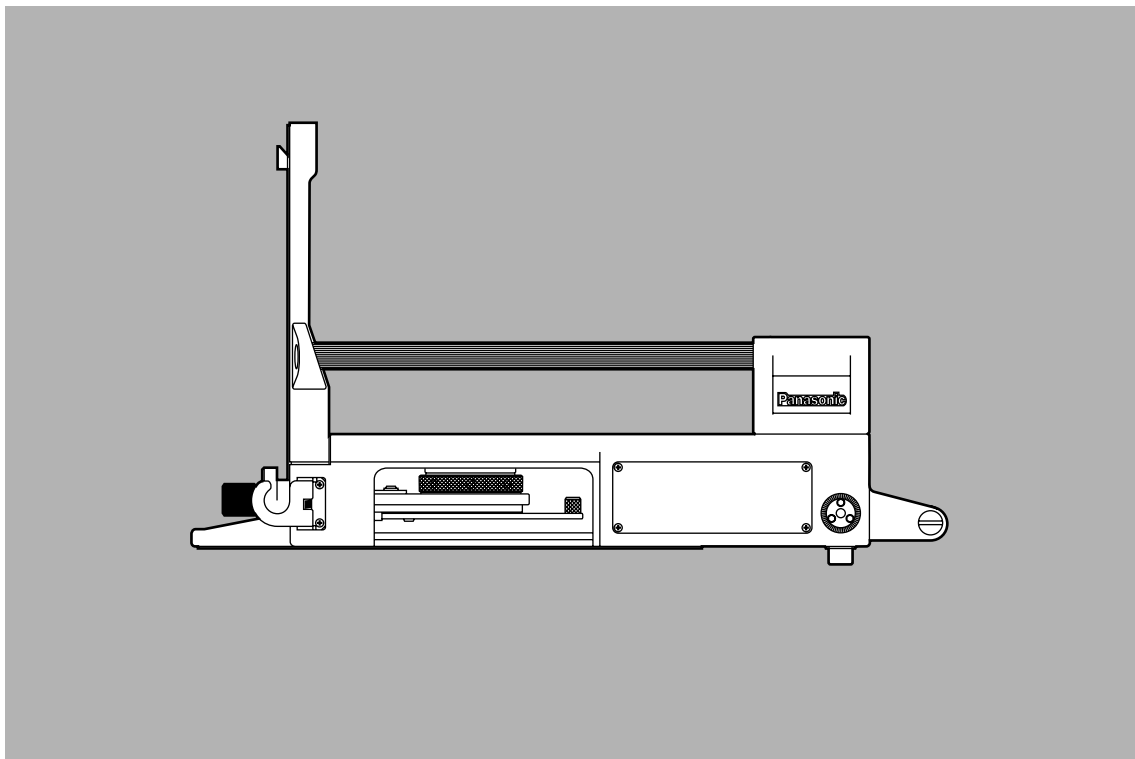


# Operating Instructions



**Build-up Unit**  
Model AK-HBU931P



# Panasonic<sup>®</sup>

Before attempting to connect, operate or adjust this product, please read these instructions completely.

# Safety precautions

	<b>CAUTION</b> <b>RISK OF ELECTRIC SHOCK</b> <b>DO NOT OPEN</b>	
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.		



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (service) instructions in the literature accompanying the appliance.

For CANADA

**This class A digital apparatus complies with Canadian ICES-003.**  
**Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.**

## FCC Note:

This device complies with Part 15 of the FCC Rules. To assure continued compliance follow the attached installation instructions and do not make any unauthorized modifications.


This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

## WARNING:

**TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.**

## CAUTION:

**TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE ONLY THE RECOMMENDED ACCESSORIES .**

 indicates safety information.

# Contents

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## Overview

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The model AK-HBU931P is a build-up unit which is designed for use with the AK-HC931P multi-format camera. When installed in the multi-format camera, it enables a large lens to be mounted, thus yielding the same range of operations as that afforded by a larger camera.

## Operating precautions

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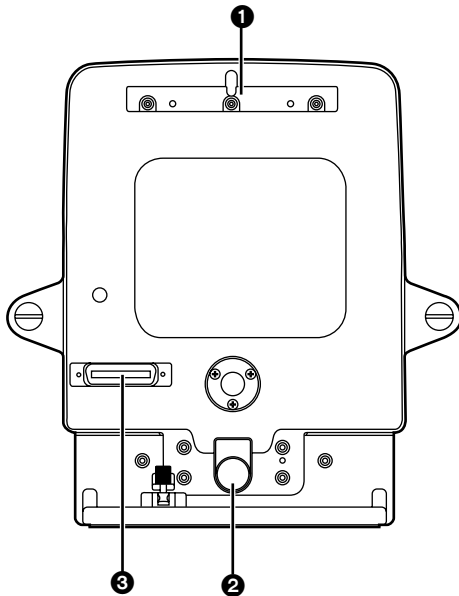
- Be absolutely sure to supply the build-up unit's power from the multi-format camera.
- Handle the viewfinder carefully.  
Dropping the viewfinder or subjecting it to strong impact may cause malfunctioning and/or accidents.
- Operate the unit within a temperature range of 32°F to 104°F (0°C to + 40°C). Operation in locations below 32°F or above 104°F may adversely affect the internal parts.
- Be absolutely sure to turn off the power before connecting or disconnecting the cables.
- Do not use the unit outdoors.
- Install the unit at a distance of at least 3.3 ft (1 meter) from the monitor.
- Maintenance  
Disconnect the optical fiber cable plug, and wipe the unit with a dry cloth. To remove stubborn dirt, soak a cloth in diluted kitchen detergent and wring it out well, and then wipe the unit gently.

### Caution

- Avoid using benzene, paint thinners or other volatile substances.
- If a chemically treated cloth is to be used, read the precautions for its use carefully.

# Controls and their functions

## Front Panel



### 1 Lens guide

The 2/3" box-type lens is attached by hooking it onto this guide. Align the guide pin of the lens with the center groove, and attach.

### 2 Lens anchoring knob

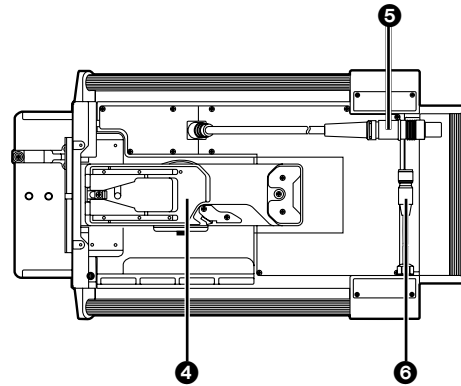
This is rotated clockwise to anchor the lens.

### 3 Lens connector

Lens connector (57-20360 made by DDK)

Pin No.	Signal	Pin No.	Signal
1	N.C.	19	N.C.
2	N.C.	20	N.C.
3	N.C.	21	TALLY CONT1
4	DC +12V	22	N.C.
5	POWER GND	23	N.C.
6	SIGNAL GND	24	LENS CODE (A)
7	DOBY GND	25	LENS CODE (B)
8	EXT. MODE (A)	26	LENS CODE (C)
9	EXT. MODE (B)	27	LENS CODE (D)
10	EXT. MODE (C)	28	EXT CONT A
11	16:9/4:3 SEL	29	EXT CONT B
12	IRIS POSITION	30	N.C.
13	ZOOM POSITION	31	INCOM1 PROD/ENG
14	RET1	32	INCOM2 PROD/ENG
15	RET2	33	INCOM1 SW
16	FOCUS POSITION	34	INCOM2 SW
17	IRIS CONTROL	35	N.C.
18	IRIS AUTO/REMOTE	36	N.C.

## Top Panel



### 4 Camera mounting base

This is used to attach the camera. For details, refer to the operating instructions of the camera concerned.

### 5 Optical fiber cable for connecting camera [CAM]

Use this to connect the unit to the optical fiber connector on the multi-format camera (AK-HC931P).

### 6 Interface cable for connecting camera [EXT I/O]

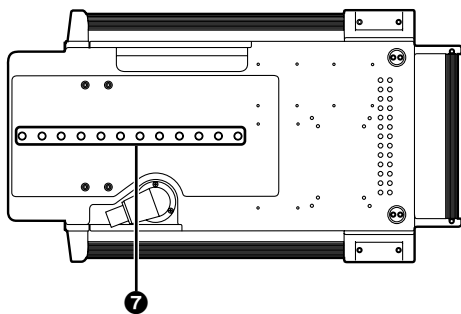
Use this to connect the unit to the EXT I/O connector on the multi-format camera (AK-HC931P).

Pin No.	Signal	Pin No.	Signal
1	BU ACTIVE	11	MONITOR SIGNAL
2	ANALOG GND	12	MONITOR GND
3	RET-1	13	DC +5 V
4	RET-2	14	DC +3.15 V
5	RET-3	15	DC +2.7 V
6	DIGITAL GND	16	IRIS CONTROL
7	CAMERA DATA	17	IRIS POSITION
8	CAMERA CONTROL	18	ZOOM POSITION
9	DC +12 V	19	FOCUS POSITION
10	POWER GND	20	IRIS AUTO/REMOTE

# Controls and their functions

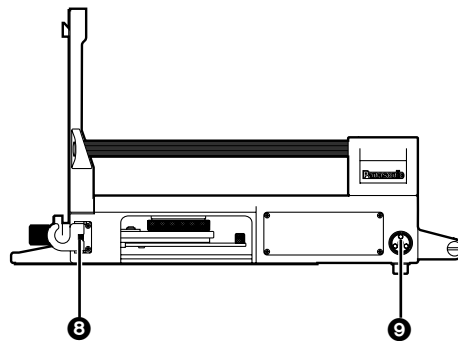
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## Bottom Panel



- 7 Screw hole for mounting tripod (3/8-16UNC)**  
This is used to attach the unit to a tripod or other accessory.

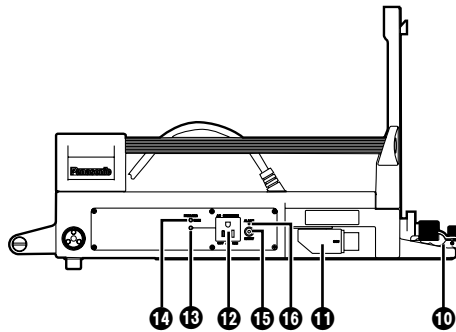
## Right Side Panel



- 8 Hook for securing cable**  
The optical fiber cable from the CCU is fastened to this hook.
- 9 Clip**  
This is used to attach the accessories.

# Controls and their functions

## Left Side Panel



**10 Cable clamp**  
This is used to clamp the optical fiber cable from the CCU.

**11 Optical fiber connector**  
OPT FIBER connector (EDW.3K.93C.CLC made by LEMO)

Pin No.	Function	Polarity	Signal flow
1	Optical fiber		CAM→CCU
2	Optical fibre		CCU→CAM
3	Control wire, hot	+	CAM↔CCU
4	Control wire, cold	-	CAM↔CCU
5	AC 240V live	+	CCU→CAM
6	AC 240V neutral	-	CCU→CAM

**12 AC outlet**  
An AC output of up to 200 VA can be supplied to this outlet.

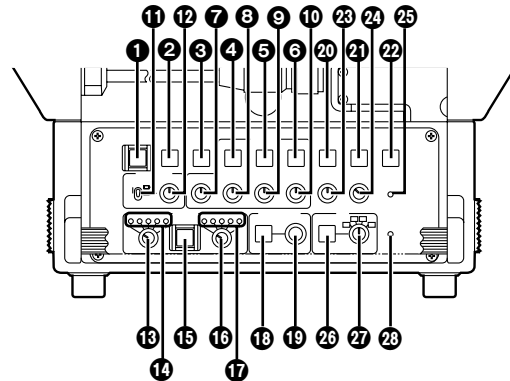
**13 AC outlet circuit-breaker**  
This is the circuit-breaker for the AC outlet. If the AC output load is too high and the circuit breaker has been tripped, reduce the load, and then reset the circuit breaker by pressing the circuit breaker button.

**14 Power main circuit breaker**  
This is the main circuit-breaker for the unit's power supply. If the circuit breaker has been tripped by an overcurrent or for some other reason, check the cause, take the appropriate measures to remedy the problem, and then reset the circuit breaker by pressing the circuit breaker button.

**15 AC OUTLET reset switch**  
This cuts off the AC output when it drops below the minimum voltage that can be supplied. When this has happened, the outlet can be reset by pressing this reset switch without turning off the camera's power.

**16 AC OUT alarm display**  
This lights when the AC output voltage range exceeds 10%.

## Operation panel



**1 VF power switch [VF POWER]**  
This is used to set the viewfinder's power to ON or OFF. When it is lighted, the viewfinder's power is OFF.

**2 Front tally ON/OFF switch [FRONT TALLY]**  
This is used set the viewfinder and lens tally lamp to ON or OFF. When the lamp is lighted, the tally lamp is OFF.

**3 CENTER marker switch [CENTER MARKER]**  
This is used to set the center marker to ON or OFF.

**4 CURSOR switch**  
This is used to set the cursor on the viewfinder screen to ON or OFF. When it is lighted, the cursor is OFF.

**5 Cursor memory switch 1**  
If this switch is held down while the cursor switch is ON, the current cursor status is stored in the memory. If the cursor switch is set to ON after the cursor memory switch 1 has been pressed, the cursor which was stored in the memory by the cursor memory switch 1 can be called.

**6 Cursor memory switch 2**  
If this switch is held down while the cursor switch is ON, the current cursor status is stored in the memory. If the cursor switch is set to ON after the cursor memory switch 2 has been pressed, the cursor which was stored in the memory by the cursor memory switch 2 can be called.

**7 H-POSI control [H-POSI]**  
This is used to adjust the horizontal position of the cursor.

**8 V-POSI control [V-POSI]**  
This is used to adjust the vertical position of the cursor.

**9 Width control [WIDTH]**  
This is used to adjust the width of the cursor.

**10 Height control [HEIGHT]**  
This is used to adjust the height of the cursor.

# Controls and their functions

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## 11 4:3 MARKER switch

This is the 4:3 marker ON/OFF switch. When the 4:3 marker is ON, the brightness modulation can be set to ON or OFF.

## 12 4:3 brightness modulation level control

This is used to vary the brightness modulation level outside the 4:3 marker.

## 13 ND filter selector switch [ND]

This is used to select the ND filter position. It is effective when the LOCAL switch is held down.

## 14 ND filter indicators [1 to 5]

These indicate the positions of the ND filter.

## 15 LOCAL switch [LOCAL]

This is used to enable the ND or CC filter to be selected at the camera.

## 16 CC filter selector switch [ND]

This is used to select the CC filter position. It is effective when the LOCAL switch is held down.

## 17 CC filter indicators [A to E]

These indicate the positions of the CC filter.

## 18 Menu ON/OFF switch

This is used to set the menu to ON or OFF and display the status.

## 19 Menu JOG switch

This is used to change the menu page and select the data. For details, refer to the operating instructions of the multi-format camera (AK-HC931P).

## 20 RET A switch [RET A]

This is used to select the RET A switch. When it is lighted, the video signals of RET A selected by the camera are output to the viewfinder.

## 21 RET B switch [RET B]

This is used to select the RET B switch. When it is lighted, the video signals of RET B selected by the camera are output to the viewfinder.

## 22 User switch [USER SEL]

This enables control to be exercised over the ON/OFF status of the items selected on the camera's menus.

## 23 VF DETAIL switch [VF DETAIL]

This is used to vary the amount of detail to be provided for the viewfinder's video output.

## 24 MONITOR output selector switch [MONI SEL]

This is used to select the viewfinder's video output from the Y/C, R, G or B camera video signals.

## 25 LENS EXT display [EXT]

This lights when the lens extender of the large lens is ON.

## 26 P in P function ON/OFF switch

This is used to set the picture-in-picture function on the viewfinder screen to ON or OFF.

## 27 P in P position selector switch

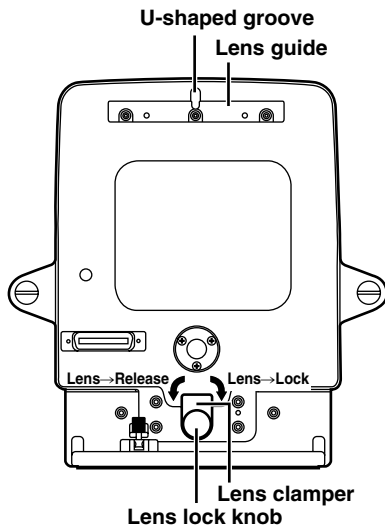
This is used to select the picture-in-picture display position on the viewfinder screen.

## 28 Lens shrinker display [x0.8]

This lights when the shrinker of the large lens is ON.

# Mounting methods

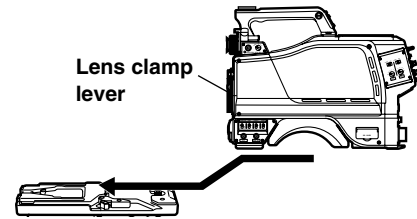
## Mounting the lens



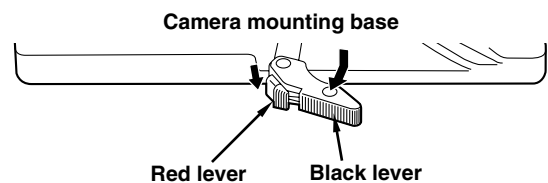
- 1 Loosen the lens lock knob and turn the lens clamber counterclockwise until it is horizontal.
- 2 Align the guide pin at the center in the upper part of the lens back with the U-shaped groove in the front panel, and mount the lens onto the camera by fitting it onto the lens guide.
- 3 Turn the lens clamber clockwise, and tighten up the lens lock knob.

## Mounting the camera

- 1 Mount the camera on the camera mounting base, and slide the camera toward the front along the groove until it clicks into place.



**Detaching the camera from the camera mounting base**  
While pushing the red lever, move the black lever in the direction of the arrow, and slide the camera toward the back.



**<Note>**

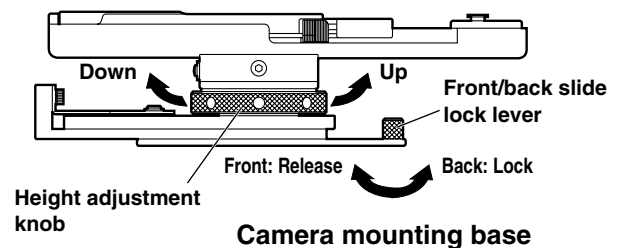
If the pin of the camera mounting base fails to return to its original position after the camera has been detached, push the red lever again and simultaneously move the black lever in the direction of the arrow to return the pin to its original position. Bear in mind that the camera cannot be mounted if the pin still remains at the center.

- 2 Lift the camera's lens clamp lever as far as it will go and keep it at this position.
- 3 Pull the front/back slide lock lever of the camera mount base toward the front, and move the camera to the front.
- 4 Insert the camera's bayonet mount by aligning its position with the mount ring of the lens, and rotate the camera's lens clamp lever downward to secure it.

**<Note>**

When the lens and camera positions cannot be aligned properly, rotate the height adjustment knob of the camera mounting base and align the heights of the lens and camera. When the knob is rotated clockwise, the camera moves up; conversely, when it is rotated counterclockwise, it moves down.

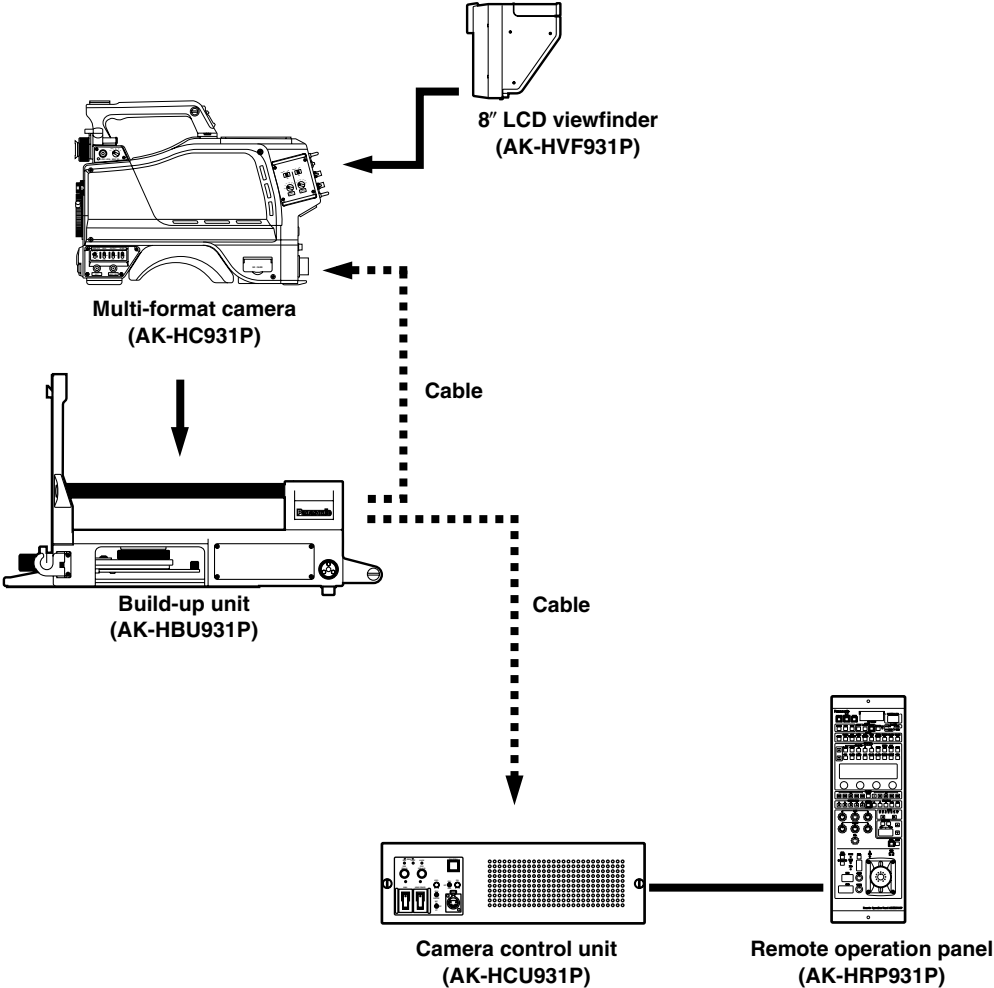
- 5 Push the front/back slide lock lever of the camera mount base toward the back to secure the camera.
- 6 Connect the camera connection optical fiber cable and interface cable to the camera.



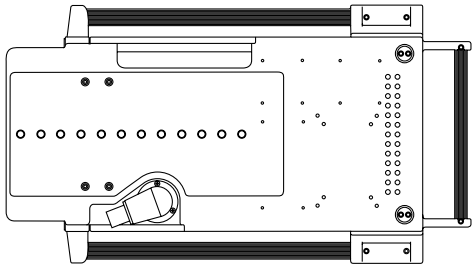
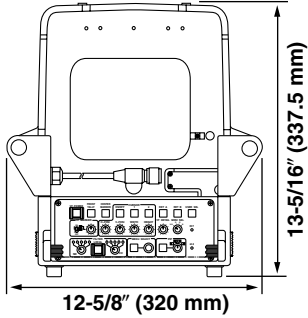
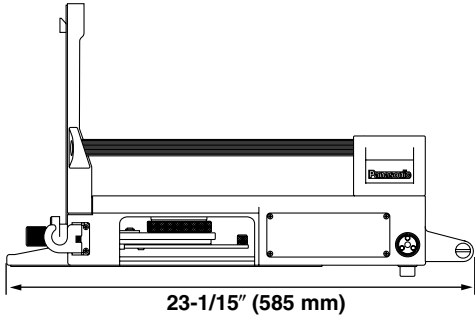
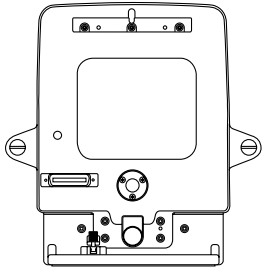
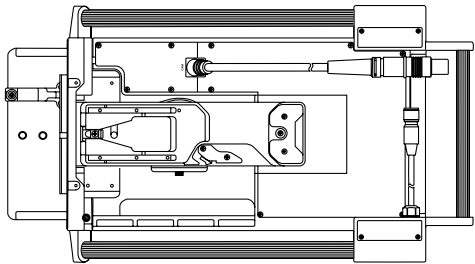


# Connections

- Connect the multi-format camera (and lens) to the build-up unit as shown in the figure below.
- Connect the cable from the CCU to the connector on the build-up unit.
- Connect the cable of the build-up unit to the connector on the multi-format camera.




# External dimension drawings



# Specifications

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Power supply: AC 220 V (supplied from CCU)
Power consumption: 8 W (main unit only)

 indicates safety information.

Switch functions:	AC OUT reset, viewfinder power, front tally ON/OFF, CENTER marker, CURSOR, cursor memory 1, cursor memory 2, 4:3 MARKER, ND filter selection, LOCAL, CC filter selection, menu ON/OFF, menu JOG, RET A switch, RET B switch, user, VF DETAIL, MONITOR output selection, P in P function ON/OFF, P in P position selection
Adjustment functions:	H-POSI, V-POSI, WIDTH, HEIGHT, 4:3 brightness modulation level
Operating temperature range:	32°F to 104°F (0°C to +40°C)
Storage temperature range:	-4°F to 140°F (-20°C to +60°C)
Operating ambient humidity:	Less than 85%
Dimensions:	12-5/8(W)×13-5/16(H)×23-1/16(D) inch (excluding protrusions) (320×337.5×585 mm)
Weight:	Approx. 31.9 lbs (14.5kg)

## Accessories

Operating Instructions (×1)

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.

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# Panasonic

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