

SONY

Camera System Adaptor

CA-4000

Baseband Processor Unit

BPU-4000



4K

4K Live Camera System based on the PMW-F55

Delivers true-to-life entertainment

BE MOVED

4K technology ready for professionals

Enhance everything with reality, emotion, and excitement

Sony offers 4K live production to professionals.

Beginning with 4K cameras, Sony continues to develop key products in the 4K production chain, and now offers you a live camera system with an efficient workflow from shooting to viewing. This new system not only provides 4K resolution but also brings new capabilities to HD live production with HD Cutout and High-frame-rate functionality. Now you can produce even better programs utilizing these creativity-enhancing features.



What does 4K mean to live production?

4K picture quality has impressed the cinema industry and has become a widely accepted format. Today, more and more broadcasters around the world are interested in adopting the 4K format. With Sony's leading technologies, 4K live production is fast becoming reality, offering true-to-life sports entertainment and concert coverage that makes audiences feel as if they are actually there.

Sony's 4K live camera system consists of a CA-4000 camera system adaptor attached to the docking interface of a PMW-F55 4K camera, along with a BPU-4000 baseband processor unit and an existing HDCU-2000/HDCU-2500 camera control unit connected by optical fiber cable.

Using the HDCU-2000/HDCU-2500 means that this system can be powered through standard SMPTE fiber cable. This also means that real-time fine adjustment of image factors and various other camera settings can be made with Sony's RCP-1000 Series remote control panels or MSU-1000 Series master setup units. The CA-4000 adaptor provides essential functionalities required for live production, including Tally, Intercom, Audio channels, and a viewfinder interface.

By simply adding the PMW-F55/CA-4000/BPU-4000 system to an existing HDC Series camera system, users can achieve multi-source operation (including 4K and HD) without any major modifications. HD

signals from the HDC Series cameras and 4K signals from the PMW-F55/CA-4000/BPU-4000 system can be adjusted to match colorimetry.

As a next step, users can add other 4K key products, such as a multi-port server capable of 4K and HD recording, a multi-format switcher capable of real-time 4K signal processing, and a 4K LCD monitor. Ultimately, Sony's 4K live production solution can be achieved from acquisition to display.

With the latest technologies from Sony, users can choose a complete 4K live production solution, ideal for pure 4K live production, or they are assured of a smooth and easy migration from HD to 4K production simply by extending the capabilities of existing HD systems. Both routes enable delivery of spectacular 4K imagery to audiences worldwide.



4K Camera PMW-F55



The PMW-F55 incorporates a Super 35mm 4K CMOS image sensor and accepts a PL-mount lens as well as a B4-mount lens with an LA-FZB2 mount adaptor. The camera delivers multiple shooting options for HD/2K/QFHD/4K, and pristine image quality. Its modular style allows for a wide range of configurations to meet a large variety of user needs. In combination with the CA-4000, BPU-4000, and HDCU-2000/2500, the user can achieve a powerful 4K live camera system.

Mount Adaptor LA-FZB2



The newly developed LA-FZB2 mount adaptor enables mounting of existing HD zoom lenses onto the PMW-F55 for shooting 4K video. This small and lightweight lens mount adaptor converts the lens mount format from B4 to FZ, which includes motorized ND (neutral density) and CC (color conversion) filters.

- Connecting the HD lens onto the LA-FZB2 not only powers the lens but also provides control of Iris/Zoom/Focus functionalities
- This solution strengthens the connection between the camera and the lens by attaching the supplied lens support to the LA-FZB2

Baseband Processor Unit BPU-4000



The BPU-4000 offers real-time 4K digital signal processing and the signal can be simultaneously down-converted to a HD signal and output when the CA-4000 is attached to the PMW-F55 via an optical fiber cable. The detail process can be optimally adjusted in each signal.

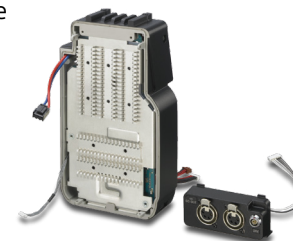
- Parallel processors for 4K/HD
- Down-converter from 4K to HD
- HD Cutout and HD High-frame-rate operation by installing optional software (SZC-2001 for HD Cutout function; SZC-2002 for High-frame-rate function)

Camera System Adaptor CA-4000



When the CA-4000 is attached to the PMW-F55, it works as a 4K live camera in combination with the BPU-4000 and HDCU-2000/HDCU-2500.

- Sends 4K data to the BPU-4000 via a SMPTE fiber cable
- Supports camera system operations (Intercom, Tally, and Return)
- Picture adjustment functions are the same as those of HDC Series cameras
- HD prompter supported by independent digital data from the HDCU-2000/2500
- USB connector for quick menu setup
- Can supply power to accessories such as a large lens for studio work by attaching an SKC-PB40 camera power boost kit to the CA-4000



SKC-PB40
Camera Power Boost Kit

Camera Control Unit HDCU-2000 HDCU-2500



The full-rack-size HDCU-2000 and half-rack-size HDCU-2500 are available for the 4K live camera system. These enable power supply to the camera, interfacing with peripheral equipment, and transferring Intercom, Tally, Prompter, Audio, and other signals. The optical fiber transmission system used in these units maintains the camera's high picture quality.

Even without an HDCU-2000/HDCU-2500 unit, the 4K live camera system can operate by supplying power to the PMW-F55/CA-4000 locally in a simple configuration. This is particularly useful when users must minimize equipment (e.g., during location shooting)

Sony's Innovation of 4K Live Camera System Technology

High-frame-rate HD capture for super slow motion (Optional software, SZC-2002)

The PMW-F55 incorporates the Super 35 mm 4K CMOS image sensor, enabling capture with four times the resolution of HD*. Utilizing this in HD shooting, users can achieve extreme high-speed image capture at a maximum of 239.76/200 fps. Captured images can be recorded to Sony's server (PWS-4400 Multi Port AV Storage Unit**), which can replay the video at 4 x slow motion (59.94/50 fps).

* This depends on the PMW-F55 software version.

** Some third-party manufacturer servers may also be used.



Simulated image

Picture adjustment functions of HDC Series cameras supported in the 4K live camera system

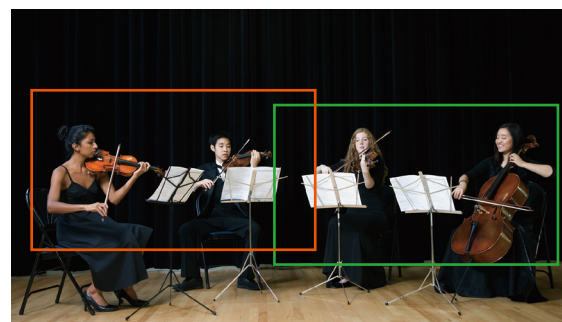
- Dynamic focus (4K focus-assist function):
On the viewfinder, a focus point can be displayed with a marker when 4K resolution is obtained for easy focusing. This function is extremely useful when shooting 4K live programs.
- Auto lens aberration compensation 2 (ALAC2) function
- Color reproduction adjustment functions
- Gamma table selection
- User gamma function
- Natural skin-tone detail function
- Knee saturation function
- Low-key saturation function

HD Cutout function with perspective correction (Optional software, SZC-2001)

Two modes enable a full HD image to be cut out from the 4K picture in real-time – users can select either Zoom & Perspective mode or Simple HD mode. Keeping the camera in a fixed position, any portion of the captured image can be cropped to provide a close-up HD image to viewers as if the camera had been panned. One portion can be cut out while performing perspective transformation, according to the lens focal length in Zoom & Perspective mode. Two portions can be cut out at the same time in Simple HD mode.

Simple HD mode:

Original 4K full-source image



Cutout HD image (1)

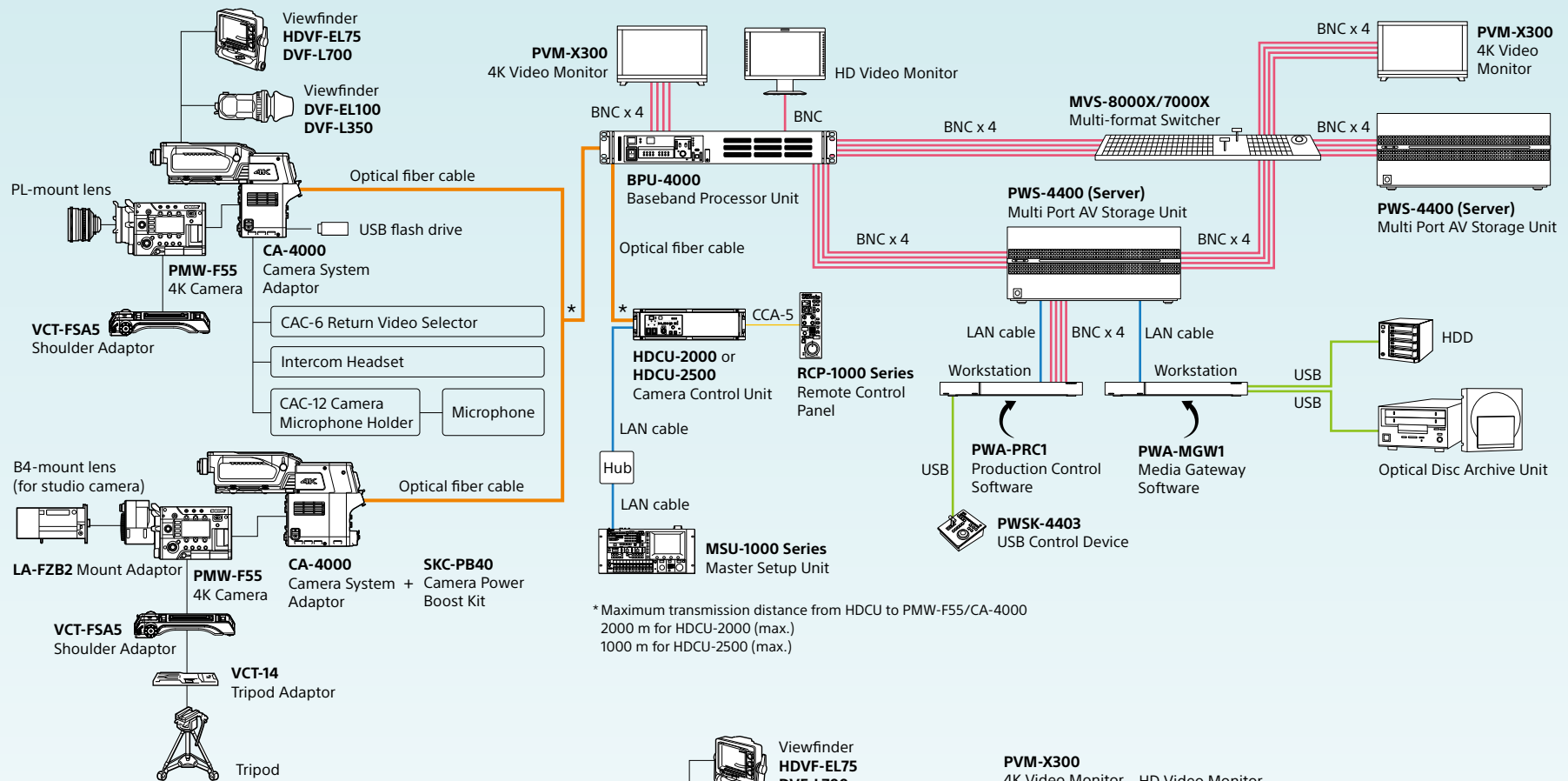


Cutout HD image (2)



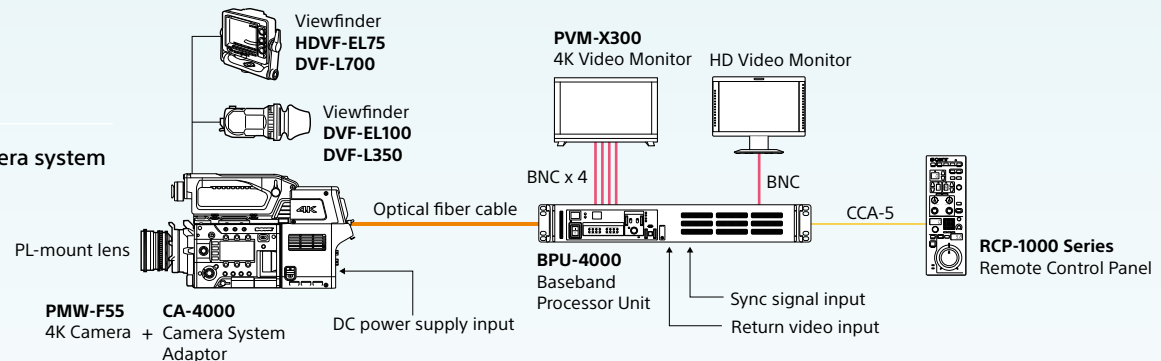
Simulated images

System Configuration Examples



Simple configuration

Even without the HDCU-2000/HDCU-2500, the 4K live camera system can be operated as shown.



CA-4000

Connector panel

For 60 Hz countries



For 50 Hz countries



With an optional SKC-PB40 camera power boost kit attached

Multi-format Switcher **MVS-8000X, MVS-7000X**

These are Sony's flagship switchers supporting 3G (1080p). Optional upgrade software adds 4K support, and the optional MKS-8460X 4K format converter board enables high-performance HD-4K up-conversion.

Upgrade software:

BZS-8570X for MVS-8000X

BZS-7570X for MVS-7000X

Server (Multi Port AV Storage Unit) **PWS-4400**

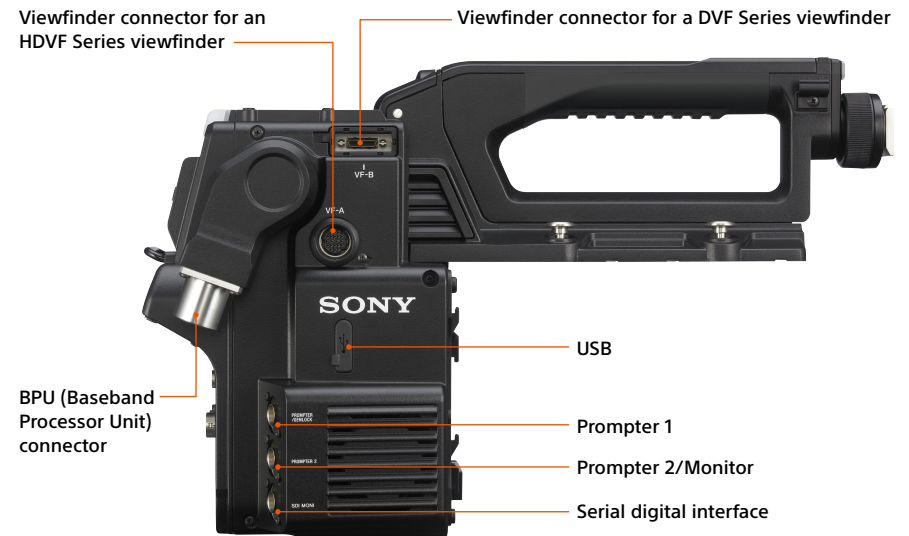
This unit records both 4K and HD video signals using as many as four 4K channels through the highly efficient XAVC video format. The recorded content can be easily handled for slow motion replay.

Production Control Software **PWA-PRC1** Media Gateway Software **PWA-MGW1** USB Control Device **PWSK-4403**

Operation for live slow motion is available by utilizing the PWA-PRC1 and PWSK-4403. PWA-MGW1 software transfers content to/from removable media (e.g., USB-HDD and Optical Disc Archive unit).

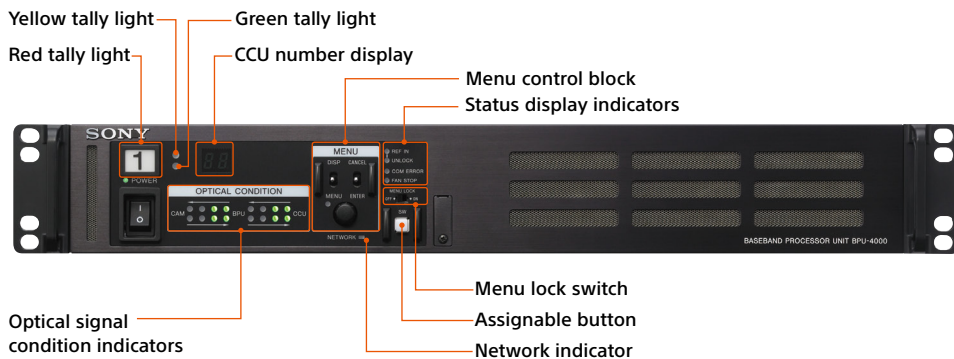
CA-4000

Inside/Outside panel

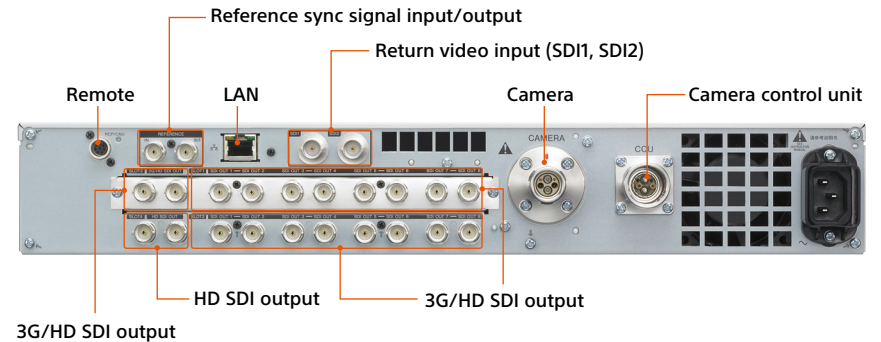


BPU-4000

Front



Rear



Optional Accessories



MSU-1000
Master Setup Unit



MSU-1500
Master Setup Unit



RCP-1000
Remote Control Panel



RCP-1001
Remote Control Panel



RCP-1500
Remote Control Panel



RCP-1501
Remote Control Panel



RCP-1530
Remote Control Panel



HDVF-EL75
7.4-inch* OLED Color Viewfinder



VFH-790
Outdoor Hood for HDVF-EL70/EL75



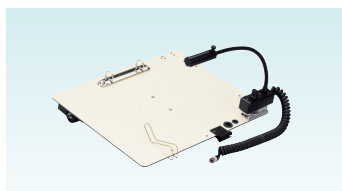
DVF-L350
3.5-inch* LCD Color Viewfinder



DVF-L700
7.0-inch* LCD Color Viewfinder



DVF-EL100
0.7-inch* OLED Color Viewfinder



BKP-7911
Script Holder



CAC-6
Return Video Selector



CAC-12
Mic Holder



VCT-14
Tripod Adaptor



VCT-FSA5
Shoulder Adaptor



AC-DN2B
AC Adaptor



CNA-1
Camera Control Network Adaptor

* Viewable area measured diagonally.

Specifications

| CA-4000 | |
|---|--|
| General | |
| Power requirements | AC 240 V, 1.7 A (max.) DC 180 V, 1.0 A (max.) DC 13 V, 10.2 A (max.) |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Storage temperature | -20°C to +60°C (-4°F to +140°F) |
| Mass | Approx. 2.5 kg (5 lb 8.2 oz) (unit only) |
| Dimension (W x H x D) | 147 × 221 × 350 mm (5 7/8 x 8 3/4 x 13 7/8 inches) |
| Input/output connectors | |
| BPU | Optoelectrical connector (x1) |
| AUX | 12-pin (x1) |
| Viewfinder (HDVF Series) | 20-pin, round-type (x1) |
| Viewfinder (DVF Series) | 26-pin, rectangular-type (x1) |
| Audio input | XLR-type 3-pin, female (x1) For MIC: -60 dBu (can be set to a value up to -20 dBu using the menu or from the HDCU-2000/2500), balanced For LINE: 0 dBu, balanced |
| Intercom | XLR-type 5-pin, female (x1) |
| DC input | XLR-type 4-pin (x1), DC 10.5 V to 17 V |
| DC output | 4-pin (x1), DC 10.5 V to 17 V, 0.5 A (max.) (Limitations may apply, depending on the load and input conditions.) |
| SDI Monitor | BNC (x1) |
| Prompter 1 | BNC (x1), 1 Vp-p, 75 Ω |
| Prompter 2/Monitor | BNC (x1), 1 Vp-p, 75 Ω |
| Return control | 6-pin (x1) |
| Remote | 8-pin (x1) |
| Tracker | 10-pin (x1) |
| USB | USB 2.0, Type A, 4-pin (x1) |
| Supplied accessories | |
| Operation Guide (1), Operation Manual (CD-ROM) (1), Cable clamp belt (1), Screws (+B3 x 8) (2) | |

| BPU-4000 | |
|--|--|
| General | |
| Power requirements | AC 100 V to AC 240 V, 50/60 Hz |
| Operating temperature | 5°C to 40°C (41°F to 104°F) |
| Storage temperature | -20°C to +60°C (-4°F to +140°F) |
| Mass | Approx. 6.8 kg (15 lb) |
| Dimension (W x H x D) | 424 x 66 x 395 mm (16 3/4 x 2 5/8 x 15 5/8 inches) excluding protrusions |
| Input/output connectors | |
| Camera | Optical fiber (x1) |
| CCU | Optical fiber (x1) |
| Remote | 8-pin multi-connector (x1) |
| LAN | 8-pin (x1) |
| SDI input | BNC (x2) 3G-SDI: SMPTE ST424/425 Level-B, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 Ω, 1.485 Gbps/1.4835 Gbps |
| Reference input | BNC (x1) HD: SMPTE ST274, tri-level sync, 0.6 Vp-p, 75 Ω SD: Black burst (NTSC: 0.286 Vp-p, 75 Ω, PAL: 0.3 Vp-p, 75 Ω) |
| 3G/HD-SDI output | BNC (x18) 3G-SDI: SMPTE ST424/425 Level-A/B, 0.8 Vp-p, 75 Ω, 2.970 Gbps/2.967 Gbps HD-SDI: SMPTE ST292, 0.8 Vp-p, 75 Ω, 1.485 Gbps/1.4835 Gbps, 3G-SDI/HD-SDI selectable |
| HD-SDI output | BNC (x2) SMPTE ST292, 0.8 Vp-p, 75 Ω, 1.485 Gbps/1.4835 Gbps |
| Reference output | BNC (x1) HD: SMPTE ST274, tri-level sync, 0.6 Vp-p, 75 Ω SD: Composite sync, 0.3 Vp-p, 75 Ω, HD sync/SD sync selectable |
| Supplied accessories | |
| Number plates (1 set), Operation Guide (1), Operation Manual (CD-ROM) (1) | |

| SKC-PB40 | |
|--------------------------------|--|
| General | |
| Power requirements | AC 240 V, 1.7 A (max.) DC 180 V, 1.0 A (max.) |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Storage temperature | -20°C to +60°C (-4°F to +140°F) |
| Mass | Approx. 0.7 kg (1 lb 8.7 oz) |
| Dimension (W x H x D) | 112 x 196 x 40 mm (4 1/2 x 7 3/4 x 1 5/8 inches) |
| Input/output connectors | |
| DC output | XLR-type 4-pin (x2), DC 14 V, 6.5 A 4-pin (x1), DC 24 V, 3.7 A (135 W 3-system maximum output power) |

| PMW-F55 | |
|-----------------------|--|
| General | |
| Power requirements | DC 12 V (11 V to 17 V) |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Storage temperature | -20°C to +60°C (-4°F to +140°F) |
| Mass | Approx. 2.2 kg (4 lb 14 oz) (without lens, handle, audio box and accessories) |
| Dimension (W x H x D) | 130 x 125 x 191 mm (5 1/8 x 5 x 7 5/8 inches) excluding protrusions |

| LA-FZB2 | |
|--|---|
| General | |
| Mass | Approx. 0.84 kg (1 lb 14 oz) With a lens support/ø15 rod: Approx. 960 g (2 lb 2 oz) |
| Dimension (W x H x D) | Approx. 91 x 114 x 96 mm (excluding the projecting parts) (3 5/8 x 4 1/2 x 3 7/8 inches) With a lens support: Approx. 105 x 173 x 96 mm (4 1/4 x 6 7/8 x 3 7/8 inches) |
| Supplied accessories | |
| Mount cap (B4) (1), Mount cap (FZ) (1), Lens support (1), Knob (1), ø15 rod (2), Operation guide (1), Warranty (1) | |

| HDCU-2000 | |
|-----------------------|--|
| General | |
| Power requirements | AC 100 V, AC 120 V, or AC 220 to 240 V, 50/60 Hz |
| Operating temperature | 5°C to 40°C (41°F to 104°F) |
| Storage temperature | -20°C to +60°C (-4°F to +140°F) |
| Mass | Approx. 17.5 kg (38 lb 9.3 oz) |
| Dimension (W x H x D) | 424 x 133 x 410 mm (16 3/4 x 5 1/4 x 16 1/4 inches) excluding protrusions |

| HDCU-2500 | |
|-----------------------|---|
| General | |
| Power requirements | AC 100 V to 240 V, 50/60 Hz |
| Operating temperature | -10°C to +40°C (14°F to 104°F) |
| Storage temperature | -20°C to +60°C (-4°F to +140°F) |
| Mass | Approx. 6.7 kg (14 lb 12 oz) |
| Dimension (W x H x D) | 200 x 127 x 410 mm (7 7/8 x 5 x 16 1/4 inches) excluding protrusions |

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