EyeCatcher EC 270

2.7-inch Color LCD Ocular Viewfinder

Declaration of Conformity

We, Grass Valley Nederland B.V., Bergschot 69, 4817 PA Breda, The Netherlands, declare under our sole responsibility that this product is in compliance with the following standards:

- EN60065 : Safety

- EN55103-1: EMC (Emission)

- EN55103-2: EMC (Immunity)

following the provisions of:

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

FCC Class A Statement

This product generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause interference to radio communications.

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

Operation of this product in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Copyright

Trademarks

Table of contents

Chapter 3 – Menu reference

Chapter 4 – Specifications

Recycling

Visit www.grassvalley.com for recycling information.

Packing for return

If a unit is being returned to Grass Valley for servicing, try to use the containers and materials of the original packaging. Attach a tag indicating the type of service required, return address, model number, full serial number and the return number which will be supplied by your Grass Valley service centre.

If the original packing is not available or can no longer be used contact your regional Grass Valley service representative to have a return package provided.

Website

Visit the Grass Valley public website to download the latest user's guide updates and additional information about your broadcast product: www.grassvalley.com

Important information

Read this information carefully before installing this equipment and retain them for future reference. Read and comply with the warning and caution notices that appear in the manual. Any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Safety Summary

This information is intended as a guide for trained and qualified personnel who are aware of the dangers involved in handling potentially hazardous electrical/electronic equipment. It is not intended to contain a complete list of all safety precautions which should be observed by personnel in using this or other electronic equipment.

Whenever it is likely that safe operation is impaired, the apparatus must be made inoperative and secured against any unintended operation. The appropriate servicing authority must then be informed. For example, safety is likely to be impaired if the apparatus fails to perform the intended function or shows visible damage.

The unit is protected according to IEC 60529 IP54 (dust-protected and resistant to splashing water).

Warnings

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

- Do not modify this equipment;
- Do not use any accessories other than those recommended by the manufacturer;
- There are no user serviceable parts inside. Refer servicing to qualified personnel only or contact your local Grass Valley representative;

Cautions

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

- Do not subject the unit to severe shocks or vibration;
- Do not expose the unit to extremes of temperature;
- Do not allow sunlight to shine into the viewfinder.

Wichtige Hinweise

Lesen Sie bitte diese Hinweise genau bevor Sie diese Apparatur installieren und erhalten Sie Sie für künftiges Nachslagen. Beachten und Lesen Sie alle mit "Achtung" und "Vorsicht" gekennzeichneten Warnhinweise. Änderungen haben zur Folge, dass die Garantie ungültig wird und der Benutzer für etwaige durch die veränderte Ausrüstung verursachte Störungen haftbar gemacht werden könnte.

Sicherheit (Zusammenfassung)

Diese Informationen sind als Leitfaden für qualifiziertes Fachpersonal gedacht, das die Gefahren beim Umgang mit potenziell gefährlicher elektrischer/elektronischer Ausrüstung kennt. Es handelt sich dabei nicht um eine vollständige Zusammenstellung aller Sicherheitsvorkehrungen, die beim Gebrauch dieser oder anderer elektronischer Geräte zu beachten sind.

Wenn eine Beeinträchtigung des sicheren Betriebs wahrscheinlich ist, muss das Gerät außer Betrieb gesetzt und gegen ungewollten Betrieb gesichert werden. Dann muss der zuständige Kundendienst benachrichtigt werden. Eine Beeinträchtigung der Sicherheit ist zum Beispiel dann wahrscheinlich, wenn das Gerät nicht wie vorgesehen funktioniert oder einen sichtbaren Schaden aufweist.

Dieser Ausrüstung ist gemäß IE 60529 IP54 geschützt (Staub- und Spritwassergeschützt).

Vorsicht

Mit "Vorsicht" wird auf eine Gefahr hingewiesen, die korrekte Arbeits- oder Verfahrensweisen erfordert, um Tod oder Verletzung zu verhindern.

- An dieser Ausrüstung dürfen keine Änderungen vorgenommen werden;

- Es sollen nur von den Hersteller empfohlene Zubehöre verwendet werden;

- Dieses Produkt enthält keine Anwenderteile. Reparatur und Wartung nur von qualifiziertem Fachpersonal vornehmen lassen oder nehmen Sie Kontakt auf mit Ihrem Grass Valley Vertretene;

Achtung

Mit "Achtung" werden Arbeitsanweisungen gekennzeichnet, die zu befolgen sind, um eine Beschädigung oder Zerstörung der Ausrüstung bzw. von Eigentum zu verhindern.

- Dieses Produkt darf nicht an extremen stöße oder Zittern ausgesetzt werden;

- Dieses Produkt darf nicht an extremen Temperaturen ausgesetzt werden.

Chapter 1

Installation

1.1 Mounting the viewfinder

To mount the viewfinder onto the camera proceed as follows:

- Loosen locking ring (2) of viewfinder support bracket (1) at the front of the camera handgrip. (As seen from the rear of the camera, turning the locking ring counterclockwise moves it towards the handgrip.)

- Push the locking pin (3) in and slide the viewfinder onto the viewfinder support bracket (1).

- Tighten the locking ring (2) by turning it clockwise (as seen from rear) so that the viewfinder is mounted securely to the support.
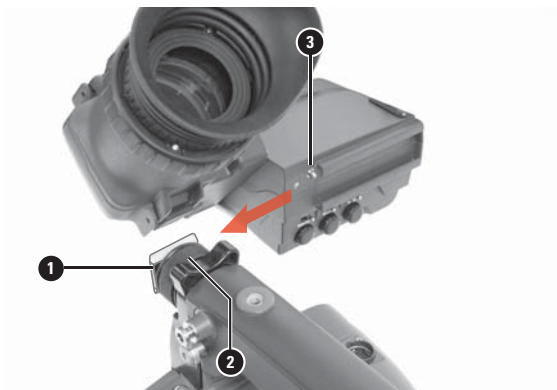
✎ **Tip**

To improve the comfort of the skin contact when using the viewfinder, fit the eye piece cover to the rubber eyepiece. Spare eye piece covers are available via your Grass Valley representative.

- Connect the viewfinder cable to the viewfinder connector socket (1) at the top right of the camera.

- Attach the microphone holder (2) onto the viewfinder and secure with the knurled screw (3).
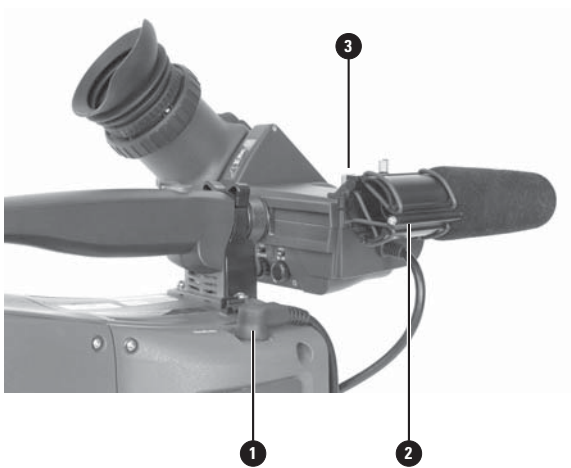
✎ **Tip**

Guide the viewfinder cable along the front of the camera and attach it to one of the cable clips.

1.2 Positioning the viewfinder

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

• Loosen the locking ring (1). As seen from the rear of the camera, turning the locking ring counterclockwise moves it towards the handgrip.

• Slide the viewfinder horizontally along the rail to the desired position.

• Tighten the locking ring (1) by turning clockwise.
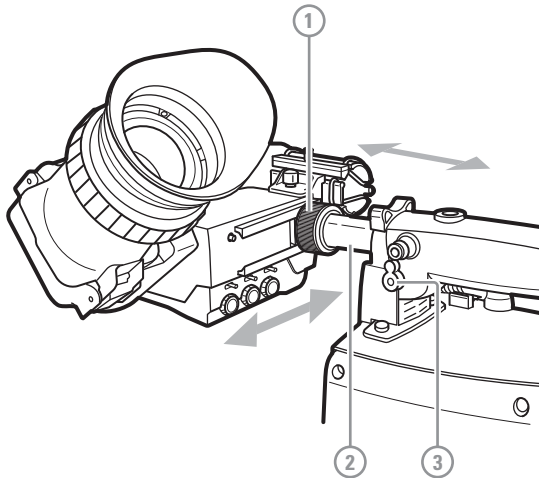
The viewfinder can be positioned backwards and forwards along the camera axis:

• Loosen the support bracket round bar retaining lever (3).

• Slide the round bar (2) forwards or backwards.

• When the desired position is reached tighten the round bar retaining lever (3) again.

Distance viewing

The viewfinder display can also be viewed from a distance :

• Push down the bottom clip (4) below the eyepiece and swing it free of the associated clip.

• The eyepiece can also be swung downwards; push down the top clip to release the eyepiece and swing it downwards.

④
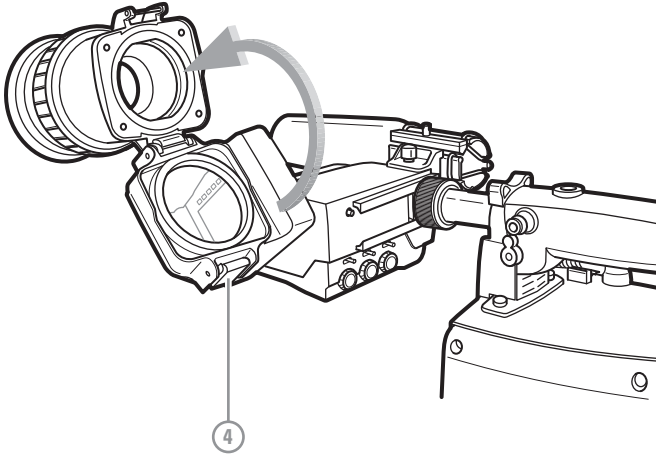
Note

Handle the eyepiece with care when folded back—its position is not secured.

Chapter 2

Operation

2.1 Controls

2.1.1 Rear panel
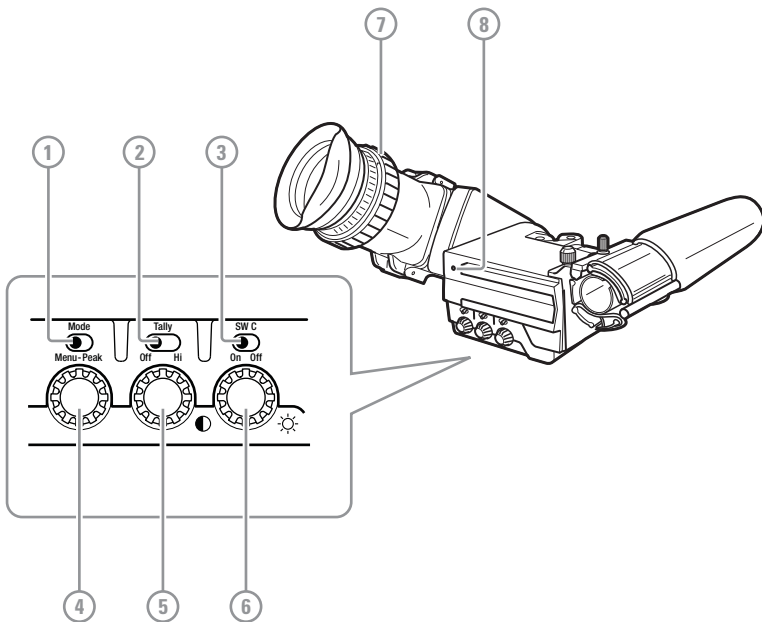
① Mode switch

This switch determines the function of the Menu-Peak rotary control below. Set the Mode switch to the right (**Peak**) to adjust peaking level. 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 handgrip. The toggle switch has three settings: Off, Low and Hi.

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

③ Switch C (underscan)

Set this toggle switch to On to see an underscan or scaled down (to approximately 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 Menu-Peak control

When the Mode switch (1) is set to Peak, this rotary control adjusts the peaking level (sharpness) of the viewfinder picture.

Tip

It may be necessary to reduce peaking when the camera gain is set to high values.

When the Mode switch (1) is set to Menu, the rotary is used for navigating the viewfinder menu. Refer to for more information about the menu and to navigate it.

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 contrast) 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 Dioptre adjustment ring

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

⑧ 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.

2.1.2 Front panel
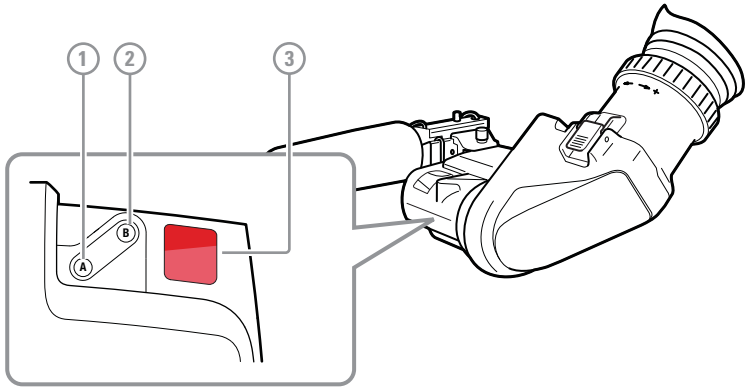
① User button A
This user button can be assigned in the viewfinder menu.

② User button B
This user button can be assigned in the viewfinder menu.

③ Front tally indicator
This indicator (and one at the rear of the handgrip of the camera) lights to indicate that the camera is On Air.

2.2 Indicators

2.2.1 LED indicators
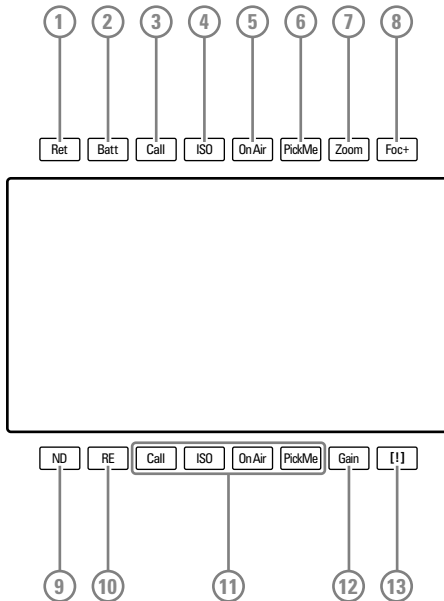
① Return indicator
Lights when a return video channel is switched on in the camera.

② Battery power indicator
Lights if the camera input voltage is too low (when using a battery).

③ Call indicator
The green LED lights to attract attention when a Call signal is activated.

④ ISO indicator
The yellow LED lights to indicate that the camera is currently in ISO mode (yellow On Air or Isolate)

⑤ On Air indicator
The red LED lights to indicate that the camera is currently On Air.

⑥ PickMe indicator

This yellow LED lights when a PickMe signal is activated.

⑦ Zoom indicator

Lights when the viewfinder Zoom function is on.

⑧ Focus Assist indicator

Lights when the focus assist function is on (turn on in the camera menu).

⑨ Range Extender indicator

Lights when a range extender is selected.

⑩ ND filter indicator

Lights when an ND (neutral density) optical filter is selected.

⑪ Studio signalling indicators

Mirrored indicators from the top row (Call, ISO, On Air and PickMe) for improved viewing range.

⑫ Gain indicator

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

⑬ Non-standard indicator

The non-standard video settings indicator lights when one of the following conditions occur:

- Exposure time is not set to the nominal value.

- Black Stretch is on.

- Extended Auto Iris is on.

- AWC (continuous automatic white balance) or FL (fluorescent) color temperature is on.

2.2.2 On screen indicators

Go to the camera menu to select the indicators you wish to see in the viewfinder screen.
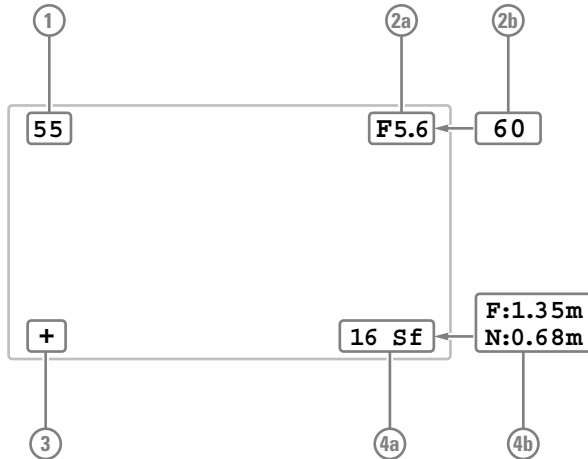
① Zoom indicator

Indicates the percentage to which the lens has been zoomed out or in, ranging from 0 (wide) to 99 (tele). 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 F1.4 to F25. The indicator shows 'Closed' when the lens is closed or capped.

②ᵦ Focus indicator

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

③ Precision Focus (PF) indicator

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

④ₐ Filter indicator

Shows the selected optical filters (ND and FX).

④ᵦ Depth of Field (DOF) indicator

Shows Depth of Field of the current lens position. F = Far limit in meters, N = near limit in meters. Ntoe: not all cameras support this feature.

2.2.3 On screen markers

Go to the camera system menu to select the markers you wish to see in the viewfinder screen.
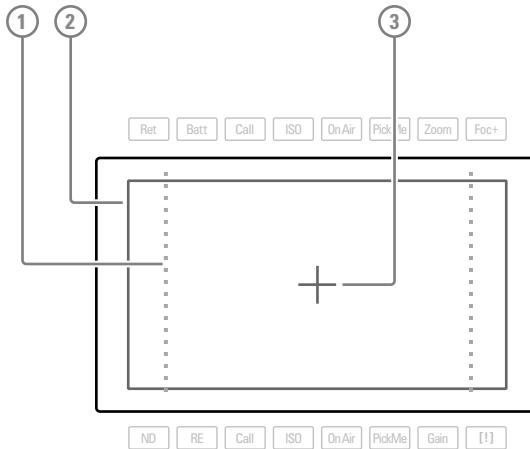
① Cadre

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

② Safe area

Encloses an area that represents 80% of the whole viewfinder picture area. This is the minimum area seen on a TV-set.

③ Centre cross

Marks the centre of the picture.

2.3 Viewfinder menu

2.3.1 Entering the menu

Many viewfinder functions can be set up in the viewfinder menu. Enter the menu as follows:

- Make sure the mode switch on the rear panel is set to *Menu* (left position).

- Press the menu rotary to open the menu. A black bar with menu items appears at the bottom of the viewfinder screen.

- Use the menu rotary to navigate to the PREV/NEXT item at the right side of the screen.

- Press the rotary to open a list of submenus. The PREV/NEXT item is blinking.

- Turn the menu rotary to loop through the submenus. The submenus are shown on the bottom bar.

- Press the menu rotary to leave the list and enter the selected submenu.

- Turn the menu rotary to loop through the items in the menu.

- Press to change the value of the selected item. Items with toggle values are changed immediately. Items with select values start blinking and their value can be changed by turning the rotary. Pressing stores the current value.

- When you are done making changes, navigate to the EXIT MENU item at the left side of the screen. Press to leave the viewfinder menu. The black bar disappears.

2.3.2 Assigning user buttons

To assign a function to a user button, proceed as follows:

• Open the viewfinder menu and navigate to the Buttons submenu as described in the previous section.

• The Buttons submenu opens.

| EXIT BUTTONS | BtnA <Alt> | BtnB <Mom> | FuncA <Box> | FuncB <Mono> | PREV ↑ NEXT ↓ |

• Use the menu rotary to loop though the items. Press to change the value of an item.

• The first two items (BtnA and BtnB) are used to set the switching mode for button A and button B. Toggle between momentary (<Mom>) and alternating (<Alt>) by pressing the rotary.

• The second two items (FuncA and FuncB) are used to assign a function to button A and button B. Use the rotary to select a function.

• Press EXIT BUTTONS to leave the viewfinder menu.

☞ Note

When a user button is assigned to Call, its switching mode is automatically set to *momentary*.

2.4 Operational functions

Many operational functions can be assigned to the user buttons at the front panel of the viewfinder. Refer to "Assigning user buttons" on page 21 to read more about assigning user buttons.

✎ **Tip**

The Ext1, Ext2, Zoom and Call functions can also be assigned to user buttons on the camera. Refer to your camera user's guide for more details about assigning user buttons.

2.4.1 Box

Turns the framing box on or off. This box is a very useful feature to help focussing and framing while shooting. Three box types are available:
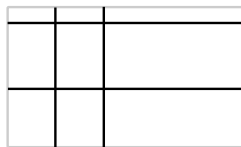
box type   line type   full type

The box can be selected and set up in the viewfinder menu. Refer to "Box" on page 29 for more information.

2.4.2 Mono

Switches the viewfinder to monochrome mode. Select the source (Y, R, G, B or -G) in the viewfinder setup menu. When the camera color bar is switched on, the viewfinder returns to color mode.

2.4.3 Ext1

Displays external video channel 1 in the viewfinder.

2.4.4 Ext2

Displays external video channel 2 in the viewfinder.

2.4.5 Zoom

Zooms in to the center of the image for an uncropped (100%) view. The actual zoom factor depends on the selected camera video mode. When the Zoom function is in use, many of the viewfinder markers are switched off to improve the clarity of the display.

The Zoom indicator in the viewfinder lights when the zoom function is active.

2.4.6 Text

Removes all text items from the viewfinder image. This includes menu and message texts and camera indicators. Markers and cadres are not removed from the image. Press again to restore text.

2.4.7 Call

Press the button to activate the studio Call signal. The green Call indicators on the viewfinder light.

2.5 Camera VF functions

The following viewfinder functions are managed by the camera and are set up in the camera system menu. Refer to your camera user's guide for more information.

2.5.1 Viewfinder detail

The viewfinder detail function emphasizes edges in the viewfinder image, resulting in sharpness perception. Go to the camera system menu to select the VF detail mode and the detail level.

2.5.2 Focus Assist

The Focus Assist function adds a crawling effect in the viewfinder to objects in sharp focus. The FOC+ indicator in the viewfinder lights when this function is active. Go to the camera system menu to turn Focus Assist on or off.

2.5.3 Zebra

The Zebra function displays a zebra (striped) pattern in the viewfinder in areas where highlights occur. This diagonal line pattern warns you that the area affected has risen above a preset level of the full scale video exposure. Go to the camera system menu to turn Zebra on or off and to set the video levels at which Zebra works.

Chapter 3

Menu reference

3.1 Menu contents

The following tables show the items and functions that can be set up in the viewfinder menu.

3.1.1 Diag

Item	Value(s)	Default	Description
EXIT	DIAG		Exits the diagnostics menu.
STATUS	INFO		Enters the viewfinder status information screen. Refer to "Status information" on page 30.
—	—		—
LCD Temp	*nn* C		Info: shows the current LCD screen temperature in degrees celsius.
Format	<video formats>		Info: shows the current video format.
VF Temp	*nn* C		Info: shows the current viewfinder operating temperature in degrees celsius.
PREV ↑	NEXT ↓		Selects a menu from the list.

3.1.2 Buttons

Item	Value(s)	Default	Description
EXIT	BUTTONS		Exits the buttons menu.
BtnA	Alt, Mom	Alt	Selects switch mode for user button A; alternating or momentary.
BtnB	Alt, Mom	Alt	Selects switch mode for user button B; alternating or momentary.
FuncA	None, Box, Mono, Ext1, Ext2, Zoom, Text, Call	Box	Assigns a function to user button A
FuncA	None, Box, Mono, Ext1, Ext2, Zoom, Text, Call	Box	Assigns a function to user button A
FuncC	None, UScan	UScan	Assigns a function to user button C
PREV ↑	NEXT ↓		Selects a submenu from the list.

3.1.3 Config1

Item	Value(s)	Default	Description
EXIT	CONFIG		Exits the Config1 menu.
—	—		—
—	—		—
FACTORY	RESET		Resets the viewfinder's settings to their factory defaults. The factory defaults are shown in the default column.
—	—		—
NoSignal	Black, Input, Bars	Black	Selects signal when no camera signal is present (for example during start-up).
PREV ↑	NEXT ↓		Selects a submenu from the list.

3.1.4 Config2

Item	Value(s)	Default	Description
EXIT	CONFIG		Exits the Config2 menu.
Text	On > Off	Off	Turns viewfinder on-screen text on or off (this is a camera function).
PkCol	Whit, Red, Grn, Blue, Yell, Mgnt, Cyan	Whit	Selects the color of the viewfinder peaking indication (white, red, green, blue, yellow, magenta, cyan).
INDADJ	—		Push to enter the indicator adjustment submenu; see below.
—	—		—
—	—		—
PREV ↑	NEXT ↓		Selects a menu from the list.

Indicator adjustment

Item	Value(s)	Default	Description
EXIT	INDADJ		Exits the indicator adjustment menu. The set indicator level is stored.
IndLvl	Low, Med, High	Med	Selects the indicator level for the viewfinder LED indicators.
RearTlly	Ena, Dis	Ena	Enables or disables the viewfinder rear tally indicator.
—	—		—
—	—		—
—	—		—
—	—		—

3.1.5 Color

Item	Value(s)	Default	Description
EXIT	COLOR		Exits the color menu.
—	—		—
—	—		—
—	—		—
Satur	0..99	50	Sets the color saturation level.
ColTemp	3200K..9500K	6500K	Sets the viewfinder color temperature.
PREV ↑	NEXT ↓		Selects a menu from the list.

3.1.6 Mono

Item	Value(s)	Default	Description
EXIT	MONO		Exits the monochrome menu.
Mono	On > Off	Off	Turns monochrome mode on or off (this is a camera system function).
Source	Y, R, G, B, -G	Y	Selects a signal source for the monochrome image when mono mode is on (this is a camera function).
—	—		—
—	—		—
—	—		—
PREV ↑	NEXT ↓		Selects a menu from the list.

3.1.7 Box

Item	Value(s)	Default	Description
EXIT	BOX		Exits the box menu.
Box	Off, Box, Line, Full	Off	Selects the box type.
Color	Whit, Red, Grn, Blue, Yell, Mgnt, Cyan	Whit	Selects the line color of the box (white, red, green, blue, yellow, magenta, cyan).
Side	T/B > L/R	T/B	Selects the side of the box to be adjusted: T/B = Top/Bottom; L/R = Left/Right
Top	0..99	24	Sets the top position of the box.
Bottom	0..99	73	Sets the bottom position of the box.
Left	0..99	24	Sets the left position of the box.
Right	0..99	74	Sets the right position of the box.
PREV ↑	NEXT ↓		Selects a menu from the list.

3.2 Status information

The status information screen shows information about the viewfinder's internal hard- and software components. This information can be useful when contacting Grass Valley service support. Press EXIT to leave this screen.

```
        Viewfinder Status Information
         Type: LDKxxxx        PID: xxxxxx

Main Brd:    12NC: 3922 406 xxxxx   St: xx   Date: xx/xx/xx
             PID:   xxxxx

Package:     12NC: 3922 407 xxxxx   vxx.xx   Date: xx/xx/xx
Firmware:    12NC: 3922 407 xxxxx   vxx.xx   Date: xx/xx/xx
Appl.Sw:     12NC: 3922 407 xxxxx   vxx.xx   Date: xx/xx/xx
Conf.Sw:     12NC: 3922 407 xxxxx   vxx.xx   Date: xx/xx/xx



EXIT
```

Chapter 4

# Specifications

4.1 Technical specifications

4.1.1 General

Power supply	+10.5 VDC to 17 VDC (supplied by the camera)
Operating temperatures	-20 to +45 °C (-4 to +113 °F)
Storage temperatures	-25 to +70 °C (-13 to +158 °F)
Power consumption (typ.)	3.5 W (supplied by the camera)
Dimensions (W x H x D)	248 x 76 x 219 mm (9.8 x 3.0 x 8.6 in)
Weight (approx.)	820 g (1.8 lbs)
Input signals	Y, Pr, Pb

4.1.2 Screen

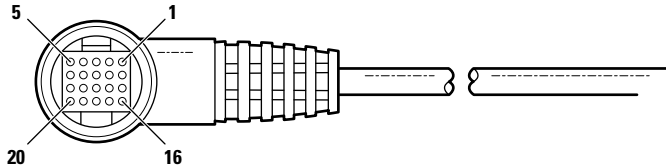|	
Diagonal size	2.7 in (68 mm)
Color depth	16.7 million colors (8 bit color)
Total display area	960 (H) x 540 (V) pixels (QHD resolution)
Response rate	14 ms
Eyepiece adjustment range	+1 to -3 dioptres
Pixel pitch	0.06 x 0.06 mm
Luminance (typ.)	300 Cd/m^2
Contrast ratio (typ.)	500:1

4.1.3 Dimensions
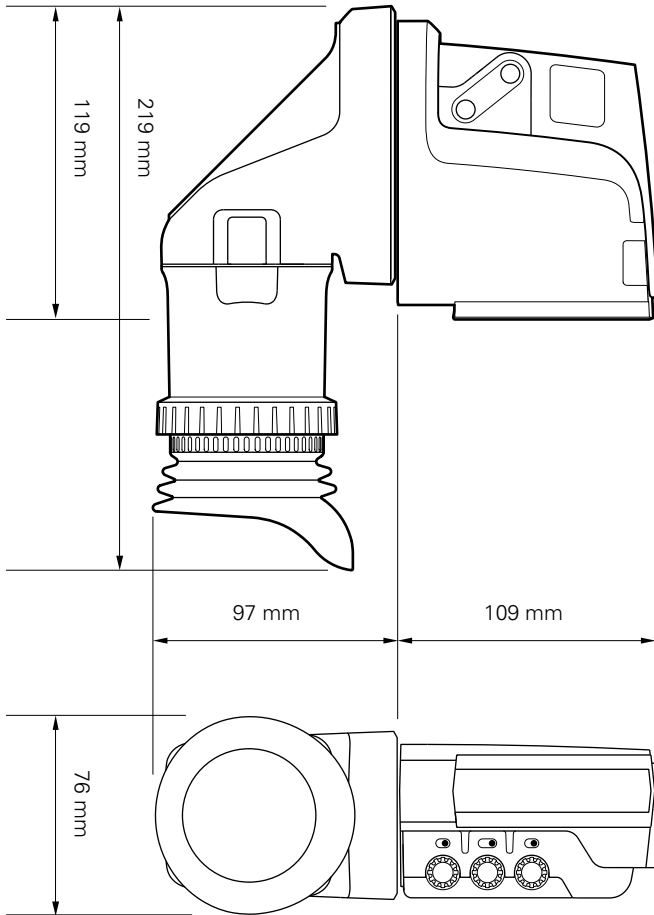
4.1.4 Accessories

- Microphone holder (included)

4.2 Connectors

4.2.1 Viewfinder lead connector

20-pin male viewfinder connector, moulded to the viewfinder cable
(manufacturer code: Hirose HR12-14LA20P)

Pin	Description
1	Not connected
2	Not connected
3	Not connected
4	INTN-D (I^2C interface)
5	Not connected
6	Not connected
7	VF video return
8	SDA-D (I^2C interface)
9	SCL-D (I^2C interface)
10	Not connected

Pin	Description
11	GND
12	VF video
13	Pb VF video return
14	Pr VF video return
15	Not connected
16	+Batt (10.5 to 17 VDC)
17	-Batt (10.5 to 17 VDC)
18	Pb VF video
19	Pr VF video
20	Shield