**SONY**®

HD CUTOUT SOFTWARE

# SZC-2001
# SZC-2001M
# SZC-2001W

HD HFR SOFTWARE

# SZC-2002
# SZC-2002M
# SZC-2002W

HFR SOFTWARE

# SZC-4002
# SZC-4002M
# SZC-4002W

USER'S GUIDE    English
1st Edition (Revised 2)

# Overview

The SZC-2001/2001M/2001W HD CUTOUT Software, SZC-2002/2002M/2002W HD HFR Software, and SZC-4002/4002M/4002W HFR Software are optional software for the BPU4000 Baseband Processor Unit.

- Installing SZC-2001/2001M/2001W on the BPU4000 allows you to cut an HD signal out of a 4K image.
- Installing SZC-2002/2002M/2002W on the BPU4000 enables High Frame Rate format output, when connected to a PMW-F55 Solid-State Memory Camcorder or F65 Digital Motion Picture Camera, allowing you to transfer and perform signal processing of HFR images.
- Installing SZC-4002/4002M/4002W on the BPU4000 enables High Frame Rate format output, when connected to a PMW-F55, F65, or HDC4300 Color Camera, allowing you to transfer and perform signal processing of HFR images.
- All functions that are added by installing SZC-2002/2002M/2002W are included in SZC-4002/4002M/4002W.

The SZC-2001M/2002M/4002M is limited to use for 30 days.
The SZC-2001W/2002W/4002W is limited to use for 7 days.

**Notes**

- The period of use starts counting from the day after installation, and can be checked on the <OPTION KEY> page.
- When using the SZC-2001 or SZC-2002, check that the software for the unit combination (CA4000 and BPU4000) is as follows:
  CA4000: Version 1.03 and later
  BPU4000: Version 1.04 and later
- When using the SZC-2001M/2001W or SZC-2002M/2002W, check that the software for the unit combination (CA4000 and BPU4000) is as follows:
  CA4000: Version 2.12 and later
  BPU4000: Version 2.16 and later
- When using the SZC-4002/4002M/4002W, check that the software for the unit combination (CA4000 and BPU4000) is as follows:
  CA4000: Version 2.50 and later
  BPU4000: Version 3.00 and later

# Installation

**1** Create a key file.

Create a text file that includes the software installation key and change the filename to "bpu4000.key." Note that the extension is ".key."

**Key file format**
- You can describe multiple installation keys in a single key file (bpu4000.key). Invalid keys are ignored in the installation process.
- Describe only one installation key on a single line.
- Any description between "#" or ";" and the line break is read as a comment.

**Example of bpu4000.key**

```
# A Studio
# CAM1
c51caee92a3d1d77

# CAM2
2897f1db294d70ae


; Studio B
bd9dc931db917f25   ; CAM1
6fe3ebd3f4ba3635   ; CAM2
```

**Note**

Entering multiple keys to specify the period of use will install all the keys at the same time, and the period of use registered is the consecutive period of all keys.

**2** Copy the key file.

Create a \MSSONY\PRO\CAMERA\BPU4000 folder on a USB flash drive and copy "bpu4000.key" to that folder.

**3** Install the key file.

Connect the USB flash drive to the USB connector on the front panel, and install the key file from the drive onto the BPU4000 using the <OPTION KEY> page of the CONFIGURATION menu.

*For details on menu operations, refer to the OPERATION MANUAL of the BPU4000.*

```
<OPTION KEY>            C11 TOP

  →READ (USB →CAM)

 INSTALLED OPTION




```

When the key file is installed on the BPU4000, the name of the installed key file appears in the <OPTION KEY> page's INSTALLED OPTION column. The illustrations below give an example of the indication when SZC-2001/2001M/2001W is installed. The indication will vary depending on the key file that you install.

| Model | Indication |
|---|---|
| SZC-2001/2001M/2001W | HD CUT-OUT |
| SZC-2002/2002M/2002W | F55/F65 HFR |
| SZC-4002/4002M/4002W | F55/F65/HDC4300 HFR |

**For SZC-2001**

```
<OPTION KEY>            C11 TOP

  →READ (USB →CAM)

 INSTALLED OPTION

  HD CUT-OUT




```

**For SZC-2001M/2001W**

Period of use

```
<OPTION KEY>            C11 TOP

  →READ (USB →CAM)

 INSTALLED OPTION

  HD CUT-OUT  [10/17-10/24]




```

The period of use is displayed for time-limited software.

# SZC-2001/2001M/2001W

Installing SZC-2001/2001M/2001W on the BPU4000 adds the HD-CutOut function, allowing you to cut an HD signal from 4K images.

## Enabling the HD-CutOut function

**Note**

When the HD-CutOut function is enabled, the "SYSTEM FORMAT" parameters on the <OUTPUT FORMAT> page of the CONFIGURATION menu are set to the following values.
- RESOLUTION: 4096x2160 or 3840x2160
- FREQUENCY: 59.94 or 50

**1** Display the <HD CUT-OUT> page of the CONFIGURATION menu on the BPU4000.

**2** Set "HD CUT-OUT" to ON (see following diagram).

   "(OFF)" is displayed for formats that do not support the HD-CutOut function.

```
<HD CUT-OUT>              C12 TOP

 HD CUT-OUT   :→  ON
  MODE        :  ZOOM&PERSPECTIVE

  CUT-OUT CH  :  1
   CENTER H   :       0
   CENTER V   :       0
   ZOOM       :  ×2.0

  CAMERA TILT :    0.0deg
  CAMERA ROLL :    0.0deg
  FOCAL LENGTH:    35mm
```

## Using the HD-CutOut function

This section describes the HD-CutOut function using the <HD CUT-OUT> page of the CONFIGURATION menu on the BPU4000.

### Selecting the cut-out mode

Select one of the following for the "MODE" parameter.
**SIMPLE HD:** Cuts out a 1920 × 1080 HD image from the 4K image for output as-is. Dual outputs are supported.
**ZOOM&PERSPECTIVE:** Cuts out a region of the 4K image which is then zoomed in/out to create an HD signal output. Perspective transformation is performed, according to the lens focal length, so that the output image is the same as if the camera was pointing toward the cut-out direction. Only one output is available.

*For details about assigning BNC connectors for HD cut-out signal output, refer to the Operation Manual supplied with the BPU4000.*

### Setting the cut-out position

**1** Select the cut-out frame (1 or 2) to control using the "CUT-OUT CH" parameter.
   In ZOOM&PERSPECTIVE mode, only CH1 is available.

**2** Specify the center position of the cut-out frame.

   **CENTER H:** Horizontal position (center is 0)
   **CENTER V:** Vertical position (center is 0)

**3** In ZOOM&PERSPECTIVE mode, specify the zoom ratio using the "ZOOM" parameter (1.0 represents a frame the same size as the 4K image).

### Setting perspective transformation parameters for cut-out

In ZOOM&PERSPECTIVE mode, set the following parameters.
**CAMERA TILT:** Camera tilt angle (horizontal is 0 with positive angles pointing up)
**CAMERA ROLL:** Camera roll angle (slope of picture frame relative to horizontal, horizontal is 0 with positive angles indicating counterclockwise rotation)
**FOCAL LENGTH:** Lens focal length in mm units. To avoid any image deformation due to perspective transformation, increase the focal length till it reads "INFINITY."

## Controlling the HD-CutOut function from a controller

You can also control the HD-CutOut function using an HD cut-out controller (such as the CNA-1) connected to the LAN port on the rear panel of the BPU4000.
In this case, set the IP settings for the BPU4000 on the <IP ADDRESS SETTINGS> page of the CONFIGURATION menu on the BPU4000.

*For details about operation, refer to the operation manual of the controller.*

# SZC-2002/2002M/2002W

Installing SZC-2002/2002M/2002W enables the following High Frame Rate format signal outputs when connected to a PMW-F55 or F65, allowing the transfer and signal processing of HFR images.

| Supported format | Connected device | |
| --- | --- | --- |
| | PMW-F55 | F65 |
| 1080/59.94P(4×) | Yes | |
| 1080/50P(4×) | Yes | |
| 720/59.94P(4×)[a] | Yes | |
| 720/50P(4×)[a] | Yes | |
| 1080/59.94P(6×) | Yes | |
| 1080/50P(6×) | Yes | |
| 720/59.94P(6×)[a] | Yes | |
| 720/50P(6×)[a] | Yes | |
| 4096 × 2160/59.94P(2×) | | Yes |
| 4096 × 2160/50P(2×) | | Yes |

a) Selectable only when the format is set to 720P or the resolution is set to 1440 × 720 on the camera control unit (for example, HDCU2000).

The signal format can be selected in the master setup unit (MSU) menu or the BPU4000 menu.
The following describes how to select 1080/59.94P(4×) when connected to a PMW-F55 as an example.

## Selecting the signal format using the MSU menu

**1** Display the <BPU Multi Format> page of the Config menu.
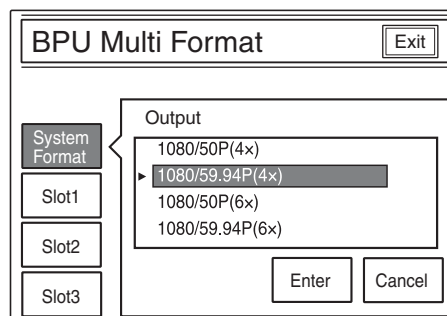
**2** Select "System Format."

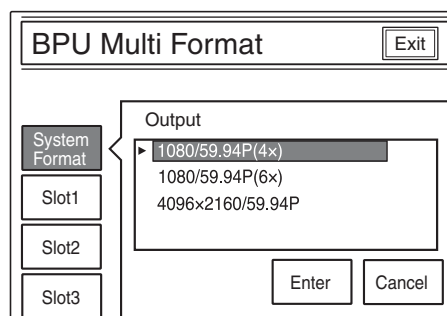A list of signal formats that can be selected appears.

### Note

If a CCU is connected to the BPU4000, only 1080/59.94P(4×), 1080/59.94P(6×), and 4096 × 2160/59.94P signal formats are displayed.

**3** Select "1080/59.94P(4×)" and press Enter.

**When in extension mode**



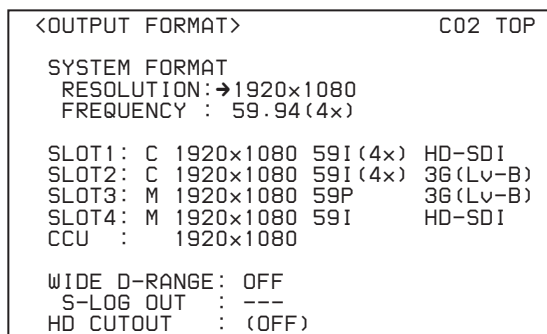**When a CCU is connected**



## Selecting the signal format using the BPU4000 menu

**1** Display the <OUTPUT FORMAT> page of the CONFIGURATION menu on the BPU4000.

**2** Set the "SYSTEM FORMAT" parameters to the following values (see following diagram).

RESOLUTION: 1920x1080
FREQUENCY: 59.94(4×)

```
<OUTPUT FORMAT>            C02 TOP

 SYSTEM FORMAT
  RESOLUTION:→1920×1080
  FREQUENCY : 59.94(4×)

 SLOT1: C 1920×1080 59I(4×) HD-SDI
 SLOT2: C 1920×1080 59I(4×) 3G(Lv-B)
 SLOT3: M 1920×1080 59P    3G(Lv-B)
 SLOT4: M 1920×1080 59I    HD-SDI
 CCU  :    1920×1080

 WIDE D-RANGE: OFF
  S-LOG OUT : ---
 HD CUTOUT  : (OFF)
```

# SZC-4002/4002M/4002W

Installing SZC-4002/4002M/4002W enables the following High Frame Rate format signal outputs when connected to a PMW-F55, F65, or HDC4300, allowing the transfer and signal processing of HFR images.

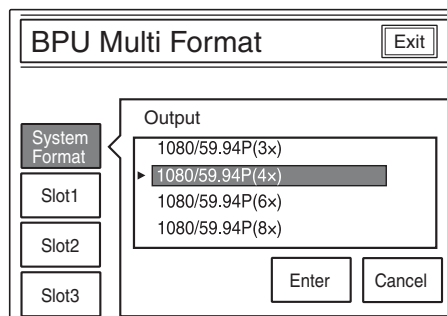| Supported format | Connected device | | |
|---|---|---|---|
| | PMW-F55 | F65 | HDC4300 |
| 1080/59.94P(4×) | Yes | | Yes |
| 1080/50P(4×) | Yes | | Yes |
| 720/59.94P(4×)[a] | Yes | | Yes |
| 720/50P(4×)[a] | Yes | | Yes |
| 1080/59.94P(6×) | Yes | | Yes |
| 1080/50P(6×) | Yes | | Yes |
| 720/59.94P(6×)[a] | Yes | | Yes |
| 720/50P(6×)[a] | Yes | | Yes |
| 1080/59.94P(8×) | | | Yes |
| 1080/50P(8×) | | | Yes |
| 720/59.94P(8×)[a] | | | Yes |
| 720/50P(8×)[a] | | | Yes |
| 4096 × 2160/59.94P(2×) | | Yes | |
| 4096 × 2160/50P(2×) | | Yes | |

a) Selectable only when the format is set to 720P or the resolution is set to 1440 × 720 on the camera control unit (for example, HDCU2000).

The signal format can be selected in the master setup unit (MSU) menu or the BPU4000 menu.
The following describes how to select 1080/59.94P(4×) when connected to an HDC4300 as an example. (Connect a compatible camera control unit to the BPU4000, and set the format of the camera control unit to 1080/59.94P.)

## Selecting the signal format using the MSU menu

**1** Display the <BPU Multi Format> page of the Config menu.

**2** Select "System Format."

A list of signal formats that can be selected appears.

**3** Select "1080/59.94P(4×)" and press Enter.



## Selecting the signal format using the BPU4000 menu

**1** Display the <OUTPUT FORMAT> page of the CONFIGURATION menu on the BPU4000.

**2** Set the "SYSTEM FORMAT" parameters to the following values (see following diagram).

RESOLUTION: 1920x1080
FREQUENCY: 59.94(4×)

```
<OUTPUT FORMAT>            C02 TOP

 SYSTEM FORMAT
  RESOLUTION:→1920×1080
  FREQUENCY : 59.94(4×)

 SLOT1: C 1920×1080 59I(4×) HD-SDI
 SLOT2: C 1920×1080 59I(4×) 3G(Lv-B)
 SLOT3: M 1920×1080 59P     3G(Lv-B)
 SLOT4: M 1920×1080 59I     HD-SDI
 CCU  :   1920×1080

 WIDE D-RANGE: OFF
  S-LOG OUT  : ---
 HD CUTOUT   : (OFF)
```

# Sony Corporation