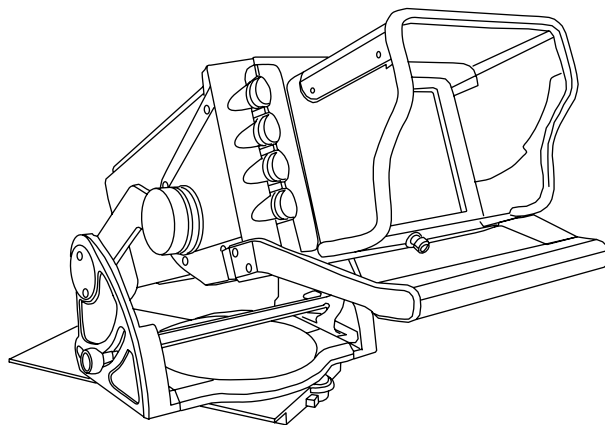


# User's Guide

3922 496 30981 December 2008 v2.0



## LDK 4021

HDTV 7-inch high brightness viewfinder

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## Declaration of Conformity

We, Grass Valley Nederland B.V., Kapittelweg 10, 4827 HG Breda, The Netherlands, declare under our sole responsibility that this product is in compliance with the following standards:

- EN60950 : Safety
- EN55103-1: EMC (Emission)
- EN55103-2: EMC (Immunity)

following the provisions of:

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

## 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.

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## Trademarks

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## Website

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

[www.thomsongrassvalley.com](http://www.thomsongrassvalley.com)

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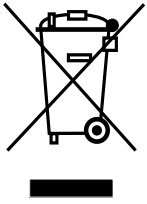
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## End-of-life product recycling



Grass Valley's innovation and excellence in product design also extends to the programs we've established to manage the recycling of our products. Grass Valley has developed a comprehensive end-of-life product take back program for recycle or disposal of end-of-life products. Our program meets the requirements of the European Union's WEEE Directive and in the United States from the Environmental Protection Agency, individual state or local agencies.

Grass Valley's end-of-life product take back program assures proper disposal by use of Best Available Technology. This program accepts any Grass Valley branded equipment. Upon request, a Certificate of Recycling or a Certificate of Destruction, depending on the ultimate disposition of the product, can be sent to the requester.

Grass Valley will be responsible for all costs associated with recycling and disposal, including freight, however you are responsible for the removal of the equipment from your facility and packing the equipment ready for pickup.

For further information on the Grass Valley product take back system please contact Grass Valley at + 800 80 80 20 20 or +33 1 48 25 20 20 from most other countries. In the US and Canada please call 800-547-8949 or 530-478-4148. Ask to be connected to the EH&S Department. In addition, information concerning the program can be found at:

[www.thomsongrassvalley.com/environment](http://www.thomsongrassvalley.com/environment)

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## 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.

The installation of this equipment involves risks both to personnel and equipment and must be performed only by qualified personnel exercising due care.

During installation and operation of this equipment, local building safety and fire protection standards must be observed. Before connecting the equipment to the power supply of the installation, the proper functioning of the protective earth lead of the installation needs to be verified.

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.

### Warnings

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

- Do not modify this equipment;
- Installation of this equipment must only be performed by qualified personnel;
- Do not use any accessories other than those recommended by the manufacturer;
- In case of an emergency ensure that the power is disconnected;
- Mount equipment so that power lead can be accessed to disconnect power;
- Any interruption of the protection conductor inside or outside the apparatus, or disconnection of the protective earth terminal, is likely to make the apparatus dangerous. Intentional interruption is prohibited;
- Use only fuses of the type and rating specified;
- To prevent fire or shock hazard, do not expose the unit to rain or moisture;
- There are no user serviceable parts inside. Refer servicing to qualified personnel only or contact your local Grass Valley representative;
- Observe local building safety, fire protection and electrical installation standards during installation and operation of this equipment;
- Before connecting the equipment to the power supply of the installation, verify the proper functioning of the protective earth lead;
- Whenever it is likely that safe operation is impaired, the apparatus must be made inoperative and secured against any unintended operation.

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## 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;
- To prevent risk of overheating, ventilate the product correctly;
- Connect the product only to a power source with the specified voltage rating.

## 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.

Die Montage, Wartung und Instandsetzung dieser Ausrüstung ist mit Risiken für Personal und Ausrüstung verbunden und darf nur von qualifiziertem Personal vorgenommen werden, wobei mit der nötigen Sorgfalt vorzugehen ist.

Beim Einbau und Betrieb dieser Ausrüstung müssen die örtlichen Gebäudesicherheits- und Brandschutzvorschriften beachtet werden. Vor dem Anschluss der Ausrüstung an die Stromversorgung der Anlage muss überprüft werden, ob der Schutzleiter intakt ist.

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.

## 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;
- Die Montage dieser Ausrüstung darf nur von Fachpersonal vorgenommen werden;
- Es sollen nur von den Hersteller empfohlene Zubehöre verwendet werden;
- Bei Eintreten eines Notfalls unbedingt die Stromzufuhr abschalten;
- Ausrüstung so montieren, daß das Netzkabel zum Abschalten der Stromzufuhr zugänglich ist;
- Jede Unterbrechung des Schutzleiters innerhalb oder ausserhalb des Geräts oder Trennung der Schutzleiter-anchlussklemme Könnte das Gerät fefährlich machen. Eine absichtliche Unterbrechung ist untersagt;
- Es dürfen nur Sicherungen des vorgeschriebenen Typs und Nennwerts verwendet werden;
- Um Feuer oder Schlaggefahr vorzubeugen, soll das Produkt nie an Regen oder Feucht ausgesetzt 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;

- 
- Beim Einbau und Betrieb dieser Ausrüstung müssen die örtlichen Gebäudesicherheits- und Brandschutzvorschriften beachtet werden;
  - Vor dem Anschluss der Ausrüstung an die Stromversorgung der Anlage muss überprüft werden, ob der Schutzleiter intakt ist;
  - Wenn eine Beeinträchtigung des sicheren Betriebs wahrscheinlich ist, muss das Gerät außer Betrieb gesetzt und gegen ungewollten Betrieb gesichert werden.

## 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;
- Um einer Überhitzungsgefahr vorzubeugen, ist das Produkt korrekt zu belüften;
- Das Produkt darf nur an eine Stromquelle mit der vorgeschriebenen Nennspannung angeschlossen werden.

## Installation notices

For proper installation the following NEC articles should be noticed:

Regarding communication circuits:

- Installation of equipment (NEC article 800.18).

Regarding radio and television equipment:

- Avoid contact with conductors of other systems (NEC article 810.13);

Provide extensive, separate clearance requirements for indoor and outdoor locations (NEC article 810.18).



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# Chapter 1

## Installation

### 1.1 Introduction

The LDK 4021 is a high quality HD 7-inch high brightness viewfinder. Due to its light-weight construction the viewfinder is very easy to handle. The LDK 4021 is used with the Grass Valley HD line of cameras (for example, LDK 4000 or LDK 8000).

### 1.2 Viewfinder support bracket

The supplied support bracket is required to mount the viewfinder on top of a Xpander/SuperXpander. Refer to user's guide of the Xpander/SuperXpander for the installation instructions for the bracket.



#### Note

When the viewfinder is mounted on top of the LDK 6517 viewfinder support the viewfinder support bracket is not needed.

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## 1.3 Mounting the viewfinder



**Caution**

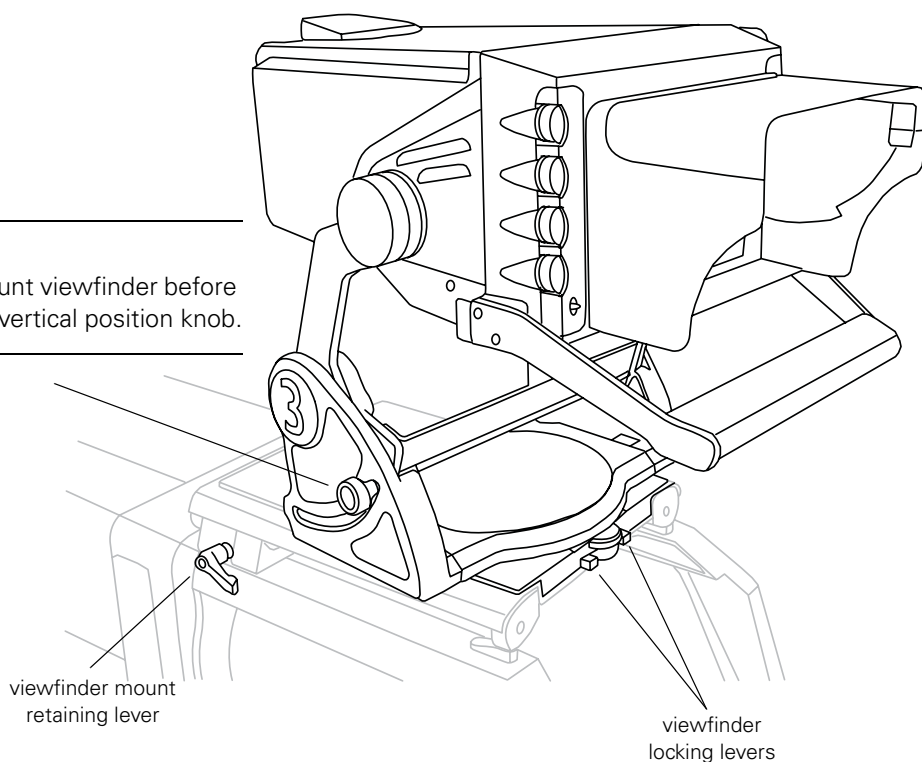
Switch off power of the SuperXpander before mounting the viewfinder.

Figure 1-1. Mounting the viewfinder



**Caution**

Always mount viewfinder before pulling the vertical position knob.



To mount the viewfinder on top of the SuperXpander proceed as follows:

1. Release the retaining lever on the viewfinder support and slide the viewfinder towards the rear of the SuperXpander; fasten the lever.
2. Slide the viewfinder along the rails on top of the SuperXpander until it can go no further.
3. Push both viewfinder locking levers inwards and slide the viewfinder until it firmly engages the connector.
4. Release the locking levers and ensure they click into the lock position (completely outwards).

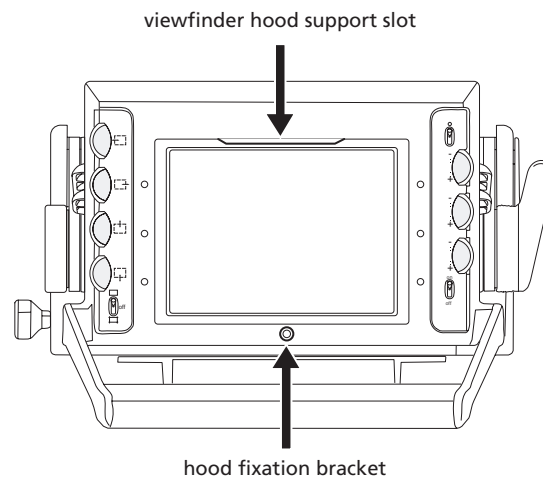
## 1.4 Sunhood

To attach the sunhood to the viewfinder proceed as follows:

1. Clip the top of the sunhood into the slot at the top-front of the viewfinder.

Figure 1-2. Attaching a sunhood

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2. Swing the sunhood down and fasten it by pushing and turning the screw into the hood fixation bracket.



### Note

The top part of the sunhood is hinged so that it can be moved up when using the viewfinder at a high angle.

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# Chapter 2

## Adjusting

### 2.1 Positioning

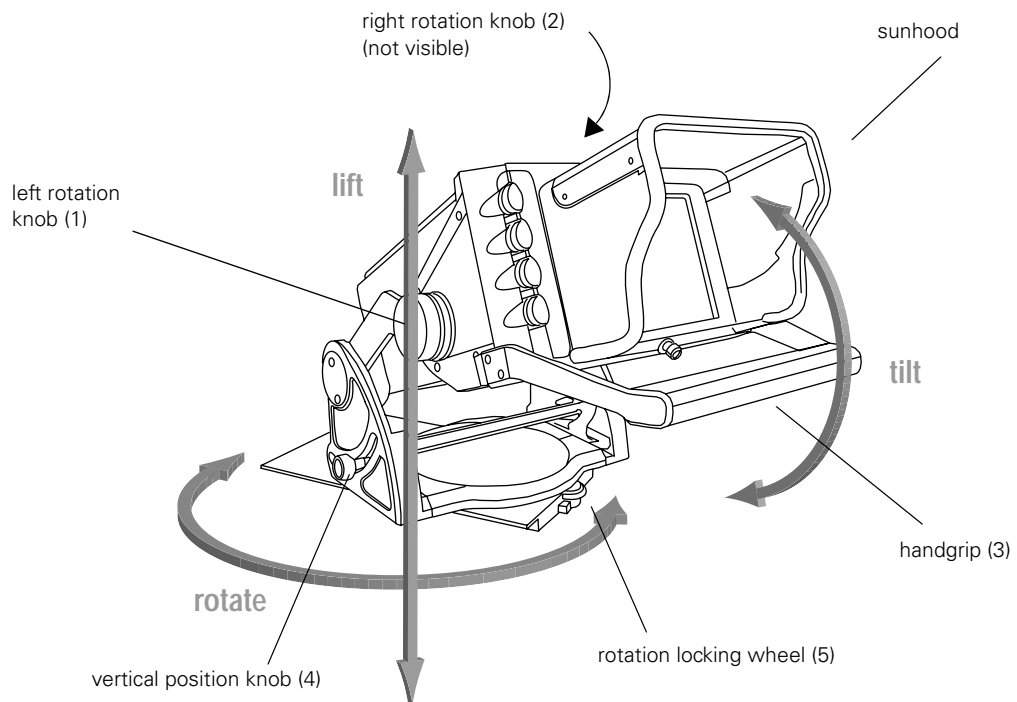
The viewfinder can be easily positioned to adapt to any viewing angle and situation. There are four position adjustments:

- backwards and forwards,
- tilt,
- lift, and
- rotate.

#### 2.1.1 Backwards and forwards

1. Loosen the viewfinder mount retaining lever on top of the SuperXpander.
2. Slide the viewfinder support mount along the rails until it is in the desired position.
3. Tighten the viewfinder retaining lever on top of the SuperXpander.

Figure 2-1. Positioning the viewfinder



### 2.1.2 Tilt

The viewfinder can be tilted very low when the camera is in a high position:

1. Hold the left rotation knob (1) with your left hand and loosen the right rotation knob (2) with your right hand.
2. Tilt the viewfinder to the desired angle using the handgrip (3).
3. Fasten the right rotation knob (2) to fix the position.

### 2.1.3 Lift

1. Pull out the vertical position knob (4) with your left hand and lift the handgrip (3) with your right hand.
2. The vertical position can be set to four fixed positions with the vertical position knob (4).
3. Choose the desired position and release the knob until it clicks.

### 2.1.4 Rotate

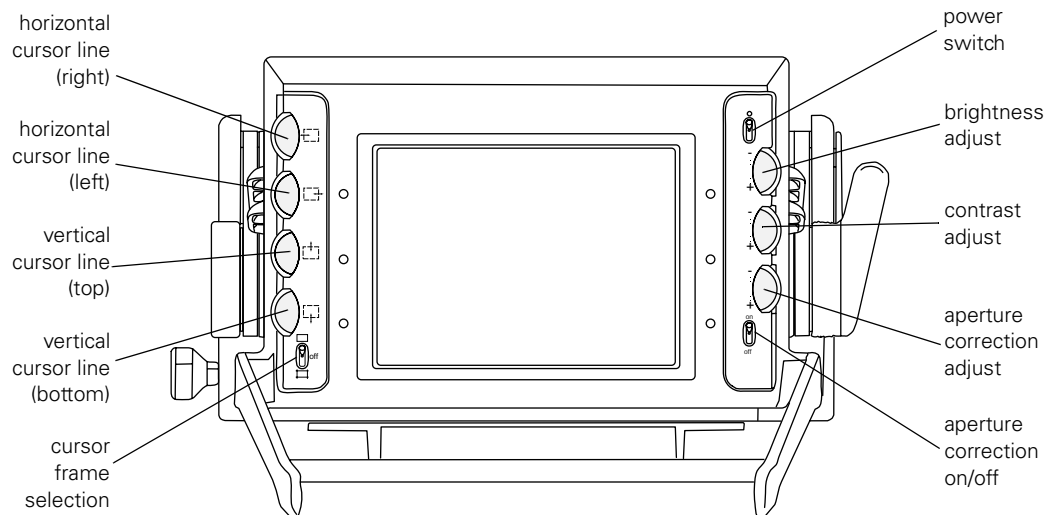
The unit can rotate 90 degrees to the right and 180 degrees to the left. When rotated to the left the viewfinder can be used to set up the lens while still observing the viewfinder picture.

1. Loosen the rotation locking wheel (5) and use the handgrip (3) to rotate the viewfinder.
2. Fasten the rotation locking wheel (5) to fix the position.

# Chapter 3

## Operation

### 3.1 Controls



#### Power switch

This switch is used to switch the power supply in the viewfinder on or off. A green LED near the switch indicates that the unit is switched on.



#### Note

The power to the viewfinder is supplied by the camera. When the camera is switched off the viewfinder receives no power even when the power switch is on.

#### Brightness adjust

Controls the brightness level of the viewfinder display.

#### Contrast adjust

Controls the contrast level of the viewfinder display.

**Aperture correction adjust**

Varies the amount of aperture correction applied to the viewfinder signal when the aperture correction switch is in the **On** position.

**Aperture correction switch**

Switches the aperture correction of the viewfinder signal **On** and **Off**.

**Cursor frame selection**

Selects the cursor frame mode for viewfinder display: box type, deactivated, lines type.

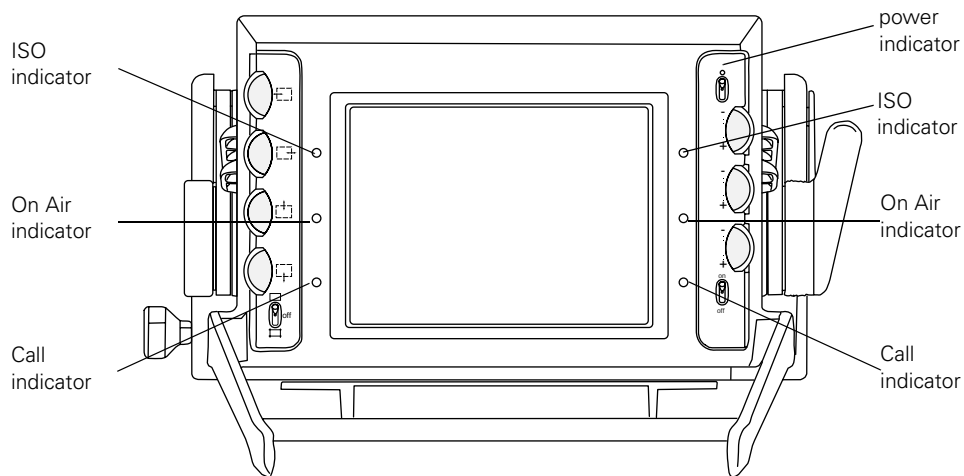
**Vertical cursor line**

Shifts the top or bottom cursor lines in a vertical direction.

**Horizontal cursor line**

Shifts the left or right cursor lines in a horizontal direction.

## 3.2 Indicators



**Power indicator**

This green LED indicates that the viewfinder is switched on.

**On Air indicators**

These red LEDs indicate that the camera is currently on air.

**ISO indicators**

These yellow LEDs indicate that the camera is currently in ISO mode.

**Call indicators**

These green LEDs light to attract attention when CALL is activated.







# Chapter 4

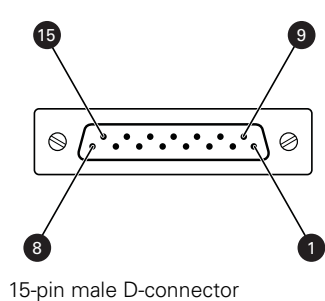
## Specifications

### 4.1 Specifications for LDK 4021

Item	Value
Dimensions (L x W x H)	424 x 296 x 173 mm (16.7 x 11.7 x 6.8 in)
Weight (approx.)	7.3 kg (16.1 lbs)
Operating temperatures	-20 to +45 °C (-4 to +113 °F)
Storage temperatures	-25 to +70 °C (-13 to +140 °F)
Operating humidity	93% RH (non condensing)
Power supply	10.5 to 17 VDC
Power consumption	28 VA max (supplied by the Xpander/SuperXpander)
Supported formats	1080i59.94, 1080i50, 1080i48 (SMPTE 274) 720p59.94, 720p50 (SMPTE 296M)
CRT	7-inch high resolution type
Picture zoom	zoom factor ~ 1.3 x
Geometric distortion	1.5% or less
Picture stability	1% of picture dimensions or better
Brightness	800 cd/m <sup>2</sup> (nom.), 2,200 cd/m <sup>2</sup> (peak)
Resolution	Min. 800 horizontal lines in centre of screen at 500 cd/m <sup>2</sup>
Frequency response	0.1 to 15 MHz (±1 dB ) 15 to 27 MHz (+1/- 3 dB)
Aperture	0 to 12 dB (at approx. 12.5 MHz) variable adjustment
Black level stability	Change of black level 2% with respect to white level

## 4.2 Connectors

Figure 4-1. Viewfinder connector



- |                 |                         |
|-----------------|-------------------------|
| 1. VF video     | 9. VF video return      |
| 2. VF Ext video | 10. VF Ext video return |
| 3. VF Pb        | 11. +15 VDC             |
| 4. GND          | 12. GND                 |
| 5. shield       | 13. shield              |
| 6. +15 VDC      | 14. VF Pr               |
| 7. SCL-D        | 15. SDA-D               |
| 8. INTN-D       |                         |

### 4.3 Dimensions

