

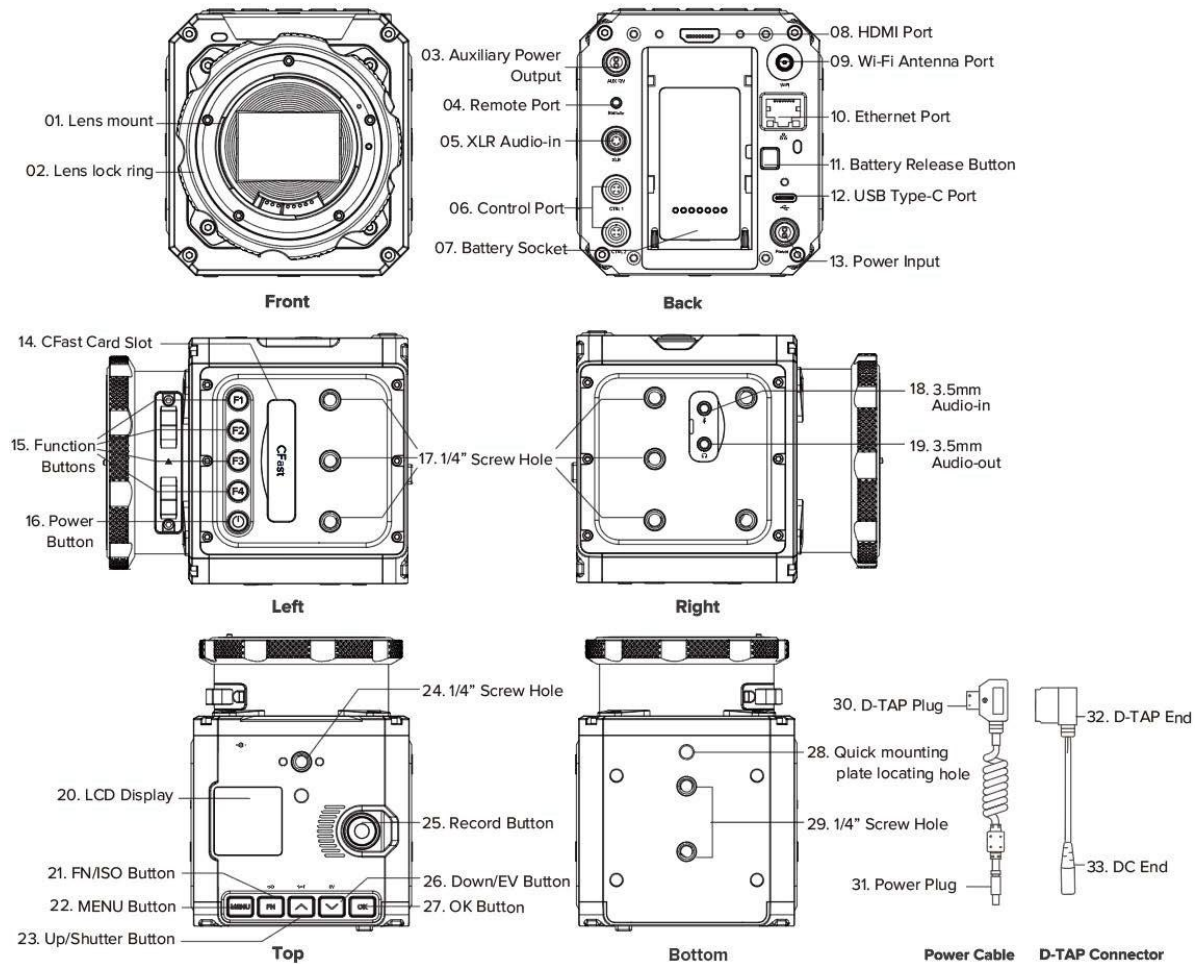
Z CAM E2 Flagship Series
(Z CAM E2-M4 / E2-S6 / E2-S6G / E2-F6 / E2-F8)

User Manual v0.4

(Firmware 0.98)

1. Introduction

1.1. Camera Introduction



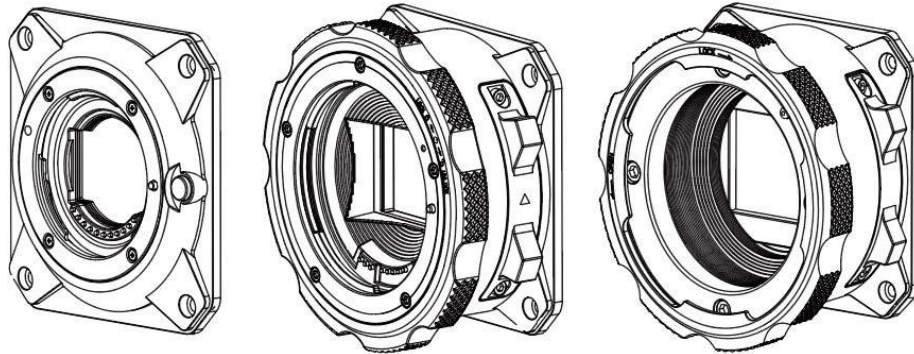
1.2. Lens Mount

There are EF or PL lens mount options for Z CAM E2 flagship series, and MFT lens mount for Z CAM E2-S6 only. It's interchangeable and you can purchase additional lens mount module to change it with professional tools (only for EF and PL lens mount) *.

Model	Lens Mount
Z CAM E2-S6	EF / PL / M / MFT

Z CAM E2-F6	EF / PL / M
Z CAM E2-F8	EF / PL / M

* Replacement of lens mount is recommended to be operated by the manufacturer's designated agent/dealer or under professional guidance. The failure of the camera may be appearing due to changing the lens mount by the user.



MFT lens mount

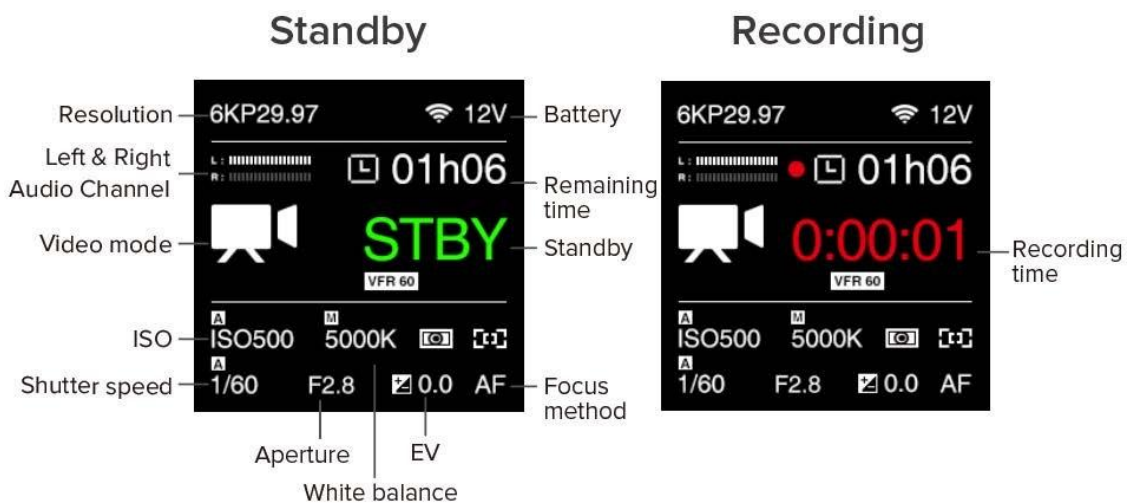
EF lens mount

PL lens mount

1.3. LCD Screen

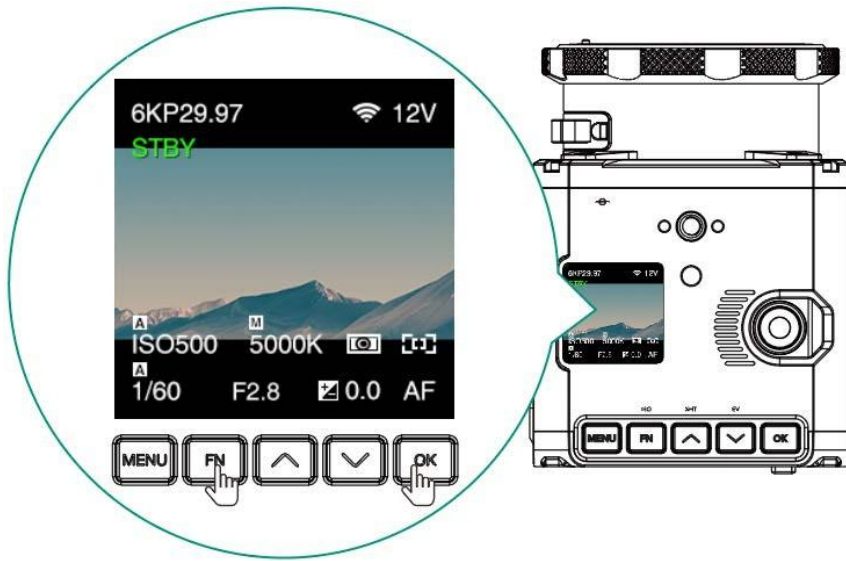
The content displayed on the LCD Screen will be different when the camera is in different mode.

- **Standby & Recording**



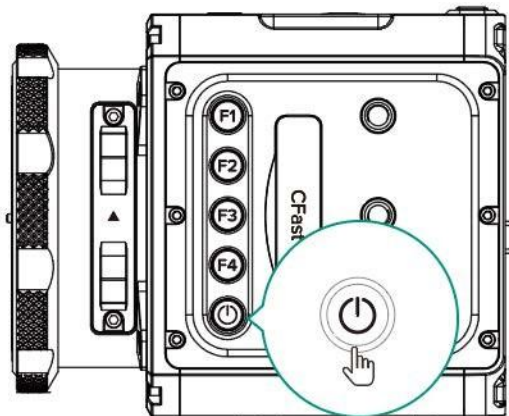
- **Preview**

Press **FN + OK** button when the camera is in **Standby** mode, it will switch to **Preview** mode. Press **FN + OK** again to come back to **Standby** mode.

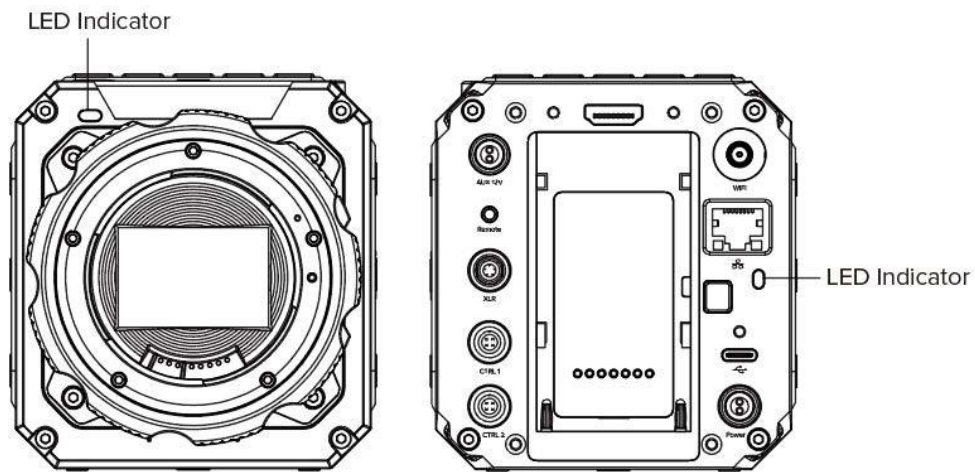


- **Playback**

Short press **Power** button when the camera is in **Standby / Preview** mode, it will switch to **Playback** mode. Short press **Power** button again to come back to **Standby / Preview** mode.

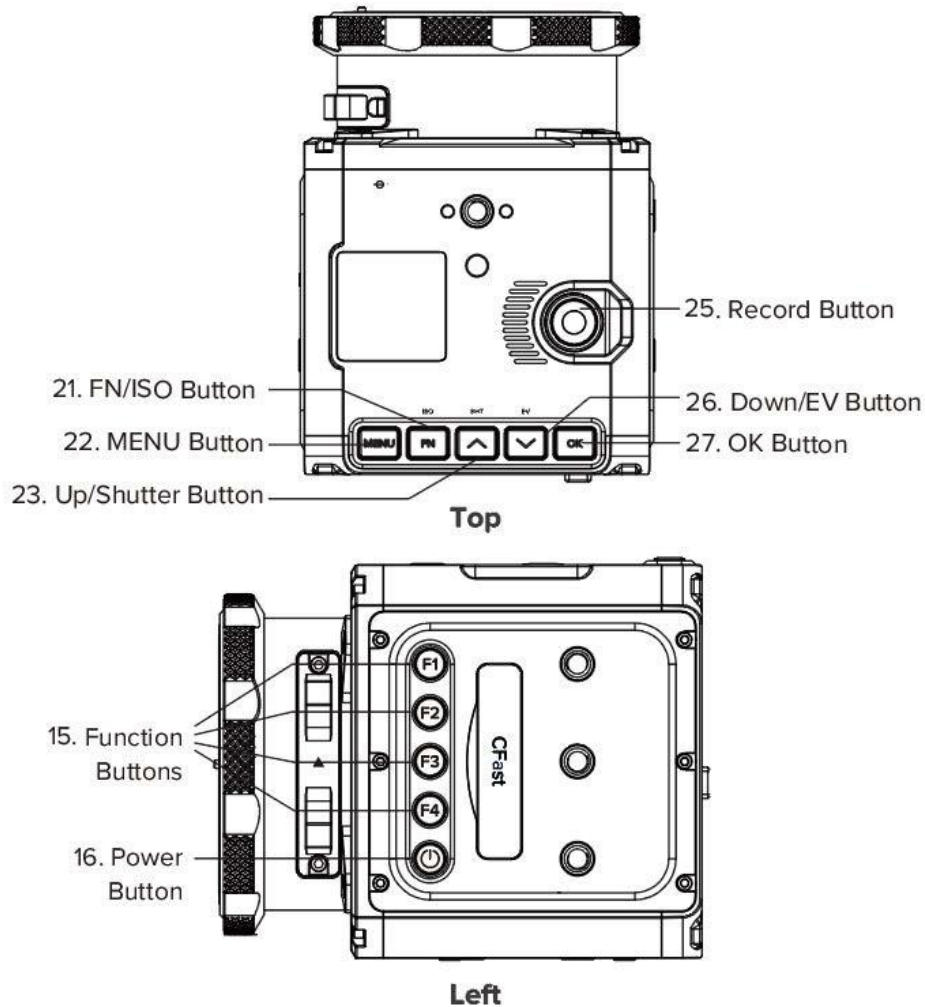


1.4. LED Indicator Status



- **Green** : Standby
- **Red** : Recording.
- **Flashing Red** (every 1s) : No memory card.
- **Flashing Red** (every 0.5s) : Memory card is full.
- **Flashing Red** (every 0.2s) : Camera overheat.
- **Flashing Red** (very fast) : Critical error.
- **Flashing Red** (fast & slow alternant) : Low battery

1.5. Buttons

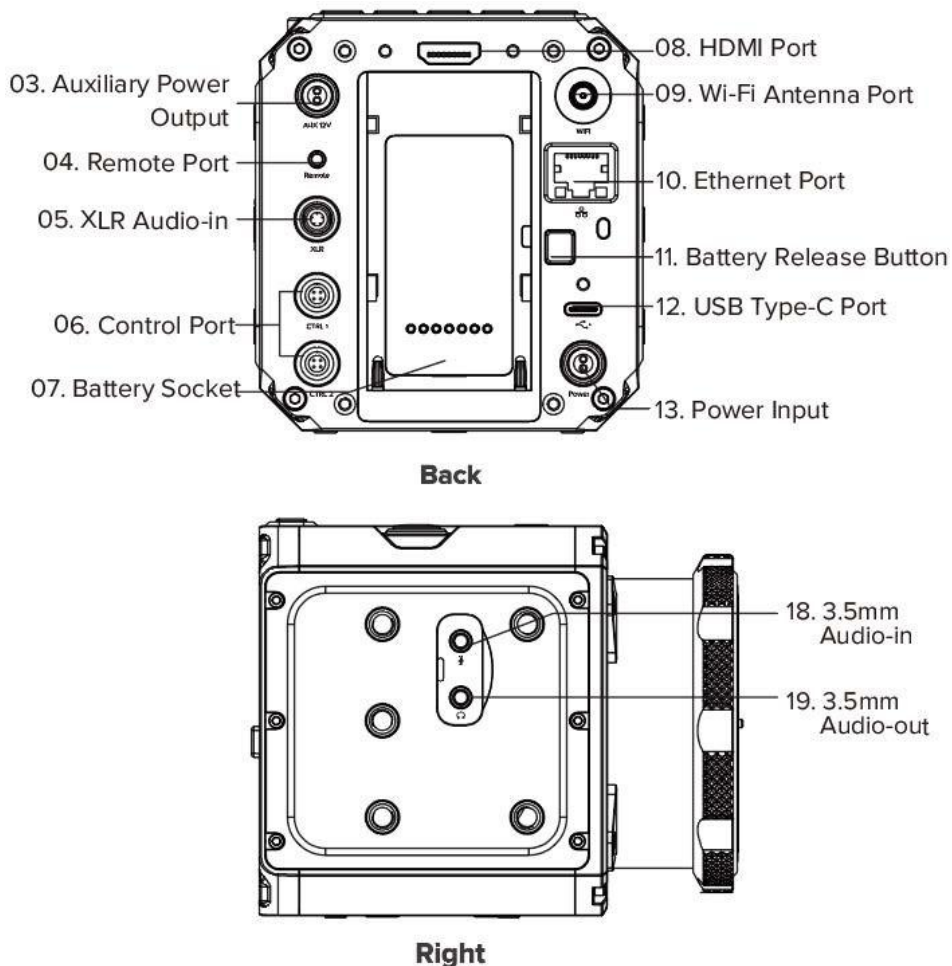


- **MENU button:** Enter / exit the camera settings, or return to the previous menu in camera settings.
- **FN / ISO button:** FN function in camera settings, or ISO quick setting in standby / preview / recording mode by default.
- **Up / SHT button:** Up selection (or add value) in camera settings, or Shutter Speed / Shutter Angle quick setting in standby / preview / recording mode by default.
- **Down / EV button:** Down selection (or reduce value) in camera settings, or EV quick setting in standby / preview / recording mode by default.
- **OK button:** Confirmation in camera settings, or to trigger the Auto Focus function in standby / preview / recording mode by default (with lens supports auto focus and the Auto Focus function on the camera is enabled).

- **F1 button:** AEL (Auto Exposure Lock) by default.
- **F2 button:** Load profile by default.
- **F3:** Aperture quick setting by default.
- **F4:** No function by default.
- **Power button:** Long press for 3 seconds to power on / off the camera, short press to switch to / back from **Playback** mode.

Note: Quick setting function of FN / Up / Down / OK / F1 / F2 / F3 / F4 buttons can be changed in system menu (2.10 System – User button).

1.6. Interfaces

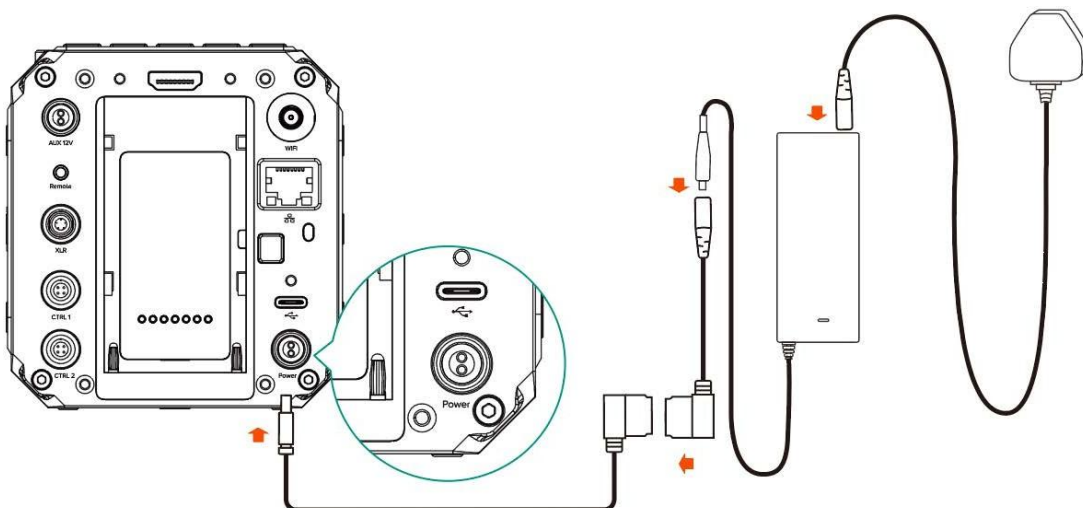


- **Auxiliary Power Output:** DC 12V (2-pin LEMO socket), can supply power to other devices.

- **Remote:** 2.5mm jack socket, compatible with Sony LANC protocol.
- **XLR audio-in:** 5-pin LEMO port for dual-channel XLR microphone, require additional XLR audio connector (compatible with ARRI Mini XLR connector).
- **Control Port:** 2 x serial port (4 pin aviation connector), support RS232 protocol.
- **HDMI port:** HDMI 2.0 Type A standard port
- **Wi-Fi antenna port:** Connect Wi-Fi antenna to use, 2.4GHz / 5GHz Wi-Fi antenna port, support 802.11 b/g/n standard.
- **Ethernet port:** Gigabit Ethernet port for camera control, setting & live preview.
- **USB Type C port:** USB 3.0 standard. Can be connected to mobile devices for camera control, setting and live preview, and be connected to computers for data transmission.
- **3.5mm Audio-in:** 3.5mm (TRS) jack socket for stereo audio input (Mic Level & Line Level supported), can connect to microphone or audio output device.
- **3.5mm Audio-out:** 3.5mm (TRS) jack socket for support stereo output, can be connected to headset or earphone.

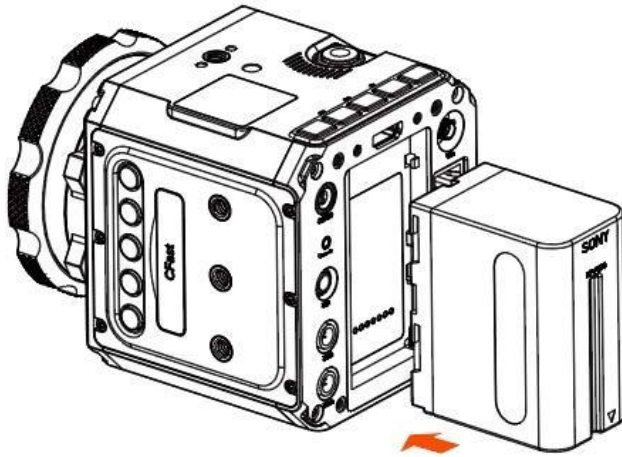
1.7. Power Options

- **External Power Source:** The camera comes with a power cable (D-TAP plug end), D-TAP/DC connector, and can be connected to an AC/DC power adapter with 12V / 3~5A output, and 2.1 x 5.5mm DC plug. (Power adapter not included in the package)

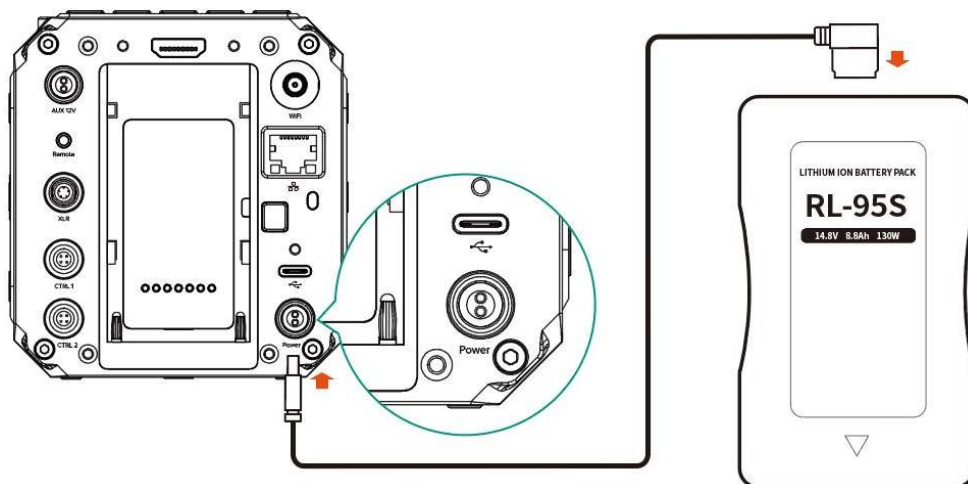


- **Camera Battery:** The battery socket is compatible with SONY NP-F series batteries,

including NP-F970/770/550 etc. (Battery not included in the package)



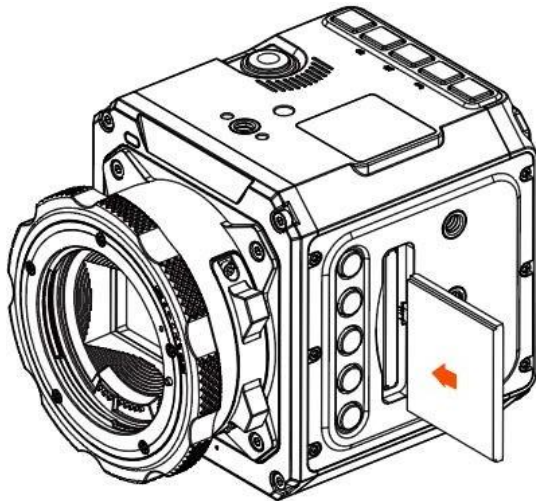
- **V Mount Battery:** Connect the camera to a V mount battery (with D-TAP port) with the power cable (D-TAP plug).



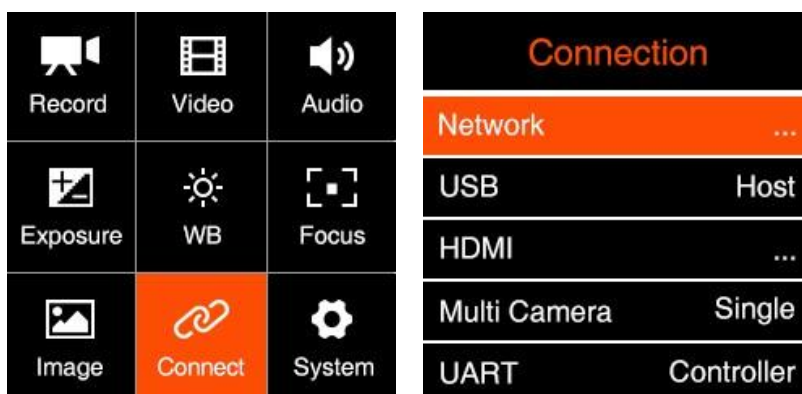
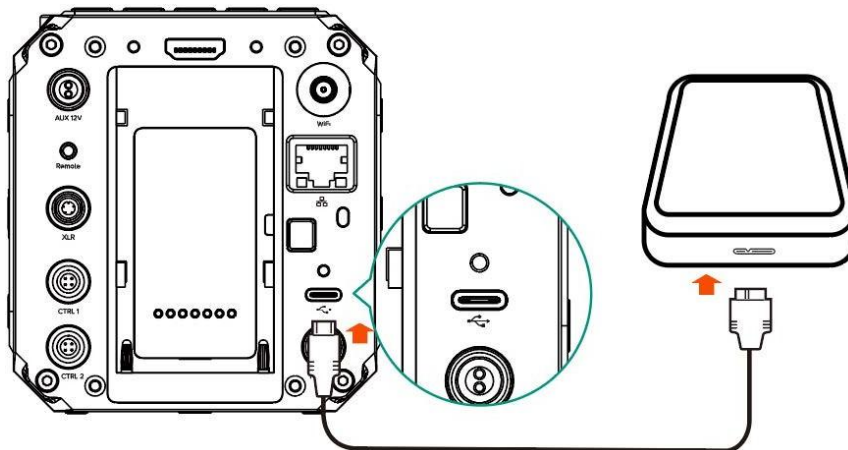
1.8. Storage

The camera uses CFast 2.0 card or SSD as storage.

- **CFast card:** The camera has 1 x internal CFast card slot, which supports CFast 2.0 standard. Insert the CFast card with correct direction, push it to the end until it's locked. To take out the CFast card, push in the card and it will be unlocked, then take it out from the slot.



- **SSD:** Connect the SSD through USB-C port on back of camera as storage. (Note: USB-C port must be in “Host” mode, see **2.9 Connect - USB**)



Please note that the SSD will NOT be recognized if there is a CFast card in the camera.

Attention: When using a CFast or SSD on Z CAM E2 for the first time, please format it before recording (**2.10 System – Format Card**).

2. Camera Settings

2.1. Quick Setting

When the camera is in **Standby** or **Recording** mode, some key settings can be quickly accessed by pressing the buttons on the camera.

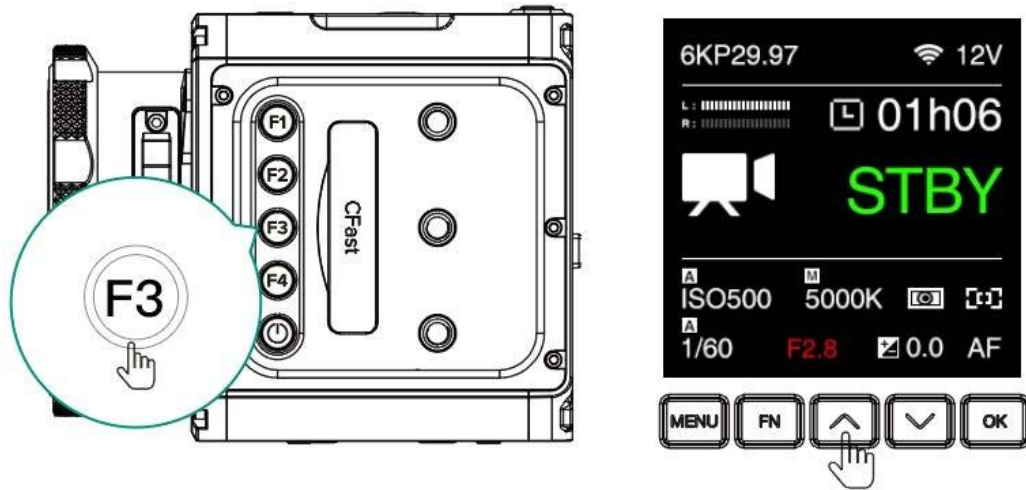
- **ISO:** Press **FN** to set ISO, then press **Up / Down** to adjust the value, and **OK** to confirm.



- **Shutter:** Press **UP** to set shutter speed / angle (refer to **2.5 Exposure – Shutter Operation** about shutter speed / shutter angle), then press **Up / Down** to adjust the value, and **OK** to confirm.



- **Aperture:** Press **F3** to set the aperture, then press **Up / Down** to adjust the value, and **OK** to confirm.



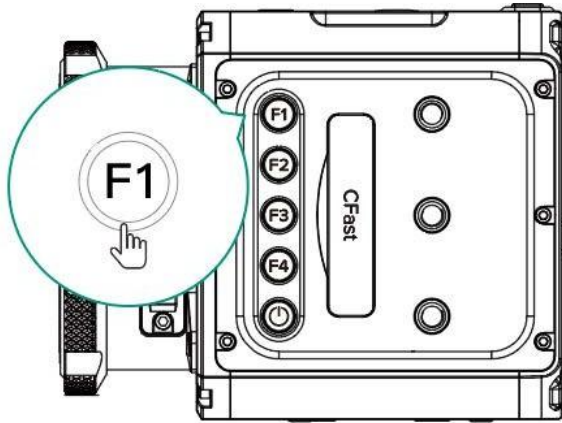
- **EV:** Press **DOWN** to set EV, then press **Up / Down** to adjust the value, and **OK** to confirm.



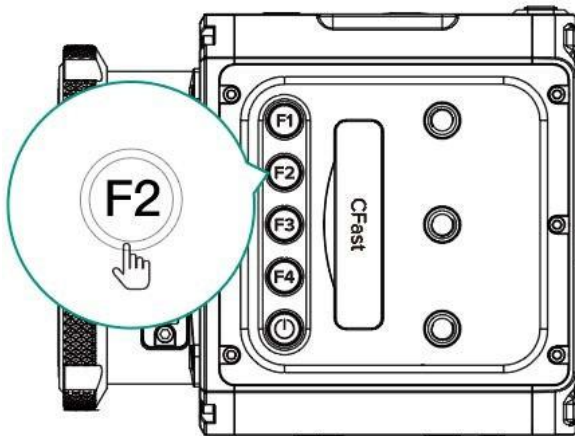
- **AF:** When the lens supports auto focus and the Focus on the camera is set to AF, press **OK** to trigger the auto focus function.



- **AEL (F1):** Press F1 to lock the exposure, then press again to unlock

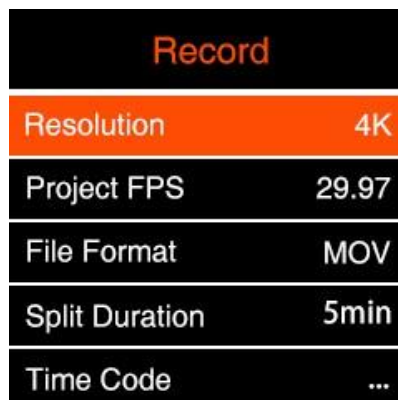


- **Load profile (F2):** Load the configuration saved in the camera. (2.10 System User Profile).



Note: Quick setting function on the buttons can be changed in system setting (2.10 System – User Button).

2.2. Record



- **Resolution**

Z CAM E2-M4

Resolution	Details
4K DCI	4096 x 2160
4K DCI (Low Noise)	4096 x 2160
4K UHD	3840 x 2160
4K UHD (Low Noise)	3840 x 2160
4K DCI 2.4:1	4096 x 1728 (2.4:1 aspect ratio)
4K 2.4:1	3840 x 1600 (2.4:1 aspect ratio)
3696 x 2772	3696 x 2772
3696 x 2772 (Low Noise)	3696 x 2772
3312 x 2760	3312 x 2760
Super16	2704 x 1600
Super16 16:9	2112 x 1188 (16:9 aspect ratio)
FHD	1920 x 1080, S16 mode, suitable for S16 cinema camera lens.

Z CAM E2-S6

Resolution	Details
6244 x 4168	Open Gate
6K UHD	5760 x 3240
6K DCI	6144 x 3240
6K 2.4:1	6144 x 2592 (2.4:1 aspect ratio)
5K 4:3	5552 x 4164 (4:3 aspect ratio), can be used with anamorphic lens.
5K DCI	5120 x 2700
5K 6:5	4992 x 4160 (6:5 aspect ratio), can be used with anamorphic lens.

5K	4800 × 2700
4K DCI (Low Noise)	4096 x 2160, Low Noise Mode*
4K DCI	4096 x 2160
4K DCI 3:2	4096 x 2732
4K 2.4:1	4096 x 1728 (2.4:1 aspect ratio)
4K UHD (Low Noise)	3840 x 2160, Low Noise Mode*
4K UHD	3840 x 2160
Super16 (16:9)	3392 x 1908 (16:9), S16 mode, suitable for S16 cinema camera lens.
2.8K	2868 × 1512
FHD	1920 x 1080

Z CAM E2-S6G

Resolution	Details
6144 x 4096	Open Gate
6K DCI	6144 x 3240
6K UHD	5760 x 3240
6K 2.4:1	6064 x 2560 (2.4:1 aspect ratio)
4K DCI	4096 x 2160
4K UHD	3840 x 2160
4K DCI 2.4:1	4096 x 1728 (2.4:1 aspect ratio)
FHD	1920 x 1080

Z CAM E2-F6

Resolution	Details
6064 x 4040	Open Gate
6K UHD	5760 x 3240

6K DCI	6064 x 3196
6K 2.4:1	6064 x 2560 (2.4:1 aspect ratio)
5K 4:3	5376 x 4032 (4:3 aspect ratio), can be used with anamorphic lens.
5K DCI	5120 × 2700
5K 6:5	4848 x 4040 (6:5 aspect ratio), can be used with anamorphic lens.
5K	4800 × 2700
4K DCI	4096 x 2160
4K DCI 3:2	4096 × 2732
4K UHD	3840 x 2160
4K 2.4:1	4096 x 1728 (2.4:1 aspect ratio)
Super16 (16:9)	2112 x 1188 (16:9), S16 mode, suitable for S16 cinema camera lens.
2.8K	2868 × 1512
FHD	1920 x 1080

Z CAM E2-F8

Resolution	Details
8K 2.4:1	8192 x 3456
8K UHD	7680 x 4320
6K DCI	6144 x 3240
6K UHD	5760 x 3240
4K UHD	3840 x 2160
Super16 (16:9)	3392 x 1908 (16:9), S16 mode, suitable for S16 cinema camera lens.

** With lower noise in shadow area in this mode, but the jelly effect will be more obvious. So it is suitable for static scenes shooting or less moving scene.*

- **Project FPS:** Frame rate of the video project. It will be different for each camera when the resolution is set to different values.

Z CAM E2-M4

Resolution	Frame Rate (fps)
4K UHD (Low Noise) / 3696x2772 / 3696x2772 (Low Noise) / 4K DCI (Low Noise)	23.98 / 24 / 25 / 29.97
4K UHD / 4K DCI / 4K DCI 2.4:1 / 4K 2.4:1 / 3312 x 2760 / Super16 / Super16 16:9 / FHD	23.98 / 24 / 25 / 29.97 / 50 / 59.94

Z CAM E2-S6

Resolution	Frame Rate (fps)
6244x4168 / 6K DCI / 6K UHD / 5K 4:3 / 5K 6:5 / 4K DCI (Low Noise) / 4K DCI 3:2 / 4K UHD (Low Noise)	23.98 / 24 / 25 / 29.97
6K 2.4:1 5K DCI / 5K / 4K DCI 2.4:1 / 4K DCI / 4K 2.4:1 / 4K UHD / Super16 (16:9) / FHD	23.98 / 24 / 25 / 29.97 / 50 / 59.94

Z CAM E2-S6G

Resolution	Frame Rate (fps)
6144 x 4096 / 6K DCI / 6K UHD / 6K 2.4:1 / 4K DCI / 4K UHD	23.98 / 24 / 25 / 29.97
4K DCI 2.4:1 / FHD	23.98 / 24 / 25 / 29.97 / 50 / 59.94

Z CAM E2-F6

Resolution	Frame Rate (fps)
6064 x 4040 / 6K DCI / 6K UHD / 5K 4:3 / 5K 6:5 / 4K DCI 3:2	23.98 / 24 / 25 / 29.97
6K 2.4:1 / 5K DCI / 5K / 4K DCI 2.4:1 / 4K DCI / 4K UHD / Super16 (16:9) / FHD	23.98 / 24 / 25 / 29.97 / 50 / 59.94

Z CAM E2-F8

Resolution	Frame Rate (fps)
8K 2.4:1 / 8K UHD / 6K DCI / 6K UHD	23.98 / 24 / 25 / 29.97
4K UHD / Super16 (16:9)	23.98 / 24 / 25 / 29.97 / 50 / 59.94

- **File format:** MOV / MP4
- **Split duration:** 1 / 5 / 10 / 15 / 20 / 30 / 60 min. The camera will split the video with the length set here automatically.

Note: After the first section via camera automatically splitting, the out of sync problem between audio and video will happen. You need to use “Z CAM™ Video Concatenator” to merge the video section before the post editing and processing. The download link as below:

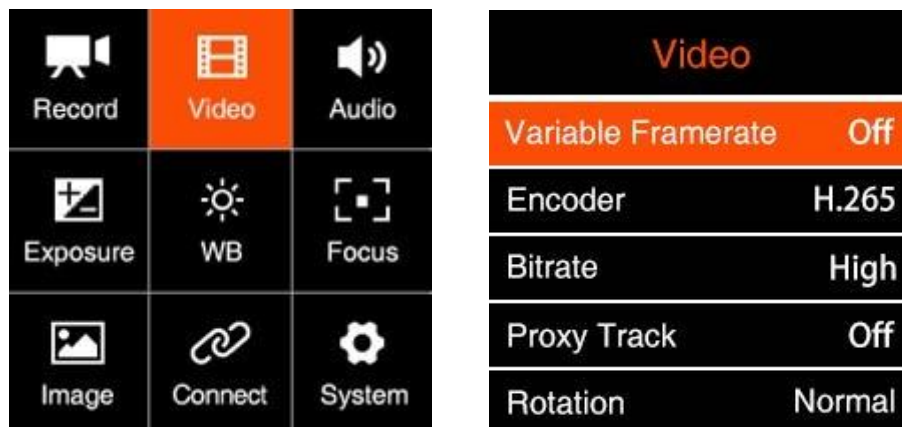
<http://www.z-cam.com/cn/software-update/>

- **Time Code:** Set the time code, there are sub-items as below:
 - **Time Code Source:** Internal / External
 - **Time Code Value:** Reset / Manual / Current
 - **Reset:** Reset the time code value to 0.
 - **Manual Input:** Set the time code value manually 00:00:00:00 (hour:minute:second:frame).
 - **Current Time:** Set time according to the camera system setting time.
 - **Count Up:** Rec Run / Free Run.
 - **Rec Run:** Counts the time code only when recording video.
 - **Free Run:** Counts the time code even when not recording video (including when the camera is power off)
 - **Time Code Mode:** DF / NDF.
 - **DF:** The camera modifies the difference between recorded time and time code. Seconds and frames are separated by “.”. (Example: 00:00:00.00)
 - **NDF:** Records the time code without drop frame. Seconds and frames are separated by “:”. (Example: 00:00:00:00)
 - **HDMI Display:** On / Off. To enable / disable the display of time code through HDMI output.

- **Playback FR:** Default / VFR. When it's set to Default, the frame rate of playback will be the same as set in Project FPS, when it's set VFR, the frame rate of playback will be the same as set in Variable Frame Rate (2.3 Video – Variable Frame Rate)

For example: Set "Record"- "Project FPS" to 29.97, and "Video"- "Variable Frame Rate" to 120. If the "playback FR" is set to "Default", the playback frame rate of the video is 29.97fps (4-fold slow motion). If the "playback frame rate" is set to "Variable Frame Rate", the playback frame rate of the video is 120fps (normal speed).
- **Meta Setup:** Set the camera metadata, include "Camera ID" and "Reel Name".
 - Camera ID: A ~ Z
 - Reel Name: 001 ~ 999
- **Pre Roll:** On / Off. Set "Pre Roll" to "ON", there would appear one red flashing circle on the left of remaining recording time (See the below picture) . To press **Record** button to start recording, the camera will automatically save the first 5 seconds before pressing record button.

2.3. Video



- **Variable Frame Rate (VFR):** With VFR you can set a different frame rate for capturing based on the Project FPS for recording, in this way you can get a slow-motion or fast-motion footage.

VFR options are related to the **Resolution** and **Project FPS in Record** setting. **And the maximum VFR is related to the exact camera model and resolution, see below:**

Z CAM E2-M4

Resolution	Max Variable Frame Rate (fps)
4K DCI	120
4K DCI (Low Noise)	30
4K UHD	120
4K UHD (Low Noise)	30
4K 2.4:1	160

4K DCI 2.4:1	150
3696 x 2772	60
3312 x 2760	60
Super16	160
Super16 16:9	170
FHD	240

Z CAM E2-S6

Resolution	Max Variable Frame Rate (fps)
6244 x 4148	30
6K DCI	48
6K UHD	48
6K 2.4:1	60
5K 4:3	30
5K 6:5	30
5K DCI	60
5K	60
4K DCI 2:4:1	100
4K DCI 3:2	30
4K DCI	75
4K DCI (Low Noise)	30
4K UHD	75
4K UHD (Low Noise)	30
Super16	90
FHD	120

Z CAM E2-S6G

Resolution	Max Variable Frame Rate (fps)
5K DCI	60
5K	60
4K DCI	90
4K DCI 3:2	30
4K UHD	90

Z CAM E2-F6

Resolution	Max Variable Frame Rate (fps)
6064 x 4040	30
6K DCI	48
6K UHD	48
6K 2.4:1	60
5K 4:3	30
5K 6:5	30
4K DCI	90
4K UHD	90
4K 2.4:1	120
Super16 (16:9)	170
FHD	120

Z CAM E2-F8

Resolution	Max Variable Frame Rate (fps)
8K 2.4:1	30
8K UHD	30
6K DCI	30
6K UHD	30
4K UHD	60
Super16 (16:9)	60

*Each resolution to the highest variable frame rate subject to H.265 encoder standard.

- **Encoder:** H.264 / H.265 / ZRAW

The corresponding color bit depth and sampling of each encoding format are as follows:

Encoder	H.264	H.265	ZRAW
Color Bit Depth	8bit	10bit	12bit
Color Sampling	4:2:0	4:2:0	N/A

Max frame rate @30fps for ZRAW encoder.

- **Bitrate:** High / Middle / Low. Value of the bitrate varies in different resolution and frame rate.

Resolution	Frame Rate Range (fps)*	Bitrate (Mbps)		
		H	M	L
8K (8K 2.4:1, 8K UHD)	FR <= 30	500	400	200
6K (Open Gate, 6KDCI, 6K UHD, 6K 2.4:1)	30 < FR <= 60	300	190	130
	FR <= 30	250	160	100
5K (5K 4:3, 5K 6:5)	FR <= 30	250	160	100
4K (4K DCI, 4K UHD, 4K 2.4:1) / Super16 (16:9)	FR > 60	300	200	160
	30 < FR <= 60	230	150	100
	FR <= 30	200	130	60
FHD	FR > 60	200	130	60
	30 < FR <= 60	60	30	15
	FR <= 30	30	20	10

* If **VFR** is activated, the frame rate here refers to the frame rate in **VFR**, otherwise it refers to the frame rate in **Movie Format**.

For ZRAW, the bitrate is 1.2Gbps.

- **Proxy Track:** On / Off. To enable or disable proxy track recording during video

recording, it will automatically “On” when using ZRAW as recording encoder, which will record a second video track (H.265) into the video file.

- **Rotation:** Normal / Upside Down. Rotate the image by 180 degrees.

Note: This setting is available only when the frame rate of recording is under 30fps (include 30fps). The display on the LCD and the video output from HDMI will not be rotated during preview and recording in current firmware, and only the video recorded in the storage will be rotated when it's set to “Upside Down”.

- **Timelapse:** Off / Manual, when it's Off, the camera is in normal record mode. When it is set to a specific value, the camera is in time lapse video mode.



- **VFR Control:** Coarse / Fine
 - Coarse: Adjust based on the camera's preset value within the range of VFR
 - Fine: VFR fine control within the range of VFR, 1 frame per step.

2.4. Audio



- **Encoder:** None / AAC / PCM
- **Input:** Off / Microphone / XLR / Mic Left + XLR Right / Mic Right + XLR Left
 - **Off:** Turn off all audio input.
 - **Microphone:** The camera will use built-in microphone as audio input if there is no external microphone plugged into the 3.5mm audio-in port, and will use the external microphone if there is one plugged into the 3.5mm audio-in port.
 - **XLR:** Take XLR port as audio-in

- **Mic Left + XLR Right:** Take 3.5mm audio-in(microphone) left channel, and XLR port right channel to merge for audio-in
 - **Mic Right + XLR Left:** Take 3.5mm audio-in(microphone) right channel, and XLR port left channel to merge for audio-in
- **Input Level:** Mic Level / Line Level
- **Input Gain:** -10 ~ 12 dB, can be set manually.
- **Output Gain:** -10 ~ 12 dB, can be set manually.
- **Phantom Power:** Enable / Disable. Available when “Input” is set to “XLR,” “Mic Left + XLR Right” and “Mic Right + XLR Left” to enable or disable the phantom power of the XLR port.
- **Audio Level Display:** Disable / Enable, enabling this setting displays the audio level on the standby screen.



2.5. Exposure



Exposure	
Flicker Reduction	50Hz
EV	0
Shutter Angle	Auto
Aperture	F2.8
ISO	500

- **Flicker Reduction :** 60Hz / 50Hz. It's set to eliminate light flicking caused by the frequency of the electricity, which is 60Hz in North America and some parts of Asia. (South Korea , Philippines , Taiwan of China), And 50Hz for China mainland, other countries and regions.
- **EV:** -3.0 ~ 3.0

- **Shutter Speed / Shutter Angle:** This setting depends on whether “Shutter Speed” or “Shutter Angle” is selected in **2.5 Exposure - Shutter Operation**

Shutter Speed: Auto / Manual (1” ~ 1/8000”)*

Shutter Angle: Auto / Manual (1° ~ 360°)

** The minimum shutter speed “1” is available only when variable frame rate is set to “1”.*

- **Aperture:** It shows the range of aperture of the lens, and can be adjusted manually if it's an electrical lens. Only for lenses with electronic contacts. If the lens used is a purely mechanical without electronic contacts, the aperture value is not shown here.
- **ISO:** ISO optional values depend on the setting in ISO control. The native ISO value varies from different models.

ISO Control	ISO
Fine	400 ~ 128000
Native ISO	Z CAM E2-S6G: 1250
Dual Native ISO	Z CAM E2-F6: 400 / 2500 Z CAM E2-S6 & E2-F8: 400 / 1250 Z CAM E2-M4 WDR On/Off: 250 / 1250 500 / 2500

- **eND:** 1.70 ~ 6.70 stop.
- **eND Mode:** ND 101 / ND 102
- **Minimum ISO:** This setting will only be enabled when **ISO** is set to “Auto”.
- **Max ISO:** This setting will only be enabled when **ISO** is set to “Auto”.
- **Max Shutter Speed / Max Shutter Angle:** This setting will be activated if Shutter Speed / Shutter Angle is in **Auto** mode.

Max Shutter Speed: Auto / Manual (1” ~ 1/1600”)*

Max Shutter Angle: Auto / Manual (1° ~ 360°)

** Minimum shutter speed “1” is optional only when variable frame rate is set to “1”.*

- **Metering Mode:** Center / Average / Spot, it sets the metering mode of exposure.
- **Shutter Operation:** Speed / Angle
- **ISO Control:** Fine / Native ISO

Fine: ISO can be set in detail value within ISO range (according to standard ISO definition)

Native ISO: only native ISO can be selected.

- **Extended Manual ISO:** On / Off
- **AE Speed:** Slow / Normal / Fast
- **Lock In Record:** Off / On. Enable this function, it will automatically lock the exposure during recording.