

**(5) Intercom Prod**

This button is used to activate the intercom Production channel ('talk').

**(6) Headset volume**

Adjusts the overall audio volume of the intercom headset.

**(7) Intercom Eng**

This button is used to activate the intercom Engineering channel ('talk').

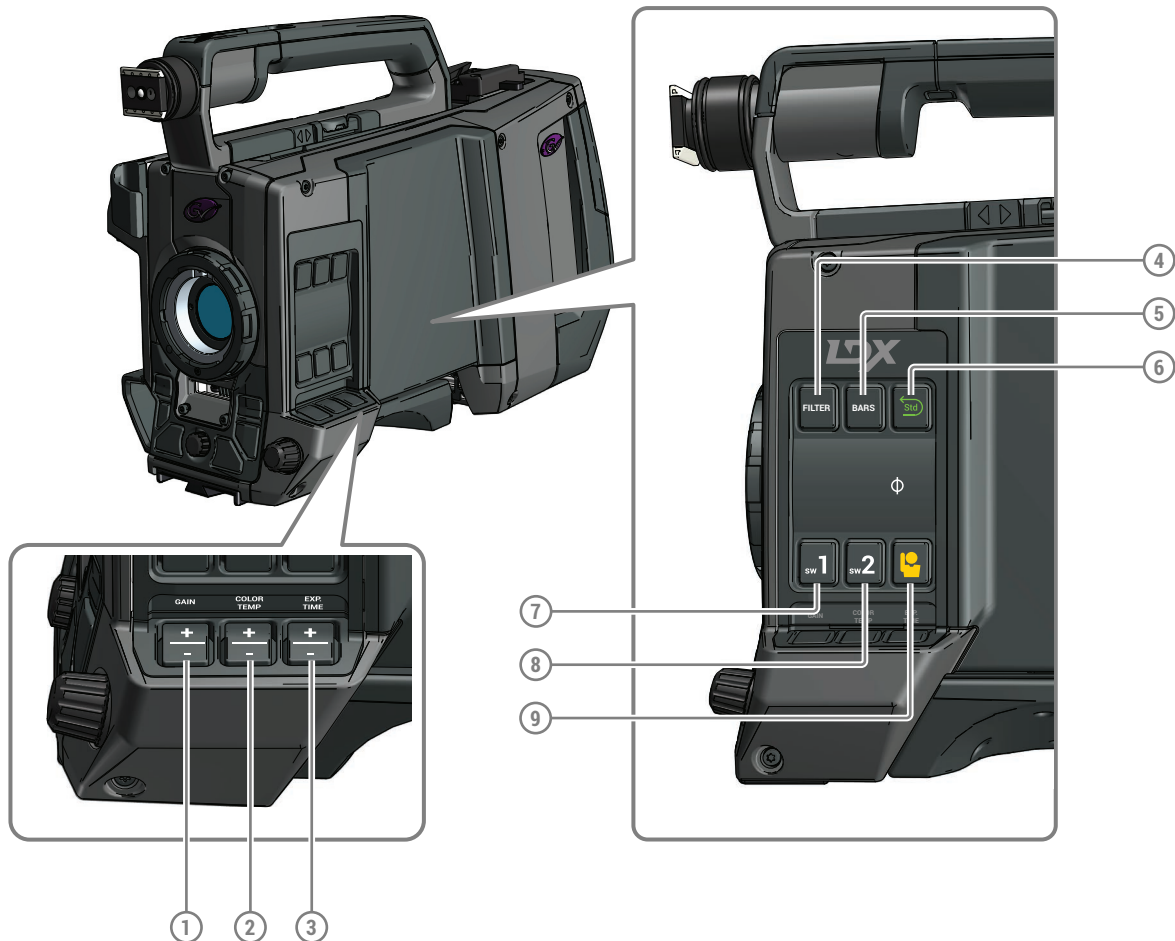
**(8) Return A**

This button can be assigned to an External/Return Video channel.

**(9) Return B**

This button can be assigned to an External/Return Video channel.

## Camera left panel



### (1) Gain up/down switch

Press plus or minus to select a Gain preset or hold the plus to set a variable gain value.

### (2) Color temperature up/down switch

Press plus or minus to select a color temperature preset or hold the plus to vary.

### (3) Exposure time up/down switch

Press plus or minus to select an exposure time or hold the plus to set a variable exposure time. Note: exposure can only be changed in single speed video modes.

### (4) Filter button

Press to enter the filters selection menu and select neutral density (ND) and/or effects (FX) optical filters.

#### (5) Bars buttons

Switches the test bars on and off and selects bar type.

#### (6) Standard Recall (or 'Green button')

Press and hold two seconds to recall standard values for the camera.

#### (7) User button SW1

Assignable user button SW1.

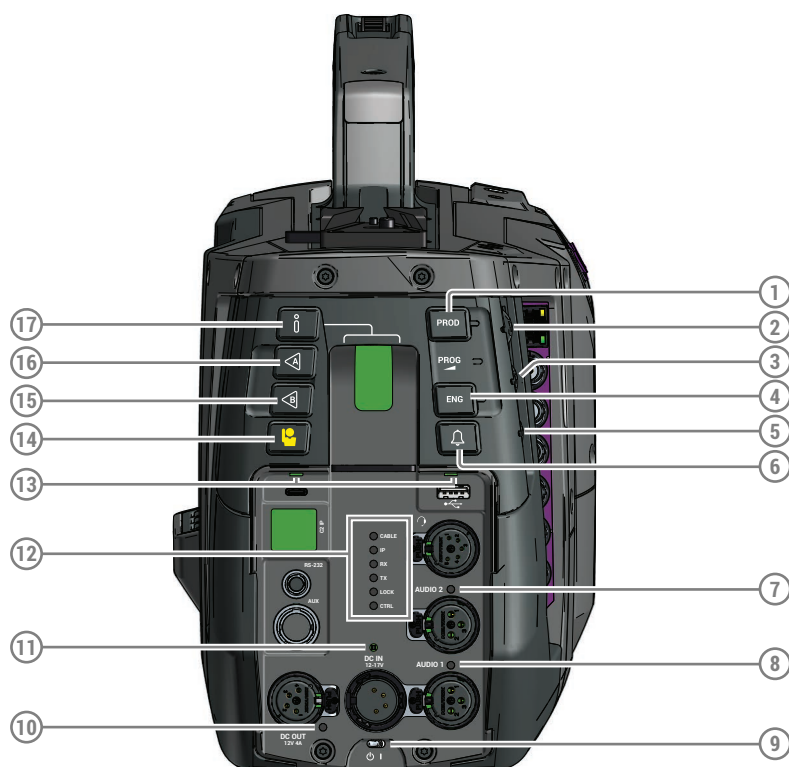
#### (8) User button SW2

Assignable user button SW2.

#### (9) PickMe button

This button can be configured to send an attention signal to the studio.

### Camera back panel



#### (1) Intercom Prod button

This button is used to activate the intercom Production channel ('talk').

**(2) Intercom Prod volume**

Headset volume for the intercom Production channel.

**(3) Intercom Prog volume**

Headset volume for the intercom Program channel.

**(4) Intercom Eng button**

This button is used to activate the intercom Engineering channel ('talk').

**(5) Intercom Eng volume**

Headset volume for the intercom Engineering channel.

**(6) Call button**

Press to send a Call signal to the studio. The Call indicator on the control panel(s) lights.

**(7) Audio 1 indicator**

This LED lights green when the audio input is set to mic sensitivity level, it lights blue when phantom power is switched on.

**(8) Audio 2 indicator**

This LED lights green when the audio input is set to mic sensitivity level, it lights blue when phantom power is switched on.

**(9) Power switch**

Main camera power switch.

**(10) Power out indicator**

This LED lights green when Power Out is available, it lights red when too much power is drawn from the Power output connector (overload indicator).

**(11) Local power indicator**

This LED lights green when Local power is present and OK, it lights red when the supplied voltage is lower than 12 VDC or higher than 17 VDC.

**(12) IP diagnose indicators**

Press and hold the info button at the back panel (17) or front panel to activate the IP diagnose indicators:

Indicator:	Color/Status:	Description:
CABLE	Yellow	Camera runs in XCU mode
	Purple	Camera runs in NativeIP mode
	Orange	Camera runs in DirectIP mode

Indicator:	Color/Status:	Description:
IP	Off	No (Q)SFP module present
	Red	(Q)SFP module mismatch
	Yellow	(Q)SFP module is present but no network link
	Green	(Q)SFP module is present and the network link is OK
RX	Red	Camera is not receiving IP Media data
	Yellow	Camera is receiving errors
	Green	Incoming IP Media data is valid
TX	Green	Outgoing IP Media data is enabled and delivered
	Red	Outgoing IP Media data is enabled but no ARP messages are received from receiver in unicast mode, or: unicast destination port number does not match the receiver's port number
	Off	Camera is not transmitting data (TX = 0 Mbps)
Lock	Green	Camera is locked
	Yellow	Reference signal present but camera is not locked
	Red	Camera is not locked
CNTRL	Green	Camera control link OK
	Red	Camera control link not valid
	Off	No camera control link

### (13) Outside illumination (2x)

Two bright white LEDs illuminate the back panel to help locating connectors.

### (14) PickMe button

This button can be configured to send an attention signal to the studio.

### (15) Return B

This button can be assigned to an External/Return Video channel.

### (16) Return A

This button can be assigned to an External/Return Video channel.

### (17) Info button and indicator

Press and hold to view information on the viewfinder screen.

The indicator LED in the button indicates if there is a system error or warning. When the Info button is pushed once, the first info page with most important camera settings is shown in combination with the IP diagnose indicators.

Press again to show the IP info page with more detailed info about the IP link. The IP diagnose indicators stay active.

The diagnose page and the IP diagnose indicators extinguish after a few seconds or after the info button is held for more than 1 second. The number of seconds can be programmed in the camera menu.

## Controlling the camera

There are several ways to control the camera:

- by using the operational switches on the camera;
- by using the (internal) camera menu to select functions;
- by using the Creative Grading Panel (CGP) and/or the Creative Grading Application (CGA) in the studio;
- by using the Camera Connect software package (for advanced configuration).



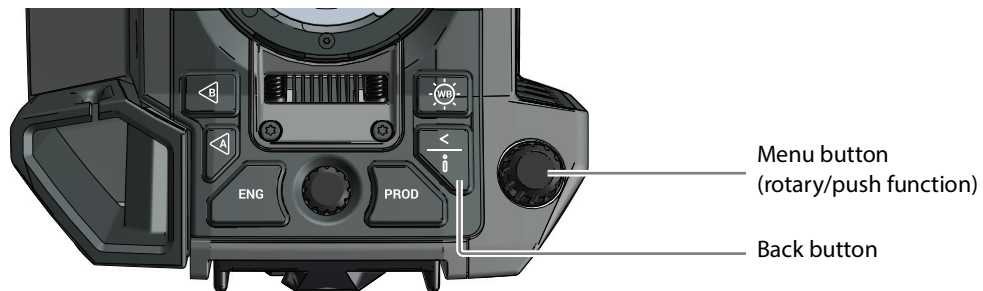
### Note

If you cannot access some camera functions or you wish to restrict access, refer to “Access and security”.

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## Navigating the camera menu

The camera menu can be viewed in the viewfinder, a connected monitor or remotely on the CGA. The camera menu can be navigated by means of the menu (rotary/push) button and back button which are located at the front of the camera:



The functions of the camera are grouped into a structure of menus and sub-menus. Each of the menus gives you access to a particular group of functions. Spend some time using the controls and menus to discover the various functions. You will quickly learn to operate the camera intuitively.



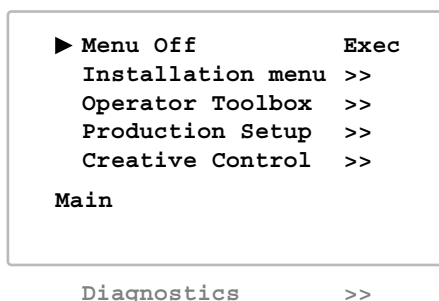
### Note

Some of the menu items may not appear if the user level is not set to 3 or S (Service).

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## Entering the camera menu

Push the menu button after the camera is switched on, the message **Menu off** appears in the viewfinder. Press the menu button again while this text is showing, the **Main** menu appears in the viewfinder.



The **Main** menu screen shows five items. The name of the menu is shown below these. More items are hidden but become visible when you scroll down using the menu button. The cursor shows your position in the menu. Turn the menu button to move the cursor up and down.

## Finding your way

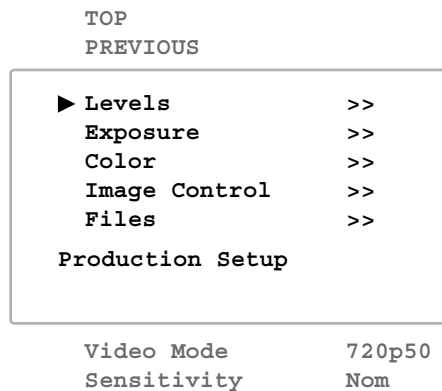
Turn the menu button to move the cursor through the menu items. If a double arrow (>>) is visible, then pressing the select button brings you one level lower in the menu system. Only five items are visible in each menu. Scroll up or down to see any additional items. When you first enter a menu (other than the **Main** menu) the cursor is positioned next to the first item.

Press the back button to go back to the menu that you were in before the current one. The cursor is positioned next to the last menu.

You can also use the **Top** and **Previous** items to navigate. These items are not immediately visible but are located above the first item. Use the rotary control to scroll up to them.

- Select **Top** to bring you back to the **Main** menu.
- Select **Previous** to go back to the menu that you were in before the current one.

The **Production Setup** menu, for example, shows the items displayed when you first enter the menu. The other items are available by scrolling up or down with the rotary control.



## Leaving the camera menu

If you are deep within the menu structure, the recommended way of leaving the menu is to press the back button a number of times until the menu is abandoned. You can also navigate to leave the menu:

- If necessary move the cursor to the left column with the menu or back button.
- Scroll upwards with the rotary control until the cursor points to **Top** (the **Main** menu).
- Press the select button. The cursor now points to the **Menu off** item of the **Main** menu.
- Press the select button again to leave the camera menu.

If you do not use the menu it disappears after a few seconds. This delay can be programmed in the **Operator Toolbox** menu. You can also press and hold the or back button for 2 seconds to make the menu disappear.

When you press the select button again you enter the camera menu at the last position of the cursor and not at the top of **Main** menu.

To prevent confusion the next time you enter the camera menu, it is advisable to leave the menu by using the back button or by returning to the **Main** menu and selecting **Menu Off**.

## Making value changes

To find out where you have to go to change a function, consult the camera menu reference to discover under which menu group or sub-group the function you want to change is located. If the cursor points to an item (and there are no double arrows to indicate a sub-menu) then the item pointed to has a value. This value can be:

- a toggle value (only two values, like on and off)
- a list value (more than two values)
- an analog value (in most cases variable from 0 to 99)
- unavailable.

If the value is unavailable it cannot be changed. This is indicated by three dashes (- - -). This can occur, for example, when a function is switched off. The analog values associated with that function are then unavailable.



If there are only two values associated with the function, then pressing the select button toggles between these two values. If a value is displayed next to a function that is one of several possible values, then pressing the select button places the cursor in a list menu indicating the value currently selected. Use the rotary control to point to a new value. Press the select button to return the cursor to the function list.

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

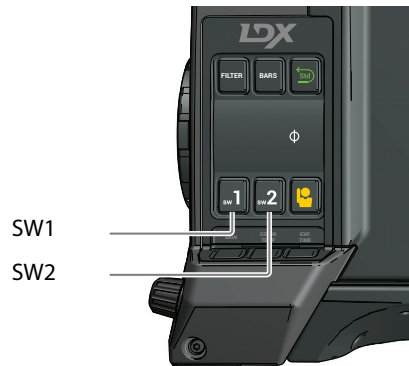
## Undoing changes

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

## Assigning user buttons

The camera has three assignable buttons: two on the left side panel (SW1 and SW2) and one under the handgrip. The operation of the RET and the VTR button on the lens can also be assigned. The assignment and switching mode (momentary or alternating) of these buttons can be set in the **Operator Toolbox > User buttons** menu.

## Left side and lens buttons



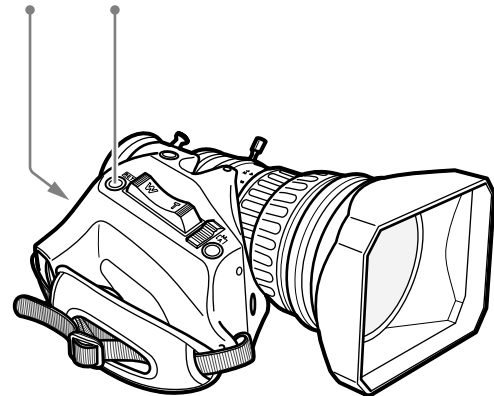
User button SW1 can be assigned to:

- Intercom Call (Call)
- Switch to Return Video A (Ret A) - default
- Switch to Return Video B (Ret B)
- Production intercom (Prod)
- Engineering intercom (Eng)
- Select (for menu navigation)
- ND+ (ND filter selection up)
- Start Auto White Balance (AW)
- Extended Auto Iris (Elris)
- Focus Assist (FocAst)
- Back (for menu navigation)

User button SW2 can be assigned to:

- Extended Auto Iris (Elris)
- Viewfinder zoom function (Zoom)
- Focus Assist (FocAst)
- Switch to Return Video A (Ret A)
- Switch to Return Video B (Ret B) - default
- Production intercom (Prod)
- Engineering intercom (Eng)
- ND- (ND filter selection down)
- Intercom Call (Call)
- Back (for menu navigation)
- Select (for menu navigation)

VTR Lens RET Lens



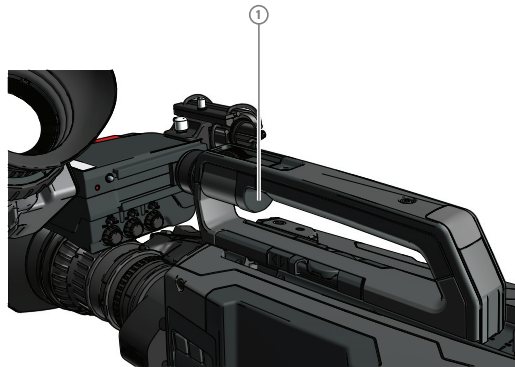
The VTR Lens button can be assigned to:

- Production intercom (Prod) - default
- Engineering intercom (Eng)
- Viewing zoom function (Zoom)
- Switch to Return Video A (Ret A)
- Switch to Return Video B (Ret B)
- VTR
- Info button (Info)

The RET Lens button can be assigned to:

- Switch to Return Video A (Ret A) - default
- Switch to Return Video B (Ret B)
- Viewing zoom function (Zoom)
- Focus Assist (FocAst)

## Handgrip button



The right handgrip button is assigned to:

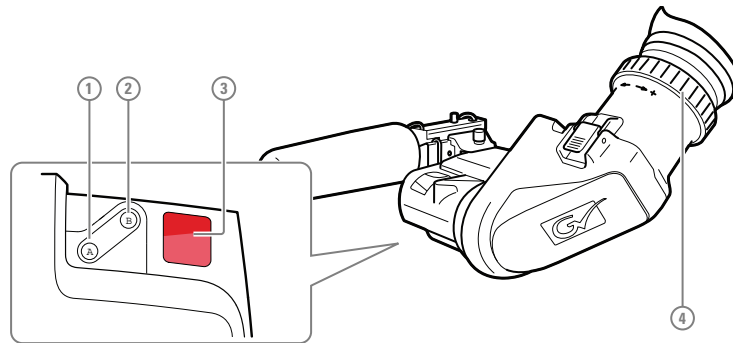
- Switch to Return Video A (Ret A) - default
- Switch to Return Video B (Ret B)
- Viewing zoom function (Zoom)
- Focus Assist (FocAst)

The left handgrip button can be assigned to:

- Production intercom (Prod) - default
- Engineering intercom (Eng)

## Viewfinder controls

### Front



**(1) User button (A)**

This user button can be assigned in the viewfinder menu.

**(2) User button (B)**

This user button can be assigned in the viewfinder menu.

**(3) Front tally indicator**

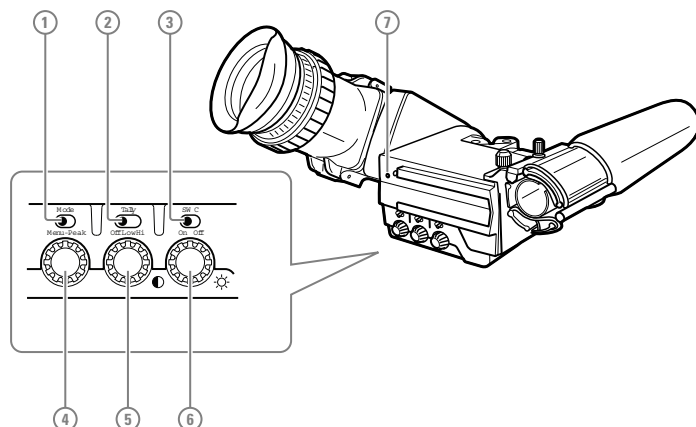
This indicator (and the one at the rear of the handgrip of the camera) lights to indicate that the camera is On Air.

**(4) Diopter adjustment ring**

The diopter of the viewfinder can be adjusted to suit your eyesight by turning the diopter adjustment ring. Turn to the right for negative diopter values, turn to the left for positive values.

## Back

Set up the viewfinder according to your own preferences; adjust viewing parameters, select markers, message boxes and on-screen display times in the **Operator Toolbox** menu.



### (1) Mode switch

This switch determines the function of the Menu/Peak rotary control below. Set the mode switch to the right (Peak) to use the rotary for peaking control. Set the mode switch to the left (Menu) to use the rotary for menu navigation.

### (2) Tally switch

This switch is used to control the tally indicators at the front of the viewfinder and the rear of the camera handgrip. The toggle switch has three settings: Off, Low and Hi.

When the tally switch is set to the Off position, the tally indicators do not light even when the camera is On Air.

### (3) User switch C (underscan)

Set this toggle switch to On to see a scaled down (to about 85% of the area) picture in the viewfinder. This allows for a greater viewing distance from the eyepiece. A blue border around the picture and the message "underscan" appear. Set the switch to Off to return to the original picture.

### (4) Peaking/Menu control

With the mode switch set to Peak, turn this rotary control to adjust peaking (sharpness) of the viewfinder picture.

With the mode switch set to Menu, push this rotary control to enter the viewfinder menu and rotate to navigate the menu.

### (5) Contrast control

Turn this rotary control clockwise to adjust the contrast of the viewfinder picture according to your preferences. The range runs from 0 (low) to 99 (high contrast).

### (6) Brightness control

Turn this rotary control clockwise to adjust the brightness of the viewfinder picture according to your preferences. The range runs from 0 (very dark) to 99 (very bright).

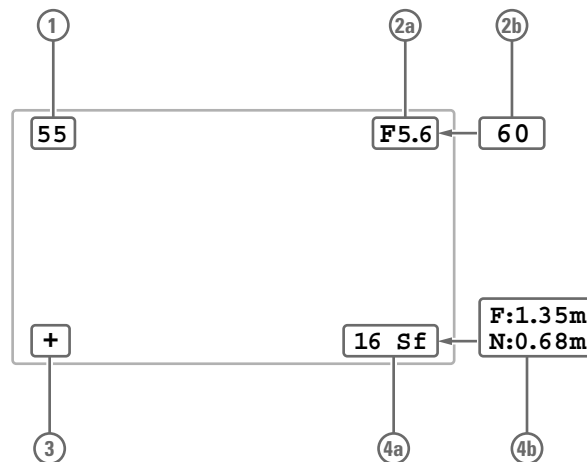
### (7) Rear tally indicator

This indicator lights to indicate that the camera is On Air. This indicator has the same function as the front tally indicator.

## Viewfinder information

### Indicators

Navigate to the **Operator Toolbox > Indicators** menu and select the on screen indicators you want to display in the viewfinder screen. The following indicators can be set up:



### (1) Zoom indicator

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.

### (2a) Iris indicator

Shows the iris opening (or F-value) of the lens. Typical range is from F1.4 to F25. The indicator shows 'Closed' when the lens is closed or capped.

### (2b) Focus indicator

Shows the percentage of the lens focus distance. Typical range is from 0 (close-up) to 99 (infinity).

### (3) Precision Focus indicator

Shows the Precision Focus indicator (if supported by the lens).

#### (4a) Filter indicator

Shows the selected optical filter(s).

#### (4b) Depth of Field indicator

Shows Depth of Field (DOF) of the current lens position. F = Far limit in meters, N = near limit in meters. Note: this feature must be supported by the lens.

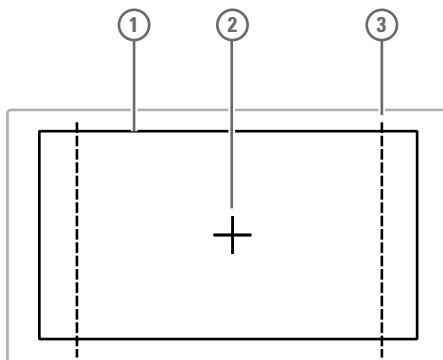


#### Note

When the Iris indicator (2a) is switched on, the Focus indicator (2b) is automatically switched off and vice versa. When the Filter indicator (4a) is switched on, the Depth of Field indicator (4b) is automatically switched off and vice versa.

### On screen marker indicators

Navigate to the **Operator Toolbox > Indicators** menu and select the marker indicators you want to display in the viewfinder screen. The following marker indicators can be set up:



#### (1) Safe Area

Shows the minimum area that can be seen on a television screen. Different aspect ratios for the safe area can be set in the menu.

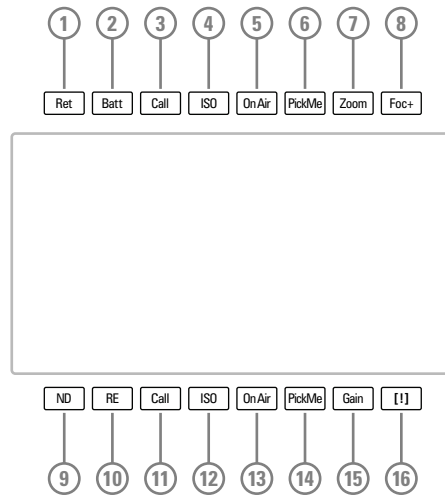
#### (2) Center Cross

Marks the center of the picture.

#### (3) Marker

A dotted white line or a shaded area that shows the limits of a 4:3, 15:9 or 14:9 picture.

## Viewfinder LED indicators



### (1) Return video indicator

Lights if one of the return video channels is switched on.

### (2) Battery indicator

Lights if the camera supply voltage is less than 11.5 V (when using an external supply).

### (3,11) Call indicators (green)

Lights if Call signal or green tally is active.

### (4,12) ISO indicators (yellow)

Lights if ISO signal or Yellow On Air is active.

### (5,13) On Air indicators (red)

Lights if On Air is active.

### (6,14) PickMe indicators (green)

Lights if PickMe is active.

### (7) Zoom indicator

Lights when viewfinder zoom is active.

### (8) Focus Assistant indicator

Lights when focus assistant is active.

### (9) ND Filter indicator

Lights when a Neutral Density (ND) filter is used.



### (10) Range Extender indicator

Lights when a Range Extender is enabled.

### (15) Gain indicator

Lights when gain is lower than 0 dB or if gain is higher than +3 dB.

### (16) Non-standard indicator

The non-standard video settings indicator (!) lights when one or more of the following conditions occur:

- Exposure Time is not set to the nominal value;
- Black Stretch is switched on;
- Extended Iris is switched on;
- AWC (Auto White Continuous or automatic white balance) or FL color temperature is switched on.

## Information pages

Press and hold the info button at the front or at the back panel of the camera to view information on the viewfinder screen. The first info page appears in the viewfinder or monitoring channel. Press the info button again to scroll through 4 pages. Release the button and after a few seconds the info page disappears.

### Page 1: IP connection page

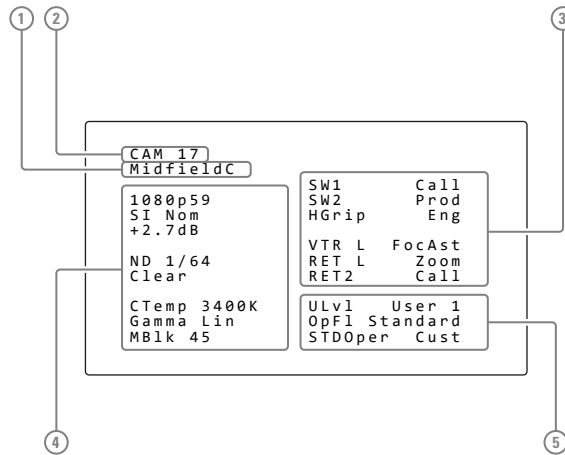
	QSFP	SFP1	SFP2
Present	No	Yes	No
Los		Ok	
Link		Yes	
TX Mb/s		11032	
RX Mb/s		2208	
QSFP IP	10.11.5.2		
SFP1 IP	10.11.6.2		
SFP2 IP	10.12.7.2		

### Page 2: Video and camera modes page

VideoMode	4k/50
CameraMode	IP
IP mode	25G

### Page 3: Basic video settings and buttons page

This info page shows mostly identification and operational information.



### (1) System Alias

Displays the camera System Alias.

### (2) Camera number

Displays the camera number.

### (3) User button assignments

Displays the assignments for the user buttons on the camera.

### (4) Video settings

Displays video mode, master gain, ND filter, FX filter, color temperature, selected Gamma curve and Master Black level

### (5) Basic operator settings

Displays the current user level ("ULvl"), the last recalled operator file ("OpFl") and the standard recall file ("STDOper").

## Page 4: BNC outputs on the camera

RX1 Act	Yes	Bnc-A	Main
RX2 Act	Yes	Bnc-B	Live
RX3 Act	No	Bnc-C	Ext1
Audio Act	No	Bnc-D	Ext2
Icom Act	No	Bnc-E	VF

## Focus assist

The focus assist function can be switched on or off in the **Operator Toolbox** menu. This function adds a motion effect in the viewfinder to objects in sharp focus. The FOC+ indicator in the viewfinder lights when this function is on.

## Viewfinder zoom

The viewfinder zoom function is another feature that helps you focus. This function enlarges the center of the viewfinder image. Choose one of the following buttons and the way it operates (momentary or toggle) to control this function in the **Operator Toolbox** menu:

- The VTR button on the lens,
- The RET switch on a zoom control when a SuperXpander is used.

When the viewfinder zoom function is in use, the viewfinder markers are switched off to improve the clarity of the display. The Zoom indicator in the viewfinder flashes when the viewfinder zoom function is active.

## Lens operation

### Back focus adjustment

When you fit a lens to the camera you may need to adjust the back focus. Refer to the lens manufacturer's instructions to find out how to do this. The **Lens** menu allows you to choose and, if necessary, adjust other parameters to suit your lens type and your personal preferences.

## CLASS

The Chromatic Lens Aberration and Sharpness Solution (CLASS) compensates for chromatic aberration by using lens data. Most major lens manufacturers support this feature.

Make sure that the lens interface is set to Digital in the **Configuration > Lens > Lens Settings > Lens IF Type** menu.

When a lens is attached to the camera for the first time, the camera reads the lens data at startup. This is done only once and may take some time to finish. Reading the lens data is a background process and does not influence normal camera operation.

Some lenses also require a manual calibration of the lens ring positions. If this is the case, a message ("CLASS: Turn lens rings") is briefly shown in the viewfinder. Turn both zoom and focus ring all the way from one end to the other.

After startup when CLASS is active, a message ("CLASS: Active") is shown in the viewfinder.

In the (very rare) occasion that lens aberration data becomes corrupted, a reset of the lens data can be forced:

Go to the **Configuration > Lens > Lens Settings > CLASS > Reset CLASS Data** menu and select Start.

## Auto Iris

When the amount of light in the scene varies (for example when shooting outdoors) the Auto Iris function can be switched on to automatically and continuously measure light levels and adjust Iris for optimal exposure.

When your lens has an Auto Iris switch, make sure it is set to the on position.

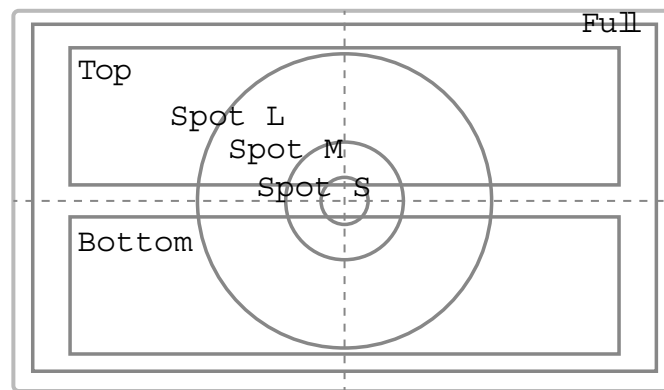
To switch Auto Iris on, go to the **Production Setup > Exposure > Iris > Auto Iris** menu and set the **Auto IRIS** function to On.

The default settings for Auto Iris are suitable for most situations but some situations may require different settings.

### Setting the Auto Iris measurement area

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

Select the Auto Iris measurement area using the **Area** function in the **Auto IRIS** menu. The following areas can be selected:



- **Top**—covers the top half of the screen, or 50% of the total surface. This is the default setting.
- **Spot S**—small center spot, covers 5%.
- **Spot M**—medium center spot covers 10%.
- **Spot L**—large center spot, covers 25%.
- **Full**—full screen measurement, covers 100%.
- **Bottom**—covers the lower half of the screen, or 50% of the total surface.
- **Custom**—a customer defined measurement area.

When **Area** is set to Custom, a customer defined area can be defined under the **Custom Area** sub menu by entering top, bottom, left and right parameters for two separate measurement areas: one for Peak and one for Average values. Auto Iris combines the readings from these two areas and uses the outcome to control the Iris opening.