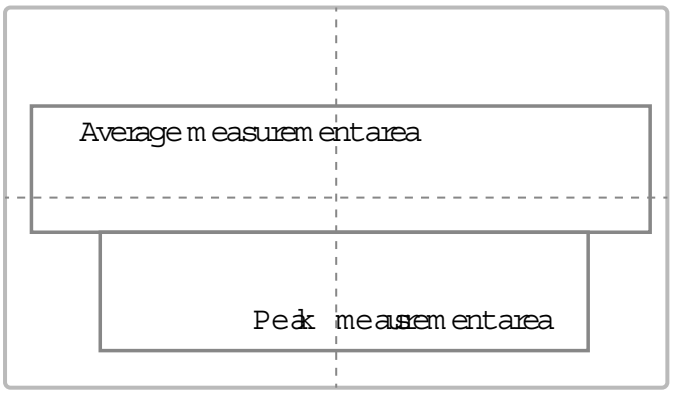


Changing Auto Iris advanced settings

Note

The user level must be set to 3 to access this function.

- **Peak/Average**—the Auto Iris function measures both the average light level and the peak light level of the image and combines these two readings to control Iris. Use the Peak/Average function to shift between more Peak mode (lower values) or more Average mode (higher values). The default value is 64 which is slightly more Average than Peak measurement.
- **Auto Iris Setpoint**—sets the target exposure level for Auto Iris. The default value is 35—higher levels give higher Iris value and thus a brighter picture.
- **Momentary Iris Setpoint**—sets the target exposure level for Momentary Iris (not a relevant setting for Auto Iris)
- **Auto Iris Gain**—sets the speed at which the Auto Iris reacts to changing lighting conditions. 5 = slow (default), 10 = fast.

Extended Iris

The Extended Iris function automatically adjusts the video signal level by adjusting the iris opening, the gain level and the exposure time to suit the ambient lighting conditions.

Note

Make sure that the SW2 button is assigned to EIris (Extended Iris) in the ***Operator Toolbox > User Buttons > SW2*** menu.

To switch on the Extended Iris function use the assignable button SW2 at the left-front side of the camera. When this button is pressed once, the current value of the Extended Iris function is displayed. Press the button twice in quick succession to toggle between on and off.

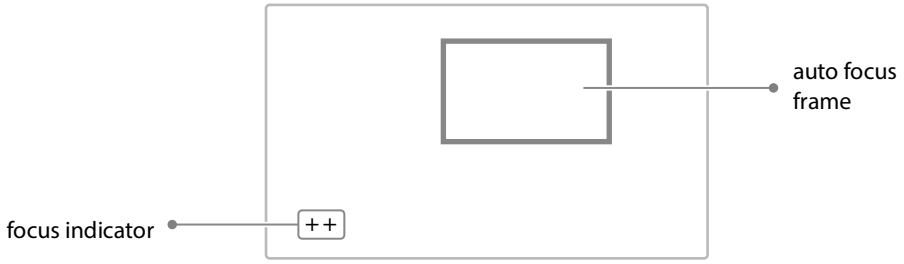
When Extended Iris is on, the non-standard indicator in the viewfinder lights, and gain and exposure controls are blocked. Settings for the Extended Iris function can be changed in the ***Production Setup*** > ***Exposure*** > ***Extended Iris*** menu.

Tip

You can use Extended Iris to maintain a constant depth of field while shooting.

Precision focus

The camera supports the precision focus feature which is offered by some advanced (digital) lenses. This system automatically focuses the image within a user defined focus frame on the screen. When precision focus is enabled on the lens, the focus frame is superimposed on the viewfinder image. The frame can be moved and resized by the controls on the lens or on the focus handle.



An indicator in the bottom left corner of the viewfinder screen shows the current focus information:

Indication	Focus information
- -	focus is behind
-	focus is behind
0	area is in focus
+	focus is in front
+ +	focus is in front

Refer to the documentation of the lens manufacturer for more information about the precision focus feature.

Lens indicators in the viewfinder

The RE indicator in the viewfinder lights when a lens range extender is selected.

The Iris indicator in the viewfinder shows the value of the iris opening (when enabled in the camera menu).

The zoom indicator in the viewfinder shows the percentage to which the lens has been zoomed out or in, ranging from 0 (wide angle) to 99 (telezoom). It shows 50 if the lens does not support this feature.

The focus indicator shows the percentage of the focus distance range from 0 (close-up) to 99 (infinity). This feature is only available when a digital lens is used.

Connecting audio

Analog audio

Set the gain levels (-22 dB to -64 dB for mic input level or +4 dBu to -10 dBu for line level) for the analog audio channels in the ***Audio*** section of the ***Configuration*** menu.

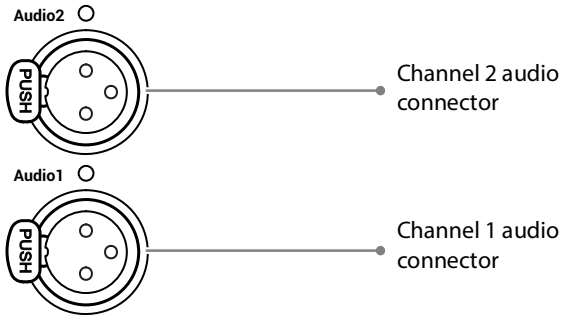
Both a high pass filter (HPF) and auto level control (ALC) are avaible for each channel and can also be switched on in this menu. Also a delay up to 170 ms can be set.

The channel 1 input socket selection switch selects either:

- the Mic connector at the front-right (Front) of the camera, or
- the Audio 1 connector at the rear of the camera (Rear)
- as the input for audio channel 1.

☞ **Note**

A phantom power (+48 VDC) for the front mic socket can be set with the ***Configuration > Audio > Front Mic > FrontMic Source*** function.



The audio channel 1 and 2 level switches select either a line level input (Line), a microphone level input (Mic) or a microphone level input with phantom power (+48 VDC) for channel 1 and 2 rear connectors (Audio 1 and Audio 2).

The (analog) audio channels are available:

- as audio channels 1 and 2 embedded in the HD-SDI video signal
- on the XCU at the XLR 3 audio output connectors
- on the XCU as converted digital signal at the Digitial Audio OUT 1+2 connector

Digital audio

Two digital audio channels are available as AES signal. Set the An VF Out/AES in switch to AES in and connect an AES digital audio source to the An VF Out/AES in connector (top left BNC connector).

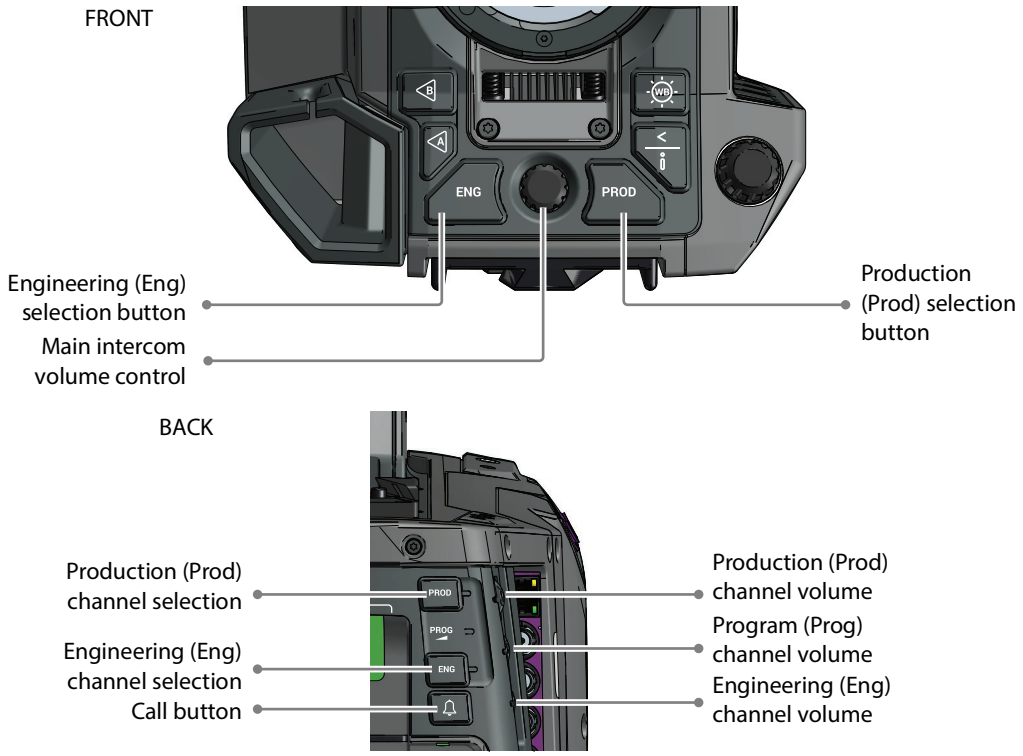
Digital audio channels 3 and 4 are available on the digital audio output (3+4) connector on the XCU and as embedded audio channels 3 and 4 in the HD-SDI video signal.

Using intercom

Three intercom channels – production (Prod), program (Prog) and engineering (Eng) – are sent from the XCU to the camera headset. The headset microphone signal is sent back to the XCU. Intercom signals are available at the XCUs intercom connector on the back panel.

To use the intercom system, connect a headset to the XLR5 connector on the back panel of the camera. An additional Tracker headset can be connected to the auxiliary connector.

Selection buttons and volume controls for the intercom channels can be found on the front and the back of the camera.



Selecting intercom channels

Push the engineering (Eng) channel selection button to talk to the engineering intercom channel. Push again to switch off the engineering channel.

Note

Go to the ***Operator Toolbox > User buttons*** menu and select the ***Eng Mode*** function to change the switching mode (momentary or alternating) of the Eng button.

Hold the production (Prod) channel selection button to talk to the production channel. Release to switch off the production channel.

Adjusting intercom volume

Use the rotary controls at the back panel of the camera to adjust the audio volume of the three intercom channels:

Prod—adjusts the volume of the production channel intercom signal.

Prog—adjusts the volume of the program intercom channel signal.

Eng—adjusts the volume of the engineering intercom channel signal.

To adjust the audio volume of the signal from the Tracker headset microphone go to the ***Configuration > Intercom*** menu and change the ***Cam Tracker lvl*** item.

Routing signals

By default, all three intercom channels are audible on both muffs (left and right) of the camera headset. The routing of the intercom channels can be changed to personal preference. Go to the ***Configuration > Intercom*** menu to set up the routing:

- Cam Prod—selects to which ear muff(s) of the camera headset the production intercom channel is routed.
- Cam Eng—selects to which ear muff(s) of the camera headset the engineering intercom channel is routed.
- Cam Prog—selects to which ear muff(s) of the camera headset the program intercom channel is routed.
- Cam Tracker—selects to which ear muff(s) of the camera headset the Tracker's microphone signal is routed (when a Tracker headset is connected).

Intercom microphone gain, 12V bias tee power supply and microphone on/off switches are also available in this menu.

Adjusting sidetone volume

Sidetone levels (this is audio feedback from microphone to ear muffs) for camera and Tracker headsets can be adjusted in the ***Operator Toolbox > Intercom*** menu:

- Cam Sidetone—adjusts the sidetone level of the camera operator's headset from 0 (muted) to 99 (loudest).
- Tracker Sidetone—adjusts the sidetone level of the Tracker's headset from 0 (muted) to 99 (loudest).

Note

Only the sidetone levels for the right side ear muff can be adjusted. The left ear muff always has a fixed sidetone level.

Assigning buttons

The user buttons at the left side panel of the camera (SW1 and SW2), the user button under the handgrip and the VTR button on the lens can also be used to send the intercom signal from the headset to Production or Engineering.

Go to the ***Operator Toolbox > User buttons > Buttons*** menu to assign user buttons to intercom functions:

- SW1—assigns a function to user button SW1: Call, Ext1, Ext2, Prod, Eng, Select.
- SW2—assigns a function to user button SW2: ElIris, Zoom, FocAst, Ext1, Ext2, Prod, Eng.
- VTR Lens—assigns a function to the VTR Lens button: Prod, Eng, Zoom, Ext1, Ext2.
- Handgrip Left—assigns a function to the left side button underneath the camera handgrip: Prod, Eng.
- Eng Mode—selects switching mode for the engineering channel selection button at the back panel of the camera: momentary (push) or alternating (toggle).

Setting up the Tracker headset

Go to the ***Configuration > Intercom > Tracker*** menu to change settings for the Tracker headset.

Function	Values	Default	Description
Tracker Mic To	Off, Cam, Eng, Prod, All	Off	Selects the Tracker microphone routing.
Tracker Mic Gain	0 dB, 12 dB, 24 dB, 40 dB	40 dB	Selects gain of camera Tracker's intercom microphone.
Tracker Mic Pwr	Off, On	Off	Switches bias tee power (12 VDC) to the Tracker's microphone on or off.
Tracker Mic Src	Eng, Side	Side	Selects Engineering channel or Tracker's microphone sidetone for tracker's headphone.

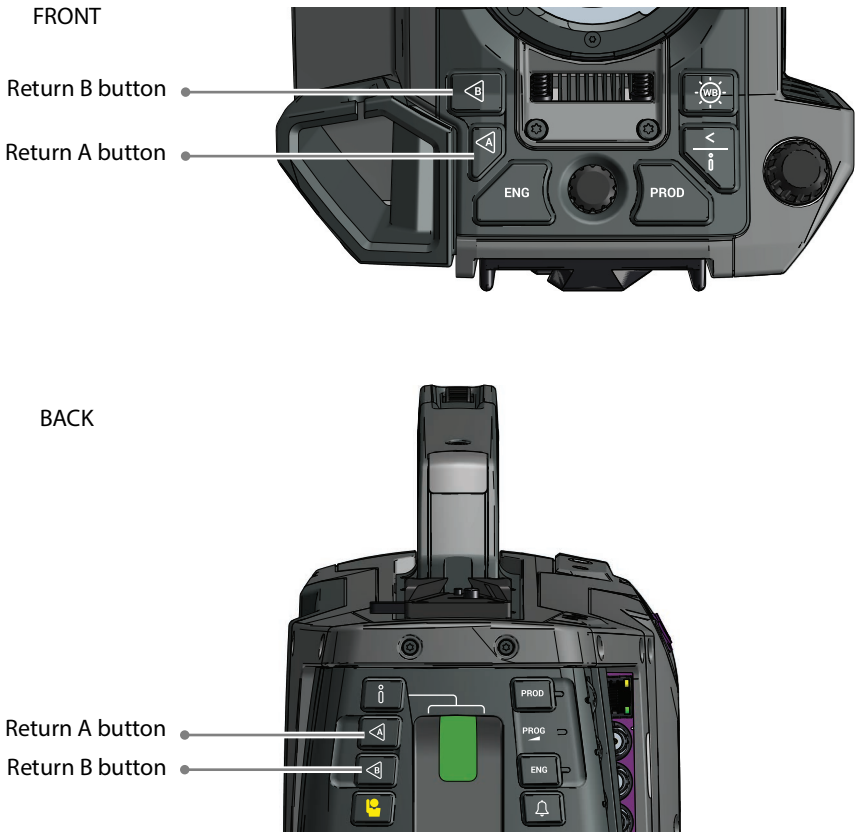
Call button

Press the Call button on the back panel to send a signal to the camera control panels in the production control room calling for attention.

The indicator in the button lights when a Call signal is sent or received. The Call indicator in the viewfinder also lights.

Communication

Return video channels



Return A and B buttons can be assigned to one of the three available External video channels or the teleprompter channel in the camera menu. Press and hold to view the assigned video channel in the viewfinder.

Tip

The Return A and B buttons can be programmed as momentary (default) or alternating switches in the ***Operator Toolbox*** > ***Buttons*** menu.

The indicators in the Return A and B buttons light when the video channel the respective button is assigned to, is switched on.

PickMe button

Press the yellow PickMe button on the left side of the camera or on the back panel to send an attention signal directly to the program director. This function can be used when the

camera operator is shooting critical or high priority footage that needs immediate action by the director.

Typically, a Connect Gateway server can be set up to route this signal to the production control room, for example to switch the camera's main video directly to the program channel (On Air).

Other communication

Private data (RS-232 connection)

The 6-pin RS-232 connector on the back panel of the camera allows for a serial two-way private data channel (a 115 kbit/s serial connection) between camera and XCU (only in XCU mode)

Tracker Tally signal

The 20-pin auxiliary connector on the back panel of the camera provides, as well as providing full intercom facilities (Tracker intercom) for the dolly or crane driver, also carries the tally signal and a +12 VDC power supply. This allows an external On Air lamp to be used. For more detail and an application schematic, refer to Auxiliary connector, on page 142.

Managing files

You have access to many different files. The ***Configuration > Files*** menu is used to recall and store these files. There are four types of files:

- Scene files
- Operator files
- Lens files
- Media files

A scene file contains values related to the picture performance. The operator file contains values related to the setup of the camera (viewfinder and configuration parameters). Lens files contain lens related settings. Media Files contain values related to the IP Media Network such as IP addresses and settings.

The tables in Appendix A indicate the functions that are stored in the scene file, functions that are stored in an operator file and those that are stored in a lens file.

Scene files

Four scene files are stored in the camera itself (SCAM1, SCAM2, SCAM3 and SCAM4) while more scene files can be stored on a USB flash drive. A Standard scene file (preselected as either factory or customer defined) is stored in the camera.

Note

The standard Customer Scene file is stored via the ***Security*** menu, not the ***Files*** menu. The decision to use the factory defined file or the customer defined file as the standard file is also made in this menu.

The ***Files*** menu enables the scene files to be stored and recalled using the store and recall entries of the menu system. If the message ***NOK*** ('Not OK') is displayed, the old values are restored.

Note

If the camera is on air and a scene file is recalled, the recalled values do not become active until the camera goes off air.

Operator files

Four operator files are stored in the camera itself (OCAM1,OCAM2, OCAM3 and OCAM4) while more operator files can be stored on aMedia USB flash drive. These files contain information for setting up the non-video configuration of the camera. A Standard operator file (factory or customer defined) is stored in the camera.

Note

The standard Customer operator file is stored via the ***Security*** menu, not the ***Files*** menu. The decision to use the factory defined file or the customer defined file as the standard file is also made in this menu.

Lens files

Lens files contain settings related to the lens configuration (e.g. white shading). Up to four lens files (LCam1 to LCam4) can be stored in the camera.

Media files

Media files

Standard files

By default, the green Std File button on the left-front side of the camera recalls the standard Scene file. This file contains default parameters for picture performance. A standard Operator file can be recalled via the ***Files*** menu. This file contains parameters for the set-up of the camera.

Customer standard files

You can define a customer standard file for the standard Scene file and for the standard Operator file. The contents of the customer files for both these standard files is stored via the ***Configuration*** > ***Security*** menu.

The selection of a factory defined or a customer defined file for use as a standard file is also made in this menu. You can only access the functions of the ***Security*** menu with the PIN code of the camera.

6 Video setup

Video settings

Standard settings

To make sure that (some of) the camera functions are not set to unusual values, a standard file has been defined that contains the default values for most video functions. The Reference tables, on page 87 list the (default) values that are set when the standard file is recalled.

To recall the standard values for the various video functions, press the STD button on the left side of the camera and hold it for two seconds. The standard values only take effect when the camera is not On Air.

The standard file can be selected as either a factory or a customer standard file. Changing the standard file can only be done in the ***Security*** menu if a PIN code is used.

Non-standard indicator

The non-standard indicator in the ocular viewfinder lights when one of the following conditions occur (refer to the user's guide of the viewfinder for more details):

- Extended Auto Iris is switched on
- AWC or FL50/FL60 color temperature is selected

Video mode

CGA In the Main video menu, go to ***Setup*** > ***Video***. Tap the ***VideoMode*** item to select the video mode you wish to use for your production.

CAM In the camera menu, go to the ***Production Setup*** > ***Video Mode*** item and select the video mode.

Sensitivity mode

To obtain the best results under different lighting conditions, the camera's sensitivity mode can be selected.[1)]

CGA In the Main video menu, go to ***Setup*** > ***Video***. Tap the ***Sensitivity Mode*** item and select the sensitivity mode.

CAM In the camera menu, go to the ***Production Setup*** > ***Sensitivity*** item and select the sensitivity mode.

The following sensitivity modes are available:

- **High Quality mode** — for studio locations and other environments with very good lighting conditions. This mode provides superior quality pictures with very low noise.
- **Nominal mode** — for general purpose situations with variable lighting conditions. This mode provides very good pictures with low noise.
- **High Sensitivity mode** —for situations with poor lighting conditions. This mode results in acceptable quality pictures.

The following settings and ranges are in use with the different sensitivity modes:

	High Quality mode	Nominal mode	High Sensitivity mode
Basic sensitivity (@2000 lux): [2)]	typ. F8	typ. F11	max. F16
Texture representation:	Excellent	Very good	Fair
Dynamic range:	1 f-stop lower	Maximum	Maximum

[1)] Sensitivity mode is not available when a high speed video mode is selected.

[2)] Actual basic sensitivity depends on selected video mode/frame rate.

Color bar

The color bar is the standard test signal that is used to set up and check the camera before shooting. When the color bar is selected the following functions are temporarily switched off: Black Stretch, White Limiter, Zebra and the Safe Area and cadre indicators. The lens iris closes automatically when the color bar is switched on.

CGP

Press the TEST button on the left side of the panel to switch on the color bar. Initially, the standard color bar is switched on and the button lights. Press it again to switch on the sawtooth signal. The button lights orange. Press again to switch off all test signals.

CAM

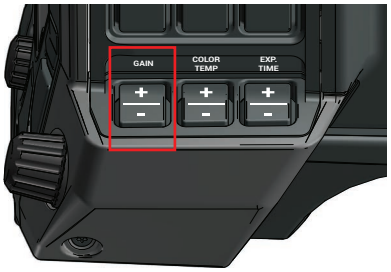
Press the BARS button on the left side panel (middle button) to switch on the standard color bar:

Gain

Depending on the available light level it may be necessary to adjust the video gain settings of the camera.

CGP Turn the upper ring on the stick to vary Gain in steps of 0.1 dB.

CAM On the camera, Gain is selected via the GAIN switch on the left side panel of the camera:



- When the switch (plus or minus) is pressed initially, the current Gain value is displayed in the viewfinder.
- Holding the plus or minus position for a short moment selects one of the five preset Gain settings: -, 0, +, ++ and +++.

The actual value of the Gain in dB is assigned to these presets in the ***Production Setup*** **>** ***Levels*** **>** ***Gain*** **>** ***Gain Presets*** menu.

Gain Preset	Gain (in HiQ and Nom mode)	Gain (in HiSens mode)
-	is always -3 dB	is always -3 dB
0	is always 0 dB	is always 0 dB
+	can be set to +3 or +6 dB	can be set to +3, +6, +9 or +12 dB
++	can be set to +6 or +9 dB	can be set to +6, +9, +12 or +15 dB
+++	can be set to +9 or +12 dB	can be set to +9, +12, +15 or +18 dB
-	is always -3 dB	is always -3 dB

Note

When Gain is set to negative values, or values higher than 3 dB, the Gain indicator in the viewfinder lights (only for ocular viewfinder).

The Gain switch can also be used to vary the Gain continuously between its minimum and maximum value.

- Hold the plus or minus position continuously until you see the value in the viewfinder change in steps of 0.1 dB.
- Release the switch when you reached the value you want. This exits the value selection mode.
- Using the switch momentarily again sets the Gain to the nearest preset value.

Note

Selecting high Gain levels may introduce noise into the image.

Optical filters

Both a Neutral Density filter (ND) and a Special Effects filter (FX) can be placed in the path of the optical signal to modify the incoming light. These filters can be used, for example, to control depth of field or exposure levels.

Press the FILTER button and select the filter type you want to change: ND or FX. Use the navigation buttons to step through the ND and FX filters.

CAM On the camera, press the FILTER button on the left side panel of the camera. The Filters menu is shown in the viewfinder. Use the front menu rotary to navigate to the filter type (ND or FX) and select the filter from the list.

Four Neutral Density (ND) filter positions are available:

- Clear - no filter is placed in the optical path
- ND1/4 - 2 stops light reduction neutral density filter
- ND1/16 - 4 stops light reduction neutral density filter
- ND1/64 - 6 stops light reduction neutral density filter

☞ **Note**

When a Neutral Density filter is selected, the ND indicator in the viewfinder lights (only for ocular viewfinders).

Four Effects (FX) filter positions are available:

- Clear - no filter is placed in the optical path
- Star 4P - 4 Point Star filter
- Sft Fcs - Soft focus filter
- Cap - Lens is capped (closed)

☞ **Note**

The camera does not need color optical filters to be able to white balance correctly. The range of the auto-white balance is so wide that there is never any need to use color filters to obtain the correct white balance.

Exposure

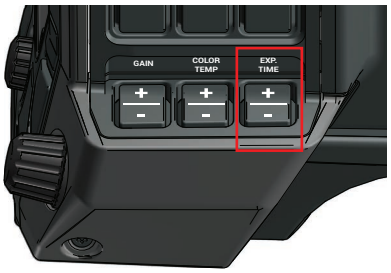
Exposure time

☞ **Note**

Exposure times other than nominal is not available in high speed video modes.

The exposure time value of 1/200 is used to capture fast moving objects so that these can be played back sharply in slow motion.

CAM On the camera, exposure time is selected by the exposure time switch on the left side panel of the camera:



The exposure time switch gives a choice of exposure time settings. If an exposure time other than nominal is selected, the non-standard indicator in the (ocular) viewfinder lights.

Note

Decreasing the exposure time lowers the camera's sensitivity proportionally.

- Nom — nominal setting
- Var — enable the exposure time to be varied
- 1/200 — for fast moving objects
- 50 Hz — shooting under 50 Hz lighting (adjustable with lighting correction)
- 60 Hz — shooting under 60 Hz lighting (adjustable with lighting correction)

Lighting correction

The exposure selection also includes lighting control positions which can be used when shooting with lighting that is operating at a different frequency to the camera. There are two positions: 50 Hz and 60 Hz. Each of these positions can be varied further in a range from -10 to +10 Hz. To reduce flicker select the frequency closest to the frequency of the lights and then vary the lighting control in the ***Production Setup > Exposure > Lighting*** menu to obtain the best result.

V-Shift (vertical acquisition shift)

When shooting monitors with (almost) the same display frequency as the camera's, for example TV sets, a horizontal black bar can be seen in the viewfinder. This phenomenon occurs because the camera is blanking while the monitor is not. The V-shift function shifts the camera blanking to synchronize it with the blanking of the monitor.

CAM In the camera menu, navigate to the ***Production Setup > Exposure > Acq Timing*** menu and switch on the ***V-Shift*** item. Use the ***V-Shift time*** item to change the time shift until the horizontal bar disappears.

Tip

V-Shift can also be used to remove color shifts that may occur when shooting DLP-type projectors.

LED Wall Filter

When shooting against LED Wall backgrounds that contain high frequencies, interference may occur, resulting in unwanted moire patterns. A special electronic filter is available that can be used to reduce these effects:

CAM In the camera menu, navigate to the ***Production Setup*** > ***Exposure*** item and switch ***Led Wall Filter*** on.

Color

Color Temperature

For true color reproduction the ambient lighting conditions must be compensated for by selecting a value for the color temperature. The standard file setting is 3200 K (normally used for tungsten and indoor lighting). Two other reference color temperatures are available: 5600 K (for outdoors, clouded conditions) and 7500 K (for outdoors, clear blue skies).

The memory positions (FL50, FL60, AW1 and AW2) are available to store the results of the auto-white measurement process. The memory positions store measured values using the automatic white balance switch at the front. The FL positions are recommended for shooting with fluorescent light.

A continuous automatic white balance position (AWC) is also available. This function continuously measures the white balance and adjusts it accordingly. It can be used when a constant color balance is required under changing lighting temperatures (sunsets, indoors/outdoors use).

Color Tint

In some cases, color temperature alone is not enough to fully compensate for color cast so an additional tint adjustment is needed. Similar to how color temperature specifies the relative warmth or coolness of an image, tint generally specifies the balance between magenta and green color casts. When combined, color temperature and tint can therefore control and effectively remove virtually any color cast.

Color Filter

In the auto-white positions (FL50, FL60, AW1 and AW2) a color filter can be set up in the ***production Setup*** > ***Color*** > ***Color Temp*** > ***Color Filter*** menu. This varies the color balance to obtain warmer or colder color effects.

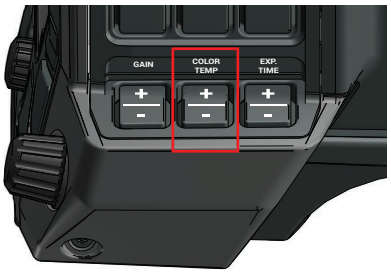
Note

The automatic white balance process is performed independent of the color filter. The color filter is not disabled when AWC is on.

Selecting color temperature

CAM

On the camera, color temperature selected by the color temperature switch on the left side panel of the camera:



Three preset color temperatures are available:

- 3200 K - for indoor lighting conditions
- 5600 K - for outdoors, clouded conditions
- 7500 K - for outdoors, clear blue skies

and four memory positions:

- FL50 - memory position for 50 Hz fluorescent light (matrix is set to CoolFL and exposure to 50 Hz)
- FL60 - memory position for 60 Hz fluorescent light (matrix is set to CoolFL and exposure to 60 Hz)
- AW1 - Auto White memory position 1
- AW2 - Auto White memory position 2

and one automatic continuous white position:

- AWC - Auto White Continuous measurement (from 2000 K to 21000 K)

Note

If AWC is selected, the non-standard indicator in the viewfinder lights (only for ocular viewfinders).

When the switch is first pressed, the viewfinder displays the current value. Select a new value by scrolling up or down through the available values.

The viewfinder also displays the measured color temperature. The range of the auto-white balance is from 2000 K to 21000 K.

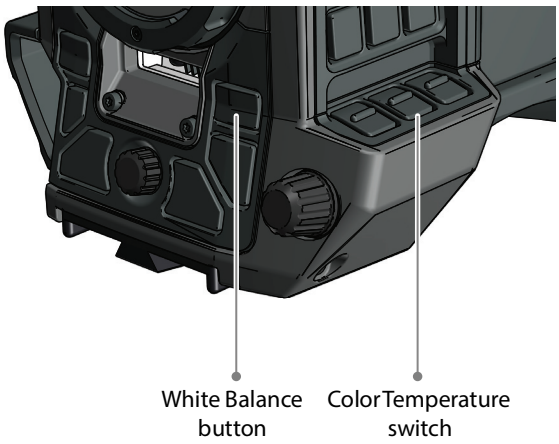
Variable color temperature

The color temperature switch on the left-front side of the camera can also be used to vary the color temperature continuously between its minimum and maximum value (2000 K to 21000 K).

1 Press and hold the plus or minus position until you see the value in the viewfinder change.
2 Release the switch when you reach the value you want. This exits the value selection mode.
3 Pressing the plus or minus position again sets the color temperature to the nearest standard value.

Auto White Balance

If the reference color temperatures does not match your lighting conditions carry out the Auto White Balance procedure as follows:



1 On the CGA, go to the ***Color menu > Color Temperature*** and select one of the memory positions (FL50, FL60, AW1 or AW2) in which to store the measured color temperature value.
On the camera use the color temperature switch to select one of the memory positions (FL50, FL60, AW1 or AW2) in which to store the measured color temperature value.
2 In the Color Temperature menu on the CGA, tap the AUTO WHITE button to start the Auto White balance procedure.
On the camera, press and hold (2 sec) the WHITE BALANCE button on the front panel to start the Auto White Balance procedure.

3 The following appears in the viewfinder:

Note

If you did not select one of the memory positions FL50, FL60, AW1 or AW2, a message ("Set Color Temp") appears in the viewfinder.

4 Point the camera so that the reference white surface is between the two small black boxes.

5 On the CGA, tap the WHITE BALANCE button again.
On the camera, press the WHITE BALANCE button on the front panel again to start the measurement procedure.

6 A message indicating that the process is running appears:

Note

If there is insufficient light, the "light level too low" message appears in the viewfinder.

7 When the process is completed (within a few seconds) the OK message and the measured color temperature appears in the viewfinder:

8 The measured color temperature is now stored in the selected memory position and can be recalled as required.
9 If the auto-white measurement has been unsuccessful, an error appears in the WHITE BALANCE button on the CGA.

Note

During the auto-white measurement process the iris is set to Auto and 90% and knee is switched off.

Black balance is not necessary because black level is automatically adjusted by the camera's internal video circuits.

Saturation

Adjust the saturation level to increase or decrease color of the picture. Saturation values below 100% decrease colors while values higher than 100% increase colors.

CAM In the camera menu, navigate to the ***production Setup*** > ***Color*** >***Saturation*** item and adjust the level.

Color Gamut

The camera can operate using two different color gamuts:

CAM In the camera menu, navigate to the ***Production Setup*** > ***Color*** > ***Color Gamut*** item and select REC709 (for default HDTV color gamut) or REC2020 (for extended color gamut). In HDR operation LMS is supported in addition to REC709 and REC2020.

Color Protect

When very bright and saturated colored lights are used, predominant colors may clip. This results in fully saturated areas with no detail. This phenomenon occurs especially in blue and magenta color ranges.

The Color Protect function restores luminance levels without affecting color over-saturation. It prevents non-dominant colors from decreasing below black level so much of the details in the picture are still maintained. If a dominant color saturates, Color Protect gradually decreases its influence in the picture.

CAM In the camera menu, navigate to the ***Production Setup*** > ***Color*** > ***Color Adjustment*** > ***Col Protect*** menu and switch on the item ***Col Protect***.

Sharpness

Detail

Detail is an image enhancement used to improve picture sharpness perception. The detail function raises the contrast at the dark-to-light and light-to-dark transitions, thus making

edges of objects appear sharper. This process is applied in video post processing within the camera by overshooting the signal at the edges. Detail is applied to both vertical and horizontal picture edges. Detail level refers to the amount of image enhancement, or in other words, the amount of sharpness added to the picture.

CAM In the camera menu, navigate to the ***Creative Control*** > ***Sharpness*** > ***Detail*** menu and use ***Detail Level*** to adjust the amount of detail added to the picture.

Advanced options

There are a number of advanced Detail options in the menu that can be used to fine tune the detail function:

- Vertical Detail Level (0 to 99)
- Coarse/Fine adjustment (0 to 99)
- Level Dependency (0 to 99)
- Noise Slicer (0 to 99)

Lens related functions

Aperture Correction follows Iris

The internal Aperture Correction circuit compensates for optical aberration caused by smaller lens apertures. When switched on, the Aperture Correction takes the actual Iris opening into account to achieve better Aperture Correction.

CAM In the camera menu, go to the ***Creative Control*** > ***Sharpness*** > ***Detail*** > ***Advanced*** menu to find the lens related detail functions.

Skin Detail

Skin Detail is set up to select a particular color range. The Detail level within this color range can then be set independently of the rest of the picture.

Skin detail is mainly used to reduce the level of Detail in a person's skin tone to produce a more attractive picture. Decreasing the Detail level of a person's skin softens the skin tones only. But the Skin Detail function is not limited to a particular color and so can also be used to achieve various effects in selected color areas. For example, decrease the detail level of a soccer field to accentuate the players or increase the Skin Detail level to accentuate a rough surface.

The color range to which the Skin Detail level is applied can be selected automatically or manually. Three skin detail ranges (called Skin Gates or Sets) can be independently defined; they can be used at the same time.

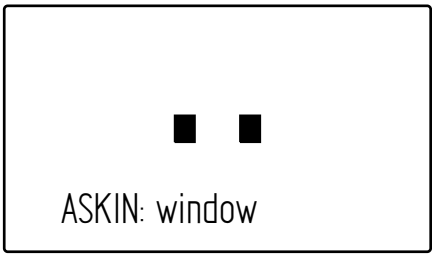
Auto Skin Detail

Carry out the Auto Skin Detail procedure as follows:

1 In the camera menu, navigate to the ***Creative Control*** > ***Sharpness*** > ***Skin Detail*** and use the Skin Gate item to select 1, 2 or 3. Do not select any of the combined options.

2 Place the cursor in front of the ***Auto Skin Dtl*** function.

3 Press the select button on the front of the camera. The following appears in the viewfinder:



4 Now point the two small black boxes at the intended surface (generally a face).

5 Press the select button again to start the measurement procedure (the iris is automatically set to auto by the camera). The process running message appears:

6 When the process is completed (within a few seconds) the OK message appears in the viewfinder:

7 Now adjust the Skin Detail level with the Skin Level item. Decrease the value below 50 to soften the selected area. Increase the value above 50 to add extra detail.

☞ **Note**

In XS (6X)1080p video modes, the view and the color view do not show the selected color in the B/W picture of the monitoring output.

Image control

Freeze Frame

Note

Freeze Frame is not available in high speed video modes.

When switched on, the freeze frame function freezes the current video frame so that many video functions can be set up off line. The following functions are NOT available in freeze frame mode:

- Iris settings
- V-shift
- Variable exposure

Note

Changing the video mode and running Auto White Balance is prohibited in Freeze Frame mode.

CAM In the camera menu, navigate to the ***Production Setup*** > ***Image Control*** > ***Freeze frame*** menu to switch Freeze Frame on or off.

Reverse Scan

Note

Reverse Scan is not available in high speed video modes.

When the camera is used at a rotated angle use the reverse scan function to rotate the camera's image to compensate.

CAM In the camera menu, navigate to the ***Production Setup*** > ***Image Control*** > ***Reverse Scan*** menu to switch reverse scan on or off and to select the scan mode (horizontal, vertical or both).

A Menu references

Reference tables

All camera functions are grouped into 7 main menus:

- Installation menu—contains camera connection methods and system setup items.
- Operator Toolbox menu—contains the functions that help the operator while shooting such as screen indicators, user buttons assignments and various shooting tools.
- Production Setup menu—contains the functions needed to set up the camera for a production, including scene related video settings.
- Creative Control menu—contains the functions to control the creative aspects of the video signal such as contrast, sharpness and color correction.
- Configuration menu—contains the functions that are used to set up the general configuration of the camera such as intercom, lens settings and interfaces.
- Diagnostics menu—provides information on the current status and of the camera.
- Service menu—contains service items for advanced camera configuration.

The columns in the tables provide reference information about the functions in the camera menu:

- Menu item: camera function, menu or submenu.
- Values: possible values or value range for the listed function (the factory default value for the listed function is indicated in **bold**.)
- Level: the access level from which the function or menu is available. User 0 is the most restricted level while User 3 is the least restrictive. Service (S) is the access level for advanced functions.
- Description: a short description of the function and its values.

Installation menu

Function:	Values:	U:	F:	Description:
Camera Mode	**IP**, **XCU**, Local	0	-	Camera mode: IP = NativeIP mode (only visible when the NativeIP option/license is installed) XCU = XCU mode Local = Local mode
IP Mode	10G, **25G**, 100G	0	-	Ethernet speed for the IP Media network
FEC Mode	**Off**, RS	0	-	Forward Error Correction method: off or RS (= Reed-Solomon)
PTP				
PTP Profile	**SMPTE2059**, AES67, AES-SMPTE, User	0	-	PTP Profile (when Reference = PTP): SMPTE2059: Profile used for synchronization of broadcast media systems AES67: media profile of AES67 AES67-SMPTE: combination of SMPTE2059 +AES67 User: User defined. Enter PTP Profile settings in the PTP Settings submenu (below)
PTP Settings (available when PTP profile = User)				
GM Select	**Auto**, GM 1, GM 2	0	-	PTP Grandmaster selection
Domain Nr	0..255 **(0)**	0	-	PTP Domain Number (refer to IEEE 1588 for more information)
DelayReqInterval	-4..1 **(-3)**	0	-	PTP DelayRequestInterval (refer to IEEE 1588 for more information)
ReceiptTimeout	2..10 **(2)**	0	-	PTP DelayRequestInterval (refer to IEEE 1588 for more information)
Timing				
Main Video	-5000us..5000us **(0 us)**	0	-	
SFP Modules				
Port QSFP				
Mode	DHCP, **Manual**	0	-	Management protocol for QSFP port
IP	[IP addr] **(10.11.5.2)**	0	-	IP address for QSFP port
NM	0..31 **(16)**	0	-	Subnet Mask for QSFP port
GW	[IP addr] **(10.11.5.1)**	0	-	Default Gateway for QSFP port
Port SFP1				
Mode	DHCP, **Manual**	0	-	Management protocol for SFP1 port
IP	[IP addr] **(10.11.6.2)**	0	-	IP address for SFP1 port
NM	0..31 **(16)**	0	-	Subnet Mask for SFP1 port
GW	[IP addr] **(10.11.6.1)**	0	-	Default Gateway for SFP1 port
Port SFP2				

Function:	Values:	U:	F:	Description:
Mode	DHCP, **Manual**	0	-	Management protocol for SFP2 port
IP	[IP addr] **(10.11.7.2)**	0	-	IP address for SFP2 port
NM	0..31 **(16)**	0	-	Subnet Mask for SFP2 port
GW	[IP addr] **(10.11.7.1)**	0	-	Default Gateway for SFP2 port
Media Interface				
Network Setup				
VLAN				
C2IP	**Off**, On	0	M	Enable/disable VLAN tagging for C2IP
C2IP Tag	2..4095 **(2)**	0	M	Assigns a tag to the C2IP (control network) VLAN (when VLAN tagging = On)
Trunk	**Off**, On	0	M	Enable/disable VLAN tagging for IP Trunk
Trunk Tag	2..4095 **(3)**	0	M	Assigns a tag to the IP Trunk VLAN (when VLAN tagging = On)
PrivData	**Off**, On	0	M	Enable/disable VLAN tagging for Private Data
PrivData Tag	2..4095 **(4)**	0	M	Assigns a tag to the Private Data VLAN (when VLAN tagging = On)
NMOS Control				
Type	**Off**, Static, DNS-SD, mDNS	0	M	NMOS service type (or switches off NMOS control)
Interface	**C2IP**, Media	0	M	NMOS over C2IP connector or via the IP Media Network
NMOS server				
IP	[IP addr] **(192.168.1.2)**	0	M	IP address for NMOS server
Port	[Port No] **(6000)**	0	M	IP port number for NMOS server
IS04 ver	**v1.0**, v1.1, v1.2, v1.3	0	M	NMOS IS-04 protocol version for NMOS server
ARPreq to DefGw	**Off**, On	0	M	Switches ARPreq to DefGw on or off. The Address Resolution Protocol (ARP) is used for mapping a network address to a physical Ethernet address
IGMP Version	**v2**, v3	0	M	Internet Group Management Protocol (IGMP) is used for Multicast IP applications: v2: use the standard version for the IGMP protocol v3: allows for source specific multicast
Private Data				
Enabled	**No**, Yes	0	M	Enable/disable Private Date
Dst IP	[IP addr] **(10.11.10.1)**	0	M	Destination IP address for Private Data
Dst Port	[Port No] **(20015)**	0	M	Destination IP port number for Private Data
Src Port	[Port No] **(20016)**	0	M	Source IP port number for Private Data
Outgoing Streams				
Main Video				
Enabled	No, **Yes**	0	M	Enable/disable Main Video

Function:	Values:	U:	F:	Description:
IP	[IP addr] **(224.11.5.9)**	0	M	IP address for Main Video
Port	[Port No] **(20009)**	0	M	IP port number for Main Video
Protocol	ST2022-6, **ST2110-20**	0	-	IP Transport Protocol for Main Video: ST2022-6: Packetized SDI over IP ST2110-20: Video Essence over IP
Payload ID	96..127 **(96)**	0	M	(SDI) payload ID for Main Video
Live Video				
Enabled	No, **Yes**	0	M	Enable/disable Live Video
IP	[IP addr] **(224.11.5.10)**	0	M	IP address for Live Video
Port	[Port No] **(20010)**	0	M	IP port number for Live Video
Protocol	ST2022-6, **ST2110-20**	0	M	IP Transport Protocol for Live Video
Payload ID	96..127 **(96)**	0	M	(SDI) payload ID for Live Video
HighSpeed Video (only in high speed video modes)				
Enabled	No, **Yes**	0	M	Enable/disable High Speed Video
Phase 1				
IP	[IP addr] **(224.11.5.3)**	0	M	IP address for High Speed Video phase 1
Port	[Port No] **(20003)**	0	M	IP port number for High Speed Video phase 1
Enabled	**No**, Yes	0	-	Enable/disable High Speed Video phase 1
Phase 2				
IP	[IP addr] **(224.11.5.4)**	0	M	IP address for High Speed Video phase 2
Port	[Port No] **(20004)**	0	M	IP port number for High Speed Video phase 2
Enabled	**No**, Yes	0	-	Enable/disable High Speed Video phase 2
Phase 3				
IP	[IP addr] **(224.11.5.5)**	0	M	IP address for High Speed Video phase 3
Port	[Port No] **(20005)**	0	M	IP port number for High Speed Video phase 3
Enabled	**No**, Yes	0	M	Enable/disable High Speed Video phase 3
Protocol	ST2022-6, **ST2110-20**	0	-	IP Transport Protocol for High Speed Video
Payload ID	96..127 **(96)**	0	M	(SDI) payload ID for High Speed Video
Audio				
Enabled	No, **Yes**	0	M	Enable/disable Audio
IP	[IP addr] **(224.11.5.17)**	0	M	IP address for Audio
Port	[Port No] **(5001)**	0	M	IP port number for Audio
Codec	L16, **L24**	S	M	Linear 16 or 24 bits PCM audio codec for Audio
Packet Time	**0.125 ms**, 0.250 ms, 1 ms	0	M	Packet Time
PayloadID	96..127 **(97)**	0	M	Payload ID for Audio
Number of Ch	2, 4, **8**, 16	0	M	Number of audio channels for Audio

Function:		Values:	U:	F:	Description:
Intercom					
	Enabled	No, **Yes**	0	M	Enable/disable Intercom
	IP	<IP address>	0	M	IP address for Intercom
	Port	[Port No] **(5002)**	0	M	IP port number for Intercom
	Codec	L16, **L24**	S	M	Linear 16 or 24 bits PCM audio codec for Intercom
	Packet Time	**0.125 ms**, 0.250 ms, 1 ms	0	M	Packet Time for Intercom
	PayloadID	96..127 **(97)**	0	M	Payload ID for Intercom
	Number of Ch	2, 4, **8**, 16	0	M	Number of audio channels for Intercom
Incoming Streams					
Video RX 1					
	Enabled	**No**, Yes	0	M	Enable/disable Video RX 1
	Multicast	No, **Yes**	0	M	Enable/disable Multicast for Video RX 1
	IP	[IP addr] **(224.11.5.12)**	0	M	IP address for Video RX 1
	Port	[Port No] **(20012)**	0	M	IP port number for Video RX 1
	PayloadID	96..127 **(96)**	0	M	Payload ID for Video RX 1
	Protocol	2022-6, **2110-20**	0	M	IP Transport Protocol for Video RX 1
	Src IP	[IP addr] **(10.11.8.1)**	0	M	Source IP address for Video RX 1
Video RX 2					
	Enabled	**No**, Yes	0	M	Enable/disable Video RX 2
	Multicast	No, **Yes**	0	M	Enable/disable Multicast for Video RX 2
	IP	[IP addr] **(224.11.5.13)**	0	M	IP address for Video RX 2
	Port	[Port No] **(20013)**	0	M	IP port number for Video RX 2
	PayloadID	96..127 **(96)**	0	M	Payload ID for Video RX 2
	Protocol	2022-6, **2110-20**	0	M	IP Transport Protocol for Video RX 2
	Src IP	[IP addr] **(10.11.8.2)**	0	M	Source IP address for Video RX 2
Video RX 3					
	Enabled	**No**, Yes	0	M	Enable/disable Video RX 3
	Active	No, **Yes**	0	M	Enable/disable Multicast for Video RX 3
	IP	[IP addr] **(224.11.5.14)**	0	M	IP address for Video RX 3
	Port	[Port No] **(20014)**	0	M	IP port number for Video RX 3
	PayloadID	96..127 **(96)**	0	M	Payload ID for Video RX 3
	Protocol	2022-6, **2110-20**	0	M	IP Transport Protocol for Video RX 3
	Src IP	[IP addr] **(10.11.8.3)**	0	M	Source IP address for Video RX 3
Audio					
	Enabled	**No**, Yes	0	M	Enable/disable Audio
	Multicast	No, **Yes**	0	M	Enable/disable Multicast for Audio

Function:		Values:	U:	F:	Description:
	IP	[IP addr] **(224.11.5.19)**	0	M	IP address for Audio
	Port	[Port No] **(5003)**	0	M	IP port number for Audio
	Codec	L16, **L24**	S	M	Linear 16 or 24 bits PCM audio codec for Audio
	Packet Time	**0.125 ms**, 0.250 ms, 1 ms	0	M	Packet Time for Audio
	Buffer Size	1,2,4,**8**,16, 32 ms	0	M	Buffer size for Audio
	PayloadID	96..127 **(97)**	0	M	Payload ID for Audio
	Number of Ch	1, 2, **4**, 8, 16	0	M	Number of audio channels for Audio
	Src IP	[IP addr] **(10.11.8.4)**	0	M	Source IP address for Audio
Intercom					
	Enabled	**No**, Yes	0	M	Enable/disable Intercom
	Multicast	No, **Yes**	0	M	Enable/disable Multicast for Intercom
	IP	[IP addr] **(224.11.5.20)**	0	M	IP address for Intercom
	Port	[Port No] **(5004)**	0	M	IP port number for Intercom
	Codec	L16, **L24**	S	M	Linear 16 or 24 bits PCM audio codec for Intercom
	Packet Time	**0.125 ms**, 0.250 ms, 1 ms	0	M	Packet Time for Intercom
	Buffer Size	1,2,**4**,8,16, 32 ms	0	M	Buffer size for Intercom
	PayloadID	96..127 **(97)**	0	M	Payload ID for Intercom
	Number of Ch	2, 4, **8**, 16	0	M	Number of audio channels for Intercom
	Src IP	[IP addr] **(10.11.8.5)**	0	M	Source IP address for Intercom
Redundancy					
Outgoing streams					
	Main IP	[IP addr] **(224.11.6.9)**	0	M	IP address for Main IP
	Port	[Port No] **(20009)**	0	M	IP port number for Main IP
	Ena	**No**, Yes	0	M	Enable/disable Main IP
	Live IP	[IP addr] **(224.11.6.10)**	0	M	IP address for Live Video
	Port	[Port No] **(20010)**	0	M	IP port number for Live Video
	Ena	**No**, Yes	0	M	Enable/disable Live Video
	Ph 1 IP	[IP addr] **(224.11.6.3)**	0	M	IP address for High Speed Video phase 1
	Port	[Port No] **(20003)**	0	M	IP port number for High Speed Video phase 1
	Ena	**No**, Yes	0	-	Enable/disable High Speed Video phase 1
	Ph 2 IP	[IP addr] **(224.11.6.4)**	0	M	IP address for High Speed Video phase 2
	Port	[Port No] **(20004)**	0	M	IP port number for High Speed Video phase 2
	Ena	**No**, Yes	0	-	Enable/disable High Speed Video phase 2
	Ph 3 IP	[IP addr] **(224.11.6.5)**	0	M	IP address for High Speed Video phase 3
	Port	[Port No] **(20005)**	0	M	IP port number for High Speed Video phase 3

Function:		Values:	U:	F:	Description:
	Ena	**No**, Yes	0	-	Enable/disable High Speed Video phase 3
	Audio IP	[IP addr] **(224.11.6.17)**	0	M	IP address for Audio
	Port	[Port No] **(5001)**	0	M	IP port number for Audio
	Ena	**No**, Yes	0	M	Enable/disable Audio
	Icom IP	[IP addr] **(224.11.6.18)**	0	M	IP address for Intercom
	Port	[Port No] **(5002)**	0	M	IP port number for Intercom
	Ena	**No**, Yes	0	M	Enable/disable Intercom
	Incoming Streams				
	RX1 IP	[IP addr] **(224.11.6.12)**	0	M	IP address for Video RX 1
	Port	[Port No] **(20012)**	0	M	IP port number for Video RX 1
	Ena	**No**, Yes	0	M	Enable/disable Video RX 1
	Mcast	Yes, **No**	0	M	Enable/disable Multicast for Video RX 1
	Src	[IP addr] **(10.11.9.1)**	0	M	Source IP address for Video RX 1
	RX2 IP	[IP addr] **(224.11.6.12)**	0	M	IP address for Video RX 2
	Port	[Port No] **(20012)**	0	M	IP port number for Video RX 2
	Ena	**No**, Yes	0	M	Enable/disable Video RX 2
	Mcast	Yes, **No**	0	M	Enable/disable Multicast for Video RX 2
	Src	[IP addr] **(10.11.9.1)**	0	M	Source IP address for Video RX 2
	RX3 IP	[IP addr] **(224.11.6.12)**	0	M	IP address for Video RX 3
	Port	[Port No] **(20012)**	0	M	IP port number for Video RX 3
	Ena	**No**, Yes	0	M	Enable/disable Video RX 3
	Mcast	Yes, **No**	0	M	Enable/disable Multicast for Video RX 3
	Src	[IP addr] **(10.11.9.1)**	0	M	Source IP address for Video RX 3
	Audio IP	[IP addr] **(224.11.6.12)**	0	M	IP address for Audio
	Port	[Port No] **(20012)**	0	M	IP port number for Audio
	Ena	**No**, Yes	0	M	Enable/disable Audio
	Mcast	Yes, **No**	0	M	Enable/disable Multicast for Audio
	Icom IP	[IP addr] **(224.11.6.12)**	0	M	IP address for Intercom
	Port	[Port No] **(20012)**	0	M	IP port number for Intercom
	Ena	**No**, Yes	0	M	Enable/disable Intercom
	Mcast	Yes, **No**	0	M	Enable/disable Multicast for Intercom

Operator Toolbox menu

Function:	Values:	U:	F:	Description:
Indicators				
Zoom Indicator	**Off**, On	0	-	Switch Zoom indicator on or off
Iris Indicator	**Off**, On	0	-	Switch Iris indicator on or off
Focus Indicator	**Off**, On	0	-	Switch Focus indicator on or off
Filter Indicator	**Off**, On	0	O	Switch Optical Filter indicator on or off
DOF Indicator	**Off**, On	0	O	Switch Depth of Field (DOF) indicator on or off
Center Cross	**Off**, On	0	O	Switch Center Cross on or off
Safe Area				
Safe Area	**Off**, On	0	O	Switch Safe Area on or off
Safe Area Type	**16:9**, 15:9, 14:9, 4:3	0	O	Aspect ratio of the Safe Area
Marker				
Marker	**Off**, On	0	O	Switch Marker on or off
Marker Type	15:9, 14:9, **4:3**	0	O	Aspect ratio of Marker
Marker Style	**Dot**, Shad, Both	0	O	Marker style: Dot = dotted lines; Shad = shaded areas; Both = dotted lines and shaded areas
Marker Shading	**Shad**, Black	0	O	Marker Shading (when marker style = Shad or Both): Shad = transparent area, Black = black area
Box				
Box 1				
Box	**Off**, On	0	O	Switch Box 1 on or off
Type	**Box**, Line, Full	0	O	Box type
Color	**White**, Red, Green, Blue, Yellow, Magenta, Cyan, Purple	0	O	Box color
Top	0..99 **(25)**	0	O	Top position of the Box
Bottom	0..99 **(75)**	0	O	Bottom position of the Box
Left	0..99 **(25)**	0	O	Left position of the Box
Right	0..99 **(75)**	0	O	Right position of the Box
Box 2				
Box	**Off**, On	0	O	Switch Box 2 on or off
Type	**Box**, Line, Full	0	O	Box type
Color	**White**, Red, Green, Blue, Yellow, Magenta, Cyan, Purple	0	O	Box color
Top	0..99 **(33)**	0	O	Top position of the Box
Bottom	0..99 **(66)**	0	O	Bottom position of the Box

Function:	Values:	U:	F:	Description:
Left	0..99 **(33)**	0	O	Left position of the Box
Right	0..99 **(66)**	0	O	Right position of the Box
Zebra				
Zebra	**Off**, On	0	O	Switch Zebra indication on or off. Zebra is a diagonal line pattern that indicates that the area affected has risen above a preset level of the full scale video exposure value
Zebra Mode	**Level**, Band	3	O	Zebra mode: Level: Zebra indication appears in areas are brighter than the set level Band: Zebra indication appears in a 2.5% band around the set level
Zebra Level	0%..117% **(90%)**	3	O	Exposure level at which Zebra pattern is shown. When level is higher than 100% the zebra indicates overexposed areas
Zebra Contrast	0..99 **(15)**	3	O	Zebra Contrast
Ind White Lvl	0..99 **(70)**	2	O	White level (= brightness) of the indicators: 0 = very dark; 99 = very bright
Viewfinder				
OnScreen Tally	**Off**, Top, Bottom	2	O	On Screen Tally (signalling) indicators to be displayed at the top or at the bottom of the viewfinder screen. Select Off to turn the indicators off
Assignments	**Show**, Hide	2	O	
Button Leds	Off, **Low**, Medium, High	2	O	Brightness level of the viewfinder menu buttons
Backpanel				
Info Leds	Low, **High**	2	-	Brightness level of the IP diagnose indicators on the back panel
Button Illum	0..99 **(75)**	2	-	Brightness level of button illumination
Outside Illum	**On**, Off	2	-	Switches outside Illumination on or off.
Level	0..99 **(75)**	2	-	Outside illumination brightness level (when outside Illumination is switched on)
AutoIris Area	**Off**, On	3	O	Switches AutoIris Area indication on or off
VF Monitoring	**YCrCb,** Y, R, G, B, -G, R-G, B-G	2	O	Type of signal to view in viewfinder
VF HDR Knee				
HDR Kn Max In	100..10000% **(2000%)**	2	O	
HDR Kn Point	20%..100% **(70%)**	2	O	
VF Peaking				
Peaking Lvl	0..99 **(20)**	0	O	Peaking level applied to the viewfinder signal (same control as peaking level rotary on the viewfinder)

Function:	Values:	U:	F:	Description:
Peaking (Return)	0..99 **(0)**	0	O	Peaking level applied to the Return video signal in the viewfinder (when enabled)
Fine Lvl	-20..50 **(0)**	0	O	Fine Peaking level
Color	**White**, Red, Green, Blue, Yellow, Magenta, Cyan, Purple	0	O	Viewfinder Peaking color
VF Detail				
VF Detail	Off, **On**, Boost	0	O	Enable/disable VF Detail, or adds extra Detail to the viewfinder signal (Boost)
Super Coarse	**Off**, On	0	O	Enable/disable Super Coarse VF Detail
Detail Level	0..99 **(50)**	0	O	Detail level for viewfinder signal
Slicer	0..99 **(10)**	0	O	Noise Slicer level for VF Detail
Vert Detail Lvl	0..99 **(50)**	3	O	Vertical component of VF Detail level
Coarse/Fine	0..99 **(90)**	3	O	Detail balance between coarse and fine structures (0 = coarse, 99 = fine)
Level Dep	0..99 **(30)**	3	O	Level at which VF Detail starts to work
Soft Detail	Off, **On**	3	O	Enable/disable Soft Detail: this reduces the amount of detail added for large transitions
Soft Detail Lvl	0..99 **(50)**	3	O	Upper limit level for Soft Detail
VF Mode	**Combined**, 1 Phase, 2 Phases, 3 Phases	2	-	(only for high speed video modes) Method of combining high speed phases for the viewfinder output: Combined: all phases are combined to obtain the highest signal level for live viewing. Some blurring may occur when panning or tilting. 1 Phase: only 1 phase is used to obtain highest sharpness but lower video levels. 2 Phases: same as above but with 2 phases. 3 Phases: same as above but with 3 phases. Note: try the setting that suits your situation best.
Menu Settings				
Rotary Speed	1..10 **(5)**	2	O	Reaction speed of the front rotary button
Menu Display	On,**Time**	2	O	Camera menu alwasy on or or disappear after a set time
Menu Time	3..30 **(10)**	2	O	Time (in seconds) the menu is shown when Menu Display is set to Time.
Menu White Lvl	0..99 **(70)**	2	O	White level (brightness) of the characters of the menu
Info Settings				
Info Start Page	**1**,2,3,4	2	-	First page shown when info button is initially pressed
Info Display	On, **Off**	2	-	Time (in seconds) the info page is shown when Info Display is Off.
Info Time	3..30 **(10)**	2	-	Sets the time (in seconds) the info page is shown.

Function:	Values:	U:	F:	Description:
Intercom				
Prod Vol Ctrl	**Prod**, Master	3	O	Selects if the Prod volume control (upper rotary on the back panel) controls Prod channel volume only (Prod) or overall (Master) intercom volume.
Cam Sidetone	0..99 **(75)**	3	O	Sets the sidetone level (audio feedback from mic to headset) in the camera operator's headset.
Tracker Sidetone	0..99 **(75)**	3	O	Sets the sidetone level (audio feedback from mic to headset) in the tracker's headset.
User Buttons				
Ret A Preset	Off, **Ext1**, Ext2, Ext3, TP	0	O	Selects which signal is shown in the viewfinder when the Ret A button at the front panel is pressed
Ret B Preset	Off, Ext1, **Ext2**, Ext3, TP	0	O	Selects which signal is shown in the viewfinder when the Ret B button at the front panel is pressed
Front Panel				
Eng Mode	**Mom**, Alt	0	O	Switching mode for the Eng button at the front panel of the camera: momentary (push) or alternating (toggle)
Ret A Mode	**Mom**, Alt	0	O	Switching mode for the Ret A button at the front panel of the camera: momentary (push) or alternating (toggle)
Ret B Mode	**Mom**, Alt	0	O	Switching mode for the Ret B button at the front panel of the camera: momentary (push) or alternating (toggle).
Back Panel				
Eng Mode	**Mom**, Alt	0	O	Switching mode for the Eng button at the back panel of the camera: momentary (push) or alternating (toggle).
Ret A Mode	**Mom**, Alt	0	O	Switching mode for the Ret A button at the back panel of the camera: momentary (push) or alternating (toggle).
Ret B Mode	**Mom**, Alt	0	O	Switching mode for the Ret B button at the back panel of the camera: momentary (push) or alternating (toggle).
Side Panel				
SW1	Call, **RetA**, RetB, Prod, Eng, Select, ND +, Awhite, Elris, FocAst, Back	0	O	Assigns a function to user button SW1
SW1 Mode	**Mom**, Alt	0	O	Switching mode for SW1: momentary (push) or alternating (toggle)
SW2	Elris, Zoom, FocAst, RetA, **RetB**, Prod, Eng, ND -, Call, Back, Select	0	O	Assigns a function to user button SW2

Function:	Values:	U:	F:	Description:
SW2 Mode	**Mom**, Alt	0	O	Switching mode for SW2: momentary (push) or alternating (toggle)
PickMe Mode	**Mom**, Alt	1	O	Switching mode for PickMe: momentary (push) or alternating (toggle)
Handgrip				
Handgrip Right	**RetA**, RetB, Zoom, FocAst	1	O	Assigns a function to the right handgrip button.
Handgrip Left	**Prod**, Eng	1	O	Assigns a function to the left handgrip button.
Lens				
VTR Lens	**Prod**, Eng , Zoom, RetA, RetB, VTR, Info	1	O	Assigns a function to the VTR Lens button.
VTR Lens Mode	**Mom**, Alt	1	O	Switching mode for the VTR Lens button: momentary (push) or alternating (toggle).
RET Lens	**RetA**, RetB, Zoom, FocAst	1	O	Assigns a function to the RET Lens button.
RET Lens Mode	**Mom**, Alt	1	O	Switching mode for the RET Lens button: momentary (push) or alternating (toggle).
RET1	**RetA**, RetB	1	O	Assigns a function to the RET 1 Lens button.
RET2	Zoom, **RetB**	1	O	Assigns a function to the RET 2 Lens button.
RET2 Mode	**Mom**, Alt	1	O	Switching mode for the RET 2 Lens button: momentary (push) or alternating (toggle).
Viewfinder				
Btn 1	None, Call, **Box1**, Box2, Mono, Ret A, Ret B, Zoom, Text, Tally	1	O	Assigns a function to button 1 of the VF 7-100 viewfinder.
Btn 1 Mode	Mom, **Alt**	1	O	Switching mode for button 1: momentary (push) or alternating (toggle)
Btn 2	None, Call, Box1, Box2, Mono, Ret A, Ret B, Zoom, Text, Tally	1	O	Assigns a function to button 2 of the VF 7-100 viewfinder.
Btn 2 Mode	Mom, **Alt**	1	O	Switching mode for button 2: momentary (push) or alternating (toggle)
Btn 3	None, Call, Box1, Box2, Mono, Ret A, Ret B, Zoom, Text, Tally	1	O	Assigns a function to button 3 of the VF 7-100 viewfinder.
Btn 3 Mode	Mom, **Alt**	1	O	Switching mode for button3: momentary (push) or alternating (toggle)
Btn A	None, Call, **Box1**, Box2, Mono, Ret A, Ret B, Zoom, Text, Tally	1	O	Assigns a function to button 1 of the EC 2-100 viewfinder.
Btn A Mode	Mom, **Alt**	1	O	Switching mode for button A: momentary (push) or alternating (toggle)

Function:	Values:	U:	F:	Description:
Btn B	None, Call, Box1, Box2, Mono, Ret A, Ret B, Zoom, Text, Tally	1	O	Assigns a function to button 1 of the EC 2-100 viewfinder.
Btn B Mode	Mom, **Alt**	1	O	Switching mode for button B: momentary (push) or alternating (toggle).
Switch C	None, **UnderScan**	1	O	Set to Underscan to view a scaled down (approx. 85% of the area) picture in the EC 2-100 viewfinder.
SuperXpander				
SXP F1	**None**, ND, FX, Bars, Prog, Back, Info, Pick Me	1	O	Assigns a function to the F1 user button on the SuperXpander, when present.
SXP F2	**None**, ND, FX, Bars, Prog, Back, Info, Pick Me	1	O	Assigns a function to the F2 user button on the SuperXpander, when present.
SXP F3	**None**, ND, FX, Bars, Prog, Back, Info, Pick Me	1	O	Assigns a function to the F3 user button on the SuperXpander, when present.
PickMe Mode	**Mom**, Alt	1	O	Selects switching mode for the PickMe buttons: momentary (push) or alternating (toggle).
Zoom Settings				
Handgrip Zoom	Off, **On**	0	O	Enable/disable Zoom control (on top of camera handgrip)
Zoom Speed	1..10 **(5)**	3	O	Zoom control speed
Zoom Curve	0..3 **(3)**	3	O	Zoom control response curve: 0 = linear curve 1 = low curve 2 = medium curve 3 = steep curve
Zoom/Focus	**Local**, Remote	0	-	Local or remote control of the Zoom/ Focus function. Only available when a SuperXpander is present.
Operator Active	Yes, **No**	S	-	

Production Setup

Function:	Values:	U:	F:	Description:
Levels				
Gain				
HDR Gain	-6 dB..18 dB **(0 dB)**	2	S	HDR Gain (in 0.1 dB steps)
HDR Out Lvl	50% .. 66% **(57% for SMPTE2084)** 50% .. 87% **(73% for HLG)**	2	-	HDR Output Level: HDR video level that corresponds with 100% video level in SDR. Note: default values depend on the selected HDR Standard.
Gain Presets				
Gain -	-6 dB..-3 dB **(-3 dB)**	2	O	Gain value for - preset Note: Available preset values depend on the selected sensitivity mode
Gain +	+3 dB..+12 dB **(+3 dB)**	2	O	Gain value for + preset. Note: Available preset values depend on the selected sensitivity mode
Gain ++	+6 dB..15 dB **(+6 dB)**	2	O	Gain value for ++ preset Note: Available preset values depend on the selected sensitivity mode
Gain +++	+9 dB..+18 dB **(+12 dB)**	2	O	Gain value for +++ preset Note: Available preset values depend on the selected sensitivity mode
Black				
Full Black	**Off**, On	3	-	Select to run Full Black calibration. Note: this takes up to 15 seconds to complete
Master Black	0..99 **(50)**	2	S	Master Black level: this is the video level that is considered as pure black
Advanced				
Master Black	0..99 **(50)**	3	S	Master Black level: this is the video level that is considered as pure black.
Black R	0..99 **(50)**	3	S	Black level for Red
Black G	0..99 **(50)**	3	S	Black level for Green
Black B	0..99 **(50)**	3	S	Black level for Blue
HDR				
HDR Standard	**SMPTE2084**, HLG, SLOG3, Lin	3	S	HDR Standard: SMPTE 2084 (or PQ, Perceptual Quantization) or HLG (= Hybrid Log-Gamma), S-Log3 or Lin (Linear)
HDR Range	**Narrow**, Full	3	-	If HDR Standard = SMPTE2084: - Full: the HDR signal is mapped into the full 10-bit range of the digital signal (3 .. 1021) - Narrow: Narrow: the HDR signal is mapped into the code value range between 64 and 940.

Function:	Values:	U:	F:	Description:
Gamma Low	0.8..3.5 **(1.2)**	3	-	Low Gamma
Gamma High	0.4..2 **(1.0)**	3	-	High Gamma
Gamma BrkPnt Low	5% .. 500% **(50%)**	3	S	
Gamma BrkPnt High	20% .. 1000% **(100%)**	3	S	
HDR Cliplevel	500 N..10000 N **(10000 N)**	3	S	
Exposure				
Iris				
Auto Iris				
Auto Iris	**Off**, On	0	-	Enable/disable Auto Iris
Area	**Top**, Spot S, Spot M, Spot L, Full, Bottom, Custom	3	-	Measurement area for Auto Iris
Area Indicator	**Off**, On	3	O	Enable/disable Area Indicator
Custom Area				
Peak				
Top	0..99 **(57)**	3	-	Custom measurement area for Auto Iris Peak measurement, when Area = Custom
Bottom	0..99 **(86)**	3	-	
Left	0..99 **(24)**	3	-	
Right	0..99 **(76)**	3	-	
Average				
Top	0..99 **(27)**	3	-	Sets a custom measurement area for Auto Iris Average measurement, when Area = Custom
Bottom	0..99 **(57)**	3	-	
Left	0..99 **(5)**	3	-	
Right	0..99 **(95)**	3	-	
Peak/Average	0..99 **(64)**	3	S	Sets the Auto Iris measurement balance between peak and average video level.
Auto Iris SP	0..99 **(35)**	3	S	Sets Auto Iris Setpoint.
Mom Iris SP	0..99 **(50)**	3	-	Sets Momentary Iris Setpoint.
Auto Iris Gain	5..10 **(5)**	3	-	Sets Auto Iris Gain.
Extended Iris				
Extended Iris	**Off**, On	0	-	Enables/disables Extended Iris
Area	**Top**, Spot S, Spot M, Spot L, Full, Bottom, Custom	S	-	Selects measurement area for Extended Iris
Custom Area				
Peak				

Function:		Values:	U:	F:	Description:
	Top	0..99 **(57)**	S	-	Sets a custom measurement area for Extended Iris Peak measurement, when Area = Custom
	Bottom	0..99 **(86)**	S	-	
	Left	0..99 **(24)**	S	-	
	Right	0..99 **(76)**	S	-	
	Average				
	Top	0..99 **(27)**	S	-	Sets a custom measurement area for Extended Iris Average measurement, when Area = Custom
	Bottom	0..99 **(57)**	S	-	
	Left	0..99 **(5)**	S	-	
	Right	0..99 **(95)**	S	-	
Lighting					
Lighting		Off, **On**	1	S	Enables/disables Lighting function
Correction		-10 .. **0** .. +10	1	S	Sets the correction to fine-adjust for ambient lighting frequency when exposure time is set to 50 Hz or 60 Hz.
Acq Timing					
V-Shift		**Off**, On	1	S	Switches V-Shift (acquisition timing shift) on or off.
V-Shift Time		0..99 **(0)**	1	S	Selects V-Shift (acquisition timing shift) time.
Exp Time (not available for high speed video modes)					
Exp Time Sel		1/200, 50%, 50 Hz, 60 Hz, **Nom**, Var	1	-	Selects camera exposure time.
Var Exp Time		50 Hz ..1000 Hz	1	-	Sets variable exposure time when Exp Time Sel = Var in Hz or ms (see below)
Units		**Hz**, ms	1	-	Selects units to use for variable exposure time
LED Wall filter		**Off**, On	2	S	Switches LED Wall Filter on or off.
HDR to SDR					
Input Ctrl					
Input Level		50% .. 87% **(57%)**	3	-	
Input Clipper		**Off**, On	3	-	
Input Clip Lvl		0% .. 10000% **(10000%)**	3	-	
Map Mode		**SceneRef**, Manual	3	-	
Knee Point		0..100 **(35)**	3	-	
Knee Max In		100..5000 **(1000)**	3	-	
Output Ctrl					
Wh Limiter		**Off**, On	3	-	
Wh Limit Lvl		87.7%..109.1% **(105%)**	3	-	
Color Saturation		0%..200% **(100%)**	3	-	
SDR Color Gamut		**REC709**, REC2020	3	-	

Function:	Values:	U:	F:	Description:
OETF	**BT1886**, REC709, SQRT709	3	-	
Black Lvl	0..99 **(0)**	3	-	
Color				
Color temp				
Color Filter	-100..100 **(0)**	2	S	Varies the color balance to obtain warmer or cooler effects. Negative values give cooler effects while positive values give warmer effects.
Color Presets	**3200K**, 5600K, 7500K, FL50, FL60, AW1, AW2, AWC, VAR	2	-	Selects the color preset.
Color Temp	2000 K..21000 K **(3200 K)**	2	S	Sets the color temperature when Color Preset = VAR
Tint	-150..150 **(0)**	2	S	Adjusts the color balance along the magenta/green axis. Negative values add more magenta while positive values add more green.
Advanced				
Gain R	0..99 **(50)**	2	S	Sets Gain Red level.
Gain G	0..99 **(50)**	2	S	Sets Gain Green level.
Gain B	0..99 **(50)**	2	S	Sets Gain Blue level.
Range	**3dB**, 6dB	2	S	Selects Gain control ('Painting') range.
x	0.2..0.55 **(0.423)**	3	-	Displays the chromacity x-value. Note: this is only an approximation.
y	0.2..0.55 **(0.399)**	3	-	Displays the chromacity y-value. Note: this is only an approximation.
Saturation				
Saturation	0%..200% **(100%)**	2	S	Sets color saturation level. 0% = fully desaturated (black/white), 100% = normal saturation, 200% = maximum saturation.
HDR Saturation	0%..200% **(100%)**	2	S	Sets HDR color saturation level. 0% = fully desaturated (black/white), 100% = normal saturation, 200% = maximum saturation.
Color gamut				
SDR Color Gamut	**REC709**, REC2020	2	S	Selects SDR Color Gamut to be used: REC709 = default color gamut REC2020 = extended color gamut
HDR ColorGamut	REC709, **REC2020**, LMS	2	S	Selects Color Gamut to be used in HDR mode: REC709 = default color gamut REC2020 = extended color gamut LMS = LMS color space (LMS = Long, Medium and Short wavelengths)

Function:	Values:	U:	F:	Description:
Matrix				
Matrix	B/W, 1:1, **XGL**, WCG, Var1, Var2	3	S	Selects a preset for the color matrix: B/W: monochrome picture; 1:1 = matrix is switched off; XGL = for vivid color reproduction (advised to combine with M/G setting); WCG = ??? Var1 = variable setting 1; Var2 = variable setting 2.
Advanced				
G->R	0..99 **(50)**	S	S	Sets Green into Red coefficient (when Matrix is set to variable).
B->R	0..99 **(50)**	S	S	Sets Blue into Red coefficient (when Matrix is set to variable).
R->G	0..99 **(50)**	S	S	Sets Red into Green coefficient (when Matrix is set to variable).
B->G	0..99 **(50)**	S	S	Sets Blue into Green coefficient (when Matrix is set to variable).
R>B	0..99 **(50)**	S	S	Sets Red into Blue coefficient (when Matrix is set to variable).
G->B	0..99 **(50)**	S	S	Sets Green into Blue coefficient (when Matrix is set to variable).
Image Control				
Freeze	**Off**, On	2	-	Switches image freeze on or off. Use to assist off line setup and configuration.
Reverse Scan				
Reverse Scan	**Off**, On	0	S	Switches Reverse Scan on or off.
Mode	**Horiz**, Vert, Both	0	S	Selects Reverse Scan mode: Horiz = the image is flipped horizontally; Vert = the image is flipped vertically; Both = the image is flipped both horizontally and vertically.
Image Shift				
Horizontal	-16..16 **(0)**	0	-	Shifts the image in horizontal direction (in pixels)
Vertical	-4..4 **(0)**	0	-	Shifts the image in vertical direction (in lines)
Video Mode	<list of video modes>	3	-	Current video mode. Available video modes depend on camera model, configuration and installed license.

Function:	Values:	U:	F:	Description:
Sensitivity	**Nom**, HiQ, HiSens	3	S	Sensitivity mode: HiQ = High quality Nom = Nominal HiSens = High sensitivity Note: Sensitivity mode is not available for high speed video modes.

Creative Control

Function:	Values:	U:	F:	Description:
Levels				
Filters				
ND Filter	**Clear**, ND 1/4 , ND 1/16, ND 1/64	2	S	Optical Neutral Density (ND) filter: Clear = No filter; ND 1/4 = 2 stops; ND 1/16 = 4 stops; ND 1/64 = 6 stops neutral.
FX Filter	**Clear**, Cap, Star 4P, Sft Fcs, Cap	2	S	Optical Effects (FX) filter: Clear = No filter; Star 4P = 4 Point Star; Sft Fcs = Soft Focus; Cap = Lens capped.
Flare				
Flare	Off, **On**	S	S	Switches flare correction on or off.
Red	0..99 **(6)**	S	S	Sets flare correction level for Red.
Green	0..99 **(9)**	S	S	Sets flare correction level for Green.
Blue	0..99 **(11)**	S	S	Sets flare correction level for Blue.
Color				
Color Adjustment				
Color Corr				
Col Corr	**Off**, On	3	S	Switches color corrector on or off. All active sets are used when color corrector is on.
Col Corr View	**Off**, On	3	-	Switch on to view the selected color area in the main signal.
VF View	**Off**, On	3	O	Switch on to view the selected color area in the viewfinder.
Set	**1**,2,3,4,5,6	3	-	Selects a color correction set.
Set On/Off	**Off**, On	3	-	Switches the selected color corrector set on or off. Note: when off, settings can not be changed.
Color	0..359.99 **(0)**	3	-	Sets the color area by hue (in steps of 22.5 degrees)
Width	22.5..360 **(0)**	3	-	Sets the color area hue width (in degrees).
Hue	-180..180 **(0)**	3	-	Sets the hue (in degrees) for the selected area.
Sat	0..99 **(0)**	3	-	Sets the saturation level for the selected area.
Luminance	0..99 **(0)**	3	-	Sets the luminance level for the selected area.
Color Name	B+, **MG-**, MG, MG+, R, R+, YL-, YL, YL+, G-, G, G+, CY, CY+, B-, B	3	-	Shows color area name: B: Blue; MG: Magenta; R: Red; YL: Yellow; G: Green; CY: Cyan
Smoothing	Sharp, **Medium**, Smooth	3	S	Selects method for smoothing transitions between affected and nonaffected areas.
Reset	Exec, ...	3	-	Resets the color corrector to its default values. All sets are reset.
Col Protect				

Function:	Values:	U:	F:	Description:
Col Protect	**Off**, On	3	S	Switches Color Protect on or off
Col Prot Lvl	0%..150% **(75%)**	3	S	Sets Colors Protect level.
Sharpness				
Detail				
Detail	Off, **On**	3	S	Switches Detail on or off
Detail Level	0..99 **(50)**	2	S	Detail level: the amount of Detail added to the video signal.
Detail Source	R+G, R, G, **Y**	3	S	Selects the video component that is used to generate Detail signal.
Soft Detail	Off, **On**	3	S	Switches Soft Detail on or off.
Soft Detail Lvl	0..99 **(50)**	2	S	Sets the level of Soft Detail added to the video signal.
Advanced				
Vert Detail Lvl	0..99 **(25)**	3	S	Sets the level of the vertical component in the Detail signal.
Coarse/Fine	0..99 **(90)**	3	S	Sets detail balance between coarse and fine structures in the image (0 = coarse structures are sharpened, 99 = fine structures are sharpened).
Detail Level	0..99 **(50)**	3	S	Sets (overall) Detail level: the amount of Detail added to the video signal. Note: this is the same function as <Detail Level> above.
Level Dep	0..99 **(30)**	3	S	Sets the detail reduction level for shadow areas.
Noise Slicer	0..99 **(10)**	3	S	Sets the level of the noise slicer for Detail.
Dtl Flw Gain	**Off**, On	3	S	When switched on, Detail level follows Gain level.
Dtl Flw Zoom	**Off**, On	3	S	When switched on, Detail level follows Zoom factor.
HDR Detail				
Detail	Off, **On**	3	S	Switches HDR Detail on or off.
Detail Level	0..99 **(50)**	2	S	Sets the level of detail added to the video signal.
Detail Source	R+G, R, G, **Y**	3	S	Selects the video component that is used to generate HDR Detail signal.
Advanced				
Coarse/Fine	0..99 **(50)**	3	S	Sets HDR Detail balance between coarse and fine structures in the image(0 = coarse structures are sharpened, 99 = fine structures are sharpened).
Detail Level	0..99 **(50)**	3	S	Sets (overall) HDR Detail level: the amount of detail added to the video signal. Note: this is the same function as <Detail Level> above.
Level Dep	0..99 **(15)**	3	S	Sets the detail reduction level for shadow areas.
4K Detail				
Detail	Off, **On**	3	-	Switches 4K Detail on or off.
Detail Level	0..99 **(50)**	2	-	Sets the level of detail added to the video signal.

Function:	Values:	U:	F:	Description:
Detail Source	R+G, R, G, **Y**	3	-	Selects the video component that is used to generate 4K Detail signal.
Soft Detail	Off, **On**	3	-	Switches Soft Detail on or off.
Soft Detail Lvl	0..99 **(50)**	2	-	Sets the level of Soft Detail added to the video signal.
Advanced				
Vert Detail Lvl	0..99 **(50)**	3	-	Sets the level of the vertical component in the Detail signal.
Coarse/Fine	0..99 **(90)**	3	-	Sets detail balance between coarse and fine structures in the image (0 = coarse structures are sharpened, 99 = fine structures are sharpened).
Detail Level	0..99 **(50)**	3	-	Sets (overall) detail level: the amount of Detail added to the video signal. Note: this is the same function as <Detail Level> above.
Level Dep	0..99 **(50)**	3	-	Sets the detail reduction level for shadow areas.
Noise Slicer	0..99 **(10)**	3	-	Sets the level of the noise slicer for Detail.
HD Detail				
Detail	Off, **On**	3	-	Switches HD Detail on or off.
Detail Level	0..99 **(35)**	2	-	Sets the level of detail added to the video signal.
Detail Source	R+G, R, G, **Y**	3	-	Selects the video component that is used to generate HD Detail signal.
Soft Detail	Off, **On**	3	-	Switches Soft Detail on or off.
Soft Detail Lvl	0..99 **(50)**	2	-	Sets the level of Soft Detail added to the video signal.
Advanced				
Vert Detail Lvl	0..99 **(25)**	3	-	Sets the level of the vertical component in the Detail signal.
Coarse/Fine	0..99 **(90)**	3	-	Sets detail balance between coarse and fine structures in the image (0 = coarse structures are sharpened, 99 = fine structures are sharpened).
Detail Level	0..99 **(35)**	3	-	Sets (overall) detail level: the amount of Detail added to the video signal. Note: this is the same function as <Detail Level> above.
Level Dep	0..99 **(30)**	3	-	Sets the detail reduction level for shadow areas.
Noise Slicer	0..99 **(10)**	3	-	Sets the level of the noise slicer for Detail.
Knee Detail	1,**2**,3,4	3	S	Selects level of detail for the compressed signal above the knee point.
Skin Detail				
Skin Gate	**Off**, 1, 2, 3, 1+2, 1+3, 2+3, 1+2+3	3	S	Switches Skin Detail off or on and selects a Skin Gate. Use Skin Detail to change the detail level within a selected color range.
Auto Skin Dtl	**Off**, On	2	-	Switches Auto Skin Detail mode on or off.

Function:			Values:	U:	F:	Description:
	VF View		**Off**, On	2	O	Switch on to view the selected Skin Detail area in the viewfinder.
	Skin1 Level		-100..100 **(0)**	2	S	Detail level for Skin Gate 1
	Skin2 Level		-100..100 **(0)**	2	S	Detail level for Skin Gate 2
	Skin3 Level		-100..100 **(0)**	2	S	Detail level for Skin Gate 3
	Follow Zoom		Off, **On**	3	-	Switches Skin Detail Follows zoom factor on or off
	Color Selection					
		Width1 Red	0..99 **(29)**	3	S	Sets width level (Red) for Skin Gate 1.
		Width1 Blue	0..99 **(40)**	3	S	Sets width level (Blue) for Skin Gate 1.
		Color1 Red	0..99 **(37)**	3	S	Sets color level (Red) for Skin Gate 1.
		Color1 Blue	0..99 **(6)**	3	S	Sets color level (Blue) for Skin Gate 1.
		Width2 Red	0..99 **(29)**	3	S	Sets width level (Red) for Skin Gate 2.
		Width2 Blue	0..99 **(40)**	3	S	Sets width level (Blue) for Skin Gate 2.
		Color2 Red	0..99 **(37)**	3	S	Sets color level (Red) for Skin Gate 2
		Color2 Blue	0..99 **(6)**	3	S	Sets color level (Blue) for Skin Gate 2.
		Width3 Red	0..99 **(29)**	3	S	Sets width level (Red) for Skin Gate 3.
		Width3 Blue	0..99 **(40)**	3	S	Sets width level (Blue) for Skin Gate 3.
		Color3 Red	0..99 **(37)**	3	S	Sets color level (Red) for Skin Gate 3.
		Color3 Blue	0..99 **(6)**	3	S	Sets color level (Blue) for Skin Gate 3.

Configuration menu

Function:	Values:	U:	F:	Description:
Security				
Installed level	**User0**, User1, User2, User3	S	-	User access level. Note: switch the camera off and on to take the changes into effect
PIN Code	<nnnn>	S	-	Enter PIN code to access Service level (S).
Customer Files				
Store Cust Scene	Exec, ...	S	-	Stores the current Scene settings to the Customer Scene File.
Cust Scene Attr	R/W, **R**	S	-	Selects the read/write attribute for the selected Customer Scene File: R/W = Read and Write; R = Read only.
Store Cust Oper	Exec, ...	S	-	Stores the current Operator settings to the Customer Operator file.
Green button				
Std Scene File	**Fact**, Cust	S	-	Selects the Scene file to be recalled when the STD File/ Green button is pressed: Fact = Factory (default) Scene file Cust = Customer Scene file
Std Oper File	**Fact**, Cust	S	-	Selects the Operator file to be recalled when the STD File/Green button is pressed: Fact = Factory (default) Operator file Cust = Customer Operator file
Scene File	**Yes**, No	S	-	Determines if the Scene file should be recalled when the STD File/Green button is pressed.
Oper File	Yes, **No**	S	-	Determines if the Operator file should be recalled when the STD File/Green button is pressed.
DeviceID Reset	Exec, ...	S	-	Resets DeviceID to factorry value.
Factory Reset	Exec, ...	S	-	Resets ALL camera settings to their factory defaults.
Files				
Scene Files				
Store				
File Select	Standard, SCam1, SCam2, SCam3, SCam4	2	-	Selects a Scene File for storing.
Store	Exec, ...	2	-	Stores the Scene settings in the selected Scene file.
Recall				
File Select	Standard, SCam1, SCam2, SCam3, SCam4	1	-	Selects a Scene File for recall.

Function:	Values:	U:	F:	Description:
Recall	Exec, ...	1	-	Recalls the selected Scene file to the camera. This overwrites current Scene settings.
Lens FIles				
Store				
File Select	LCam1, LCam2, LCam3, LCam4	2	-	Selects a Lens File for storing.
Store	Exec, ...	2	-	Stores the Lens settings in the selected Scene file.
Recall				
File Select	LCam1, LCam2, LCam3, LCam4	1	-	Selects a Lens File for recall.
Recall	Exec, ...	1	-	Recalls the selected Lens file to the camera. This overwrites current Lens settings.
Media FIles				
Store				
File Select	MCam1, MCam2, MCam3, MCam4	S	-	Selects a Media File for storing.
Store	Exec, ...	S	-	Stores the Media settings in the selected Scene file.
Recall				
File Select	MCam1, MCam2, MCam3, MCam4	S	-	Selects a Media File for recall.
Recall	Exec, ...	S	-	Recalls the selected Media file to the camera. This overwrites current Media settings.
Operator FIles				
Store				
File Select	Standard, OCam1, OCam2, OCam3, OCam4	2	-	Selects a Operator File for storing.
Store	Exec, ...	2	-	Stores the Operator settings in the selected Scene file.
Recall				
File Select	Standard, OCam1, OCam2, OCam3, OCam4	1	-	Selects a Operator File for recall.
Recall	Exec, ...	1	-	Recalls the Operator file to the camera. This overwrites current Operator settings.
File Attributes				
File Select	None, SCustStd, OCustStd, SCam1, SCam2, SCam3, SCam4, OCam1, OCam2, OCam3, OCam4, LCam1, LCam2, LCam3, LCam4, MCam1, MCam2, MCam3, MCam4	3	-	Selects a file to change its attributes.

Function:	Values:	U:	F:	Description:
Filename	<file name>	2	-	Displays the selected file name.
Attribute	**R/W**, R	2	-	Selects the attribute for the selected file: R/W = Read and Write; R = Read only.
USB				
Name	<text>		-	Displays USB device name.
Free Space	0 MB..65535 MB **(0 MB)**		-	Displays free space left on USB in Mb.
No of Files	0..255 **(0)**		-	Displays number of files stored on USB.
USB Files				
File Select	**Scene 0**		-	Selects a file on the USB device.
Delete	Exec, ...		-	Deletes the selected file.
Filename	<text>		-	Changes name of the selected file.
Attribute	R/W, **R**		-	Selects the attribute for the selected file: R/W = Read and Write; R = Read only.
Reference	SDI Input, **PTP**, TriLvl, Composite, FreeRun	0	-	Reference signal/source to lock the camera to.
XCU Conn (only when camera is in XCU mode)				
ConnectType	**Cable**, DirectIP, DirectIP+	2	-	Select Connect Type: Cable (=XCU mode), DirectIP or DirectIP+ Note: the DirectIP+ license is required.
2ry Stream		3	-	???
XCU Name	<name>	2	-	In DirectIP/DirectIP+ mode this is the name of the XCU that the camera connects to. Note: the DirectIP+ license is required.
Disable Camera	**Off**, On	0	-	Locks all camera buttons to prevent operational mistakes.
Lens				
Lens Settings				
Lens Connector	**SXP**, Camera	0	-	Selects the lens connector to be used. Select Camera when a normal lens is used with the SuperXpander (Only when a SuperXpander is present).
Lens IF Type	Analog, **Digital**	0	-	Selects a digital or analog lens interface.
Lens IF Status	OK, **Not OK**	0	-	Shows the status of the lens interface (when a digital lens interface is used).
RE Iris Comp	**Off**, On	0	-	Switches Iris compensation on or off. Use this setting to compensate for Iris level when a range extender (RE) is used.
Lens Corrections				
ARIA				

Function:		Values:	U:	F:	Description:
	ARIA	**Auto**, Off	0	-	Selects ARIA (Automatic Restoration of Illumination Attenuation) mode: Auto = Automatic correction; Off = no correction.
	Status	Active, Lens Unsup, RE Unsup, **I/F NOK**, Off	0	-	Active: ARIA is active; Lens Unsup: Lens does not support ARIA; RE Unsup: Range Extender does not support ARIA; I/F NOK: Lens interface not OK - no lens found; connected or analog lens interface in use; Off: ARIA is switched off.
CLASS					
	CLASS	**Auto**, Off	0	-	Selects CLASS (Chromatic Lens Aberration and Sharpness Solution) mode: Auto = Automatic correction; Off = no correction.
	Reset	**Exec**, busy	0	-	Select to reset lens aberration data
	Status	Active, Init, Waiting, Reading, No Info, Unsup, **I/F NOK**, Off, InitNOK, Error	0	-	Active: CLASS is active; Init: initilization process is started; Waiting: camera waits for manual turning of lens rings; Reading: camera is reading lens abberation data from lens; No Info: lens does not support ; Unsup: CLASS cannot be activated; I/F NOK: Lens interface not OK - no lens found; connected or analog lens interface in use; Off: CLASS is switched off.
	Progress	0%..100% **(0%)**	0	-	Shows progress of the lens CLASS data reading process.
Shading					
	Shading	Off, **On**	S	-	Switches lens shading compensation on or off.
	R Saw H	0..99 **(50)**	S	-	Sawtooth (Horizontal) for Red channel.
	R Par H	0..99 **(50)**	S	-	Parabola (Horizontal) for Red channel.
	R Saw V	0..99 **(50)**	S	-	Sawtooth (Vertical) for Red channel.
	R Par V	0..99 **(50)**	S	-	Parabola (Vertical) for Red channel.
	G Saw H	0..99 **(50)**	S	-	Sawtooth (Horizontal) for Green channel.
	G Par H	0..99 **(50)**	S	-	Parabola (Horizontal) for Green channel.
	G Saw V	0..99 **(50)**	S	-	Sawtooth (Vertical) for Green channel.
	G Par V	0..99 **(50)**	S	-	Parabola (Vertical) for Green channel.
	B Saw H	0..99 **(50)**	S	-	Sawtooth (Horizontal) for Blue channel.
	B Par H	0..99 **(50)**	S	-	Parabola (Horizontal) for Blue channel.
	B Saw V	0..99 **(50)**	S	-	Sawtooth (Vertical) for Blue channel.
	B Par V	0..99 **(50)**	S	-	Parabola (Vertical) for Blue channel.
Pixel Alignment					

Function:	Values:	U:	F:	Description:
Hor Red	-8..8 **(0)**	S	-	(Advanced setttings)
Hor Blue	-8..8 **(0)**	S	-	(Advanced setttings)
Vert Red	-8..8 **(0)**	S	-	(Advanced setttings)
Vert Blue	-8..8 **(0)**	S	-	(Advanced setttings)
Apt Flw Iris	Off, **On**	3	-	(Advanced setttings)
Remote BackFocus				
Control	**Off**, On	0	-	Switch on to carry out the Remote Back Focus of the lens. note: the lens must support the Remote Back Focus functionality.
Position	0..99	0	-	Stored value of the back focus adjustment (in the lens)
Intercom				
Source Selection				
Intercom	Ext1, **AES67**		-	Selects source for intercom: Ext1 is audio from the External 1 video signal
Ext1	**SDI**, IP		-	
Prog Icom AES67	**Icom**, Audio		-	
Prog Ext	**Ext1**, AES67		-	
Prog Mon	**Ext1**, AES67		-	
Cam Mic	Off, **Switch**, Track, Prod	1	-	Selects the camera operator's microphone routing: Off = no routing; Switch = Track = route signal to Tracker channel; Prod = route signal to Production channel.
Cam Mic Level	-22dB, -28dB, -34dB, -40dB, -46dB, -52dB, -58dB, **-64dB**	1	-	Selects Mic level of camera operator's intercom microphone.
Cam Mic Power	Off, On	1	-	Switches bias tee power (12 VDC) to camera operator's intercom microphone on or off.
Cam Prod	Off, Left, Right, **Both**	1	-	Selects to which ear muff(s) of the camera headset the production intercom channel is routed.
Cam Eng	Off, Left, Right, **Both**	1	-	Selects to which ear muff(s) of the camera headset the engineering intercom channel is routed.
Cam Prog	Off, Left, Right, **Both**	1	-	Selects to which ear muff(s) of the camera headset the program intercom channel is routed.
Cam ProgExt	Off, Left, Right, **Both**	1	-	???
Cam ProgExt Lvl	0..99 **(50)**	1	-	???
Cam ProgMon	Off, **On**	1	-	???
Cam ProgMon Lvl	0..99 **(50)**	1	-	???

Function:	Values:	U:	F:	Description:
Cam Tracker	Off, Left, Right, **Both**	1	-	Selects to which ear muff(s) of the camera headset the Tracker's microphone signal is routed.
Cam Tracker Lvl	0..99 **(50)**	1	-	Sets Tracker signal level in the camera operator's headset.
Cam Boost	**Off**, On	1	-	???
Tracker				
Tracker Mic To	**Off**, Cam, Eng, Prod, All	1	-	Selects the Tracker's headset microphone routing.
Tracker Mic Lvl	-22dB, -28dB, -34dB, -40dB, -46dB, -52dB, -58dB, **-64dB**	1	-	Selects Mic level of Tracker's headset microphone.
Tracker Mic Pwr	**Off**, On	1	-	Switches bias tee power (12 VDC) to Tracker's microphone on or off.
Tracker Prod	Off, Left, Right, **Both**	1	-	Selects to which ear muff(s) of the Tracker headset the production intercom is routed.
Tracker Eng	Off, Left, Right, **Both**	1	-	Selects to which ear muff(s) of the Tracker headset the engineering intercom is routed.
Tracker Prog	Off, Left, Right, **Both**	1	-	Selects to which ear muff(s) of the Tracker headset the program intercom is routed.
Tracker ProgExt	Off, Left, Right, **Both**	1	-	???
Tracker Cam	Off, Left, Right, **Both**	1	-	Selects to which ear muff(s) of the Tracker headset the camera headset microphone signal is routed.
Tracker Lvl	0..99 **(75)**	1	-	Sets Tracker headset level.
Tracker Boost	**Off**, On	1	-	???
Audio				
Audio Gain Mode	Local, **Extern**	1	-	Loc (= local): audio gain level is controlled by the settings in this menu Extern (= external): audio gain level is (for both channels) controlled by the XCU when the camera mode is XCU.
Audio Delay	0 ms..170 ms **(0 ms)**	1	-	Sets an audio delay
Front Mic				
FrontMic Source	Line, **Mic**, Mic48V	1	-	Selects source input sensitivity for the Front Mic: either Line or Mic level or Mic level with phantom power.
FrontMic Level	-22dB, -28dB, -34dB, -40dB, -46dB, -52dB, -58dB, **-64dB**	1	-	Selects input gain level for Front Mic (when Audio Gain Mode is set to Local).
FrontMic HPF	**Off**, On	1	-	Switches High Pass Filter for Front Mic input on or off. Use to reduce 50 Hz and 60 Hz hum or low frequency noise.
FrontMic ALC	Off, **On**	1	-	Switches Auto Level Control for Front Mic on or off.
Audio 1				

Function:	Values:	U:	F:	Description:
Audio 1 Input	**Front**, Rear	1	-	Selects which connector to use as the input source for Audio channel 1: Front (of camera) or Rear (back panel)
Audio 1 Source	Line, **Mic**, Mic48V	1	-	Selects source input sensitivity for the Audio 1, either Line or Mic level or Mic level with phantom power.
Audio 1 Level	-22dB, -28dB, -34dB, -40dB, -46dB, -52dB, -58dB, **-64dB**	1	-	Selects input gain level for Audio channel 1 (when Audio Gain Mode is set to Local). Note: when Audio Gain Mode is set to Extern(al), Audio 1 Level is set by the XCU.
Audio 1 HPF	**Off**, On	1	-	Switches High Pass Filter for Audio channel 1 on or off. Use to reduce 50 Hz and 60 Hz hum or low frequency noise.
Audio 1 ALC	Off, **On**	1	-	Switches Auto Level Control for Audio channel 1 on or off.
Audio 2				
Audio 2 Source	Line, **Mic**, Mic48V	1	-	Selects source input sensitivity for the Audio 2, either Line or Mic level or Mic level with phantom power.
Audio 2 Level	-22dB, -28dB, -34dB, -40dB, -46dB, -52dB, -58dB, **-64dB**	1	-	Selects input gain level for Audio channel 2 (when Audio Gain Mode is set to Local). Note: when Audio Gain Mode is set to Extern(al), Audio 2 Level is set by the XCU.
Audio 2 HPF	**Off**, On	1	-	Switches High Pass Filter for Audio channel 2 on or off. Use to reduce 50 Hz and 60 Hz hum or low frequency noise.
Audio 2 ALC	Off, **On**	1	-	Switches Auto Level Control for Audio channel 2 on or off.
HDMI Audio	Off, **Audio1+2**, Audio3+4, Cam E&P, Prog 1+2	1	-	Selects which audio channels are assigned to the HDMI audio channels.
TestTone MPB	**Off**, ProgInt, ProgExt, PrgMon1, PrgMon2, Eng, Prod, Ch7, Ch8, Mon1Sdi, Mon2Sdi, Mon1Aes, Mon2Aes, Ch13, Ch14, Ch15, TstTrns, All	S	-	
TestTone Out	**Off**, Audio 1, Audio 2, Audio 3, Audio 4, EngCam, ProdCam, USB1, USB2, Audio 5, Audio 6, MicCam, MicTrck, AudioX, AudioY, PrgMon1, PrgMon2, All	S	-	
Tally				

Function:	Values:	U:	F:	Description:
Source	XCU, **Ethernet**, IS-07, Serial	0	O	Select source for the tally signal.
On Air Lamp	**Enable**, Disable	0	O	Select Enable when the On Air Lamp/Tally light at the front of a large viewfinder should follow the tally signal or select Disable if you never want it to light.
On Air Lamp Lvl	0..99 **(99)**	0	-	Sets brightness level of the On Air Lamp/Tally light at the front of a large viewfinder.
On Air Handgrip	**Switch**, Input, Off	0	-	???
Aux out	Off, **On**	0	-	???
Lock	Off, **On**	3	-	Switches the Tally Lock function on or off. When Tally Lock is on, some camera controls are locked when the camera is On Air.
SDI embedding	**Off**, On	3	-	???
CAWB Settings				
CAWB Speed	1..40 **(4)**	S	-	Sets the speed for the Auto White Balance procedure.
CAWB Gain	1..40 **(10)**	S	-	Sets the gain value for the Auto White Balance procedure.
Network				
Camera Number	1..99 **(1)**	0	-	Selects logical camera number.
IP Settings				
IP Mode	DHCP, **Auto**, Manual	0	-	Selects automatic, manual or DHCP IP mode for C2IP network.
Subnet Mask	0..31 **(0)**	0	-	Selects the subnet mask (when IP mode is set to manual).
IP	<IP address>	0	-	Sets camera IP address in the C2IP network (when IP mode is set to manual).
Def GW	<GW address>	0	-	Selects camera head default gateway IP address in the C2IP network (when IP mode is set to manual).
Apply Settings	Exec, ...	0	-	Select Exec to apply the new IP settings.
Nameserver 1				
Use Server	**No**, Yes	0	-	Select Yes to enable use of the C2IP Name Server 1 Note: Nameserver license must be installed on the Camera Connect.
Status	**Off**, Unknown, Active, Unavail	0	-	Shows currrent status of Name Server 1
IP	<IP address>	0	-	Selects Name Server 1 IP address.
Apply Settings	Exec, ...	0	-	Select Exec to apply the new IP settings
Nameserver 2				
Use Server	**No**, Yes	0	-	Select Yes to enable use of the C2IP Name Server 2 Note: Nameserver license must be installed on the Camera Connect.

Function:	Values:	U:	F:	Description:
Status	**Off**, Unknown, Active, Unavail	0	-	Status of Nameserver 2
IP	<IP address>	0	-	IP address for Nameserver 2
Apply Settings	Exec, ...	0	-	Select Exec to apply the IP settings
PCI ID	0..8 **(1)**	S	-	ID for external PC operation (not used)
Signals				
Live2K				
Mode	**1080p**, 1080i	3	-	Video mode for Live2K signal: 1080p or 1080i
Source	**HDR**, SDR	3	-	Dynamic range setting for Live2K signal: HDR or SDR
BNC Ref/AES	**Ref In**, Aes In, TriLvl, Composite	0	-	Signal/function of the BNC Ref/AES connector: Ref In = Reference input (can be SDI, TriLvl or Composite); Aes In = AES Digital Audio input; TriLvl = reference output TriLvl; Composite = reference output composite (SD Black Burst)
BNC Outputs	**Default**, Phases	0	-	In high speed video modes, this selects the BNC Outputs Profile for the signals on BNC-A to BNC-D: default = Live, Live2K are output, Ext and SDI phases = Live Combined plus Phases are output
BNC-A Preset	**Live4K**, Live2K	0	-	In high speed video modes, and when the BNC Outputs Profile is set to Phases, this selects which Live signal is output on BNC-A.
BNC-C Preset	Off, Ext1, **Ext2**, Ext3, TP	0	-	External video or TP signal to output on BNC-C. Note: this setting is not available for high speed video modes and when the BNC Outputs Profile is set to Phases.
BNC-D Preset	Off, Ext1, Ext2, Ext3, **TP**	0	-	External video or TP signal to output on BNC-D. Note: this setting is not available for high speed video modes and when the BNC Outputs Profile is set to Phases.
HDMI Select	Off, Main, Live, **VF**, Ext1, Ext2, Ext3, Ext1sc, Ext2sc, Ext3sc, BNC-D	0	-	Video signal to output on HDMI connector

Licenses menu

Function:	Values:	U:	F:	Description:
Active Licenses				
UHD 1x	**Unknown**, Not Applicable, ..., ...	2	-	Shows status of the UHD 1x license
Time Left	0 sec..65535 sec **(0 sec)**	2	-	Shows time left in seconds for the UHD 1x license
UHD 3x	**Unknown**, Not Applicable, ..., ...	2	-	Shows status of the UHD 3x license
Time Left	0 sec..65535 sec **(0 sec)**	2	-	Shows time left in seconds for the UHD 3x license
UHD FilmC	**Unknown**, Not Applicable, ..., ...	2	-	Shows status of the UHD FilmC license
Time Left	0 sec..65535 sec **(0 sec)**	2	-	Shows time left in seconds for the UHD FilmC license
UHD FilmB	**Unknown**, Not Applicable, ..., ...	2	-	Shows status of the UHD FilmB license
Time Left	0 sec..65535 sec **(0 sec)**	2	-	Shows time left in seconds for the UHD FilmB license
Native IP	**Unknown**, Not Applicable, ..., ...	2	-	Shows status of the Native IP license
Time Left	0 sec..65535 sec **(0 sec)**	2	-	Shows time left in seconds for the Native IP license
Direct IP+	**Unknown**, Not Applicable, ..., ...	2	-	Shows status of the Direct IP+ license
Time Left	0 sec..65535 sec **(0 sec)**	2	-	Shows time left in seconds for the Direct IP+license
GPS	**Unknown**, Not Applicable, ..., ...	2	-	Shows status of the GPS license
Time Left	0 sec..65535 sec **(0 sec)**	2	-	Shows time left in seconds for the GPS license
Planned Licenses (this section is repeated for each license)				
License Count	0..65535 **(0)**	2	-	Number of licenses currently installed on the camera
Start Date	<date>	2	-	Start date of each planned license.
Start Time	<time>	2	-	Start time of each planned license.
Type	**None**, GPS, NativeIP, UHD, UHD_3X, DirectIP+	2	-	Shows planned license type.
Duration	0..65535 day **(0 day)**	2	-	Duration in days of each planned license
New Licenses				
Time		2	-	
Date		2	-	
Change time				
Hours (24h)	0..23 **(0)**	2	-	
Minutes	0..59 **(0)**	2	-	
Time Zone	UTC-12:00 .. UTC+11:00 **(UTC+01:00)**	2	-	

Function:	Values:	U:	F:	Description:
Apply Time	**Exec**, ...	2	-	
Change date				
Days	1..31 **(1)**	2	-	
Month	1..12 **(1)**	2	-	
Year	2013..2199 **(2013)**	2	-	
Apply Date	**Exec**, ...	2	-	
Time&Date OK?	**...**, No, Yes	2		
Find licenses				
Search Next	**Exec**, ...	2	-	
Add License	**Exec**, ...	2	-	
Type	**None**, GPS, NativeIP, UHD 1x, UHD 3x, UHD FilmC, UHD FilmB, DirectIP+	2		
Start		2	-	
Time Zone	UTC-12:00 .. UTC+11:00 **(UTC+01:00)**	2	-	
Duration	0..65535 day **(0 day)**	2	-	
Trial license				
Select Type	**None**, GPS, NativeIP, UHD, UHD_3X, DirectIP+	2	-	
Activate	Exec, ...	2	-	
Time left	0 sec..65535 sec **(0)**	2	-	

Diagnostics menu

Function:	Values:	U:	F:	Description:
C2IP Network				
Communication				
XCU Connected	Yes, No	2	-	Indicates wheter an XCU is connected to the camera (only valid in XCU mode)
C2IP Panels	0..99 **(0)**	2	-	Shows number of C2IP control panels connected to the camera.
Camera Connects	0..99 **(0)**	2	-	Shows number of Camera Connects connected to the camera.
DHCP				
Server	<IP address> **(192.168.1.1)**	2	-	
DNS	<IP address> **(192.168.1.1)**	2	-	
Domain	<IP address>	2	-	
Hostname	<name>	2	-	
Ethernet				
MAC-Address	<00:00:00:FF:FF:FF>	2	-	Shows hardware MAC address of the camera.
Link State	Connected, **Disconn**	2	-	Shows link status of the Ethernet connection.
Link type	**Unknown**, 10Mb/Half, 10Mb/Full, 100Mb/Half, 100Mb/Full, Negotiate	2	-	Show link type (speed) of the Ethernet connection.
Loopback test				
Loopback test	**Off**, On	S	-	
Data count	<nnn>	S	-	
Date errors	<nnn>	S	-	
Data loss	<nnn>	S	-	
Ser Stats (DTCP)				
Packets Recv	<nnn>	S	-	
Packets Sent	<nnn>	S	-	
Frame Errors	<nnn>	S	-	
Checksum Errors	<nnn>	S	-	
Ser Stats (PCI)				
Packets Recv	<nnn>	S	-	
Panel Sent	<nnn>	S	-	
Packets Sent	<nnn>	S	-	
Panel Recv	<nnn>	S	-	

Function:	Values:	U:	F:	Description:
SPI Stats				
Msg Recv	<nnn>	S	-	
HWOvr	<nnn>	S	-	
SWOvr	<nnn>	S	-	
QueueOvr	<nnn>	S	-	
QueueSize	<nnn>	S	-	
Refresh	Exec, ...	S	-	
SFP Modules				
QSFP present	Yes, **No**	1	-	
Type	**Unavail**, Unknown, 100G, 10G, 40G, Act_40G	1	-	
Los	Ok, **NotOk**	1	-	
Link	Yes, **No**	1	-	
TX Mb/s	<nnn>	1	-	
RX Mb/s	<nnn>	1	-	
RX Error	<nnnn>	1	-	
RX Error/sec	<nnnn>	1	-	
FEC Corrected	<nnnn>	1	-	
FEC Ok	<nnnn>	1	-	
SFP1 present	Yes, **No**	1	-	
Type	**Unavail**, Unknown, 100G, 10G, 40G, Act_40G	1	-	
Los	Ok, **NotOk**	1	-	
Link	Yes, **No**	1	-	
Speed	Unsup, 10G, 25G	1	-	
TX Mb/s	<nnn>	1	-	
RX Mb/s	<nnn>	1	-	
RX Error	<nnnn>	1	-	
RX Error/sec	<nnnn>	1	-	
FEC Corrected	<nnnn>	1	-	
FEC Ok	<nnnn>	1	-	
SFP2 present	Yes, **No**	1	-	
Type	**Unavail**, Unknown, 100G, 10G, 40G, Act_40G	1	-	
Los	Ok, **NotOk**	1	-	

Function:	Values:	U:	F:	Description:
Link	Yes, **No**	1	-	
Speed	Unsup, 10G, 25G	1	-	
TX Mb/s	<nnn>	1	-	
RX Mb/s	<nnn>	1	-	
RX Error	<nnnn>	1	-	
RX Error/sec	<nnnn>	1	-	
FEC Corrected	<nnnn>	1	-	
FEC Ok	<nnnn>	1	-	
Details				
Module	**SFP 1**, SFP 2, QSFP	1	-	
Link	Yes, **No**	1	-	
Temp	-128 C..127 C **(0 C)**	1	-	
Voltage	0 mV..5000 mV **(0 mV)**	1	-	
Name:		1	-	
Link	**RX1**, RX2, RX3, RX4	1	-	
TxPower	-100dBm..100dBm **(0 dBm)**	1	-	
RxPower	-100dBm..100dBm **(0 dBm)**	1	-	
Los	Yes, **No**	1	-	
Rx Cdr Lock	Yes, **No**	1	-	
Tx Cdr Lock	Yes, **No**	1	-	
Media Network				
Vlan				
C2IP Packets Rx	<nnnn>	0	-	
C2IP Packets Tx	<nnnn>	0	-	
Trunk Packets Rx	<nnnn>	0	-	
Trunk Packets Tx	<nnnn>	0	-	
Outgoing Streams				
Main video	Unsup, Yes, **No**	0	-	
Live Video	Unsup, Yes, **No**	0	-	
Audio	Unsup, Yes, **No**	0	-	
Intercom	Unsup, Yes, **No**	0	-	
Incoming Streams				
Video RX 1				
Stream Active	Yes, **No**	1	-	
Pkts in Buffer	<nnn>	1	-	

Function:	Values:	U:	F:	Description:
VideoMode	**Unknown**, SD, 1080i59, 1080i50, 720p50, 720p50, 1080pfs23, 1080p59, 1080p50, 4K59, 4K50, 4K47, 4K29, 4K25, 4K23	1	-	
Video RX 2				
Stream Active	Yes, **No**	1	-	
Pkts in Buffer	<nnn>	1	-	
VideoMode	**Unknown**, SD, 1080i59, 1080i50, 720p50, 720p50, 1080pfs23, 1080p59, 1080p50, 4K59, 4K50, 4K47, 4K29, 4K25, 4K23	1	-	
Video RX 3				
Stream Active	Yes, **No**	1	-	
Pkts in Buffer	<nnn>	1	-	
VideoMode	**Unknown**, SD, 1080i59, 1080i50, 720p50, 720p50, 1080pfs23, 1080p59, 1080p50, 4K59, 4K50, 4K47, 4K29, 4K25, 4K23	1	-	
Audio				
Stream Active	Yes, **No**	1	-	
Profile	Ok, **NotOk**	1	-	
Intercom				
Stream Active	Yes, **No**	1	-	
Profile	Ok, **NotOk**	1	-	
Redundancy				
Outgoing Streams				
Main Video	Unsup, Yes, **No**	0	-	
Live Video	Unsup, Yes, **No**	0	-	
Audio	Unsup, Yes, **No**	0	-	
Intercom	Unsup, Yes, **No**	0	-	
Incoming Streams				
Video RX 1				
Stream Active	Yes, **No**	1	-	
Stream Valid	Yes, **No**	1	-	

Function:		Values:	U:	F:	Description:
	Pkts in Buffer	0..99 **(0)**	1	-	
	Video Mode	<list of video modes>	1	-	
Video RX 2					
	Stream Active	Yes, **No**	1	-	
	Stream Valid	Yes, **No**	1	-	
	Pkts in Buffer	0..99 **(0)**	1	-	
	Video Mode	<list of video modes>	1	-	
Video RX 3					
	Stream Active	Yes, **No**	1	-	
	Stream Valid	Yes, **No**	1	-	
	Pkts in Buffer	0..99 **(0)**	1	-	
	Video Mode	<list of video modes>	1	-	
Audio					
	Stream Active	Yes, **No**	1	-	
	Stream Valid	Ok, **NotOK**	1	-	
Intercom					
	Stream Active	Yes, **No**	1	-	
	Stream Valid	Ok, **NotOK**	1	-	
PTP					
Status		Listening, Calibrating, Locked, GM-found, **Off**	1	-	
Path Delay		<nnn>	1	-	
Offset to Master		-30000..30000 **(0)**	1	-	
Selected GM		**None**, GM 1, GM 2	1	-	
GM 1 Info					
	ID	<text>	1	-	ID of the PTP Grandmaster to which the camera is locked
	IP	<IP address>	1	-	IP address of the PTP Grandmaster to which the camera is locked
	Status	Listening, Calibrating, Locked, **Off**	1	-	Locking status of GM1
	Path Delay	<nnn>	1	-	
	Offset to Master	-30000..30000 **(0)**	1	-	
	Prio 1	0..255 **(0)**	1	-	
	Prio 2	0..255 **(0)**	1	-	
	Class	0..255 **(0)**	1	-	
	Accuracy	0..255 **(0)**	1	-	
GM 2 Info					

Function:		Values:	U:	F:	Description:
	ID	<text>	1	-	ID of the PTP Grandmaster to which the camera is locked
	IP	<IP address>	1	-	IP address of the PTP Grandmaster to which the camera is locked
	Status	Listening, Calibrating, Locked, **Off**	1	-	Locking status of GM1
	Path Delay	<nnn>	1	-	
	Offset to Master	-30000..30000 **(0)**	1	-	
	Prio 1	0..255 **(0)**	1	-	
	Prio 2	0..255 **(0)**	1	-	
	Class	0..255 **(0)**	1	-	
	Accuracy	0..255 **(0)**	1	-	
Nmos Server					
	Priority	0..255 **(0)**	1	-	
	IP	<IP address>	1	-	
	Port	<port>	1	-	
TxApplication			S	-	
Private Data		**Off**, Active, NoDest	0	-	
Reference					
UserSelect		SDI Input, **PTP**, TriLvl, Composite, FreeRun	0	-	Reference signal or source to lock the camera to (note: this is the same function as Configuration > Reference.
Lock Source		**Unknown**, SDI Input, PTP, TriLvl, Composite, XF, FreeRun	0	-	Source to which the camera is currently locked.
Lock Standard		**Unknown**, 1080i59, 1080i50, 720p59, 720p50, 1080p59, 1080p50, PAL, NTSC, SD, 4K50, 4K59	0	-	Video mode/standard to which the camera is currently locked.
Locked		Yes, No, **Invalid**	0	-	Shows whether camera is locked or not.
Video Inputs					
Extern 1					
	Available	Yes, **No**	1	-	
	VideoMode	**Unknown**, SD, 1080i59, 1080i50, 720p50, 720p50, 1080pfs23, 1080p59, 1080p50, 4K59, 4K50, 4K47, 4K29, 4K25, 4K23	1	-	
Extern 2					

Function:	Values:	U:	F:	Description:
Available	Yes, **No**	1	-	
VideoMode	**Unknown**, SD, 1080i59, 1080i50, 720p50, 720p50, 1080pfs23, 1080p59, 1080p50, 4K59, 4K50, 4K47, 4K29, 4K25, 4K23	1	-	
Extern 3				
Available	Yes, **No**	1	-	
VideoMode	**Unknown**, SD, 1080i59, 1080i50, 720p50, 720p50, 1080pfs23, 1080p59, 1080p50, 4K59, 4K50, 4K47, 4K29, 4K25, 4K23	1	-	
BNC-D				
Available	Yes, **No**	1	-	
VideoMode	**Unknown**, SD, 1080i59, 1080i50, 720p50, 720p50, 1080pfs23, 1080p59, 1080p50, 4K59, 4K50, 4K47, 4K29, 4K25, 4K23	1	-	
HDMI				
Connected	Yes, **No**	0	-	
VideoMode	**Unknown**, 1080P50, 1080p59, 4K25, 4K29, 4K50, 4K59	0	-	
SampleFormat	**RGB**, YCrCb	0	-	
Bits	**8**, 10, 12	0	-	
HdrMode	**SDR**, PQ, HLG	0	-	
XF Transmission				
System Locked	**No**, Yes	0	-	
Fiber				
Fib B (XCU->CAM)				
Cable Status	OK, Critic, Error, **NoSig**	0	-	
Signal Status	OK, Critic, Error, **NoSig**	0	-	
RX Margin	-100 dB..100 dB **(0 dB)**	0	-	
Signal Error Cnt	0..65535 **(50)**	0	-	
Fib A (CAM->XCU)				
Cable Status	OK, Critic, Error, **NoSig**	0	-	

Function:	Values:	U:	F:	Description:
Signal Status	OK, Critic, Error, **NoSig**	0	-	
RX Margin	-100 dB..100 dB **(0 dB)**	0	-	
Signal Error Cnt	0..65535 **(50)**	0	-	
Ethernet Tunnel				
CAM	**Off**, 10Mb, 100Mb, 1000Mb	0	-	
XCU	**Off**, On	0	-	
Active	**No**, Yes	0	-	
Transm Details				
Fiber				
Rx Margin		S	-	
Signal Err Cnt		S	-	
Ethernet Err/sec		S	-	
Eye Value		S	-	
Ethernet Load				
Rx Mb/sec		S	-	
Tx Mb/sec		S	-	
Ethernet Packets				
valid/sec		S	-	
error		S	-	
error/sec		S	-	
FEC Corr		S	-	
FEC Corr/sec		S	-	
Ethernet Network				
Status		S	-	
IP RX Info				
Loc IP		S	-	
Port_Ch0		S	-	
IP TX Info				
IP_Ch0		S	-	
Port_Ch0		S	-	
Stream Locked		S	-	
Stream RxBuf_1		S	-	
Stream RxBuf_2		S	-	
Stream RxBuf_3		S	-	
Streams				
Tx Available		S	-	

Function:	Values:	U:	F:	Description:
Tx Not Used		S	-	
Rx Requested		S	-	
Rx Subscribed		S	-	
Ethernet Tunnel				
MDIO		S	-	
SGMII		S	-	
PhySpeed		S	-	
Tunnel Active		S	-	
CAM		S	-	
XCU		S	-	
Rx Packets		S	-	
Tx Packets		S	-	
C2IP Trunk				
Rx Packets		S	-	
Tx Packets		S	-	
Audio				
FrontMic Lvl	-127..0 **(-127)**	0	-	
Audio1 Lvl	-127..0 **(-127)**	0	-	
Audio2 Lvl	-127..0 **(-127)**	0	-	
Audio3 Lvl	-127..0 **(-127)**	0	-	
Audio 4 Lvl	-127..0 **(-127)**	0	-	
Configuration				
Camera				
Type			-	
PID			-	
Alias			-	
Device ID			-	
Number			-	
Number			-	
MPB Image			-	
MPB Config			-	
TXB Image			-	
TXB Config			-	
Viewfinder				
Type			-	
XCU				
Type			-	

Function:	Values:	U:	F:	Description:
Lens			-	
Package Info				
Package			-	
Code			-	
Version			-	
Component			-	
Valid			-	
Code			-	
Version			-	
Service Package				
Component	???	2	-	
Code	???	2	-	
Version	???	2	-	
Temperature				
Warning	**None**, Front, Head, Mpb Fpga, Txb Fpga, Fan, Fan+T, !STOP!	2	-	
Fan Mode	Off, **Var**, Manual	2	-	
Fan Profile	Silent+, Silent, **Default**, Cool	2	-	
Manual Speed	3000 rpm..9000 rpm **(6000 rpm)**	2	-	
Fan Speed			-	
Temp (C)				
Camera	-128 C..127 C **(0 C)**	2	-	
MPB FPGA	-128 C..127 C **(0 C)**	2	-	
Sitara	-128 C..127 C **(0 C)**	2	-	
TXB FPGA	-128 C..127 C **(0 C)**	2	-	
Front	-128 C..127 C **(0 C)**	2	-	
Sensor Red	-128 C..127 C **(0 C)**	S	-	
Sensor Green	-128 C..127 C **(0 C)**	S	-	
Sensor Blue	-128 C..127 C **(0 C)**	S	-	
Backpanel	-128 C..127 C **(0 C)**	2	-	
Temp (F)				
Camera	-197 F..261 F **(0 F)**	2	-	
MPB FPGA	-197 F..261 F **(0 F)**	2	-	
Sitara	-197 F..261 F **(0 F)**	2	-	
TXB FPGA	-197 F..261 F **(0 F)**	2	-	

Function:	Values:	U:	F:	Description:
Front	-197 F..261 F **(0 F)**	2	-	
Sensor Red	-197 F..261 F **(0 F)**	S	-	
Sensor Green	-197 F..261 F **(0 F)**	S	-	
Sensor Blue	-197 F..261 F **(0 F)**	S	-	
Backpanel	-197 F..261 F **(0 F)**	2	-	
Front				
PID		2	-	
Code		2	-	
Status	0..255 **(0)**	2	-	
Red Sensor				
Imager Gain	0 dB..6 dB **(0 dB)**	S	-	
Green Sensor				
Imager Gain	0 dB..6 dB **(0 dB)**	S	-	
Blue Sensor				
Imager Gain	0 dB..6 dB **(0 dB)**	S	-	
Status				
PCB Status				
Board		2	-	
PID		2	-	
Code		2	-	
Rev/Ed		2	-	
System Status	**Unknown**, OK, Illegal, Illegal	2	-	
SXP Status				
SXP SW 12NC		2	-	
SXP SW Status		2	-	
SXP Detect	Yes, **No**	S	-	
SXP Power On	Yes, **No**	S	-	
SXP SW Version		S	-	
Status				
State	**??**, NoAccess, Recovered, Init, Valid	S	-	
Oper.Hours	0..65535 **(0)**	S	-	
Oper.Hours (SXP)	0..65535 **(0)**	S	-	
Power Cycles	0..65535 **(0)**	S	-	
Minimum Temp	-128 C..127 C **(0 C)**	S	-	
Maximum Temp	-128 C..127 C **(0 C)**	S	-	

Function:		Values:	U:	F:	Description:
	High Temp Warn.	0..65535 **(0)**	S	-	

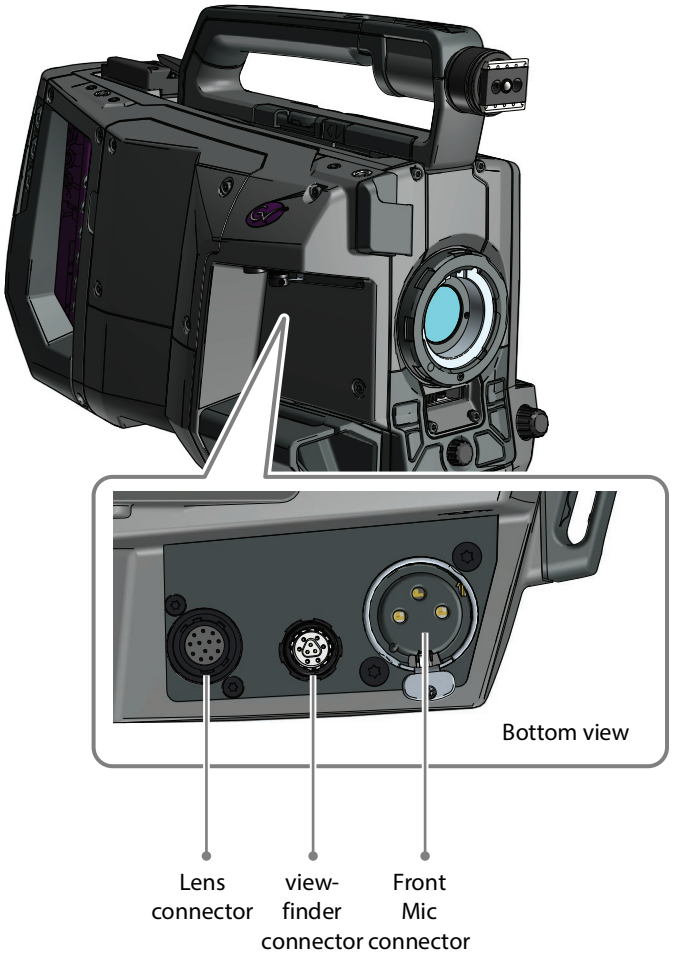
Service menu

Function:	Values:	U:	F:	Description:
Test signals				
Colour bar	**Off**, On	3	-	Enable/disable color bar
Test Signal	**Off**, On	3	-	Enable/disable test signal
Test Select	**SawT**, Step	3	-	Select Sawtooth or Stepped signal
Licenses				
Write Logfile	Exec, Busy	S	-	
Diag Files				
File Selection				
Camera AppLog	No, **Yes**	S	-	Select Yes to include Camera Applog in diagnostics file
Config Info	No, **Yes**	S	-	Select Yes to include Camera Config in diagnostics file
Settings Info	No, **Yes**	S	-	Select Yes to include Settings Info in diagnostics file
Usage Info	No, **Yes**	S	-	Select Yes to include Usage Info in diagnostics file
Network Info	No, **Yes**	S	-	Select Yes to include Network Info in diagnostics file
Storage	**None**, SDcard, USB, SD+USB	S	-	Selec storage space for diagnostics files
Write Files	Exec, Busy, Abort	S	-	Shows writing status
Current File	**None**, Config, Usage, NetWork, Settings, AppLog	S	-	Shows file currently being written to storage space
SD Card				
Present	**Yes**, No	S	-	
Status	**Unknown**, Busy..., OK, Error, NonGV, Init..., Int. Error	S	-	
Format	**Off**, Running	S	-	
Copy to USB	Exec, Busy	S	-	
Data Partition				
Status	**Unknown**, Busy..., OK, Error, NonGV, Init..., Int. Error	S	-	
Space Left	0MB..65535MB	S	-	
Format	**Off**, Running	S	-	Select to format SD Card
USB				
Present	**No**, yes	S	-	
Space Left	0 MB .. 65535 MB	S	-	
Calibrations				

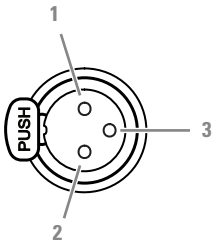
Function:	Values:	U:	F:	Description:
3200K Calibr				
3200K Calibr	**Off**, On	S	-	Select to run 3200K Calibration
3200K Reset	**Fact**, Cust	S	-	Resets 3200K Calibration data
Vref Calibr-				
Vref Calibr	**Off**, Running	S	-	Select to run Vref Calibration
Status	**Unknown**, Ok, Ready, Busy, Error, Abort, Filter Cap	S	-	Shows status of Vref Calibration
Progress	0%..100%	S	-	Progress of Vref Calibration procedure
Black Calibr				
Black Calibr	**Off**, Running	3		Select to run Black Calibration Note: this takes up to 80 seconds to complete
Status	**Unknown**, OK, Error, Fatal Error, Needed, Temp Low, Temp Unst, TimeOut, Temp Range, FullBlRec, Filter Cap, Running, Ready, Failed, Aborted	3		Shows status of the Black Calibration procedure
Progress	0%..100%	3		Progress of Black Calibration procedure
Act Temp	-128 C..127 C	3		Shows actual (current) camera temperature.
White Calibr				
User Calibr	**Off**, Running	S		Select to run User White Calibration
Status	Unknown, Error, Busy, OK, Ready, VidLvl	S		Shows status of White Calibration procedure
Progress	0%..100%	3		Progress of White Calibration procedure
User Clear	Exec, ...	S		Clears User White Calibration data
White Corr	Off, **On**	S		Enable or disable White Correction

B Connectors

Right front side



Front microphone connector



XLR 3-pin female connector (panel view)

Pin	Description
1	Audio shield
2	Audio In (+)[1)]
3	Audio Return (-)

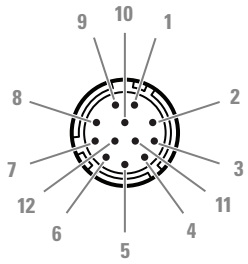
Microphone impedance >200 Ω

Nominal input level is adjustable from -22 dBu to -64 dBu in the camera menu.

Phantom power (+48 V) on this socket can be switched on or off.

[1)] Signal at pin 2 of audio input is in phase with signal at pin 2 of audio output.

Lens connector



12-pin Hirose male connector (panel view)

Pin	Description
1	External video on/off
2	VTR trigger switch
3	+13 VDC Return
4	Momentary iris
5	Iris control
6	+13 VDC (max 1.1 A) [1)]

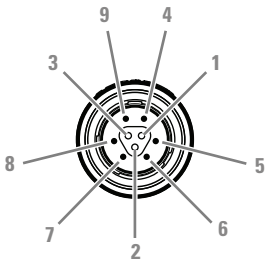
Pin	Description
7	Iris follow
8	Lens servo
9	Range Extender
10	Zoom follow
11	RxD / Focus follow [2)]
12	TxD

[1)] If more than maximum power is drawn from the lens connector, the camera automatically shuts off power to the lens. A message ("Lens Power Error") is shown in the viewfinder.

[2)] Focus Follow is not a default function of all lens types.

NOTE: Only connect broadcast ENG/EFP lenses to the lens interface connector.

Viewfinder connector

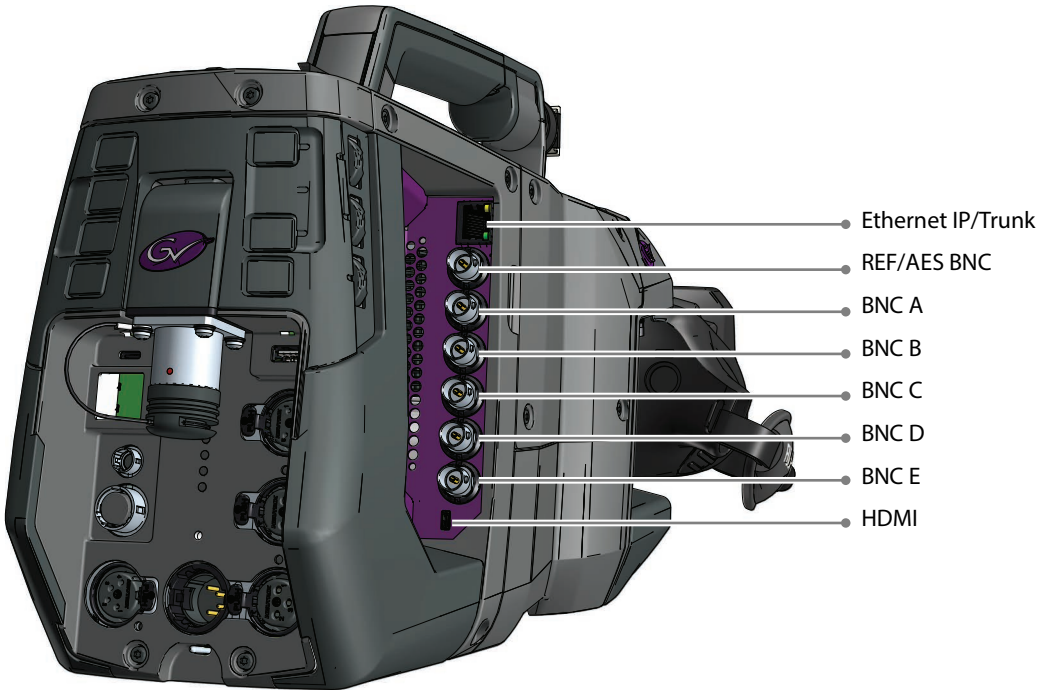


9-pin Fischer male + female connector (panel view)

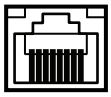
Pin	Description
1	USB - (I^2C control data)
2	Drain (Lane 1+2)
3	USB +(I^2C control data)
4	VF Power +
5	VF video (Lane 1 +)
6	VF video (Lane 1 -)
7	VF video (Lane 2 +)
8	VF video (Lane 2 -)
9	GND

manufacturer code:
Fischer MiniMax Series
MP11ZL08 2007 BK1 Z1AS

Right side connector panel



Ethernet Trunk/IP connector



8-pin standard RJ-45 ethernet connector (panel view)

Pin	Description
1	Transmit Data 1+ (TX_D1+)
2	Transmit Data 1- (TX_D1-)
3	Receive Data 2+ (RX_D2+)
4	BI_D3+
5	BI_D3-
6	Receive Data 2- (RX_D2-)
7	BI_D4+
8	BI_D4-

Ethernet 10/100/1000 Base-T compliant with IEEE-802.3 (edition 2000)

REF/AES connector

BNC connector
(panel view)

This connector can be programmed to act as a reference input , reference output or as an AES digital audio input.

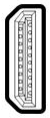
Go to the ***Configuration > Signals > BNC Ref/AES*** setting to change the signals/function for this connector.

BNC A to E connectors

BNC connector
(panel view)

These BNC connectors can be programmed for different video output signals. Refer to Appendix C for more information about the video signals on these connectors.

HDMI connector

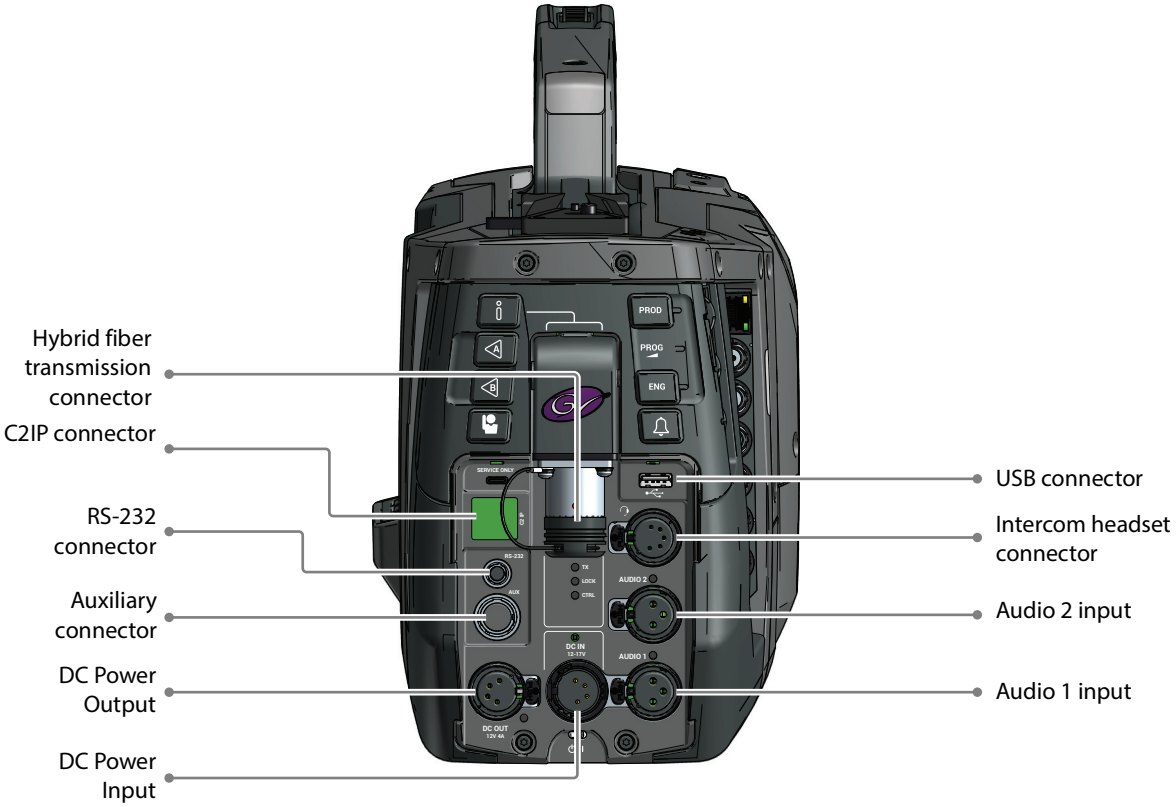


Micro HDMI (type D)
connector
(panel view)

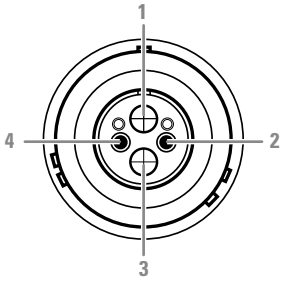
Pin	Description
1	Hot Plug Detect
2	Reserved
3	TDMS Data 2+
4	TDMS Data 2 Shield
5	TDMS Data 2 -
6	TDMS Data 1+
7	TDMS Data 1 Shield
8	TDMS Data 1-
9	TDMS Data 0+
10	TDMS Data 0 shield

Pin	Description
11	TDMS Data 0-
12	TDMS Clock+
13	TDMS Clock shield
14	TDMS clock -
15	CEC
16	GND
17	SCL-HDMI
18	SDA-HDMI
19	+5 V DC power

Back panel



Hybrid fiber transmission connector

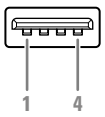


LEMO SMPTE304M Hybrid fiber connector

Pin	Description
1	Optic Fiber channel A
2	Power supply return
3	Optic Fiber channel B
4	Power

Manufacturer code: LEMO 3K.93C

USB connector

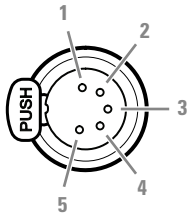


USB type A
host connector
(panel view)

Pin	Description
1	+ 5 VDC
2	Data -
3	Data +
4	GND

USB type A connector (host) compatible with USB 2.0 standard

Intercom headset connector

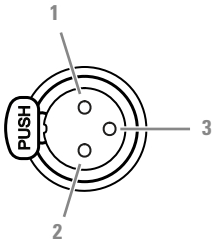


XLR 5-pin female
connector
(panel view)

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

Microphone level: -64 dBu/-24 dBu (switchable)
Microphone impedance > 600 Ω
Output level: +6 dBu nominal
Output impedance: < 50 Ω

Audio 1+2 input connectors



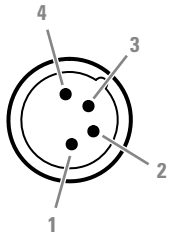
XLR 3-pin female
connector
(panel view)

Pin	Description
1	Audio shield
2	Audio In (+)[1)]
3	Audio Return (-)

Microphone impedance > 200 Ω
Phantom power +48 V switchable
Sensitivity range:
Mic: from -22 dBu to -64 dBu
Line: +4 dBu to -10 dBu

[1)] Signal at pin 2 of audio input is in phase with signal at pin 2 of audio output.

DC Power input connector

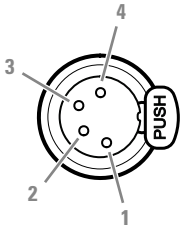


XLR 4-pin male connector (panel view)

Pin	Description	
1	GND	Pins 1 & 2 are bridged
2	GND	
3	+12 to +17 V	Pins 3 & 4 are bridged
4	+12 to +17 V	

CAUTIONS:
input voltage must not exceed 17 V
total input current must be <= 16A

DC Power output connector



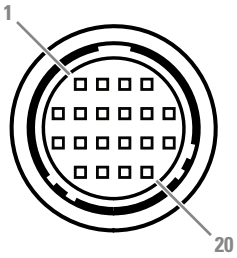
XLR 4-pin female connector (panel view)

Pin	Description	
1	GND	Pins 1 & 2 are bridged
2	GND	
3	+13 to +17 V	Pins 3 & 4 are bridged
4	+13 to +17 V	

NOTE: DC Power is not available when the camera is locally powered by the DC Power input connector.

When more than 4 A current is drawn from this connector, the power overload indicator (located next to the connector) lights.

Auxiliary connector

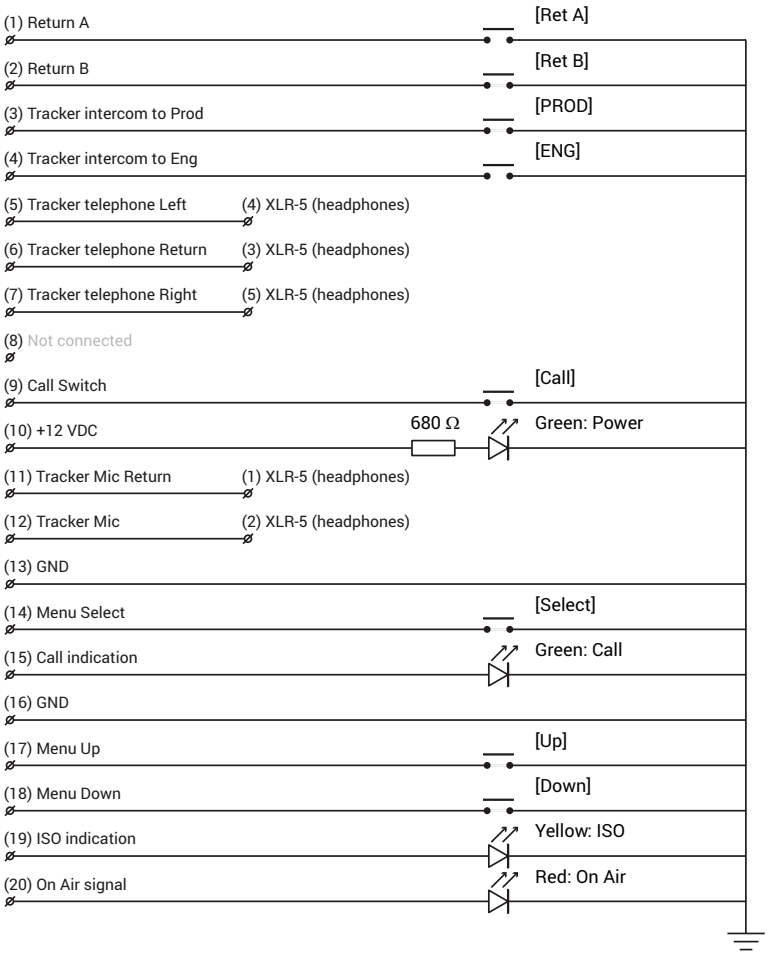


20-pin Hirose
female connector
(panel view)

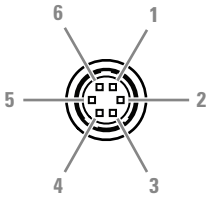
Pin	Description
1	Return A
2	Return B
3	Tracker intercom to Production
4	Tracker intercom to ENG
5	Tracker telephone left
6	Tracker telephone return
7	Tracker telephone right
8	not connected
9	Call switch
10	+12 Volt (max. 100mA)

Pin	Description
11	Tracker Microphone return
12	Tracker Microphone
13	GND
14	Menu select
15	Call indication
16	GND
17	Menu Up
18	Menu Down
19	ISO indication
20	On Air signal

Manufacturer code of the **mating** cable/plug connector: HR10A-13P-20P(C)
Below is an example for the wiring of the auxiliary connector:



RS-232 connector



6-pin Hirose
female connector
(panel view)

Pin	Description
1	GND
2	TxD1 (serial connection 1)
3	TxD2 (serial connection 2)
4	GND
5	RxD1 (serial connection 1)
6	RxD2 (serial connection 2)

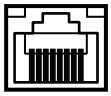
Serial connection 1: can be used for serial (private) data.

Serial connection 2: can be used for camera control or pan and tilt systems.

Signals are at RS-232 levels, 115 kB/s max.

Mating cable/plug connector:
HR10A-7P-6P(C)

C2IP Ethernet connector



8-pin standard
RJ-45 ethernet
connector
(panel view)

Pin	Description
1	Transmit Data 1+ (TX_D1+)
2	Transmit Data 1- (TX_D1-)
3	Receive Data 2+ (RX_D2+)
4	BI_D3+
5	BI_D3-
6	Receive Data 2- (RX_D2-)
7	BI_D4+
8	BI_D4-

Ethernet 10/100/1000 Base-T compliant with IEEE-802.3 (edition 2000)

C Video signals

Introduction

The LDX 150 delivers and accepts many different video signals in the form of IP streams over the IP Media Network and/or as baseband (SDI) signals over BNC connectors. Depending on the camera mode (NativeIP, XCU or Local mode) these signals are available on the IP Media network, or the baseband connector panels on the camera head or the Base Station.

☞ **Note**

One or more options/licenses may be required to operate the camera in the desired mode(s).

Baseband video signals

Baseband signals are available (in all available camera modes) at the BNC connectors panel on the camera. No installed (Q)SFP modules are required.

☞ **Note**

High Speed (3X) video modes are not available when the camera is in XCU mode.

4K video modes

	4K150/179 (3X)		**4K50/59 (1X)**
Required option/license:	UHD 3X	UHD 3X	UHD 1X
BNC Outputs profile[1]:	Phases	Default	—
BNC-A	*Live4K*[2]*:* 2160p (12 Gb/s) ST2082, HDR only — this is a combined signal	*Live4K:* 2160p (12 Gb/s) ST2082, HDR only — this is a combined signal	*Live4K:* 2160p (12 Gb/s) ST2082, HDR only
	Live2K[2]*:* 1080i (1.5Gb/s) ST292M or 1080p (3Gb/s) ST425-1, HDR or SDR[3]		

	4K150/179 (3X)		4K50/59 (1X)
BNC-B	*Phase 1 out:* 2160p (12 Gb/s) ST2082, HDR only	*Live2K:* 1080i (1.5Gb/s) ST292M or 1080p (3Gb/s) ST425-1, HDR or SDR[3)]	*Live2K:* 1080i (1.5Gb/s) ST292-M or 1080p (3Gb/s) ST425-1, HDR or SDR[3)]
BNC-C	*Phase 2 out:* 2160p (12 Gb/s) ST2082, HDR only	*Ext1, 2 or 3 out[4)]:* SD (270 Mb/s) ST259M or 720p/1080i (1.5Gb/s) ST292M or 1080p (3 Gb/s) ST425-1 or 2160p (12 Gb/s) ST2082[5)]	*Ext1, 2 or 3 out[4)]:* SD (270 Mb/s) ST259M or 720p/1080i (1.5Gb/s) ST292M or 1080p (3 Gb/s) ST425-1 or 2160p (12 Gb/s) ST2082[5)]
BNC-D	*Phase 3 out:* 2160p (12 Gb/s) ST2082, HDR only	*Ext1, 2 or 3 out[4)]:* SD (270 Mb/s) ST259M or 720p/1080i (1.5Gb/s) ST292M or 1080p (3 Gb/s) ST425-1 or 2160p (12 Gb/s) ST2082[5)]	*Ext1, 2 or 3 out[4)]:* SD (270 Mb/s) ST259M or 720p/1080i (1.5Gb/s) ST292M or 1080p (3 Gb/s) ST425-1 or 2160p (12 Gb/s) ST2082[5)]
		Ext SDI in: 1080p (3 Gb/s) ST425-1 or 2160p (12 Gb/s) ST2082[6)]	*Ext SDI in:* 1080p (3 Gb/s) ST425-1 or 2160p (12 Gb/s) ST2082[6)]
BNC-E	*Viewfinder out:* 1080p (3 Gb/s) ST425-1, SDR only		

1 Go to ***Configuration > Signals > BNC Outputs*** and select <Default> or <Phases>.

2 Go to ***Configuration > Signals > BNC-A Preset*** and select <Live4K> or <Live2K>.

3 To select the video mode for the Live2K signal, go to ***Configuration > Signals > Live2K > Mode*** and select <1080p> or <1080i>.
To select the dynamic range for the *Live2K* signal, go to ***Configuration > Signals > Live2K > Source*** and select <HDR> or <SDR>.

4 To select the source for the outputs on these connectors, go to ***Configuration > Signals > BNC-C Preset*** resp. ***BNC-D Preset*** and select <Ext 1>, <Ext 2> or <Ext 3>.

5 *Ext 1* and *Ext 2* can be 270 Mb/s, 1.5 Gb/s, 3 Gb/s or 12 Gb/s formats. *Ext 3* can be only be 1.5 Gb/s or 3 Gb/s.

6 When BNC-D is set as SDI input and the applied SDI signal is a 1080p signal, level A/B is detected automatically and level B is converted to level A as input for the internal video router.

4K filmic video modes

Video mode:	**4K23**	**4K25**	**4K29**
Required option/license:	UHD FilmC	UHD FilmB	UHD FilmB
BNC-A	*video out:* 2160p@23.98 (6 Gb/s) ST2081-10:2018+ST2036-1, HDR only	*video out:* 2160p@25 (6 Gb/s) ST2081-10:2018+ST2036-1, HDR only	*video out:* 2160p@29.97 (6 Gb/s) ST2081-10:2018+ST2036-1, HDR only
BNC-B	*Live2K:* 1080p@23.98 (1.5 Gb/s) ST292M+ST274[1)], HDR or SDR[2)]	*Live2K:* 1080p@25 (1.5 Gb/s) ST292M+ST274[1)], HDR or SDR[2)]	*Live2K:* 1080p@29.97 (1.5 Gb/s) ST292M+ST274[1)], HDR or SDR[2)]
BNC-C	*Ext1,2,3 out:* 2160p@59 (not for *Ext3*), 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59	*Ext1,2,3 out:* 2160p@50 (not for *Ext3*), 1080p@50, 1080psF@25 | ST274 Annex A or 1080i@50	*Ext1,2,3 out:* 2160p@59 (not for *Ext3*), 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59
BNC-D	*Ext1,2,3 out:* 2160p@59 (not for *Ext3*), 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59	*Ext1,2,3 out:* 2160p@50 (not for *Ext3*), 1080p@50, 1080psF@25 | ST274 Annex A or 1080i@50	*Ext1,2,3 out:* 2160p@59 (not for *Ext3*), 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59
	Ext SDI in: 2160p@59, 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59	*Ext SDI in:* 2160p@50, 1080p@50, 1080psF@25 | ST274 Annex A or 1080i@50	*Ext SDI in:* 2160p@50, 1080p@50, 1080psF@25 | ST274 Annex A or 1080i@50
BNC-E	*Monitoring out:* 1080p@59 (with 3/2 pull-down), SDR only	*Monitoring out:* 1080p@50 (with 3/2 pull-down), SDR only	*Monitoring out:* 1080p@59 (with 3/2 pull-down), SDR only

1 This signal is progressive video only, not psF.

2 To select the dynamic range for the *Live2K* signal, go to ***Configuration > Signals > Live2K > Source*** and select <HDR> or <SDR>.

Note

External video inputs accept both HDR and SDR.

IP streams in NativeIP mode

These video signals are available as IP streams on the IP Media Network when the LDX 150 is in NativeIP mode.

Note

Make sure that you have installed the correct (Q)SFP modules that allow the selected video mode and required bandwidth. Refer to Appendix E for more information about installing (Q)SFP modules on the camera.

4K video modes

Video mode:	**4K150/179 (3X)**	**4K50/59 (1X)**
Required option/license:	NativeIP + UHD 3X	NativeIP + UHD 1X
Required (Q)SFP module:	100G	25G
	Outgoing streams (Cam to IP):	
	4K Phase 1: 2160p (11.1 Gb/s) ST2110-22, HDR only	*4K:* 2160p (11.1 Gb/s) ST2110-22, HDR only
	4K Phase 2: 2160p (11.1 Gb/s) ST2110-22, HDR only	
	4K Phase 3: 2160p (11.1 Gb/s) ST2110-22, HDR only	
	Live4K: 2160p (11.1 Gb/s) ST2110-22, HDR only	
	Live2K: 1080p or 1080i[1)] (2.77 Gb/s) ST2110-22, HDR or SDR[2)]	*Live2K:* 1080p or 1080i[1)] (2.77 Gb/s) ST2110-22 or ST2022-6[3)], HDR or SDR[2)]
	Incoming streams (IP to Cam):	
	Ext 1: 2160p[4)], 1080p or 1080i	
	Ext 2: 2160p[4)], 1080p or 1080i	
	Ext 3: 1080p or 1080i	

1 To select the video mode for the *Live2K* signal, go to ***Configuration > Signals > Live2K > Mode*** and select <1080p> or <1080i>.
2 To select the dynamic range for the *Live2K* signal, go to ***Configuration > Signals > Live2K > Source*** and select <HDR> or <SDR>.
3 To select the IP transport protocol for *Live2K* video, go to ***Installation > Media Interface> Outgoing Streams > Live Video > Protocol*** and select <ST2022-6> or <ST2110-22>.
4 Only full raster 4K is accepted — 4K with quadrants is not supported. A workaround for these signals is to use the first 1080p 2SI-quadrant.

4K filmic video modes

Video mode:	**4K23**	**4K25**	**4K29**
Required option/license:	NativeIP + UHD FilmC	NativeIP + UHD FilmB	NativeIP + UHD FilmB
Required (Q)SFP module:	10G, 25G, 100G	10G, 25G, 100G	10G, 25G, 100G
	Outgoing streams (Cam to IP):		
	Main Video: 2160p@23.98 | ST2110-20	*Main Video:* 2160p@25 | ST2110-20	*Main Video:* 2160p@29.97 | ST2110-20
	Live Video: 1080p@23.98 | ST2110-20	*Live Video:* 1080p@25 | ST2110-20	*Live Video:* 1080p@29.97 | ST2110-20
	Incoming streams (IP to Cam):		
	Ext1: 2160p@59, 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59, HDR only	*Ext1:* 2160p@50, 1080p@50, 1080psF@29 | ST274 Annex A or 1080i@50, HDR only	*Ext1:* 2160p@59, 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59, HDR only
	Ext2: 2160p@59, 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59, HDR only	*Ext2:* 2160p@50, 1080p@50, 1080psF@25 | ST274 Annex A or 1080i@50, HDR only	*Ext2:* 2160p@59, 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59, HDR only
	Ext3: 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59, HDR only	*Ext3:* 1080p@50, 1080psF@25 | ST274 Annex A or 1080i@50, HDR only	*Ext3:* 1080p@59, 1080psF@29 | ST274 Annex A or 1080i@59, HDR only

Baseband video signals in XCU mode

In XCU mode, video signals are available as baseband signals at the BNC back panel of the XCU. Refer to the XCU UXF Series user's guide for an overview of available video signals.

☞ **Note**

Make sure that you have installed the correct (Q)SFP modules that allow the selected video mode and required bandwidth. Refer to Appendix E for more information about installing (Q)SFP modules on the camera.

IP streams in XCU mode

In XCU mode, video signals are available as IP streams on the IP Media Network that is connected to the IP Media Bay on the back panel of the XCU. Refer to the XCU UXF Series user's guide for an overview of available video streams.

☞ **Note**

Make sure that you have installed the correct (Q)SFP modules that allow the selected video mode and required bandwidth. Refer to Appendix E for more information about installing (Q)SFP modules on the camera.

D Procedures

Licenses

About options

With Grass Valley licenses it is possible to temporarily or permanently add one or more options to your LDX 150 camera.

Contact your local Grass Valley representative for information about the availability and prices of the different options.

Options can be added to the camera by installing licenses.

Installation procedure

Licenses have the form of a **.lic** file which is a plain text file containing one or more licenses for one or more cameras. In most cases, you obtained the license file as an email or file attachment after purchasing a license from Grass Valley.

Note: It may be necessary to extract the license file(s) from a compressed (zip) archive before proceeding.

Using a USB Flash Drive

Copy the license file to the root directory of a USB Flash Drive and insert the USB Flash drive into the USB connector at the back panel of the camera head.

☞ **Note**

The file system of the USB Flash Drive must be FAT32.

Adding licenses

1. In the camera menu, navigate to the **Licenses > New Licenses** menu.
2. Check the time, date and time zone settings in the **Time** menu. If these settings are correct, set the **Time & Date OK?** item to Yes and continu with step 5.
   - Date, time and time zone need to be set correctly before installing a temporary license. A temporary license uses these settings for its start date reference. Once a temporary license is activated, it will run until it is expired.
   - To confirm the correct setting of time and date, this step must be repeated after each power cycle.

3 If the time, date or time zone settings are incorrect, set the **Time & Date OK?** item to No and set the correct time in the **Change Time** menu and/or the correct date in the **Change Date** menu. After that, set the **Time & Date OK?** item to Yes.
4 Enter the **Find Licenses** menu and select **Search Next** to start searching for licenses on the USB Flash Drive.
   • During the search process **[...]** is shown.
5 When a license is found, select **Add License** to install it.
   • License type, duration and start date (only for temporary licenses) are shown.
   • Up to 5 planned licenses are visible at the same time in the menu. More licenses can be installed; planned licenses show up when they become active.
6 Repeat steps 4 and 5 until all licenses are installed.
7 Finally, check the installed licenses in the **Licenses > Active Licenses** and the **Licenses > Planned Licenses** menus.

NFC Feature

NFC stands for Near Field Communication which allows the camera to communicate with an NFC enabled device like a smartphone. For the LDX 100 Series, Grass Valley created the LDX Scanner, a free of charge application (app) for NFC enabled smartphones, both Android and IOS.

The LDX Scanner app of the smartphone powers the NFC chip in the camera (also when the camera is not powered) and enables two functions;

- Reading out status information of the camera
- Add Options/eLicenses to the camera

Reading out status information of the camera

To read out a status information of the camera, proceed as follows;

1 Start the LDX Scanner app on your smartphone, hold the phone close to the NFC symbol on the left side of the camera and select **Scan Camera**.
2 After the phone activated the NFC chip in the camera, a status of the camera will be displayed on the phone that indicates:
   a Camera info
      • Type
      • Type nr
      • Serial nr
   b Package Info
      • Valid
      • Code nr
      • Version
      • Date
      • Updated on
   c Active Licenses
   d NFC Licenses Pending

e Camera Configuration
- Camera Mode
- IP Mode

f C2IP Configuration
- IP mode
- IP Address
- Subnet mask
- VLAN

Add Options/eLicenses to the camera

To add a license, the purchased license needs to be emailed to the NFC enabled smartphone as an attachment. Open the attachment with the LDX Scanner app, then place the smartphone close to the NFC symbol on the right side of the camera and select **Add license** on the smartphone. The LDX Scanner app smartphone will get a confirmation message.

When a perpetual license is added, the camera will automatically activate the license after a power up or reboot. A daily license needs to be manually activated via the Licenses item in the viewfinder menu (because time and date verification is needed).

Tip

Websites such as http://time.is/UTC or www.timeanddate.com are a good source to find the correct date and time in a given time zone.

Trial licenses

Trial licenses can be activated at any time; they expire after 3 minutes. You do not need a license file to activate them.

To activate a trial license, navigate to the **Licenses > Trial Licenses** menu and switch on the license you want to use.

Running a trial license is a good way of checking if your camera system is capable of running a specific functionality.

Calibrations

Black Calibration

In high-end broadcast cameras such as Grass Valley's LDX 150, Black Calibration is an automated procedure that improves the image quality by re-mapping black level for each pixel to keep a consistent sensitivity over the entire image.

The Black Calibration procedure should be applied in the following cases:

- mandatory: when the message "Black Calibration needed" appears in the viewfinder. This may occur (once) after a firmware update that includes an imager update. In some cases, it may take about a minute before this message appears.

- recommended: when the ambient temperature changes by more than 20 °C / 36 °F.

Tip

The best results are achieved when camera settings and calibration conditions are similar to the intended shooting situation, for example, shortly before a shooting.

How to apply

To start the Black Calibration procedure proceed as follows:

- Switch on power and camera and wait for the system to become fully operational. To ensure the best black performance, wait until the camera has reached its operational temperature. This may take up to 30 minutes, depending on the ambient temperature.

Note

The user level must be set to **Service** to access the Service menu.

Do not change Camera mode, Video mode and do not interrupt reference/locking during the calibration procedure.

- In the camera menu, go to the **Service > Calibrations > Black Calibr** menu and select the calibration temperature using the **Calibr Temp** item. There are two options: **37 C** (default) or **Act** (actual) temperature.
- Go to the **Black Cal** item and select it. The camera starts to warm up or cool down, depending on the ambient temperature and the selected calibration temperature. The lens is capped automatically and lens iris is closed during the calibration process. The Actual (current) temperature can be monitored using the **Act Temp** item.
- When the camera reaches the selected calibration temperature, the Black Calibration process starts. It takes up to 80 seconds to complete. During the process, you can monitor Black Calibration using the **status** item and a progress indication (%) is shown in the viewfinder.
- When the process is finished, the camera can be used normally.

Note

It is recommended to carry out Black Calibration when the camera is used under extreme ambient temperature conditions. Make sure to set the **Calibr Temp** item to **Act** before performing the calibration.

The results of the Black Calibration procedure are stored in the camera's internal memory. The new values are used after switching the camera off and on.

Black Calibration affects all video modes within one of the following clusters of video modes: (720p, 1080i and 1080p in single speed), (720p, 1080i and 1080p in 3X speed) and in 4K video modes. The availability of video modes depend on installed licenses.

Full Black

A quicker method to carry out Black Calibration (up to 15 s of running time) is the Full Black procedure. Full Black can be started both from the CGP and the camera system menu:

CAM In the camera menu, go to the **Production Setup > Levels > Black** menu. Go to the **Full Black** item and select it to start the calibration.

The Full Black calibration procedure starts and takes approximately 10 to 15 seconds to run.

☞ **Note**

The results of the Full Black procedure are NOT stored in the camera's internal memory: after switching off the camera the results are reset to their default values.

Black Calibration affects all video modes within one of the following clusters of video modes: (720p, 1080i and 1080p in single speed), (720p, 1080i and 1080p in 3X speed) and in 4K video modes. The availability of video modes depend on installed licenses.

Formatting the SD Card

In some situations it may be necessary to format the camera's internal storage (SD) Card. To format the SD Card, proceed as follows:

- Switch on the camera.

☞ **Note**

The user level must be set to **Service** to access the Service menu.

- In the camera menu, go to the **Service > SD Card > Format** item and select it. The formatting process starts. It takes about one minute to complete.
- During the process, you can monitor the process using the **status** item.
- When the SD Card formatting has finished, the camera can be used normally.

Updating camera software

The basic procedure to update a camera package is as follows:

- Go the Grass Valley to find the latest software package for your camera and download it to your local PC.
- Connect your PC to the C2IP network (make sure you use the correct IP range)
- Run the LDK Scripter tool and connect to the LDX 150.
- Refer to the (embedded) documentation of the LDK Scripter to follow the update procedure for the camera.

E Installation of (Q)SFP modules

(Q)SFP modules configurations

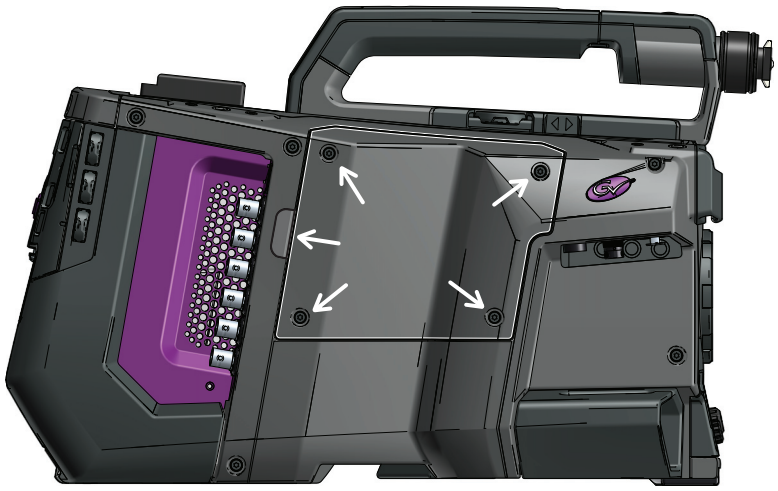
Depending on the workflow the optical connections of the camera need to be properly installed. This is done through internal installation of (Q)SFP modules.

(Q)SFP module configuration:	Workflow:	Camera mode:
none	Local/baseband mode	none
1: 1x 10G SFP (or 10/25G dual-rate SFP)	Legacy XCU modes	XCU
1: 1x 25G SFP	1x Speed UHD	NativeIP
2: 2x 25G BiDi SFP	1x Speed UHD with redundancy	NativeIP
3: 1x 100G QSFP	3x Speed UHD	NativeIP

Changing (Q)SFP modules

To install or exchange an (Q)SFP module proceed as follows:

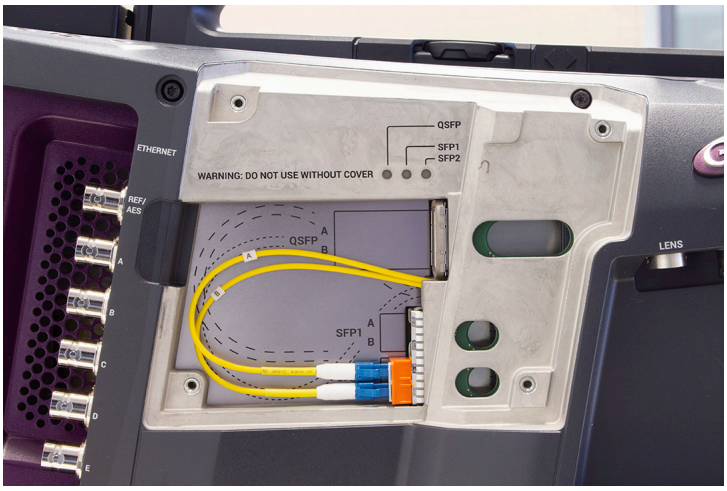
- Switch off the camera.
- Use a Torx T10 screwdriver to loosen the four captive screws from the right side panel of the camera as indicated below:



- Lift the panel by using the small recess at the left. Remove the panel. The optic cabling and Q(SFP) module(s) become visible.

Note

The inside of the panel holds the cooling pads for the (Q)SFPs. Make sure that they stay in place and do not get deformed. Keep them free from dirt.



- Remove the LC fiber(s) from the dummy SFP module. Make sure the cable (ferrule) ends keep clean.
- Carefully remove the inserted (Q)SFP module(s) from their case(s). If two SFP modules are inserted, remove them one by one.
- If needed, place the new (Q)SFP module(s) into the suitable cage(s). Unused (Q)SFP modules can be left in their cage, the camera automatically switches off (all) unused modules.
- AFTER placing the (Q)SFP module(s), insert the fiber cables according to the desired configuration in the next section.

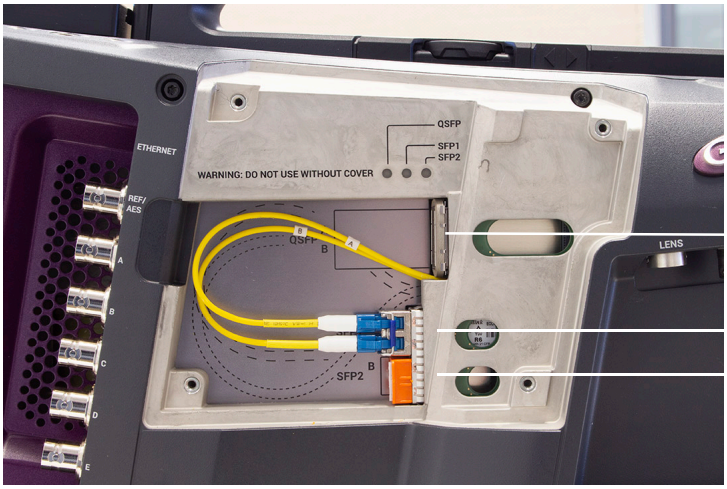
Caution

Only use (Q)SFP modules that comply to LASER CLASS 1.

Configuration 1 (1x 25G SFP module)

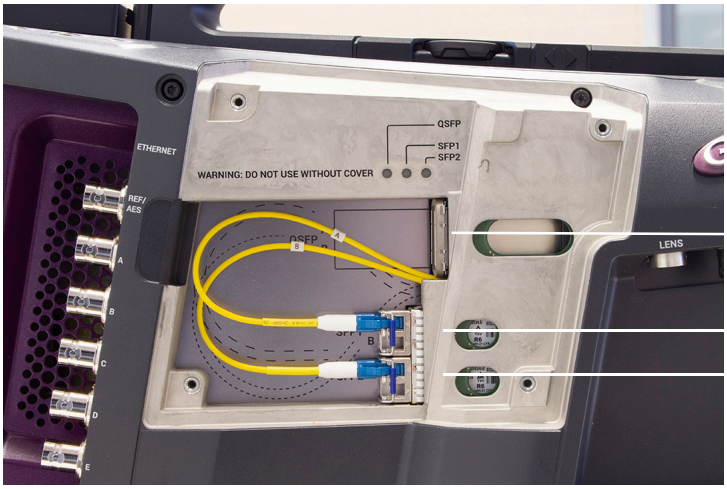
(also valid for 1x 10G/10G+25G dual-rate SFP module)

- Remove
- Insert fiber **A** into the top LC socket of the SFP module and insert fiber **B** into the bottom LC socket of the SFP module:



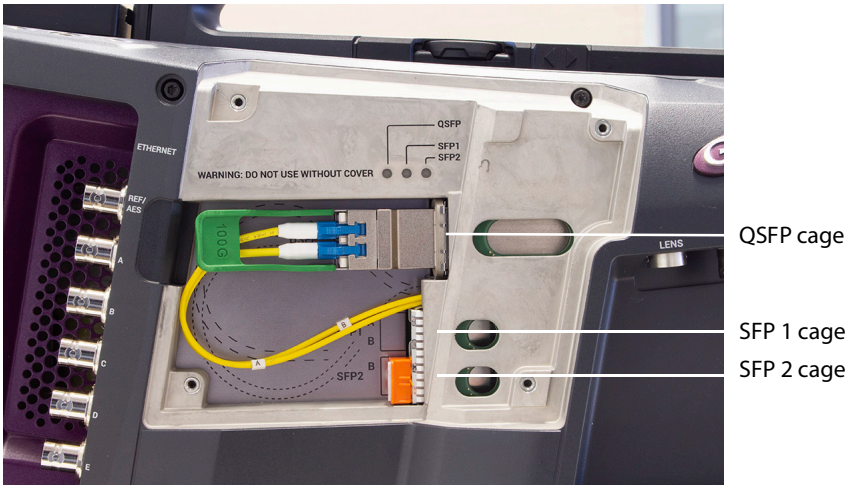
Configuration 2 (2x 25G BiDi SFP modules)

Insert fiber **A** into the top LC socket of the SFP module and insert fiber **B** into the top LC socket of the SFP module:



Configuration 3 (1x 100G QSFP module)

- Remove the plastic protection cap from the QSFP module (if present).
- Place the QSFP (without fibers) into the QSFP cage.
- Insert fiber **A** into the top LC socket of the QSFP module and insert fiber **B** into the bottom LC socket of the QSFP module.



- Reinstall the right side panel and tighten the four captive screws. Make sure that the screws are fixed hand-tight.
- The camera is now ready for operation with the new (Q)SFP configuration.

List of (Q)SFP modules

The following (Q)SFP modules have been released for use with the LDX 150:

manufacturer part number:	module type:	description:
Eoptolink EOLP-1325G-10-RI	25G/10G SFP SM 10 km 1310 nm	Single-Mode 1310 nm SFP28 Transceiver with DDM and dual CDR
Eoptolink EOLP-1396-10-I	10G SFP SM 10 km 1310 nm	Single-Mode 1310 nm 10GBASE-LW/LR Transceiver with DDM
Eoptolink EOLQ-161HG-10-LI	100G QSFP SM 10 km LR4	Single-Mode 100GBASE-LR4 QSFP28 Transceiver
EOLQ-161HG-02-SI1	100G QSFP SM 2 km CWDM4	Single-Mode CPRI/100GBASE CWDM4 2km QSFP28 Transceiver

Note

All listed modules have industrial specifications. Refer to your Grass Valley sales representative for availability and prices.

Note

Make sure that the matching ('other end') (Q)SFPs in the IP switch have the same specifications.

E Specifications

General

Temperature range (operating):	-20 °C to +45 °C (-4 °F to 113 °F)
Weight:	approx. 5.9 kg (13.3 lbs) including handgrip and shoulderpad
Dimensions (width x depth x height):	166.5 x 397.7 x 252.3 mm (6.56 x 15.66 x 9.93 in)
Power consumption (typ.):	100 W

Camera

Pick-up device:	3x 2/3" UHD imagers
Smear:	no vertical smear
Shutter:	no mechanical shutter
Optical system:	F1.4 prism
Lens mount:	2/3" bayonet (B4 type) lens mount
Optical filters:	First wheel: Clear, 1/4 ND, 1/16 ND, 1/64 ND, *capped*; Second wheel: Clear, 4 point star, Soft focus Fixed: 2.5µ Optical Low Pass filter
Electronic color correction:	3200 K, 5600 K, 7500 K, FL, 2 AWB presets, Variable, Continuous Auto White
Exposure:	Electronic exposure down to 1/1000 s (in single speed operation)

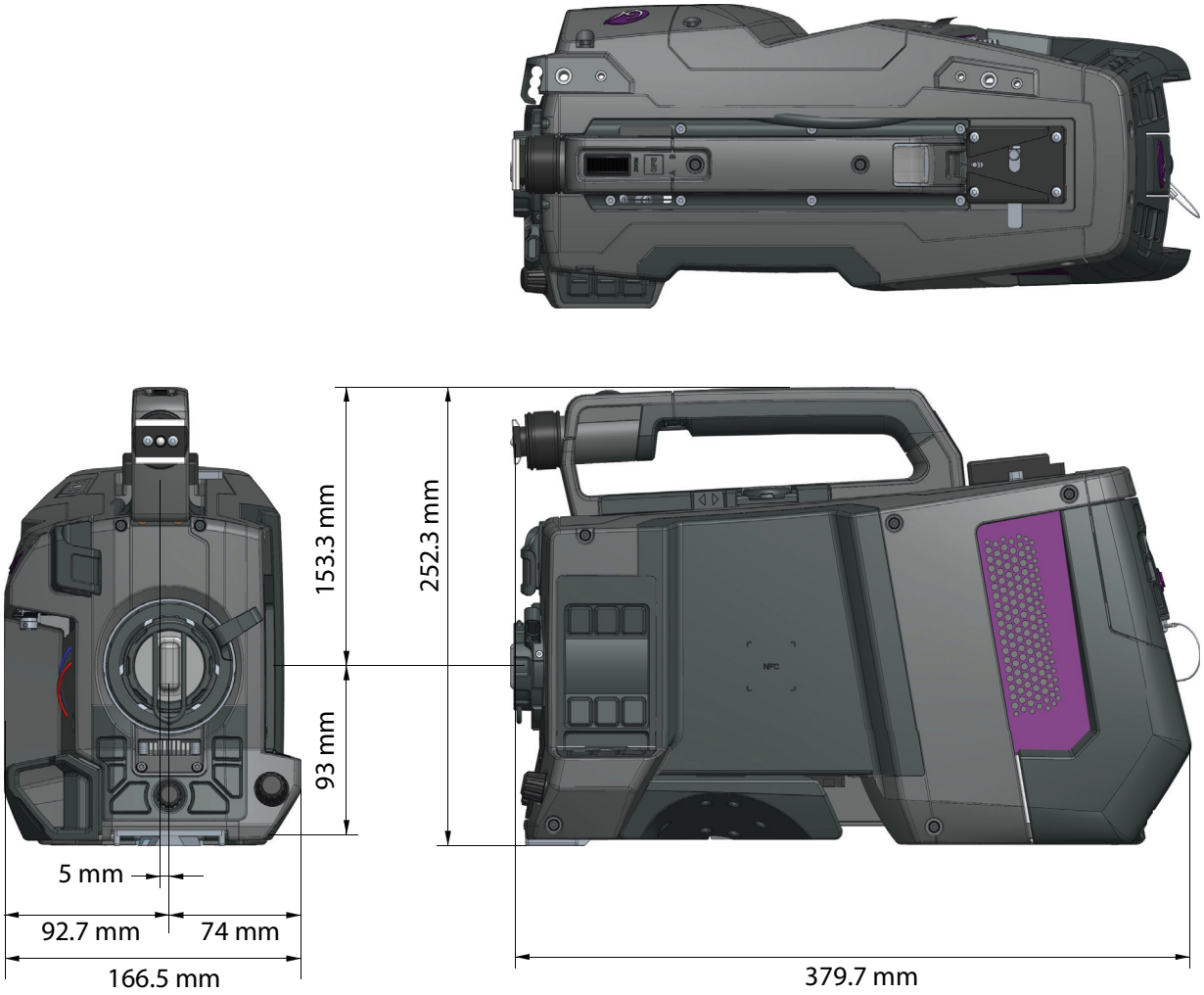
Video

S/N ratio (typ.)	62 dB (in 1080p50/59 video modes), sensitivity mode = Nominal
Sensitivity @2000 lux (typ.)	F11 (in 2160p50 video mode), sensitivity mode = Nominal
Aspect ratio:	16:9
Gain selection:	-6 dB to +18 dB in 3 dB steps (user definable presets) or continuous gain in 0.1 dB steps
Sensitivity modes:	High Quality, Nominal or High Sensitivity

Connectivity

Microphone input (front):	XLR-3 female, balanced, with switchable +48 V phantom power
REF/AES BNC connector:	Reference input,output or AES digital audio
BNC A to E connectors:	Video BNC baseband connectors (1.5G, 3G or 12 G)
Camera control network (C2IP)	RJ-45 Ethernet connector (1 Gb/s)
Ethernet/IP Trunk	RJ-45 Ethernet connector (1 Gb/s)
Lens connector:	12p Hirose connector
Viewfinder connector:	9p Fischer MiniMax connector
Monitoring video:	Micro HDMI (type D) connector
Hybrid Fiber connector:	SMPTE 304M hybrid fiber connector (swiveling)
Mounting holes:	2x ¼" - 20 UNC + 3x M4 threaded holes (camera thread)
Audio inputs (rear):	2x XLR-3 female, balanced, with +48 V phantom power
Intercom:	XLR-5 with Engineering, Production and Program channels
DC Power input:	12 V (12 to 17 V), XLR-4 male <16 A
DC Power output:	13 V, XLR-4 female < 4 A

Dimensions



Grass Valley Technical Support

For technical assistance, contact our international support center, at 1-800-547-8949 (US and Canada) or +1 530 478 4148.

To obtain a local phone number for the support center nearest you, please consult the Contact Us section of Grass Valley's website (www.grassvalley.com).

An online form for e-mail contact is also available from the website.

Corporate Head Office

Grass Valley
3499 Douglas-B.-Floreani
St-Laurent, Quebec H4S 2C6
Canada
Telephone: +1 514 333 1772
Fax: +1 514 333 9828
www.grassvalley.com