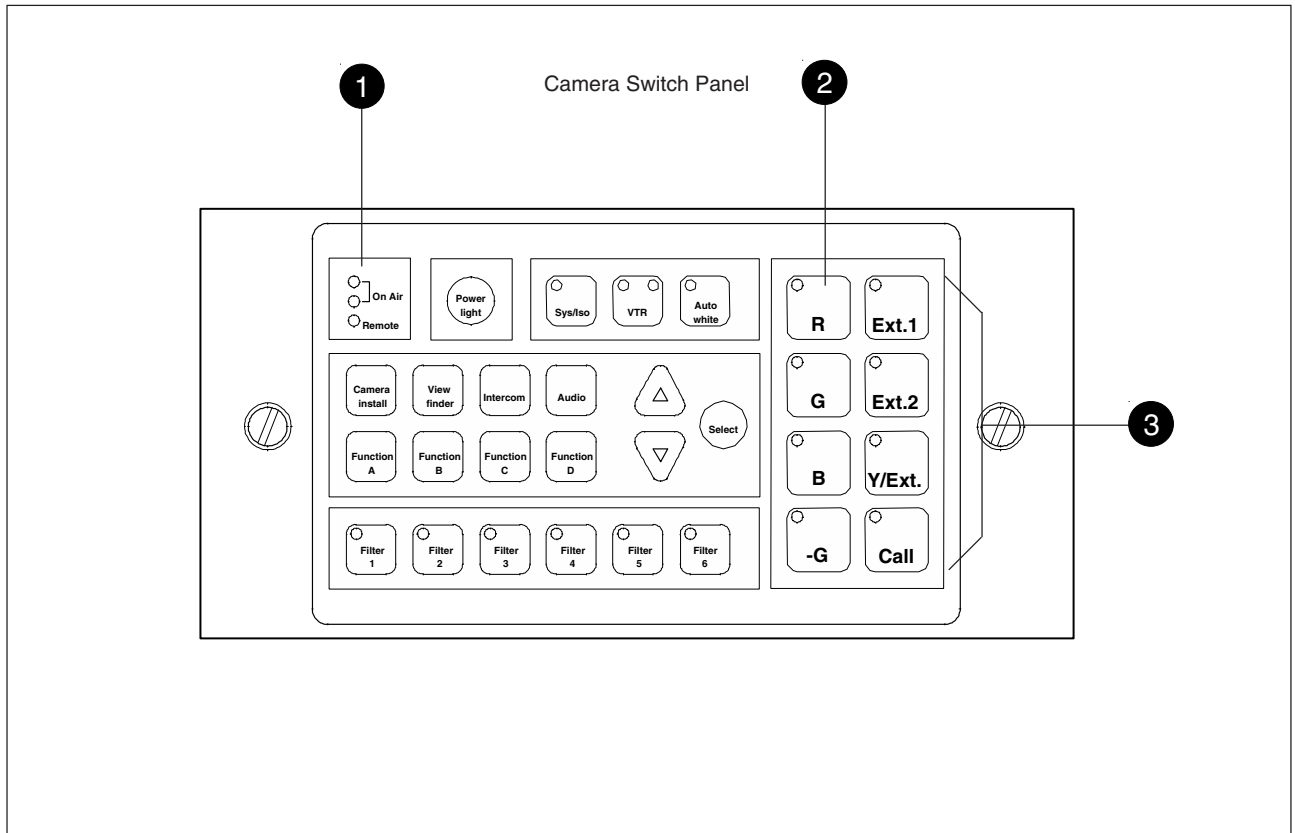
6 Filter switches

Select the filter by touching the appropriate number:

- Position 1: Clear Filter
- Position 2: ND 0.6 Filter
- Position 3: ND 1.2 Filter
- Position 4: ND 1.8 Filter
- Position 5: Four Point Star Filter
- Position 6: Six Point Star Filter

The indicator lights to show the selected filter. These switches do not work when the camera is on-air.

Monitoring Functions



1 On-air 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 base station. It indicates that the camera signal is being used for recording purposes but is not on-air. On-air indication will override ISO.

2 Viewfinder signal selection switches

These four switches interactively select the signal to be displayed in the viewfinder. The LED indicator in the switch lights to show it is on. These switches are used to choose between the local camera head Y signal or the R, G, B, or inverted G signal for display in the viewfinder. If all switches are off the Y signal is selected.

3 External signal selection switches

These switches are used to select the external signal displayed in the viewfinder. The LED indicator in the switch lights to show it is on. The signal displayed for each position is as follows:

Switch LED on

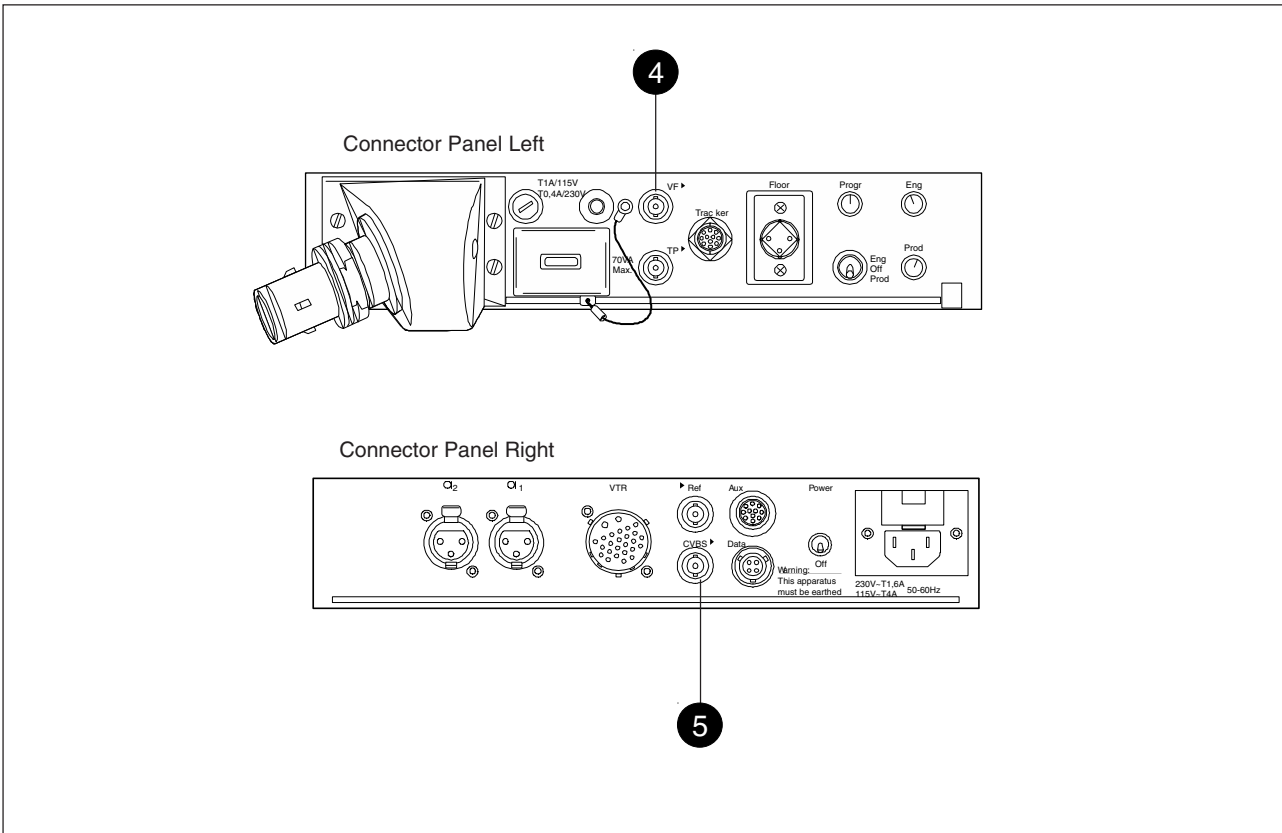
EXT 1	Base station external input 1.
EXT 2	Base station external input 2.
Y/EXT	A mix of the external signal selected and the camera head Y-signal.

Note

In the stand-alone mode the viewfinder displays a playback signal from the recorder for monitoring purposes when the external 1 switch is on.

For PIP-functionality refer to the User's Guide of the 7-inch PIP Viewfinder (LDK 4016/05).

Monitoring Functions



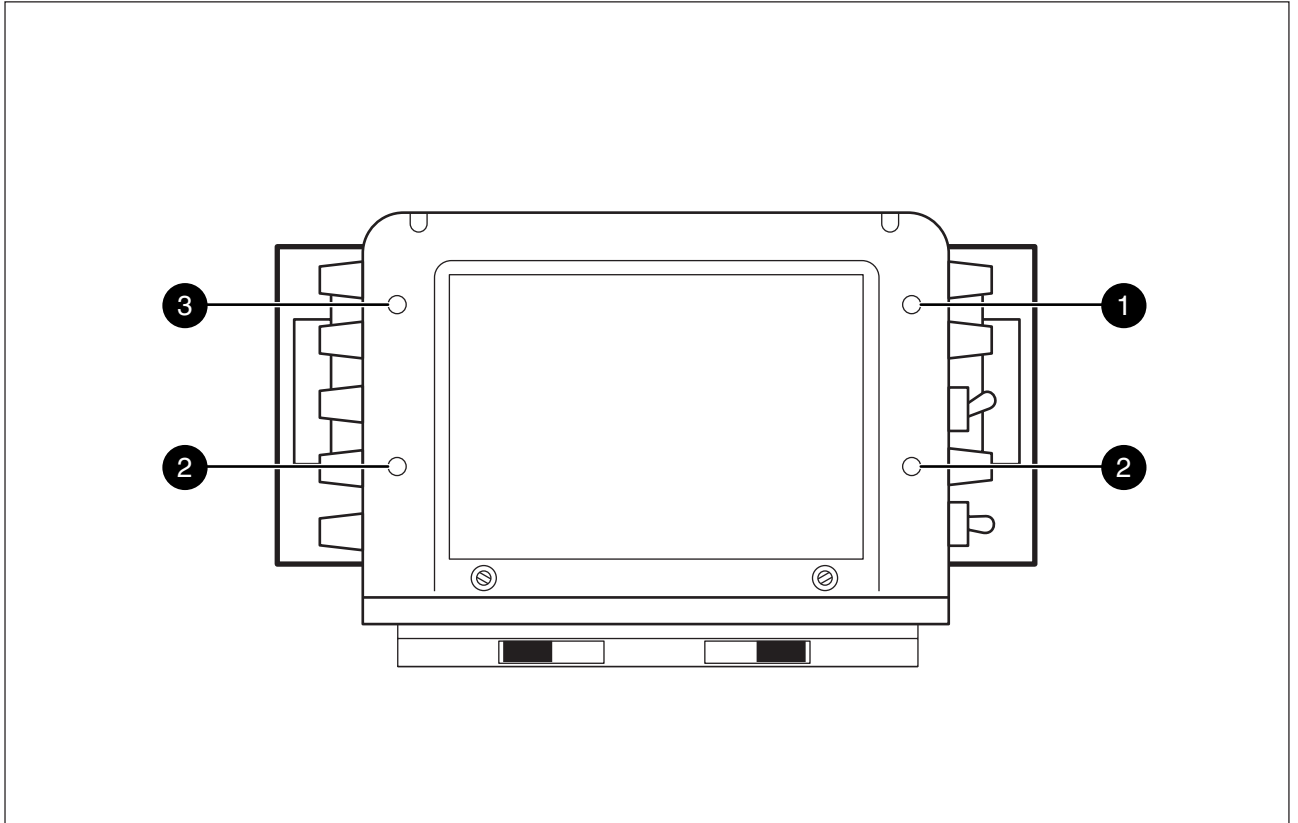
4 Viewfinder video output connector

This BNC connector provides a 1Vpp output signal, which is identical to the signal displayed in the viewfinder, for monitoring purposes.

5 CVBS output connector

This BNC connector provides a 1Vpp CVBS output signal for monitoring purposes (only available with the optional encoder).

Viewfinder LED's



1 Call LED

This green LED lights to attract the cameraman's attention.

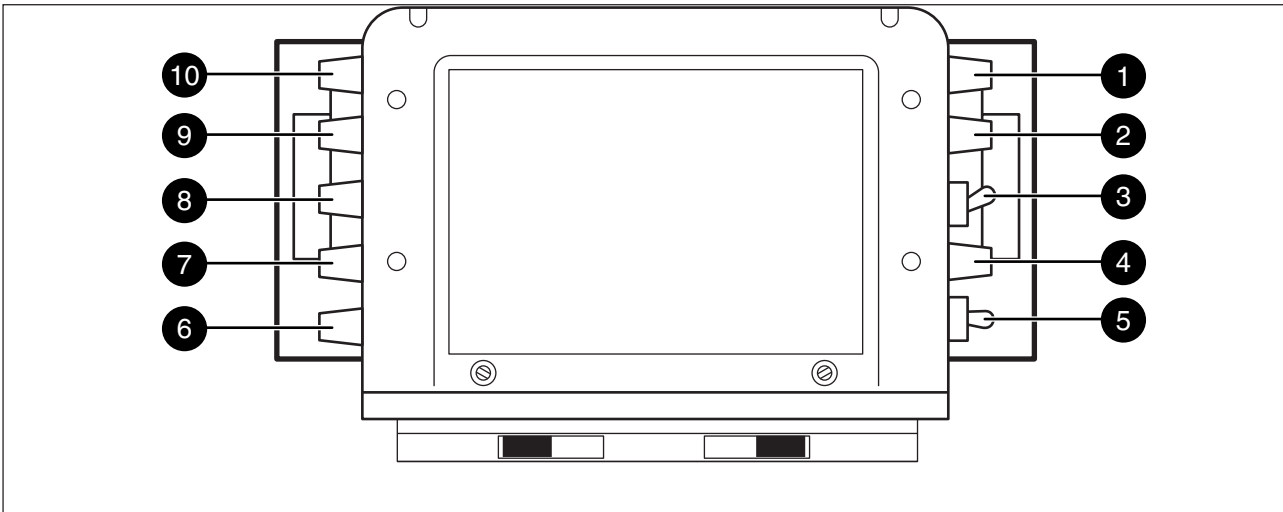
3 ISO LED

This yellow LED lights to indicate that the camera signal is being used though not necessarily on-air.

2 On-air LEDs

These red LEDs light to indicate that the camera is on-air.

Viewfinder Controls



1 Brightness Control

Controls the brightness of the viewfinder display.

2 Aperture Correction Control

This control varies the amount of aperture correction applied to the viewfinder signal when the aperture correction switch is in the ON position.

3 Aperture Correction Switch

This switch is used to switch the aperture correction of the viewfinder signal on and off.

4 Contrast Control

Controls the contrast of the viewfinder display.

5 Picture In Picture Switch

This switch is used to switch on the PIP signal.

6 Cursor Frame Selection

Selects the cursor frame mode for display on the viewfinder:

Off	=	Deactivated
#	=	Lines
□	=	Box
Off	=	Deactivated

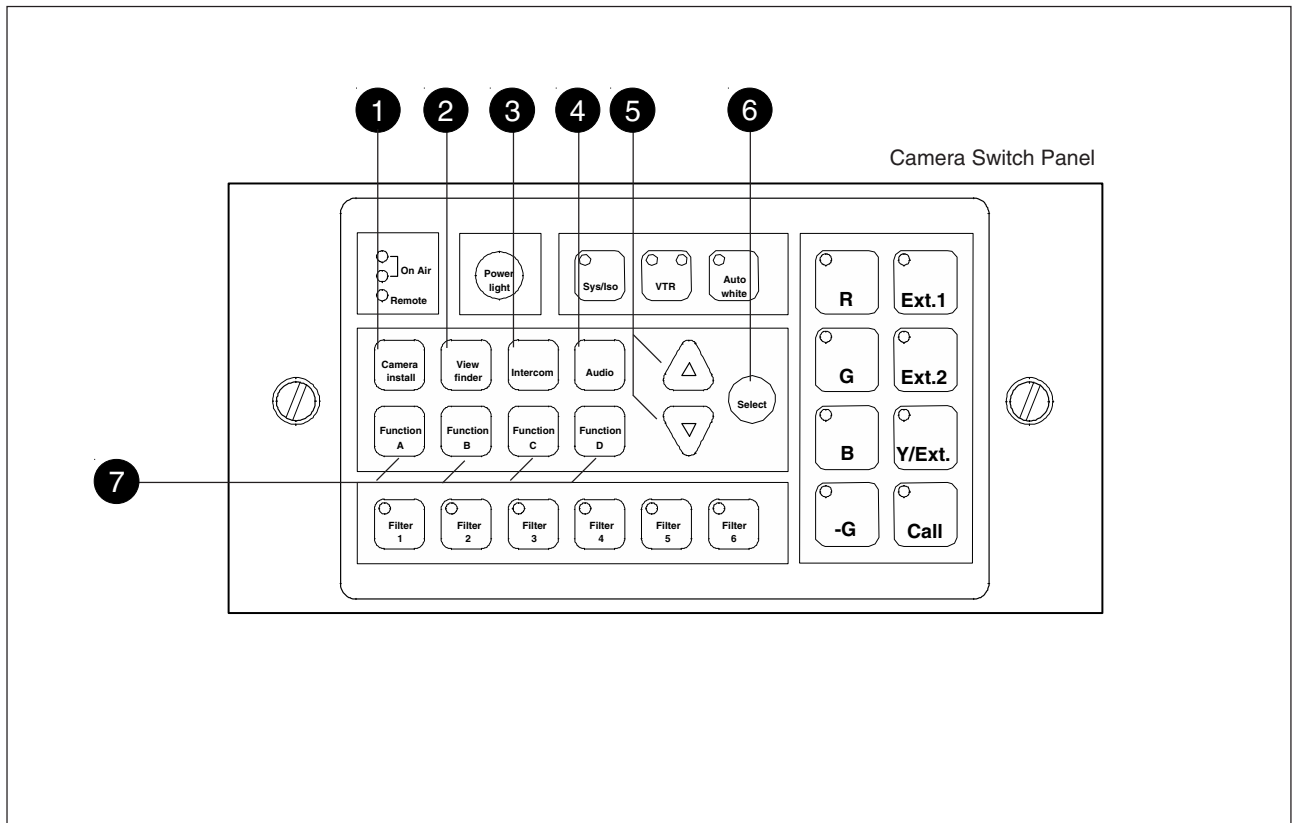
7, 8 Cursor Line Control

Shifts the horizontal cursor lines in a vertical direction.

9, 10 Cursor Line Control

Shifts the vertical cursor lines in a horizontal direction.

Control Functions



1 Camera installation menu selection switch

This switch when pressed brings the camera installation menu directly to the viewfinder screen. The LED lights while the menu is displayed.

2 Viewfinder menu selection switch

This switch when pressed brings the viewfinder menu directly to the viewfinder screen. The LED lights while the menu is displayed.

3 Intercom menu selection switch

This switch when pressed brings the intercom menu directly to the viewfinder screen. The LED lights while the menu is displayed.

4 Audio menu selection switch

This switch when pressed brings the audio menu to directly the viewfinder screen. The LED lights while the menu is displayed.

5 Up/Down function selection switches

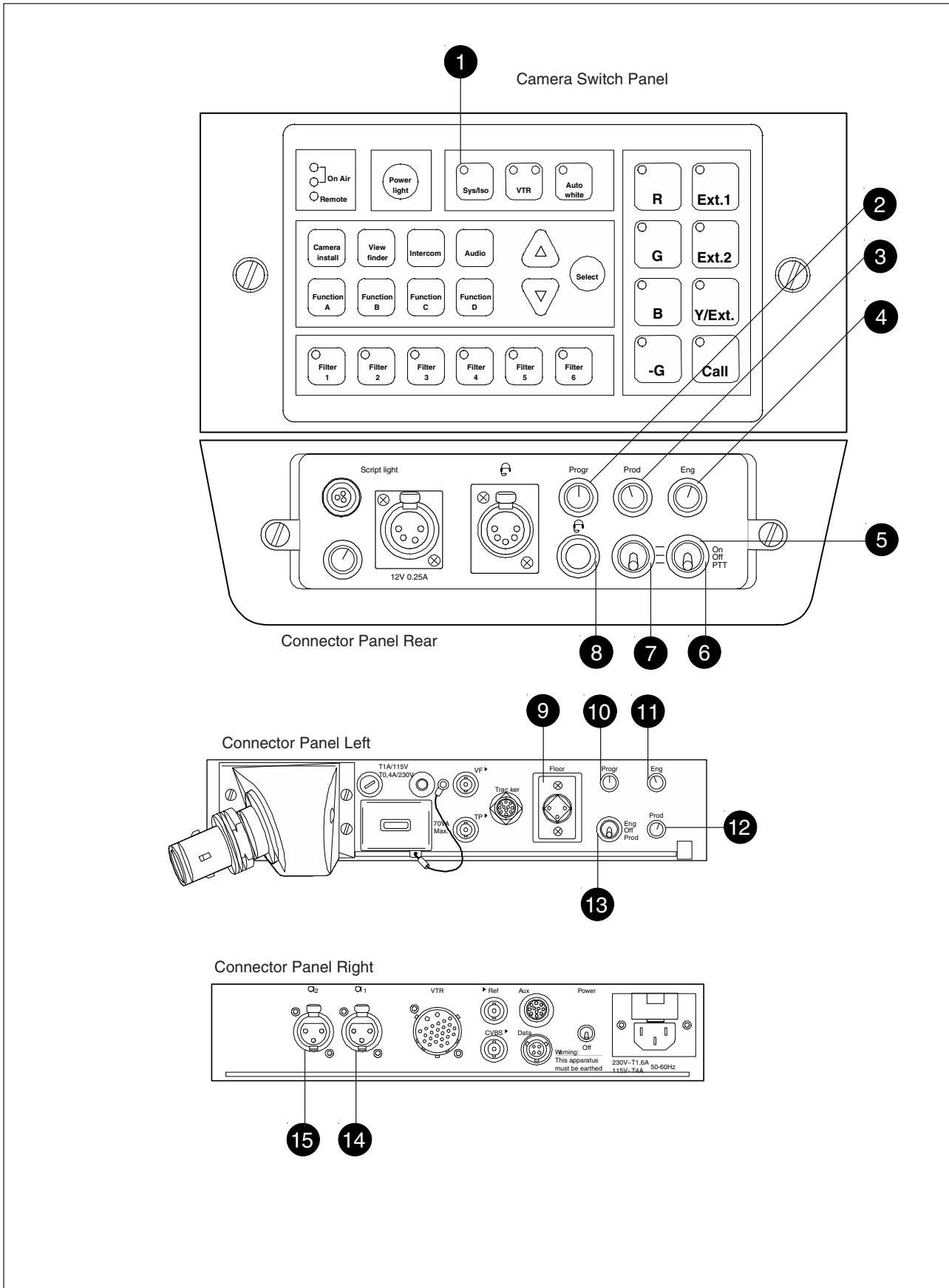
These two up/down scroll switch are used to move through the various menus of the control system or to set a particular value for a function.

6 Select switch

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

7 User-defined menu switches

These four function switches can be programmed to bring a user-defined menu directly to the viewfinder screen. Refer to section 5 for further instructions on how to set up these switches. Audio / Intercom



1 Intercom isolation switch

Touching this switch isolates the cameraman, floorman and tracker intercom systems from the engineering and production system. The yellow LED in the switch lights when the system is isolated. Touching the switch again reconnects the systems.

2 Cameraman headset programme volume

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

3 Cameraman headset production volume

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

4 Cameraman headset engineering volume

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

5 Engineering intercom signal selection

A 3-position switch for the engineering intercom which switches it on or off. The third position PTT (Push To Talk) is a momentary position allowing the cameraman to talk to engineering when the switch is held down.

6 Production intercom signal selection

A 3-position switch for the production intercom which switches it on or off. The third position PTT (Push To Talk) is a momentary position allowing the cameraman to talk to engineering when the switch is held down.

7 Cameraman intercom connector (RTC)

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

8 Cameraman intercom connector

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

9 Floorman intercom connector

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

10 Floorman headset programme volume

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

11 Floorman headset engineering volume

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

12 Floorman headset production volume

This control varies the volume of the production intercom signal to the floorman's headset.

13 Floorman Intercom routing switch

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

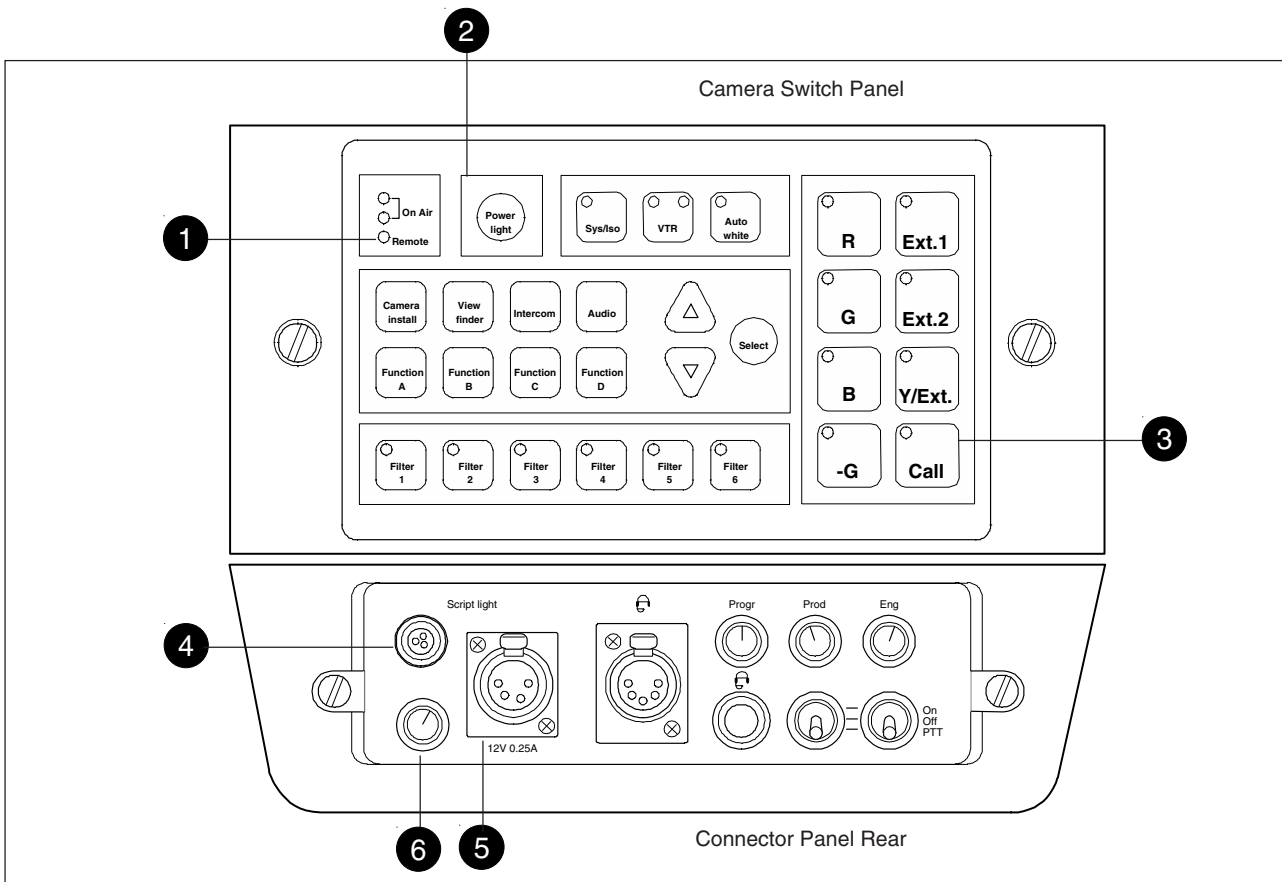
14 Audio Ch. 2 microphone connector

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 base station.

15 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 base station.

Auxiliary Functions



1 Remote/Local operation indicator

This indicator lights to show that the camera is connected to and controlled by a Series 9000 control panel (OCP, MCP, etc.).

2 Panel light switch

This switch is used to turn the rear panel backlight on and off. Touching the switch toggles the state of the light.

3 Call switch

Touching this switch sends a signal to the control panels calling for attention. The indicator lights when the call switch is activated or when a call is received from another system part.

4 Script light connector

A 3-pole socket which supplies +12 Vdc for a script light (maximum dissipation 3W).

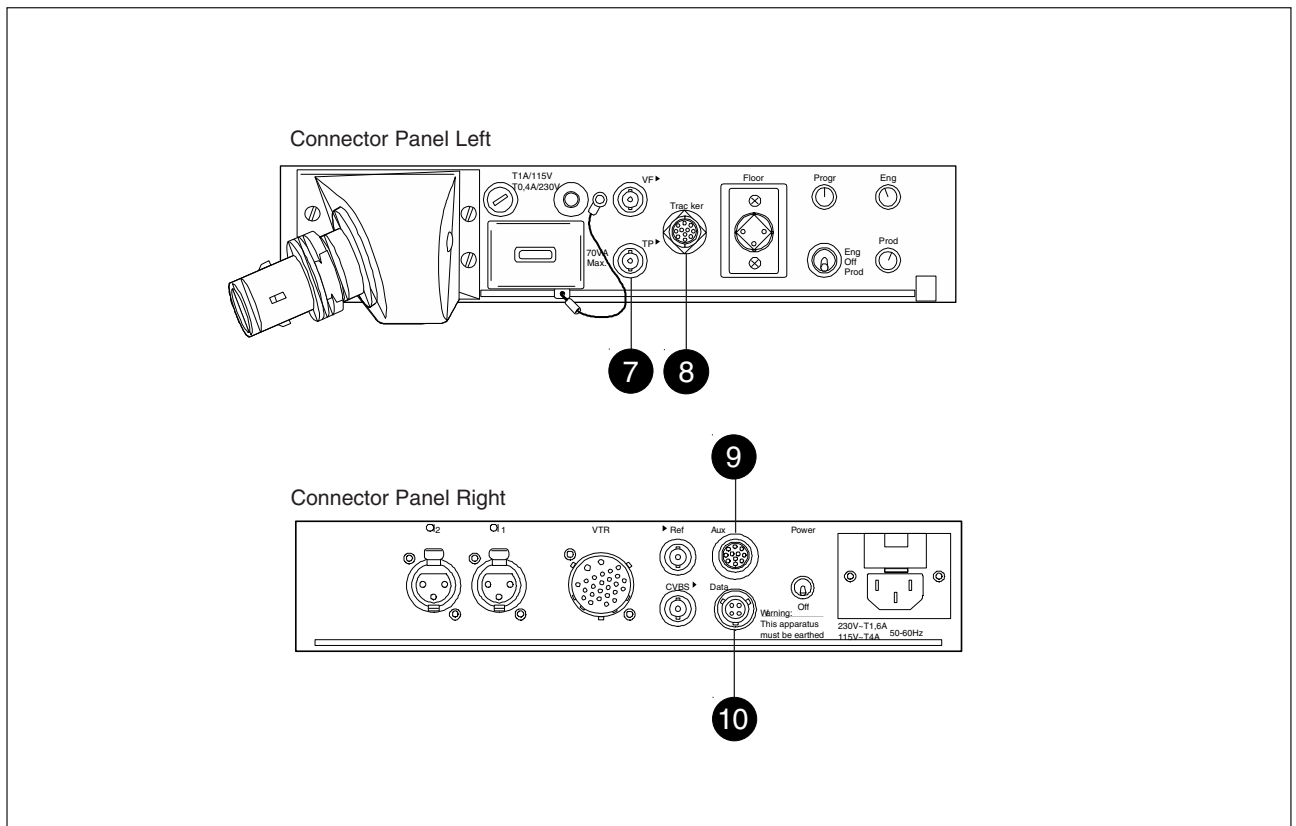
5 Script light connector (variable)

A 3-pole socket which supplies +12 Vdc for a script light (maximum dissipation 3W).

6 Script light brightness control

This control varies the brightness of the script light connected to the variable script light connector.

Auxiliary Functions



7 Teleprompter output connector

This BNC connector provides the teleprompter video signal which is applied to the teleprompter input connector of the base station.

If the CVBS output signal of the camera base station is connected to the teleprompter input, then this teleprompter output connector provides the CVBS signal for colour monitoring.

8 Tracker connector

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

9 Auxiliary connector

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

10 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.

Section 5

Shooting

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

Contents

Using the Camera	5-2	Optical filter selection	5-4
Standard settings	5-3	Colour temperature selection	5-5
Colour Bar	5-3	Auto-White Balance	5-5
Gain selection	5-4		

Using the Camera

The camera is operated via the viewfinder text display and the control system switches on the rear panel. You have great detail and selection at your disposal when changing all the functions which are available in the camera. Refer to the next section (Section 6 - Operating the Menu System) which explains the use of the menu selection structure and the viewfinder text display.

This section describes the operational functions that are available when using the camera via the viewfinder display and the switches at the rear.

These 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:

- a. The camera must be set up and powered.
- b. The standard settings must be recalled.
- c. Adjustments must be made for ambient lighting.

Physical set-up and power supply

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

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 right panel of the camera. For remote operation the camera is powered by the base station via the triax cable. Set the power switch on the right panel of the camera to the on position.

For stand-alone operation connect the VTR to the 26-pole VTR connector on the right panel of the camera. The camera is powered from the mains power supply which is connected to the input socket on the right panel.

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.

Use the selection switches at the rear and the viewfinder display to recall the standard values from the Files menu for the various functions. The standard values only take effect when the camera goes Off-air.

Note

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

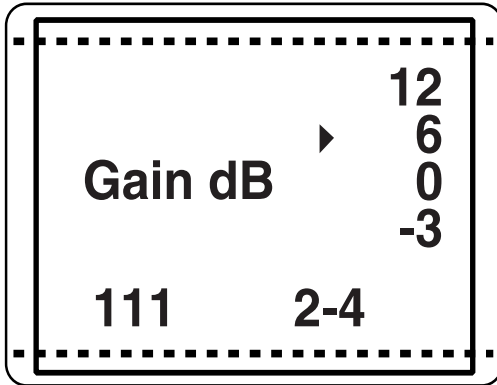
The Operate menu contains a selection for switching on the colour bar test signal. The colour bar is a standard test signal which is used to set up and check the camera before use.

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

Gain selection

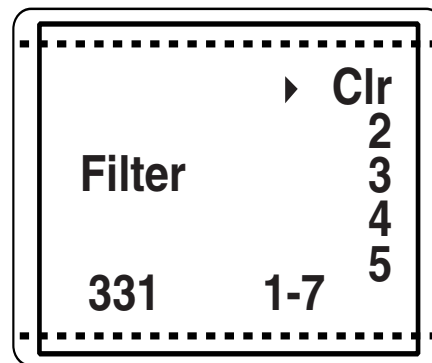
Depending on the available light levels it may be necessary to adjust the gain of the camera. The gain is selected via the Operate menu. When this function is selected initially, a list of the available values for the gain is displayed in the viewfinder. The cursor marks the current value. A new value 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.

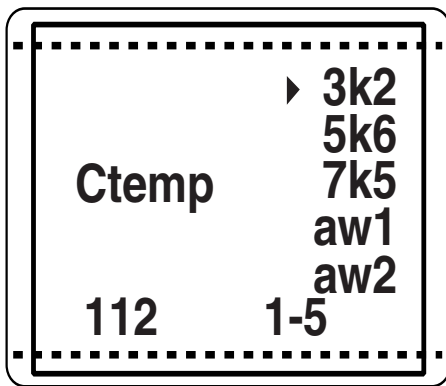
Optical filter selection

A filter can be placed in the path of the optical signal to restrict the incoming light or for artistic effect. The filter is selected via the filter switches on the rear panel. The filters can also be selected via the VF/Lens-Lens-Filter menu, 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 pressing another switch or 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).

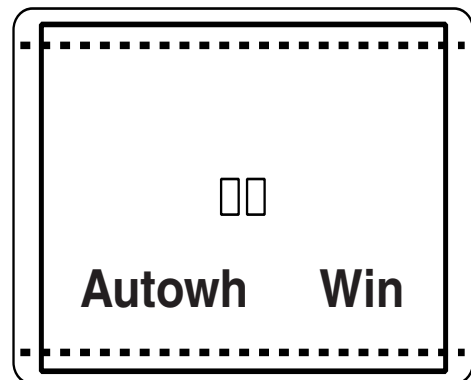
For true colour reproduction the ambient lighting conditions must be compensated for by selecting a value for the colour temperature. The standard file setting is 3200K (normally used for tungsten light). Two other reference colour temperatures are available; 5600K (for outdoors, clouded conditions) 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. The colour temperature is selected via the operate menu. 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 reference colour temperatures do not match your lighting conditions then the auto-white procedure must be carried out as follows:

- 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 Auto white switch on the rear panel of the camera to start the automatic white balance procedure. A 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.

Section 6

Operating the Menu System

Because the LDK 20(S) 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	Alternative Ways to Navigate	6-4
Finding your way	6-2	Menu Structure	6-5
Making Changes	6-3	Menu Install Features	6-6

Once you grasp the operational aspects of the camera you will find it 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 to become familiar with them. We recommend that you spend some 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.

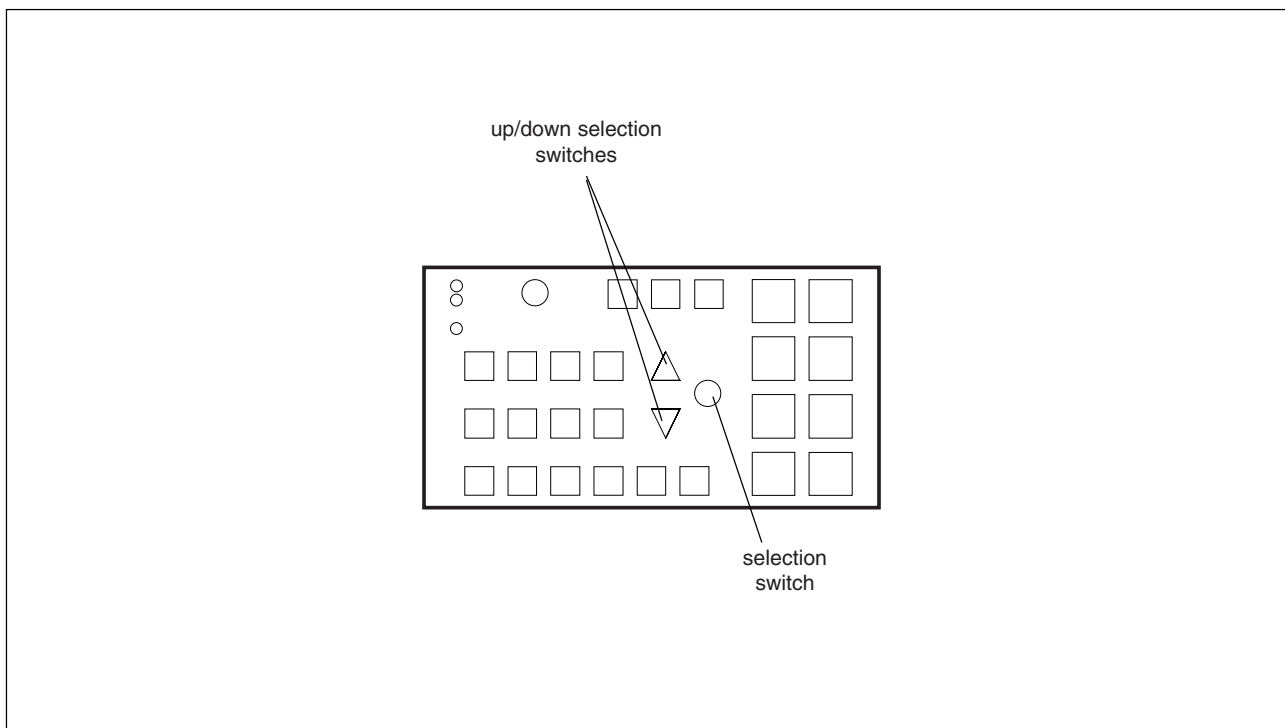
To select functions use the viewfinder display and the switches on the rear panel (refer to Section 5 "Shooting" for more information).

The functions of the camera are grouped into menus and sub-menus. If we look at the first screen that appears after the logo when the camera is switched on, we get an idea of the structure. The Top menu is shown in the viewfinder text display

To find a function first consult the appendix to find out where it is located. Use up/down selection switches to move the cursor through the menu items. As long as a double arrow (>>) is visible, then pressing the Select switch brings you one level lower in the menu system. Only five items are visible in the menu. Scroll up or down to see any additional items.

Selecting TOP brings you back to the first menu. Selecting PREVIOUS brings you back to the previous menu until you get at the TOP again.

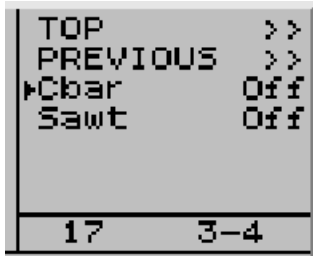
The viewfinder text display provides information about your position in the menu system. The number on the left gives the menu number. The number on the right gives the current item number and the total number of items available.



Making Changes

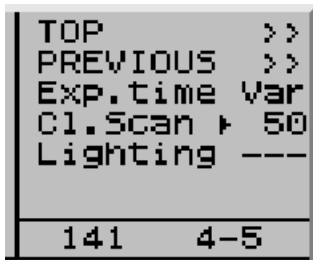
If there are no double arrows then the Select switch can be used to make a selection.

If On or Off is displayed after the function name then pressing the Select switch toggles this value.



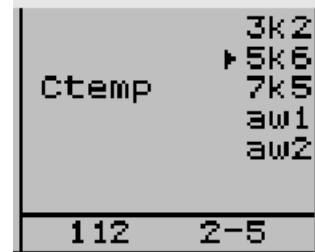
pressing Select switches on the colour bar

If an analogue value is displayed after the function name then pressing the Select switch places the cursor in front of the value and the up/down selection switches are used to change it. Press the Select switch to return the cursor to the selection list.



use the up/down selection switch to change this value

If a switchable value is displayed after the function name then pressing the Select switch places the cursor in a selection menu indicating the current choice. Use the up/down selection switches to change the value. Press the Select switch to return the cursor to the selection menu.



if you press Select, you will return to the Gain menu

If the value is indicated by --- then it is not available for change.

Alternative Ways to Navigate

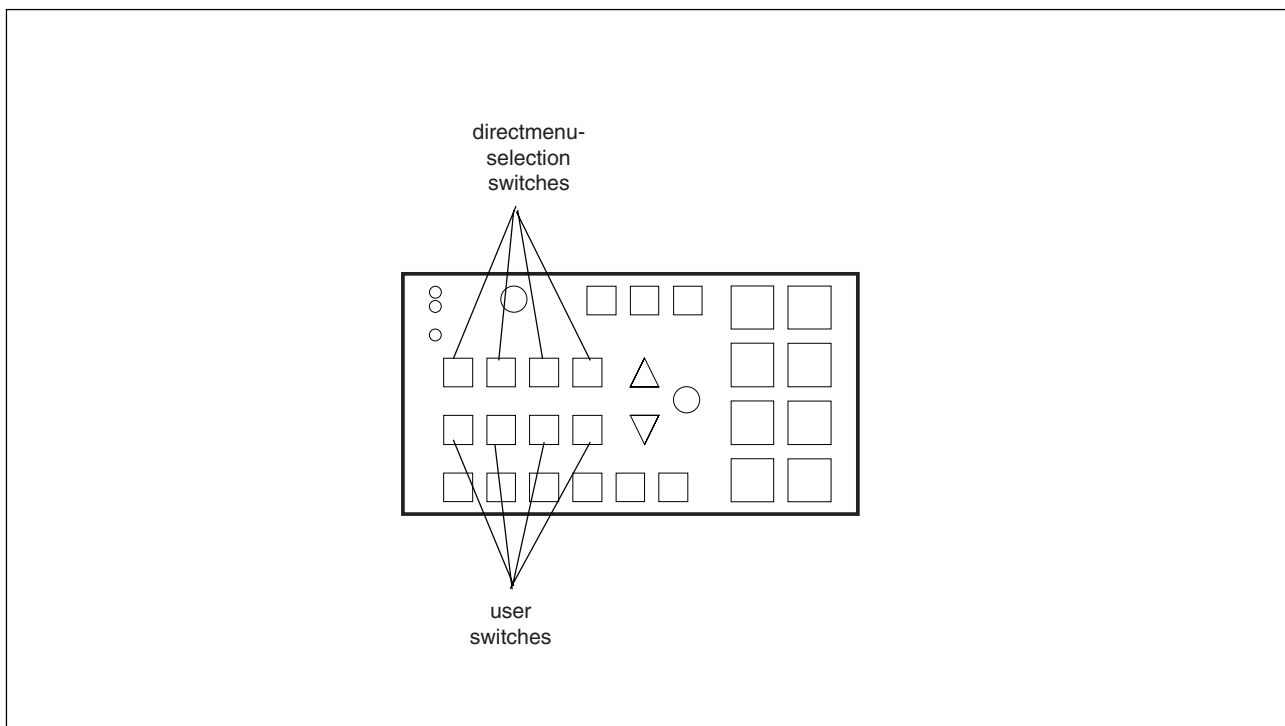
There are several other ways of selecting and changing functions.

Direct menu selection switches

Press one of the direct menu selection switches to go directly to one of the four available menus. The selection of a function value is carried out with the up/down selection switch and the Select switch. If the PREVIOUS option is selected in this case, the display jumps back to what it was showing before the selection was made.

User switches

The user switches are a special type of direct menu selection switches. They are special because the user can determine which menus will be directly displayed when they are pressed. These switches are programmed in the Install menu by entering the number of the menu to be selected. They can also be programmed by selecting a menu and pressing the user switch for 3 seconds.



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 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.

In local mode the camera always starts up with user level 1.

User defined menu switches

Four switches located on the rear panel can be defined by the user. These switches can be used to bring selected menus directly to the display. The menus selected by these switches are defined in the Install menu by entering the appropriate menu numbers under the Switch 1 and Switch 2 sub-menus (the user defined menu switches can also be programmed by selecting a menu and pressing the user switch for 3 seconds).

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

Menu Structure	A-3	List of Menu Functions	A-8
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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 (StF) column lists the values of the functions when a camera is delivered. An asterisk marks the values that are restored when the standard file is recalled.

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

UI.	Available choices	StF	Available if...	Explanation	No.
Operate	>>				1
Gain	2	>>			11
Gain dB	2	-6,-3,0,3,6,9,12,15,18	0	Gain presets	Gain switch -see the Install menu for values
Studio Mode	2	On,Off			Digital gain switch
Ctemp	2	3k2,5k6,7k5,aw1,aw2	3k2		Colour temperature
Black	2	>>			12
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	>>			13
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
Skin 1-2	2	Off,1,2,1+2	Off		Skin contour switch
Softcont	2	On,Off	On	Contour On	Soft contour switch
Soft lev	3	00 to 99	70	Softcont On	Soft contour level
Kneecont	2	Off, 1, 2, 3, 4	1		Knee contour switch
Sensor	2	>>			14
Shutter	2	>>			141
Exp.time	2	Nom,60H,50H,200,500,1k,Var,Crt	Nom		Exposure time switch
Cl.Scan	2	50 to 103, 60 to 155, (PAL,NTSC)	50,60	Exp Time Var	Clean scan
Lighting	2	+10 to -10	0	Exp Time 60H,50H	Lighting frequency
Film Exp	2				Film exposure
Enh Vres	2				Enhanced vertical resolution
Asp Ratio	2	>>			142
Asp Ratio	2				
input	2	Loc,Ext (only for switchable camera's)	Loc		Aspect ratio switch source (Ext = Analogue Ch-1)
select	2	4:3,169 (only for switchable camera's)	4:3	input is Loc	Aspect ratio switch
Let.Box	2	Off,;11,;10,;9	Off	Asp Ratio 4:3	Letterbox; switches to Off as Asp Ratio = 169
ScanMode	2	>>		Progressive system	143
Aperture	2	>>		Progressive system	144
Iris	2	>>			15
Auto Iris	2	On,Off	On		Automatic Iris switch
Audio	2	>>			16
Audio1	2	-22,-28,-34,-40,-46,-52,-58,-64			Audio 1 level select
Audio2	2	-22,-28,-34,-40,-46,-52,-58,-64			Audio 2 level select
Test	2	>>			17
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	4	>>			19
Matrix	4	EBU,RAI,BBC,B/W,SKN,1:1,VM1,VM2	SKN		Matrix select
G > R	4	00 to 99		Matrix is VM1,VM2	Matrix parameter G > R
B > R	4	00 to 99		Matrix is VM1,VM2	Matrix parameter B > R
R > G	4	00 to 99		Matrix is VM1,VM2	Matrix parameter R > G
B > G	4	00 to 99		Matrix is VM1,VM2	Matrix parameter B > G
R > B	4	00 to 99		Matrix is VM1,VM2	Matrix parameter R > B
G > B	4	00 to 99		Matrix is VM1,VM2	Matrix parameter G > B
Mat/Gam	4	M/G, G/M	M/G		Matrix/Gamma sequence

Notes:

- 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

UI.	Available choices	StF	Available if...	Explanation	No.	
Setup	>>				2	
Gain	2	>>			21	
Gain dB	2	-6,-3,0,3,6,9,12,15,18	0		Gain switch -see the Install menu for values	211
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	>>			22	
Black	2					
Auto	2	On,Off			Reference black	
Red	3	00-99	50		Red black level	
Green	3	00-99	50		Green black level	
Blue	2	00-99	50		Blue black level	
Gamma	2	>>			23	
Gamma Crv	4	B04,B05,B06,ARD,RAI,CCR	ARD		Select Gamma curve	231
Gamma	2	Lin,1,2,Var	1		Gamma switch	
Master	2	00-99		Gamma Var	Master gamma level	
Red	4	00-99	76	Gamma Var	Red gamma level	
Green	4	00-99	76	Gamma Var	Green gamma level	
Blue	4	00-99	76	Gamma Var	Blue gamma level	
Knee	2	>>			24	
Knee	2	Off,Aut,Var	Var		Knee switch	241
Source	3	Y,Nam	Y		Select knee source	
Slope M	3	00-99	90	Knee is Var	Master knee slope	
Point M	3	00-99	13	Knee is Var	Master knee point	
Limit	4	00-99			Knee limit level	
Desat	3	On,Off	On	Knee is Var, Aut	Desaturation	
Des Lev	4	00-99	30	Desat is On	Desaturation level	
Auto Rf	4	00-99		Knee is Auto	Auto knee reference level	
Auto Pt	4	00-99	On	Knee is Auto	Auto knee point	
Contour	2	>>			25	
Contour	3	>>			251	
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	
Skin	2	Off,1,2,1+2	Off		Skin contour select	252
Level	4	00-99	00	Skin 1,2,1+2	Skin contour level	
View	4	Off,On	Off	Skin 1,2,1+2	Skin view select	
Auto	4	Off,Win,On,Fai	Off	Skin 1,2	Auto skin select	255
Skin1	4	>>			256	
Skin 1	4					
Width R	4	00-99		Skin is 1 or 1+2	Red skin contour 1 width	
Width B	4	00-99		Skin is 1 or 1+2	Blue skin contour 1 width	
Color R	4	00-99		Skin is 1 or 1+2	Red skin contour 1 colour	
Color B	4	00-99		Skin is 1 or 1+2	Blue skin contour 1 colour	
Skin2	4	>>			257	
Skin 2	4					
Width R	4	00-99		Skin is 2 or 1+2	Red skin contour 2 width	
Width B	4	00-99		Skin is 2 or 1+2	Blue skin contour 2 width	
Color R	4	00-99		Skin is 2 or 1+2	Red skin contour 2 colour	
Color B	4	00-99		Skin is 2 or 1+2	Blue skin contour 2 colour	

UI.	Available choices	StF	Available if...	Explanation	No.
Setup	>>				2
Wh. Limit	4	>>			26
Wh. Limit	4	On,Off	On	White limiter switch	
Master	4	00-99	Wh. Limit On	White limiter master level	
Red	4	00-99	60 Wh. Limit On	White limiter red level	
Green	4	00-99	60 Wh. Limit On	White limiter master level	
Blue	4	00-99	60 Wh. Limit On	White limiter blue level	
Flare	2	>>			27
Flare	2	On,Off,DB1	On Sawtooth Off	Flare switch	
Red	4	00-99	00 Flare On	Red flare level	
Green	4	00-99	00 Flare On	Green flare level	
Blue	4	00-99	00 Flare On	Blue flare level	
Intercom	2	>>			28
Cam	2	>>			281
Cam Mic	2	On,Off		Cam mic switch	
TRS mic	2	On,Off		Cam TRS mic switch	
Prod	2	Off,L,R,L+R		Cam headphone prod switch	
Prog	2	Off,L,R,L+R		Cam headphone prog switch	
Eng	2	Off,L,R,L+R		Cam headphone eng switch	
Track Mic	2	Off, L		Cam headphone tracker mic. switch	
Sidetone	2	00-99	Audio If present	Side tone level	
Floor	2	>>			282
Floor Mic	2	Low, Off, High		Floor / tracker mic switch	
Prod	2	Off,On	Not in RTS mode	Floor headphone prod switch	
Prog	2	Off,L,R,L+R	Not in RTS mode	Floor headphone prog switch	
Eng	2	Off,L,R,L+R	Not in RTS mode	Floor headphone eng switch	
Cam mic.	2	Off,L,R,L+R	Not in RTS mode	Floor headphone cam. mic. switch	
Shading	4	>>			29
Shading	4	On,Off	On	White shading switch	
Shad R	4	>>			292
hsaw R	4	00-99	Shading On		
hpar R	4	00-99	Shading On		
vsaw R	4	00-99	Shading On		
vpar R	4	00-99	Shading On		
RE saw R	4	00-99	RE & Shading On	Range Extender Offset	
Shad G	4	>>			293
hsaw G	4	00-99	Shading On		
hpar G	4	00-99	Shading On		
vsaw G	4	00-99	Shading On		
vpar G	4	00-99	Shading On		
RE saw G	4	00-99	RE & Shading On	Range Extender Offset	
Shad B	4	>>			294
hsaw B	4	00-99	Shading On		
hpar B	4	00-99	Shading On		
vsaw B	4	00-99	Shading On		
vpar B	4	00-99	Shading On		
RE saw B	4	00-99	RE & Shading On	Range Extender Offset	

UI.	Available choices	StF	Available if...	Explanation	No.
Vf/Lens	>>				3
Vf Inst	1	>>			31
Vf mon	1	>>			311
Vf mon	1	Y,R,G,B,-G		Viewfinder monitor select	
Cont Sel	1	On,Off,Bst		Viewfinder contour select	
Contour	1	00-99	Cont Sel On, Bst	Viewfinder contour level	
Test	4	Low,Hgh		Viewfinder test mode	
Status bar	1	On, Off	Cbar, Sawt off	Status bar enable / disable (Z/F ind. Option)	312
Channel ID	1	On, Off		Channel ID enable / disable	
Info Text	1	On, Off		Info text enable / disable	
Zebra	1	On,Off,Win	Test Low	Viewfinder zebra switch	
level	3	00-99	Zebra is On, Win	Viewfinder zebra level	
contr	3	00-99	Zebra is On, Win	Viewfinder zebra contrast	
Markers	1	>>			318
Wh. Ind	1	00-99		Viewfinder marker white level	
C cross	1	On,Off	Test is Low	Centre cross switch	
Safe ar	1	On,Off	Test is Low	Safe area switch	
Cadre	1	On,Off	Test is Low	Cadre switch	
On Air Lamp	3	EN, DIS		Enable/Disable On Air lamp	
Iris	3	>>			32
Iris	3				
Setpnt	4	00-99		Iris set point level	
Peak/av	3	00-99	Iris is on	Iris peak/average level	
Lens	4	>>			33
Filter	4	Clr,2,3,4,5,6,Cap	Clr	Lens filter select	
Zoom	4	00-99		Lens zoom indication	
Focus	4	00-99		Lens focus indication	
Range Ext	4	On,Off	dep of type of lens	Lens range extender indication	
Man Id	4	Ang,Fuj,Can	dep of type of lens	Lens manufacturer id	

UI.	Available choices	StF	Available if...	Explanation	No.
Install	>>				4
User Lev	1	0,1,2,3,4	Max user level	User level select	
Cam Nr	2	1-15	Local mode	Camera number select	
Timing	2	>>			43
Subc Crs	2	0,90,180,270	Local mode	Subcarrier timing coarse	
Subc Fine	2	00-99	Local mode	Subcarrier timing fine	
H_Phase	2	00-99	Local mode	Horizontal phase	
Notch	2	On,Off	On	Notch switch	
Chroma	2	On,Off			
VF	2	>>			45
VF-Disp	2	On,Tim		Viewfinder text display switch	
VF-Time	2	00-99	10 VF-Display Tim	Viewfinder text display time	
Gain :	2	>>			47
Gain	2				
- =	2	-6,-3		Gain value for -	
0	2			Indication	
+ =	2	6,9,12,15	< ++	Gain value for +	
++ =	2	9,12,15,18	> +	Gain value for ++	
Intercom	2	>>			48
Mic Gain	2				
Cam	2	Low,Hgh		Cam Mic gain switch	
Floor	2	Low,Hgh		Floor Mic gain switch	
Audio	1	>>			49
Aud 1 HPF	1	On,Off		Audio 1 High Pass Filter	
Aud 2 HPF	1	On,Off		Audio 2 High Pass Filter	
Ph. Power	1	On, Off		Audio Microphone Power	

UI.	Available choices	StF	Available if...	Explanation	No.
Files	>>				5
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	
View	2	Ok,Nok,Exe		Scene file view switch	
Edit	2	Ok,Nok,Exe		Scene file edit switch	

UI.	Available choices	StF	Available if...	Explanation	No.
Diagn	>>				6
Software	2	>>			61
Camera	2	>>		Shows 12NC and status software	
Battery	2	>>			62
Memory	2	Ok,Nok		Shows status of memory battery	
Comm	2	>>			63
Base	2	Yes,No		Shows connectivity to base station	
OCP	2	Yes,No		Shows connectivity to OCP	
MCP	2	Yes,No		Shows connectivity to MCP	
Boards1	2	>>			64
Video1	2	>>		Shows 12NC, status, serialnumber and production date of specific module	
Dvp	2	>>			
Dvp Sub	2	>>			
Dvp Ptol	2	>>			
Sync Shad	2	>>			
Data Cam	2	>>			
Vid Misc	2	>>			
Encoder	2	>>			
Boards2	2	>>			65
Video Mux	2	>>		Shows 12NC, status, serialnumberr and production date of specific module	
Audio TXR	2	>>			
Audio LF	2	>>			
Pulse Pat	2	>>			
Shut Filt	2	>>			
Boards3	2	>>			66
SwPanel	2	>>		Shows 12NC, status, serialnumberr and production date of specific module	
RTS Misc	2	>>			
Intercon	2	>>			
Power	2	>>			
7" VF	2	>>			
7" VF Power	2	>>			

List of Menu Functions

Function	Path in Menu
Aspect ratio	Operate \ Sensor \ Asp Ratio
Aspect ratio source	Operate \ Sensor \ Asp Ratio
Aspect ratio switch	Operate \ Sensor \ Asp Ratio
Audio	Operate \ Audio
Audio 1 level select	Operate \ Audio
Audio 2 level select	Operate \ Audio
Auto black	Setup \ Black
Auto white balance	Operate \ Gain
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memory status	Diagn \ Battery \ memory
power status	Diagn \ Battery \ power
Black level blue	Setup \ Black
Black level green	Setup \ Black
Black level red	Setup \ Black
Black stretch level	Operate \ Black
Black stretch switch	Operate \ Black
Boards	Diagn \ Boards 1 Diagn \ Boards 2 Diagn \ Boards 3
Camera number select	Install \ CamNr
Clean scan	Operate \ Sensor \ Shutter
Colour bar switch	Operate \ Test
Colour temperature	Operate \ Gain
Connectivity	Diagn \ Comm
Contour	
auto skin select	Setup \ Contour
coarse/fine level	Setup \ Contour \ Contour
knee	Operate \ Contour
level	Operate \ Contour
level dependence	Setup \ Contour \ Contour
noise slice level	Operate \ Contour
skin contour 1	Setup \ Contour \ Skin 1
skin contour 2	Setup \ Contour \ Skin 2
skin contour level	Setup \ Contour
skin contour select	Operate \ Contour Setup \ Contour
skin contour view	Setup \ Contour
soft contour level	Operate \ Contour
soft contour switch	Operate \ Contour
source	Operate \ Contour Setup \ Contour \ Contour
switch	Operate \ Contour Setup \ Contour \ Contour
vertical level	Operate \ Contour
Exposure time switch	Operate \ Sensor \ Shutter
Flare	
level blue	Setup \ Flare
level green	Setup \ Flare
level red	Setup \ Flare
switch	Setup \ Flare

Function	Path in Menu
Gain	Operate \ Gain Setup \ Gain
Blue	Setup \ Gain
Green	Setup \ Gain
Red	Setup \ Gain
studio mode	Operate \ Gain
switch	Operate \ Gain Setup \ Gain
values	Install \ Gain
Gamma	Setup \ Gamma
curve select	Setup \ Gamma
level blue	Setup \ Gamma
level green	Setup \ Gamma
level master	Setup \ Gamma
level red	Setup \ Gamma
switch	Setup \ Gamma
Horizontal phase	Install \ Timing
Intercom	
cam headph eng sw	Setup \ Intercom \ Cam
cam headph prod sw	Setup \ Intercom \ Cam
cam headph prog sw	Setup \ Intercom \ Cam
cam mic switch	Setup \ Intercom \ Cam
floor headph eng sw	Setup \ Intercom \ Floor
floor headph prod sw	Setup \ Intercom \ Floor
floor headph prog sw	Setup \ Intercom \ Floor
floor mic switch	Setup \ Intercom \ Floor
side tone switch	Install \ Intercom
side tone level	Setup \ Intercom \ Cam
tracker mic sw	Setup \ Intercom \ Cam
Iris	
Auto switch	Operate \ Iris
Peak/average level	Vf/Lens \ Iris
Set point level	Vf/Lens \ Iris
Knee	
auto reference level	Setup \ Knee
auto point	Setup \ Knee
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desaturation	Setup \ Knee
desaturation level	Setup \ Knee
limit levelswitch	Setup \ Knee
master point	Setup \ Knee
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Lens focus indication	Vf/Lens \ Lens
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Lens RE indication	Vf/Lens \ Lens
Lens zoom indication	Vf/Lens \ Lens

Function	Path in Menu
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Menu number	Install \ Switch 1 Install \ Switch 2
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Scene file store switch	Files \ Store
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Shading green	Setup \ Shading \ Shad G
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VF-contour select	Vf/Lens \ Vf Inst \ Vf mon
VF-channel id switch	Vf/Lens \ Vf Inst
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VF-info text switch	Vf/Lens \ Vf Inst
VF-markers	Vf/Lens \ Vf Inst
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centre cross switch	Vf/Lens \ Vf Inst \ Markers
safe area switch	Vf/Lens \ Vf Inst \ Markers
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VF-monitoring select	Vf/Lens \ Vf Inst \ Vf mon
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level green	Setup \ Wh.Limit
level master	Setup \ Wh.Limit
level red	Setup \ Wh.Limit
switch	Setup \ Wh.Limit
White shading switch	Setup \ Shading \ Shading

Function	Path in Menu
Zebra	Vf/Lens \ Vf Inst
contrast	Vf/Lens \ Vf Inst
level	Vf/Lens \ Vf Inst

