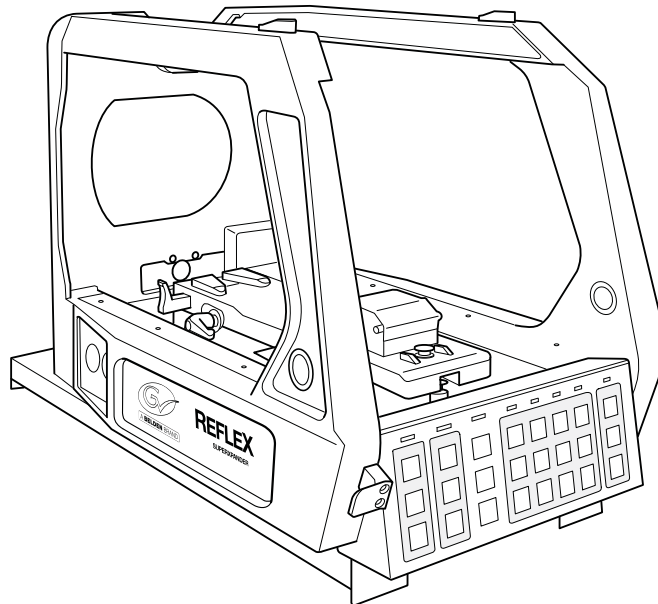


## User's Guide

3922 496 31641 December 2016 v3.0



**LDK 4475/15**

Reflex SuperXpander

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## Declaration of Conformity

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

- EN62368-1:2014 + AC:2015 — Safety
- EN 55032:2012 + C2:2013 — EMC (Emission)
- EN55103-2:2009 — EMC (Immunity)

following the provisions of:

- a. the Low Voltage directive 2014/35/EU
- b. the EMC directive 2014/30/EU
- c. the RoHS directive 2011/65/EU

## 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

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## Trademarks

Grass Valley, LDX Series and derivatives are trademarks of Belden Inc. or Grass Valley. All other tradenames referenced are service marks, trademarks, or registered trademarks of their respective companies.

## 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](http://www.grassvalley.com)

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## Recycling

Visit [www.grassvalley.com](http://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.

---

## 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.

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;
- Only mount the unit on a tripod or pedestal and head that can carry a payload of more than 50 kg;
- Grass Valley clearly states that it is unacceptable with respect to safety to use Triax cables (for the interconnection between Base Station and The SuperXpander) with knowingly a short circuit between the inner and outer shield. Also the use of coax cables or the use of patch panels with a short circuit between the inner and outer shield is prohibited;
- Do not use any accessories other than those recommended by the manufacturer;
- In case of an emergency ensure that the power is disconnected;
- Any interruption of the protection conductor inside or outside the apparatus is likely to make the apparatus dangerous. Intentional interruption is prohibited;
- 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;
- Whenever it is likely that safe operation is impaired, the apparatus must be made inoperative and secured against any unintended operation.

---

## 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.

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;
- Diese Ausrüstung soll nur auf einem Stativ oder Sockel und einem Kopf aufgestellt werden die eine Last von mehr als 50 kg tragen kann;
- Grass Valley erklärt daß es im Zusammenhang mit der Sicherheit nicht gestattet ist Triaxkabel zu verwenden (für die Verbindung zwischen Base Station und SuperXpander) die wissentlich ein Kurzschluß zwischen der innere und aussere Abschirmung haben. Auch die Verwendung von Koaxialkabel oder Rangierfeldern mit einem Kurzschluß zwischen der innere und aussere Abschirmung is nicht gestattet.
- Es sollen nur von den Hersteller empfohlene Zubehöre verwendet werden;
- Bei Eintreten eines Notfalls unbedingt die Stromzufuhr abschalten;
- Jede Unterbrechung des Schutzleiters innerhalb oder ausserhalb des Geräts könnte das Gerät fegefährlich machen. Eine absichtliche Unterbrechung ist untersagt;
- 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;
  - 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:

- Installation of equipment (NEC article 800.18);
- 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).

## Tripod installation

The typical configuration for this device (SuperXpander with Triax cables and 7-inch viewfinder mounted) has proved to be stable when used on a tripod with the following specifications: weight 24 kg (53 lbs), height 120 cm (47 in), leg distance at floor level of 135 cm (53 in).

Note that these values are recommendations only. Always check the mechanical stability of the device before using it.



# Chapter 1

## Introduction

### 1.1 System overview

Grass Valley™ broadcast products offer production professionals the most comprehensive multi-format solutions for acquisition, production, storage, and playback, and a strong foundation for centralized, pro-active status and activity monitoring.

The Grass Valley Reflex SuperXpander is such a solution. The unit is part of the latest Grass Valley 3G line of camera adapters and it supports many types of studio lenses, teleprompters and high-resolution viewfinders.

For sports and events coverage the use of large zoom lenses is a common requirement. The Reflex SuperXpander acts as a large lens adapter, rapidly converting a portable camera into a mobile production system. The Reflex SuperXpander provides secure mounting and balancing for the largest prompt head.

To make life even easier, your camera can remain mounted inside the housing for transport, saving rigging time and precious space, and ensuring that the camera is aligned and ready to go immediately. Alternatively, you can mount or release the camera from the housing quickly so you can switch between pedestal, studio lens, and handheld applications working with an ENG-style lens – even during a live program.

### 1.2 HotShoe docking

The Reflex SuperXpander has a HotShoe docking connector that interfaces with the camera without the need for a flying lead. Camera adapters equipped with a HotShoe connector, such as Grass Valley's XF, 3G Triax and 3G Fiber adapters can be docked and disconnected quickly and easily.

### 1.3 Lenses

The Reflex SuperXpander can be used with types of broadcast lenses:

- ENG style lenses;
- Compact studio lenses
- Large studio (box) lenses



**Note**

To mount a compact studio lens a special lens support is needed. Contact your local Grass Valley representative for more information about this.

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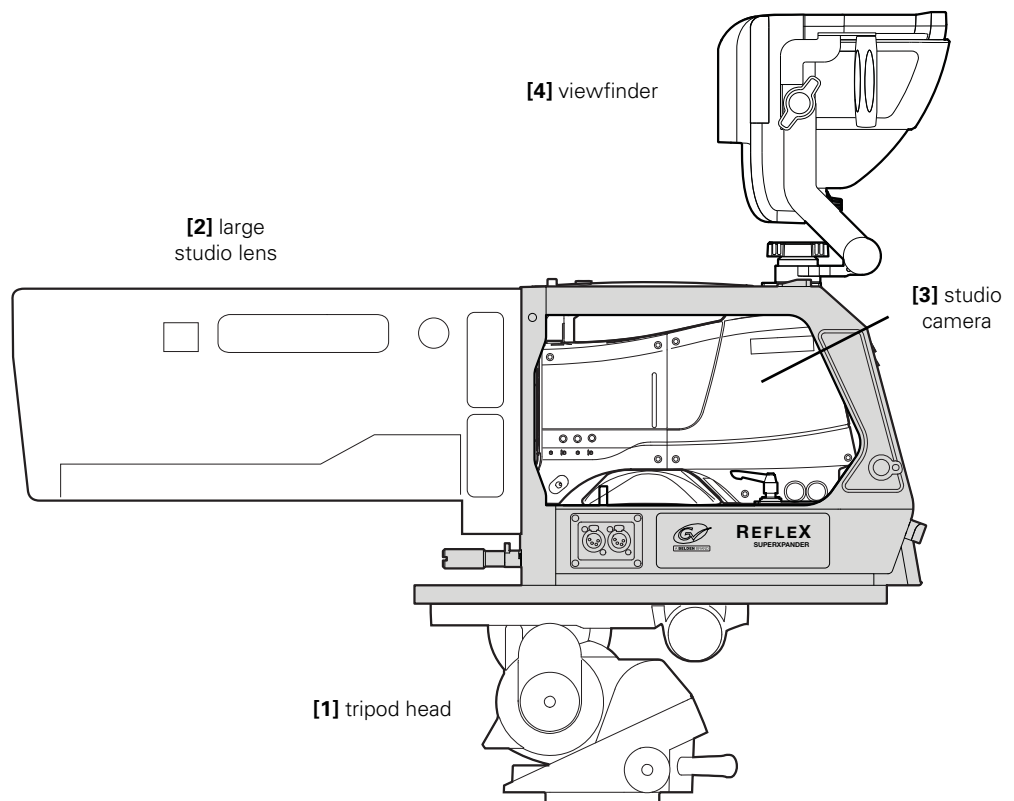
## 1.4 Viewfinders

The Reflex SuperXpander can be used with all Grass Valley viewfinders, providing unprecedented degrees of freedom. The unique design of the Reflex SuperXpander system puts even a large viewfinder close to the optical axis of the camera, making camera movements and positioning more intuitive for the operator to ensure that the shot is right every time.

# Chapter 2

## Installation

### 2.1 Configuration



It is important that you assemble and disassemble the units in the right order. The correct order of assembly is as follows:

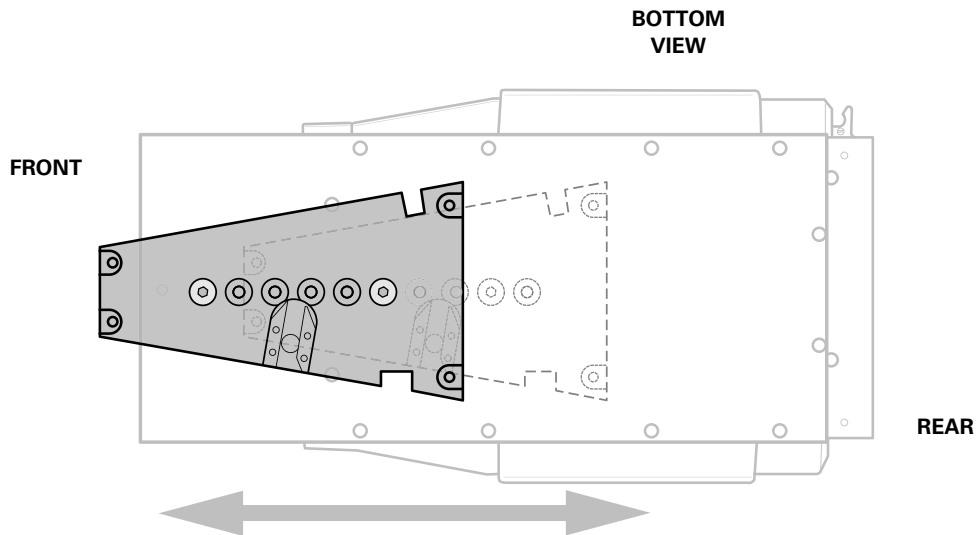
1. Attach the Reflex SuperXpander to the tripod head.
2. Mount the lens onto the Reflex SuperXpander.
3. Attach the camera to the Reflex SuperXpander.
4. Mount the viewfinder (onto the viewfinder support of the Reflex SuperXpander.)

## 2.2 Attaching a wedge plate



### Caution

Only mount the unit on a tripod or pedestal and head that can carry more than 50 kg (110 lbs).



To mount the Reflex SuperXpander on a tripod, first attach the wedge plate to the underside of the unit as follows:

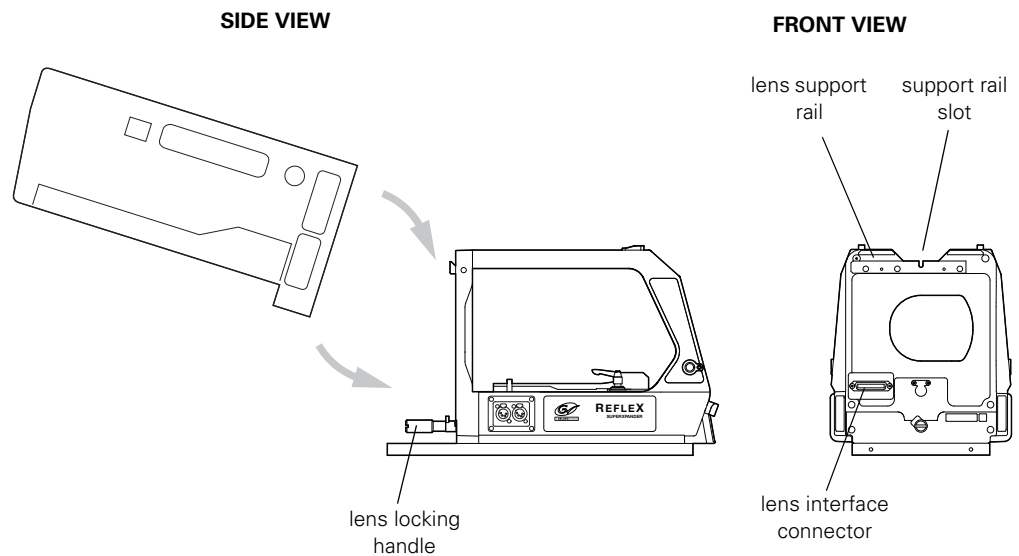
1. Lay the Reflex SuperXpander on its side.
2. Ensure that the flat side of the tripod wedge plate is against the underside of the Reflex SuperXpander.
3. The 6 holes in the wedge plate can be shifted along the length of the 9 holes in the Reflex SuperXpander. Choose the right position depending on the weight and balance of the total configuration.
4. Secure the tripod wedge plate to the Reflex SuperXpander by screwing two screws ( $3/8$ " BSW-type, use a  $7/16$ " hex key wrench) into the holes provided. Keep at least 3 empty holes between the two screws.
5. Slide the Reflex SuperXpander onto the tripod and lock in place with the tripod locking bar and security pin.

## 2.3 Mounting a large studio lens



### Note

When a viewfinder support (for CRT viewfinders) is mounted, slide back the support towards the front of the Reflex SuperXpander.



To mount the lens onto the Reflex SuperXpander, proceed as follows:

1. When the camera is already mounted (in transport position) remove the lens cap before proceeding.
2. Hook the lens onto the support rail ensuring that the upper lens pin fits into the slot in the support rail.
3. Swing the lens downwards so that the lower lens pin fits into the hole in the front of the Reflex SuperXpander.
4. Turn the lens locking handle clockwise to secure the lens in place.
5. If a zoom control is used, attach the zoom control cable to the lens.




### Note

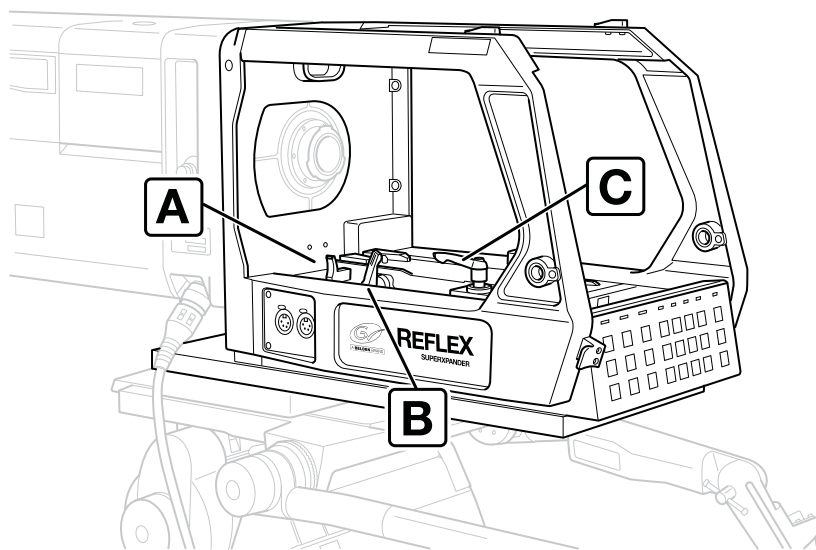
When the SuperXpander is used with an ENG type lens, set the lens connector to *Camera* in the **LENS > CAMERA CONNECTOR** menu. Connect the lens cable directly to the lens connector on the camera.

## 2.4 Mounting a camera

### 2.4.1 Prepare SuperXpander

 **Note**

When a viewfinder support (for CRT viewfinders) is mounted, slide the support back ('roof') towards the front of the Reflex SuperXpander.



1. Make sure that the Reflex SuperXpander is mounted firmly on the tripod. Use tripod brakes when present.
2. Make sure that the **Quick Mount plate** inside the Reflex SuperXpander is in the back position and that it is fixed. Lever **A** should be pushed out.



## 2.4.2 Insert camera



### Note

Make sure that the shoulder pad on the camera is in the front position and that the lens cap is removed.

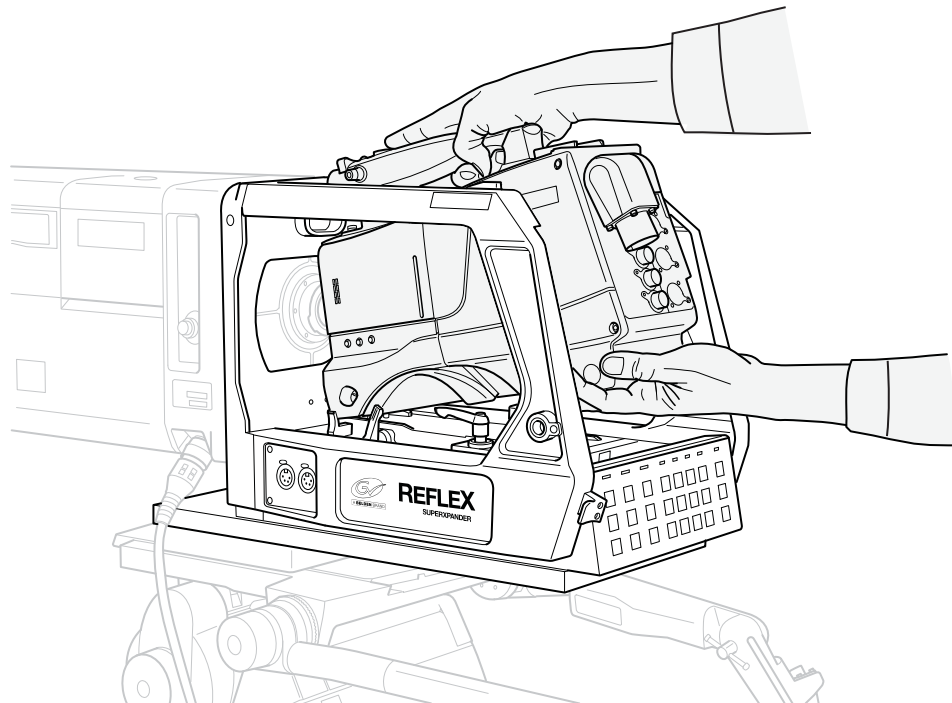
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### Note

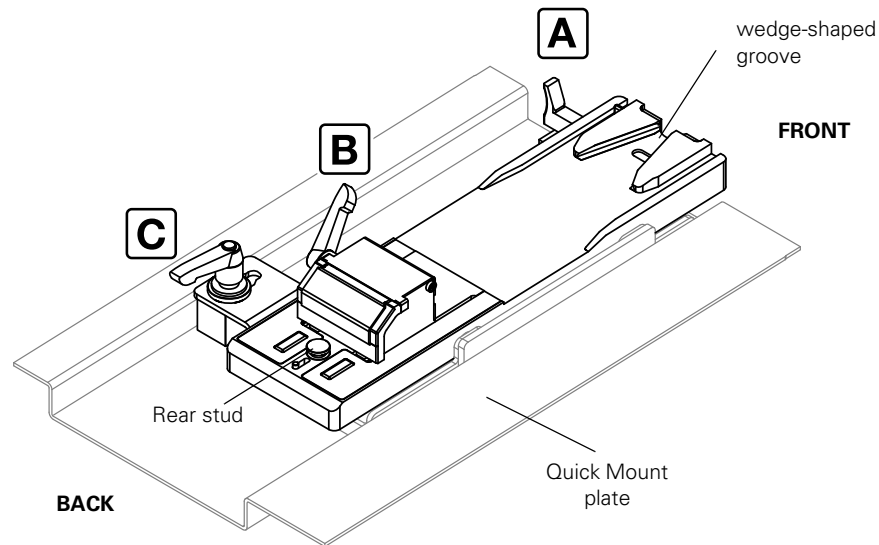
When the camera is fitted with a short V-Block, it needs to be replaced with the original V-Block before the camera can be used with the SuperXpander.

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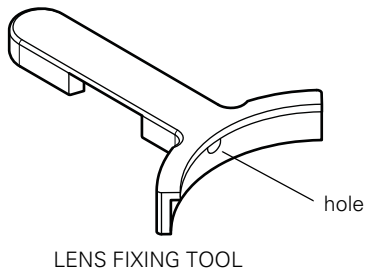


1. Hold the camera at a slight angle and place the front onto the **Quick Mount plate** behind the rear stud.
2. Level the camera and slide it forward slightly to rest on the **Quick Mount plate**.
3. Push the camera forward along the wedge-shaped groove until the rear stud engages the rear of the camera. When the camera is correctly locked into position lever **A** springs out.

### 2.4.3 Fix camera position



1. Adjust the position of the camera with levers **B** and **C** so that the bayonet ring engages the lens.



2. Use the supplied lens fixing tool to turn the bayonet ring lever on the front of the camera downwards so that the camera is connected to the lens. The adjustment pin on the bayonet ring fits into the hole of the fixing tool.
3. Tighten the levers **B** and **C** to secure the camera.

### 2.4.4 Mount viewfinder

1. Slide the V-block of the viewfinder onto the quick mount block on the camera adapter until it clicks firmly into place.
2. Connect the viewfinder cable to the camera head.

### 2.4.5 Connect transmission

1. Connect the transmission cable from the base station to the camera.
2. Transmission cables can be guided using the cable clamp at the left side of the SuperXpander's frame. Only small diameters can be clamped.

## 2.5 Transport position

The SuperXpander can be transported in a safe way without the need to remove the camera. To bring the unit into transport position proceed as follows:

1. Disconnect the transmission cable from the camera and remove any plugs from the utility power.
2. If a zoom control is used, remove the zoom control cable from the lens and the zoom control handle.
3. Turn the bayonet ring lever on the front of the camera upwards to disconnect the lens from the camera.
4. Remove the lens in the reversed direction as described in the section [“Mounting a large studio lens” on page 15](#).
5. Release lever **C** to loosen the camera.
6. Gently pull back the camera.
7. Tighten lever **C** to secure the camera. Leave lever **B** in the current position.
8. Remove the viewfinder from the camera.
9. The Reflex SuperXpander is now ready for safe transportation.

## 2.6 Optional accessories

### 2.6.1 LDK 6985/30 Script board

The LDK 6985/30 Script board can be mounted onto the viewfinder quickmount on the camera adapter. First mount the scriptboard, then the viewfinder.



# Chapter 3

## Operation

### 3.1 Power

#### 3.1.1 Power configuration

The Reflex SuperXpander, camera and viewfinder are powered by the base station via the Triax or Hybrid fiber transmission cable. The Reflex SuperXpander is receiving its power through the HotShoe connector of the camera adapter.



#### Note

The maximum allowed power consumption of the system depends on the configuration and the usage of the system.

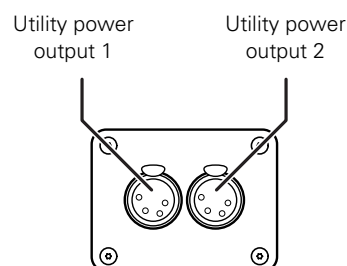
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#### 3.1.2 Cable length

The maximum length of the transmission cable depends on the amount of power drawn by the utility power and the camera configuration, including any attached accessories.

#### 3.1.3 Utility power

The Reflex SuperXpander is equipped with a utility power that can be used to power external equipment. Two 4-pin XLR sockets are available at the base of the unit:



**Note**

The power drawn from the combined utility power outputs should never exceed 120 W.

The utility power indicator on the control panel provides information about the power outputs:

Indicator	Description
Green	Normal operation. Power is available.
Green (flashing)	Power overload or temperature too high
Off	This indicates that there is a power overload on the power outputs. Power is switched off.

### 3.1.4 Temperature warning system

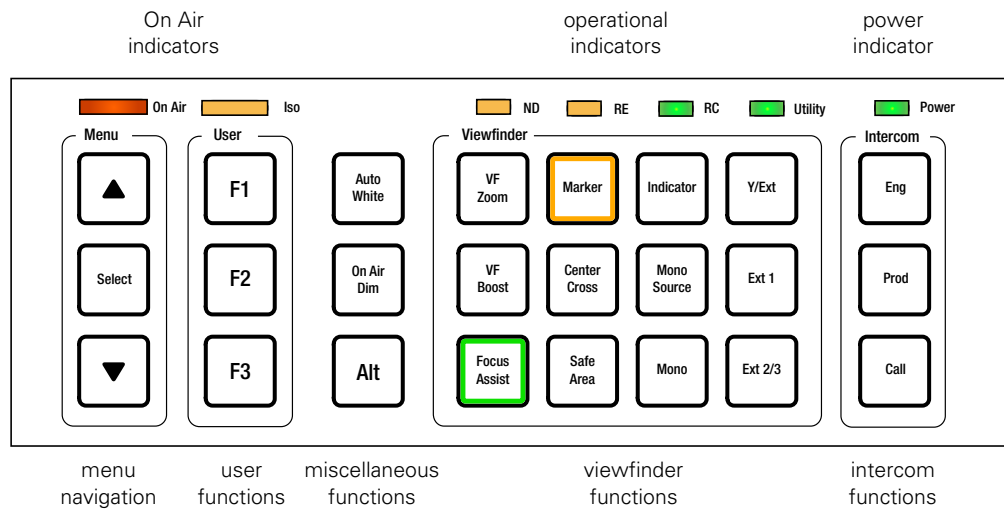
When the temperature inside the Reflex SuperXpander becomes too high, utility power is switched off. The table below shows detailed information about the temperature warning system:

Temperature	Action
below 60 °C (140 °F)	Normal operation.
from 60 °C (140 °F) up to 70 °C (158 °F)	A warning message is shown in the viewfinder. The utility power indicator on the control panel is flashing.
higher than 70 °C (158 °F)	The power output is switched off and a warning message is shown in the viewfinder. The utility power indicator on the control panel is off.

## 3.2 Control panel

### 3.2.1 Overview

The Reflex SuperXpander is equipped with a control panel at the rear of the unit. This panel holds buttons for controlling the camera and the viewfinder.



The buttons on the control panel have colored (ring) backlighting that indicates the state of the function:

Indication	State of function
Off	Function is unavailable.
Green	Function is available but not active.
Orange	Function is selected and active.
Orange -flashing	Function is selected but has unusual behavior.

### 3.2.2 Indicators

#### On Air indicators

Indicator	Description
On Air	Camera system is On Air. Tally lamp on camera and viewfinder light (when not disabled).
Iso	Camera system is in Iso mode ("Yellow On Air").

### Operational indicators

Indicator	Description
ND	Neutral Density Filter is active on the camera.
RE	Range Extender is active on the camera
RC	Lights when the camera is in the remote control mode.
Utility	Utility power status

### Power indicator

This green indicator lights when the Reflex SuperXpander is powered by the camera.

## 3.2.3 Functions

The following tables provide an overview of functions included in the Reflex SuperXpander control panel. Note that the availability of some functions depends on your camera configuration.

### Menu navigation

The **Up**, **Down** and **Select** buttons are used to navigate and select functions in the camera system menu. The menu is displayed on the attached viewfinder. These buttons operate in the same way as the **Rotary** and **Select** buttons on the front of the camera.

Switch	Default function	Alternate function (with Alt)
up	Menu navigation: up	LED brightness higher
select	Menu navigation: select	Selects green, orange or indicator leds for brightness control.
down	Menu navigation: down	LED brightness lower

### User functions

Three assignable user buttons (F1, F2 and F3) are provided.

Button	Default function	Alternate function (with Alt)
F1	User button F1 (assignable to: none, ND, FX, Bars and Prog)	Start diagnostic test
F2	User button F2 (assignable to: none, ND, FX, Bars and Prog)	Start diagnostic test
F3	User button F3 (assignable to: none, ND, FX, Bars and Prog)	Start diagnostic test

To assign a function to one of the user buttons, proceed as follows:

- Push the select button on the SuperXpander's control panel to enter the camera menu
- Go to the **INSTALL > BUTTONS > SXP F1, SXP F2 or SXP F3** item and select an assignment for that button. You can select: **none, ND, FX, Bars or Prog**.



### Miscellaneous functions

Button	Default function	Alternate function (with Alt)
Auto White	Push this button together with the Alt button to start the automatic white balance procedure on the camera.	Press the Alt button to activate auto white function.
On Air Dim	Push this button to enable/disable or dim the On Air/Tally lamp of the connected viewfinder. 1. On Air/Tally lamp is enabled 2. On Air/Tally lamp is dimmed (option available only with dimmable viewfinders) 3. On Air/Tally lamp is disabled	-
Alt	Hold this button and press another to activate alternative functions of the control panel.	-

### Viewfinder functions

This group of functions controls what is displayed in the viewfinder:

Button	Default function	Alternate function (with Alt)
VF Zoom	Turns the viewfinder zoom function on and off.	Toggles between momentary and alternating mode.
VF Boost	When turned on, extra gain is added to the viewfinder detail signal.	Toggles between On and Boost.
Focus Assist	Turns the focus assist system in the viewfinder on and off.	-
Marker	Turns the marker indicator in the viewfinder on and off.	-
Center Cross	Turns the center cross indicator in the viewfinder on and off.	-
Safe Area	Turns the safe area indicator in the viewfinder on and off.	-
Indicator	Turns all indicators on the viewfinder screen On or Off	-
Mono Source	Selects a signal source (Y, R, G, B, -G) for the monochrome signal when mono mode is on.	-
Mono	Turns monochrome mode on or off.	-
Y/Ext	When on, the mix of Y + EXT 1 or Y + EXT 2/3 signal for display in the viewfinder. Y/EXT OFF switches only EXT 1 or EXT 2/3 signal for display in the viewfinder.	-
Ext 1	Switches the External video 1 and External video 2/3 signal for display in the viewfinder. Ext 1 and Ext 2/3 can also be selected with the pan-bar switches at the back of the handle.	
Ext 2/3		

### Intercom functions

Button	Default function	Alternate function (with Alt)
Call	Pressing this button sends a signal to the control panels calling for attention. An incoming call activates the LED in the switch.	-
Prod	Opens the camera intercom Production channel.	-
Eng	Opens the camera intercom Engineering channel.	Switches between momentary and alternating mode.

# Chapter 4

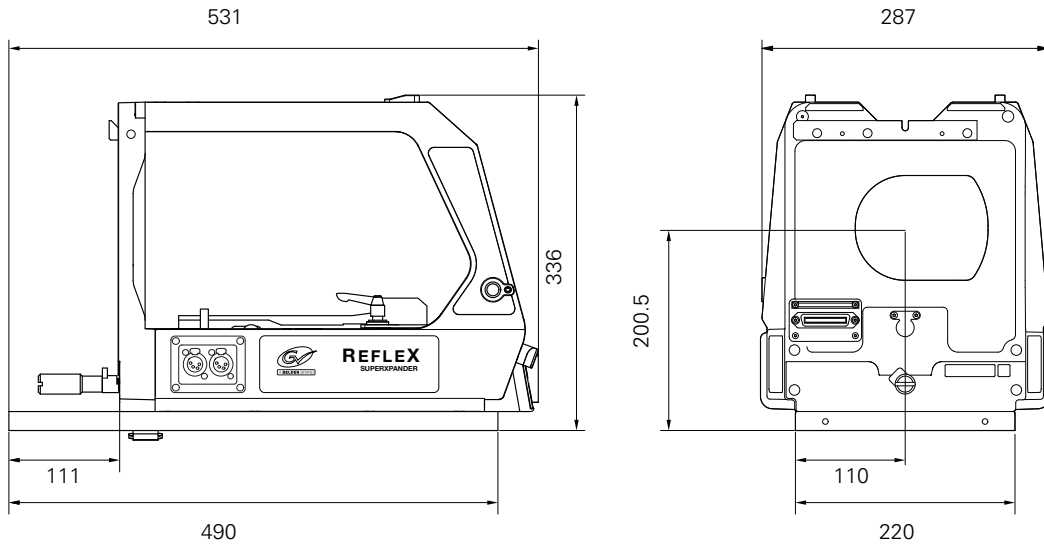
## Specifications

### 4.1 Technical specifications for LDK 4475/15

#### 4.1.1 General

Item	Value
Dimensions (L x W x H)	526 x 287 x 347 mm (20.7 x 11.3 x 13.7 in)
Weight (approx.)	8.5 kg (18.7 lbs)
Operating temperatures	-20°C to +45 °C (-4 to +113 °F)
Storage temperatures	-20 °C to +60 °C (-4 to +140 °F)
Power supply	(supplied by the Base Station)
Power consumption	250 W max. fully equipped (supplied by the base station)
Utility power outputs	2x 13.8 V <sub>DC</sub> XLR-4 female connector, P <sub>max</sub> = 120 W
Lens interface	36-pin Centronics female connector

### 4.1.2 Dimensions



### 4.1.3 Supplied accessories

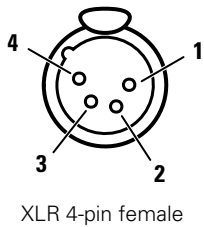
- User’s guide (electronic publication)
- Lens fixing tool

### 4.1.4 Optional accessories

- LDK 5820/25 Set of serrated discs (2x) for mounting pan bars
- LDK6985/30 Scriptboard with light

## 4.2 Connectors

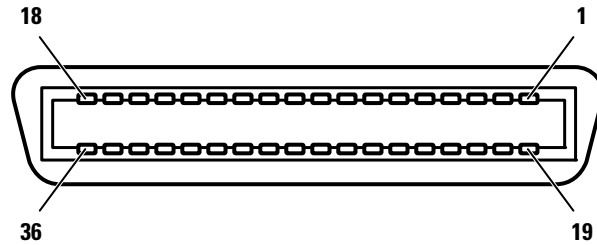
### 4.2.1 Utility power outputs (2x)



Pin	Description
1	GND
2	no connection
3	no connection
4	13.8 VDC

$P_{max}$  (total) = 120 W

## 4.2.2 Lens interface connector



Centronics 36-pin female

Pin	Description
1	no connection
2	no connection
3	no connection
4	Lens power (+15 VDC)
5	Lens power return
6	GND
7	Housing
8	Range Extender A or RxD
9	Range Extender B
10	Range Extender C or Aspect Ratio Follow
11	Heater
12	Iris follow
13	Zoom control
14	Ext switch 1
15	Ext switch 2
16	Zoom/focus local/remote or Exit pupil position
17	Iris control
18	Iris auto/remote or TxD

Pin	Description
19	Zoom control
20	Focus control
21	Tally control
22	Zoom/focus local/remote or Exit Pupil position
23	no connection
24	Lens ID #0
25	Lens ID #1
26	Lens ID #2
27	Lens ID #3
28	no connection
29	no connection
30	Focus follow
31	Image stabilizer
32	no connection
33	ENG switch
34	PROD switch
35	no connection
36	no connection





