nac
IMAGE TECHNOLOGY

Hi-Motion II
Ultra Slow Motion

Hi-MotionII Preliminary Quick Guide

2012/2/1

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1 Quick Overview of Specification

1.1 Camera Head

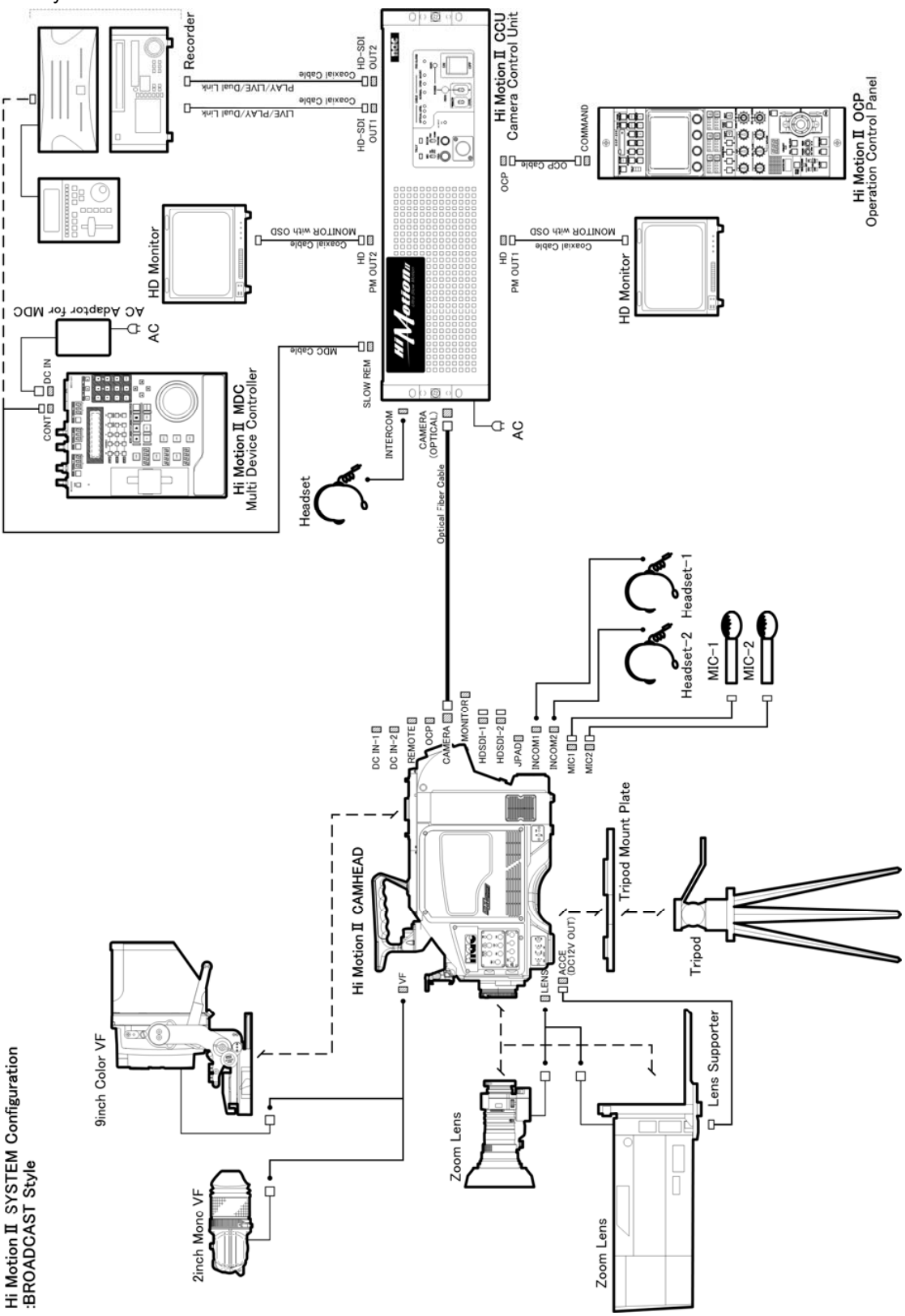
1	Image Sensor	3x CMOS, 2/3-inch Optical System
2	Effective picture elements	1920x1080
3	Lens Mount	B4 Mount
4	Operation temperature	-15 to +40 degrees C
5	Storage temperature	-30 to +60 degrees C
6	Memory	96GB (32GB x 3ch)
7	Frame rate	24 to 1000 fps, 1fps step
8	Recording time	38 Sec. (300fps)
9	Dimensions (W x H x D)	146 x 326 x 456 mm
10	Weight	7 Kg (without VF and lens)

1.2 CCU

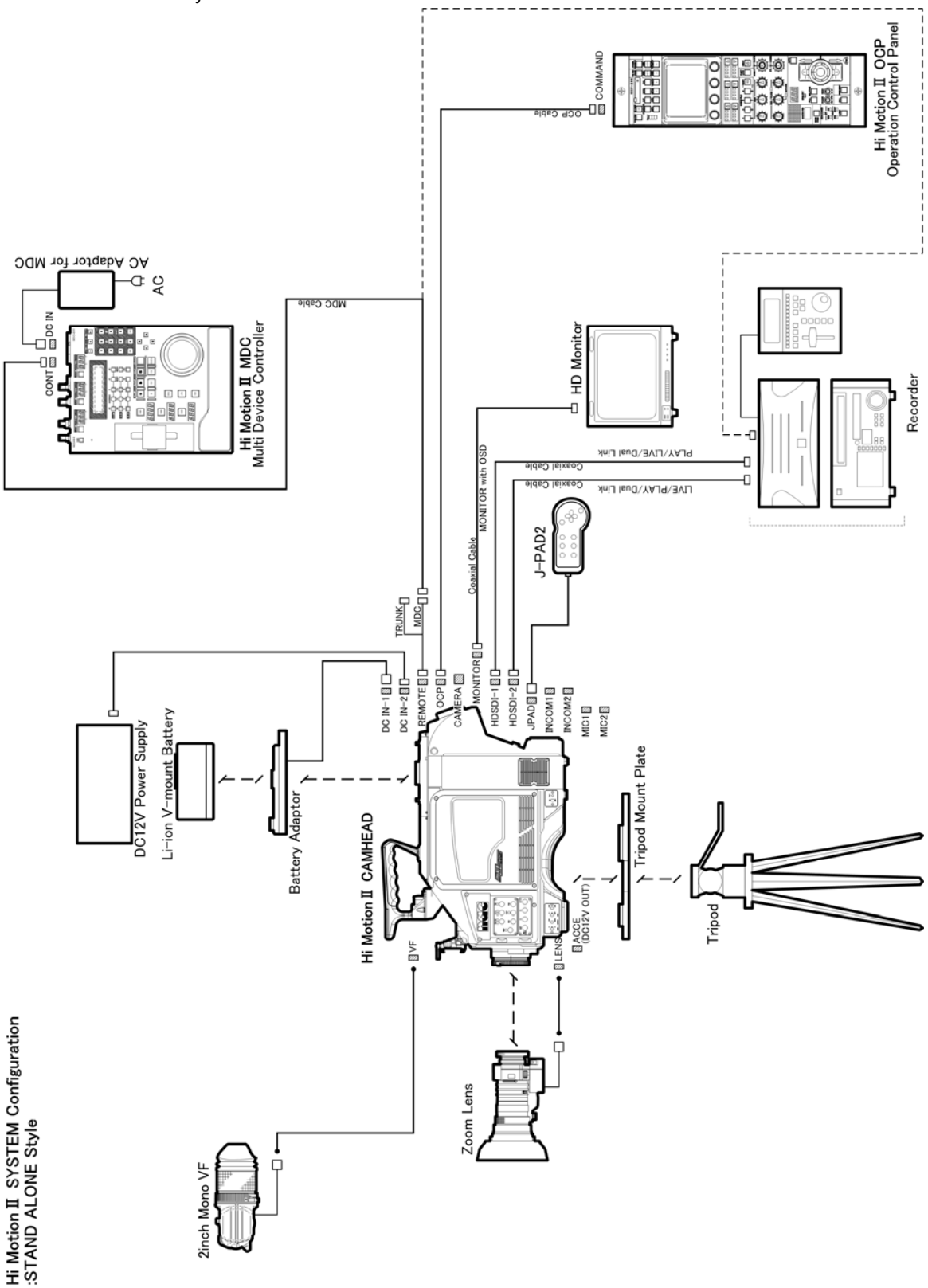
1	FORMAT	1080i or 720p / 59.94 or 50Hz
2	Power supply	AC 100 / 110 / 117 / 220 / 240 V ±10%
3	Power consumption	approx. 290 - 510VA (Camera , 9"VF and CCU)
4	Operating temperature	-0 to +45 degrees C
5	Storage temperature	-30 to +60 degrees C
6	Dimensions (W x H x D)	483 x 133 x 454 mm
7	Weight	28 Kg

2 Setup and Connections

2.1 OB Style



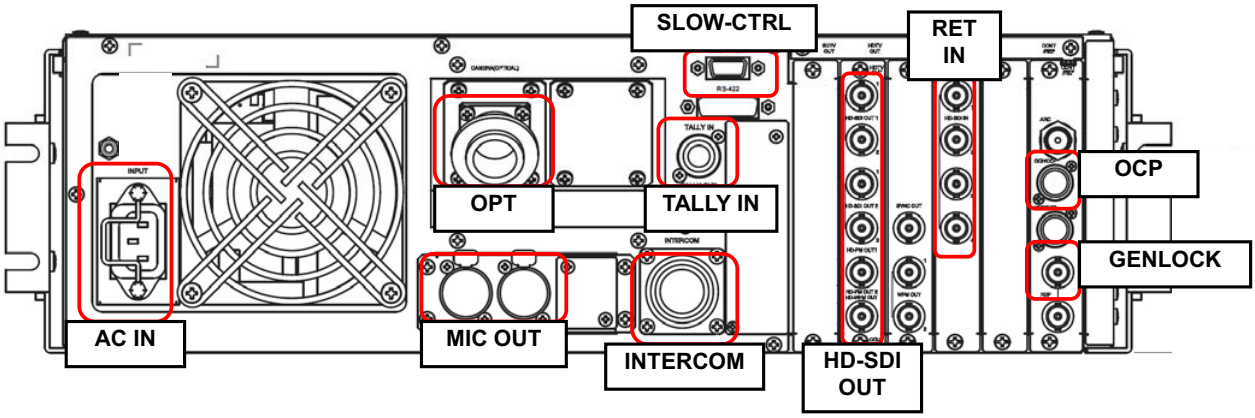
2.2 Stand Alone Style



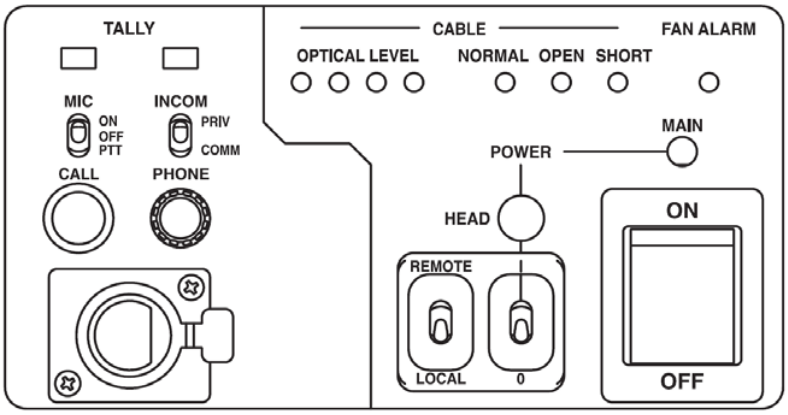
3 CCU Quick Guide

3.1 Rear Panel

A	AC IN		AC100V/110V/117V/220V/240V ±10%
B	OPT		For Optical Fiber Connection
C	MIC OUT		MIC Direct Output from the MIC Input of Camera
D	SLOW-CTRL		For Slow Controller Connection
E	TALLY IN		For Tally Signal Input
F	INTERCOM		For Intercom Signal Connection
G	RET IN		For Return Signal Connection via max. 4ch x HD-SDI
H	OCP		For OCP Cable Connection
I	GENLOCK		For Genlock Signal Connection for rither HD Tri-sync or SD-BB Signal
J	HD-SDI OUT		There are 6x BNC Connectors as follows
	1	HD-SDI 1	Output for Live at All Times
	2	HD-SDI 1	Output for Live at All Times
	3	HD-SDI 2	Output for Replay
	4	HD-SDI 2	Output for Replay
	5	Picture Monitor 1	Output for OCP Operator. Characters Signal for Operator is overlaid
	6	Picture Monitor 2	Output for V/T Operator. Characters Signal for Operator is overlaid



3.2 Front Panel



A POWER

1	MAIN	Power switch of CCU. It initializes together when the switch of the Camera head is ON.
2	HEAD	Power switch of Camera Head.

B CABLE Indicator

1	OPTICAL LEVEL	It shows the optical communication status of camera cable.

- ○●●● 1.OK In a good condition
- ○●●○ 2.ATTENTION Cable cleaning recommended, but still can use.
- ○●○○ 3.WARNING Problem on the signal. Clean the cable.
- ●○○○ 4.NG Cannot use. Change the cable.

2	CAMERA CABLE	It shows the camera cable status

- ●NORMAL Cable status is normal.
- ●OPEN Cable may be disconnected or snapped
- ●SHORT Cable may be short-circuited.

C MIC

1	ON	Sound communication from MIC of CCU front to Camera head to be ON
2	OFF	Sound communication from MIC of CCU front to Camera head to be OFF
3	PTT	MIC of CCU front to be ON only while the switch is at PTT position.

D INCOM

1	PRIV	It activates MIC connector of CCU front when Camera head and Incom are in communication
2	COMM	It activates Incom connector of CCU rear when Camera head and Incom are in communication.

E REOTE / LOCAL Set it to LOCAL. REMOTE is not functional.

F FAN ALARM It lights on when CCU fan stops.

4 Format Selection

4.1 1080I59, 720P59, 1080P59, 1080I50, 720P50, 1080P50 are selectable as the image signal output.
*At the time of January 2012, 1080P59 and 1080P50 are not capable

A It is necessary to change both settings on the Camera Head and the CCU. The Camera has to be changed first and the CCU as the second. At this time of settings, GENLOCK signal has to be free from the system.

1. Call the HEAD MENU on the VF output and change the SCAN MODE setting of SCAN FORMAT SELECT on MENU(2/2)
2. Turn off the Camera Power
3. Call the color bar on PM1 output of CCU by pressing [BARS] button on OCP.
4. Press [SETUP] button on OCP and press [CHARACTER] button on its LCD touch screen.
5. Pressing [MENU] button on OCP longer calls Main Menu on its LCD touch screen.
6. Select one in the SYSTEM FORMAT by turning Select Knob or Next Knob, and press [ENTER] button.
7. Change the Frame Rate, and this has to be same as the Camera Format.
8. Turn off the CCU Power and reboot the system to complete the settings.

4.2 Adjustment for H Phase is as follows.

1. Call the color bar on PM1 output of CCU by pressing [BARS] button on OCP.
2. Press [SETUP] button on OCP and press [CHARACTER] button on its LCD touch screen.
3. Pressing [MENU] button on OCP longer calls Main Menu on its LCD touch screen.
4. Select PHASE CONTROL by turning Select Knob or Next Knob, and press [ENTER] button.
5. H PHASE of CCU HD-SDI OUT (1&2) changes when HD OUT H TRACK is operated and H PHASE of PM OUT(1&2) changes when HD PM H TRACK is operated. Please note that the variable width is approximately 1 line.

*There is H PHASE setting in the HEAD MENU, but take the above-mentioned steps when CCU is connected.

4.3 720P Capture Mode is available when either 720P59 or 720P50 is selected. The sensitivity of 720P gains twice as much as the regular 1080 Capture mode

A Removing the Magnification Optics

1 Unscrew the lever that is attached on the Mount Ring of the Magnification Optics

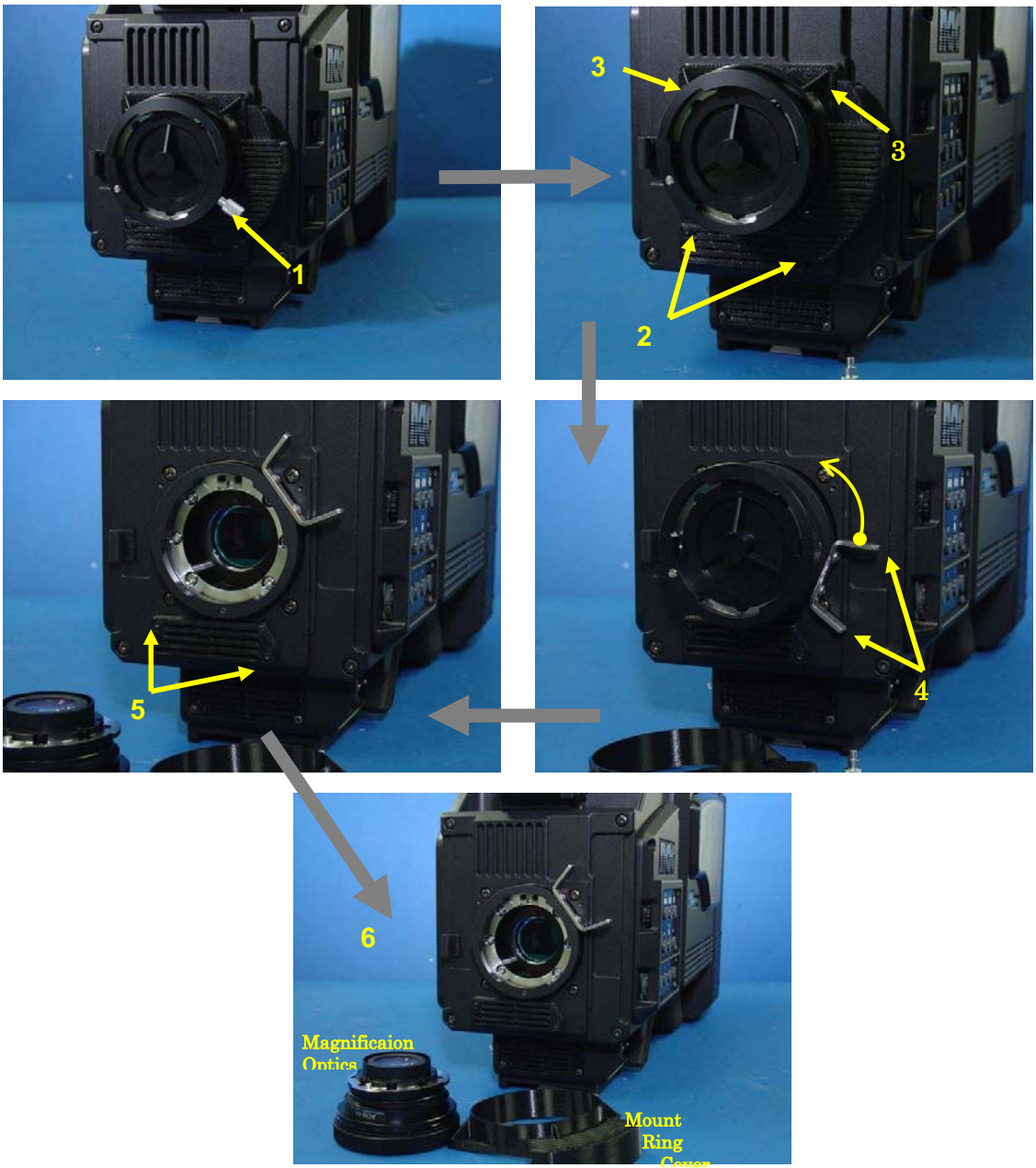
2 Loosen the screws for Air Filter Cover

3 Unscrew the screws on the Mount Ring Cover of the Camera Body and remove the Cover

4 Turn the lever that is attached on the Mount Ring of the Camera Body counter-clock wise

5 Remove the Magnification Optics and tighten the loosened screws for Air Filter Cover

6 Done



B How to change Capture Format

1 Call the Camera Head Menu on VF and change CAPTURE SIZE of RECORDING to 720 in MENU(2/2)

2 Reboot the Camera

C Notice

1 Follow the steps in reverse for re-mounting the Magnification Optics

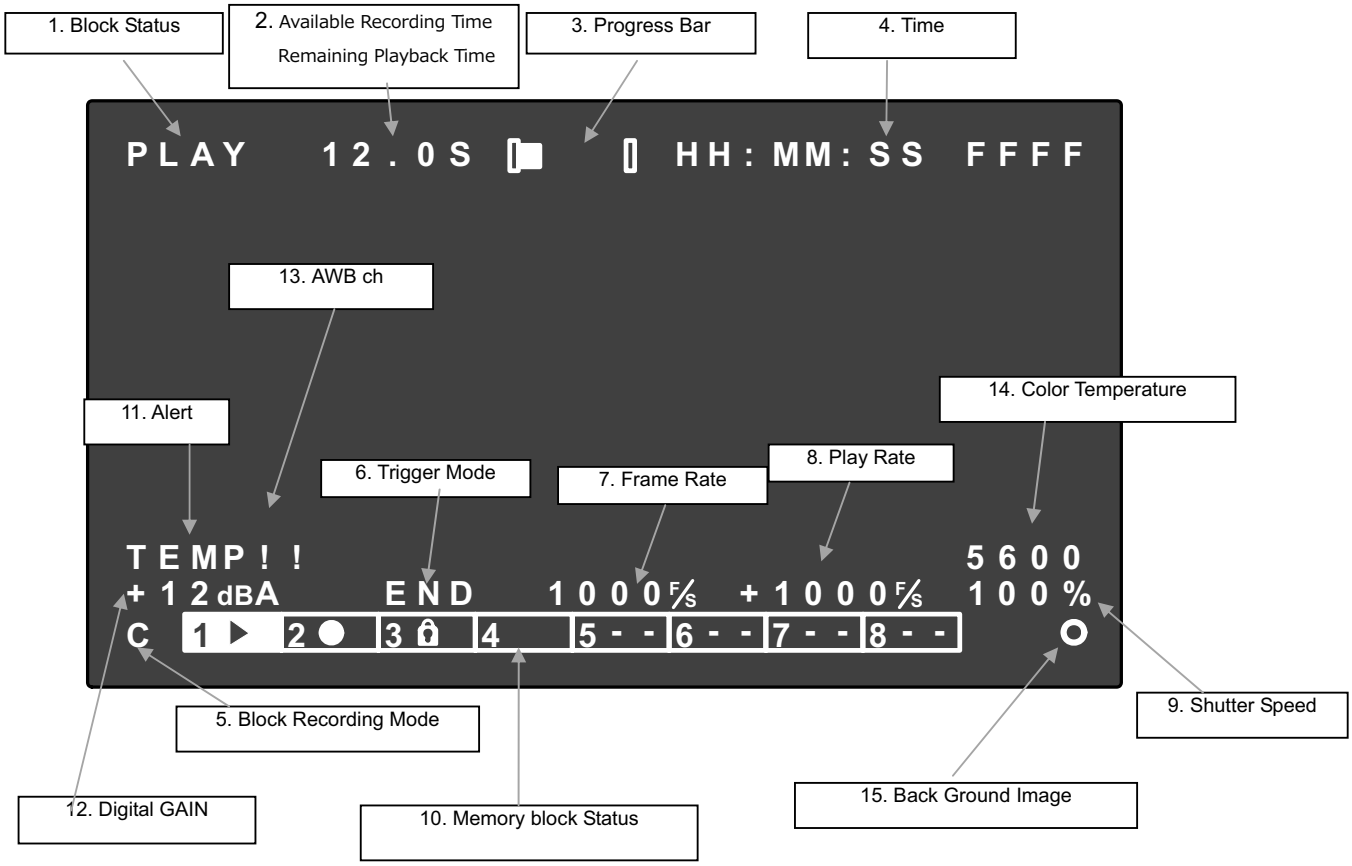
2 Optical part of the Magnification Optics has to be treated carefully with soft cloth not to have contaminations or possible damage.

3 Mount Ring Cover may get damaged if unexpected force received

4 Do not lose the small screws（M2x5　2pcs）

5 Description of Monitor Information Caption

5.1 Picture Monitor 1 of CCU rear panel, Picture Monitor 2 on the rear panel of CCU, and Monitor Output, VF Output of the Camera will have Information Caption for each Camera Status overlaid



1 Block Status：Displays the status of the selected Block

STOP	Playback Stop
VIEW	Live Image
REC	In Recording
PLAY	In Playback
LOOP	Playback in Loop (LOOP only available by Camera or J-PAD control)

2 Available Recording Time / Remaining Playback Time：Displays Available Recording Time or Remaining Playback Time depending on the selected Block status

VIEW, REC	Displays Available Recording Time(Sec) on the selected Block
PLAY,LOOP	Displays Remaining Playback Time (Sec) from the current position to the end of the frames with the selected playback speed.
STOP	Displays Remaining Playback Time (Sec) from the current position to the end of frames at PLAY REF SPEED

3 Progress Bar : Displays the status of the Memory at each Camera Mode

REC	Displays the status of the Memory in Recording Mode. The left end is the start position of the recording, and the right end is the end position of the recording
PLAY,LOOP	Displays Playback position out of all the recorded image clips on the Blocks

4 TIME：Displays the Time for the selected Block status and Frame Numbers in HH : MM : SS : FFFF

5 Block Recording Mode：Displays Block Recording mode(Refer to 6.3.F)

S	SINGLE MODE
C	CONTINUES MODE
L	LOOP MODE

6 Trigger Mode：Displays the Trigger Mode(Refer to 6.3.D)

STRT	Start Trigger Mode
CENT	Center Trigger Mode
END	End Trigger Mode
0 – 100%	Custom Trigger Mode

7 Frame Rate：Displays the Frame Rate

8 Play Rate：Displays Playback Rate (29.97 and 59.94 or any numbers with decimal point are displayed as integer numbers as 30 or 60)

9 Shutter Speed：Displays Shutter Speed. e.g. Exposure time for each frame is 1/400sec when the Frame Rate is set 400fps and the Shutter Speed is set 100%

10 Memory Block Status：Displays the status of divided Blocks. The box of the current selected Block has its color turned white

PLAY	
REC	
Recorded Block	Nothing displayed
LOCK	
Empty Block	

11 Alert：

CAUTION SENSOR TEMP!	Displays if even one of the three R,G, and B imagers exceeds its tolerated temperature.. In the case of this Alert, turn off the Camera and cool it down by avoiding possible causes.

12 Digital GAIN

1 Displays Gain settings that are set on OCP when OCP is connected to CCU or Camera Head.

2 When OCP is not connected to Camera Head in the case of Stand Alone Style, it displays the setting of Gain switch (0,M,H) that is attached on the right side of the Camera Body.

13 AWB Ch

1 Displays Auto White Balance settings that are set on OCP when OCP is connected to CCU or Camera Head.

2 When OCP is not connected to Camera Head in the case of Stand Alone Style, it displays the setting of AWB switch (A,B,OFF) that is attached on the right side of the Camera Body.

14 Color Temperature : Displays the setting value of electric color temperature filter.

15 Background Image : Displays the settings of the images that are output from PM1/PM2 output of CCU and VF/ MON OUT of the Camera. Refer to 6.2.A for how to switch images of Picture Monitor 1, and 6.1.A for Picture Monitor 2

	Displays Live image
	Displays Playback image

6 Quick Guide for OCP Operation

6.1 The following Camera Head Menu are selectable by ▲ ▼ buttons on OCP. Please press ABB button on OCP and perform Auto Black Balance when the following settings are changed.

A FRAME RATE 24, 30, 50, 60, 100, 120, 150, 180, 240, 300, 400, 500, 600, 800, 1000

B SENSITIVITY 3dB, 0dB, +3dB, +6dB

C COLOR TEMP 3200K, 5600K, 6300K, 7500K

***When CUSTOM of FRAME RATE is selected from HEAD MENU, it works properly, but the display will not show correct frame rate on OCP.

6.2 The background image on Picture Monitor 1 output can be changed with the following function.

A PM1 LIVE, PLAY

6.3 Color Space Setting for SMPTE / EBU / ITU-709

A Check the desired Color Space number from the MATRIX PRESET DATA in the ENGINEER MENU(1/2) of HEAD MENU and select the Matrix from the OCP Touch Screen Menu and assign the number.

B Prees SET UP button on OCP, go and press COLOR button in the touch screen, then COLOR CORR button, and set as following chart shows

	SMPTE	EBU	ITU-709
R HUE	+5	0	+2
R SAT	-25	+9	-5
G HUE	+1	+5	-2
G SAT	+8	+14	+17
B HUE	-4	+6	0
B SAT	-25	+9	+1
Y HUE	-6	+2	-5
Y SAT	-17	+13	-5
Cy HUE	+14	+5	+11
Cy SAT	-20	+15	+2
Mg HUE	+2	+3	+5
Mg SAT	-7	-2	+6

7 Quick Guide for Slow Controller Operation

7.1 How to Switch between LIVE and REPLAY

A The operator of the Slow Controller operates by looking at PM2 output of the CCU. At this time, select either LIVE or REPLAY image for the overlaid image of PM2 output.

1 How to change LIVE and REPLAY on PM2 output.

2 LIVE and REPLAY image switches alternatively every time [STANDBY] button is pressed.

3 ○ displays when in LIVE and ▸ displays when in REPLAY at the lower right of PM2 output.

7.2 Block Recording

A The memory can be divided max. 8 Blocks.

B The number of Blocks can be set by the following procedure. Please note that all the recorded memory is deleted when the number of Blocks is changed.

- How to change the number of Blocks
- Press [ASSEMBLE] button
- Press the desired number of Blocks and select from [1] to [8]
- Press [ENT] button to complete the settings.

C Pressing the numeric key selects the desired Block.

7.3 Recording

A Select one of Blocks you want to start recording with by pressing the numeric key.

B Press [REC] and [PLAY] buttons at the same time to start recording, and you will see ● blinks on the Block on Block Status Character on PM2 output.

C Press either [REC] or [STOP] button to stop recording. [REC] button functions on whatever the Block that is being selected, but [STOP] button only functions on the selected Block.

D When [REC] button is pressed, the Block Recording stops according to the Trigger Mode Setting(Refer to the following setting), and starts a new Block Recording according to Recording Mode Setting(Refer to 6.3 F)

1 How to change Trigger Mode Settings(Regularly, END is selected）

2 Press [AE] button.

3 Press [▲] [▼] buttons to call a desired Trigger Mode as you see on the display of the Slow Controller.

- 011 TRG/STRT Records after the Triggered point
- 012 TRG/CENT Records 50% before&after the Triggered Point
- 013 TRG/END Records before the Triggered point
- 014 TRG/CSTM Records before&after according to the desired Triggered point

4 Press [ENT] button to complete the settings.

E When [STOP] button is pressed, the Block Recording stops as END Trigger Mode even in whatever the Trigger Mode is selected, and the Block does not jump to the next Block Recording even in CONTINUOUS or LOOP Mode. (Refer to 6.3 F)

F Recording Mode has three types; SINGLE,CONTINUES and LOOP. In SINGLE Mode, it only records in a Block and does not jump to the next Block Recording. In CONTINUES Mode, it jumps to the next Block Recordings every time [REC] button is pressed and ends after one round of all the divided Block(For example, if the Blocks are divided as

4 Blocks and started with the 3rd Block, it ends at the 2nd Block after one round）. In LOOP Mode, it jumps to the next Block Recordings every time [REC] button is pressed, and it continues until [STOP] button is pressed. When in CONTINUES or LOOP Mode, the Blocks that are being in LOCK and PLAY will not be overwritten.（Refer to 6.3）

- How to change Recording Mode Settings
- SINGLE,CONTINUES,LOOP mode changes every time [0] button is pressed.
- Status of [0] and Display of PM2 output at each Mode.
  - SINGLE Mode　　No light on [0]（S displays at the lower left on PM2 output）
  - CONTINUES Mode　　Light On on [0]（C displays at the lower left on PM2 output）
  - LOOP Mode　　Light Blinks on [0]（L displays at the lower left on PM2 output）

7.4 Playback

A Select the Block you want to play back by the numeric key. Once the desired Block is selected, the Block that has not been played back will display as a still image with a setting of PLAY POSITION (Refer to the following settings.),and the Block that has been played back will display with a still image that has been stopped at previous playback. There are 5 ways to play back as B, C, D, E, F and the Block Status displays ▸ during playback.

- How to change PLAY POSITION settings

2 Press [AE] button

3 Press [▲] [▼] buttons to call the desired PLAY POSITION as you see on the display on the Slow Controller

- 041-POS/STRT　　Displays the head of the image clip
- 042-POS/CENT　　Displays the middle(50%) of the image clip
- 043-POS/END　　Displays the end of the image clip
- 044-POS/CSTM　　Displays the desired PLAY POSITION of the image clip
- 045-POS/TRIG　　Displays the Triggered point.

4 Press [ENT] button to complete the settings.

B When [PLAY] button is pressed, the image clip starts playback according to the setting of PLAY REF SPEED(Refer to the following settings）

- How to change PLAY REF SPEED Settings（Select 60 at 1080/59.94i and 720/59.94p, 50 at 1080/50i. Select 30 or 25 for more slow motion effect）

2 Press [AE] button

3 Press [▲] [▼] buttons to call the desired PLAY REF SPEED as you see on the display on the Slow Controller.

- 031-PREF/25　　25FPS
- 032-PREF/30　　30FPS
- 033-PREF/50　　50FPS
- 034-PREF/60　　60FPS

4 Press [ENT] button to complete the settings.

C For T-Bar control after [VAR] button is pressed, the image clip can be played back according to the desired T-Bar position. For T-Bar playback speed, the playback stops at End position and it plays back with T-Bar Top Speed at Top position.(Refer to the following settings)

- How to change T-Bar Top Speed Settings

- Check [1] button of the CUE MODE SEL button's light is On on the top of the Slow Controller. If the [1] button's light blinks, press either [1] or [ESC] button to make it On
- Press [MENU] button
- Press [7(↑)] [4(↓)] buttons as you see on the display of the Slow Controller and select >CONSOLE, then press [ENT] button.
- Press [7(↑)] [4(↓)] buttons and find Hi2TbarPtn
- Press [5 (-)] [6 (+)] buttons and select the followings, and press [ENT] button to confirm
  - PLAY 0.5x 0.5x faster than PLAY REF SPEED.
  - PLAY 1.0x 1x faster than PLAY REF SPEED
  - FRAME 1x 1x faster than FRAME RATE
  - FRAME 2x 2x faster than FRAME RATE
- Press [MENU] button to complete the settings.

D When [VAR1] [VAR2] [VAR3] buttons are pressed, the image clip is played back according to the FPS Setting value stated on the below of the each buttons.(Refer to the following settings) It ranges from -1200 to +1200. It means Play in Backwards when all dots of 4 digits blink.

- How to change each VAR Settings
- Check [1] button of the CUE MODE SEL button's light is On on the top of the Slow Controller. If the [1] button's light blinks, press either [1] or [ESC] button to make it On
- Press [MENU] button
- Press [7(↑)] [4(↓)] buttons as you see on the display of the Slow Controller and select >CONSOLE, then press [ENT] button.
- Press [7(↑)] [4(↓)] buttons and select each VAR-1 / VAR-2 / VAR-3
- Press [5 (-)] [6 (+)] buttons and select value, and press [ENT] button to confirm
- Press [MENU] button to complete the settings

E Press [SHTL] button and rotate the jog wheel, it plays back as shuttle playback.

F Press [JOG] button and rotate the jpg wheel, it plays back as jog playback.

7.5 Block LOCK Function

A The Blocks you do not want to delete can be prevented from overwriting by locking Blocks(Refer to the following settings)

- How to lock and unlock the Blocks
- Double-click the Block you want to lock and the Blocks and the Block changes in LOCK and UNLOCK alternatively. The Block Status on Character display shows key mark when the Block is in LOCK, and does not show key mark in UNLOCK
- Double-click [0] and it unlocks all the Block.

B For the other way to lock the Blocks, there is a Auto LOCK Function after recording. See the following settings

- How to set Auto LOCK
- Press [AE] button
- Press [▲] [▼] buttons and select the function as you see on the display of the Slow Controller.
  - 021-LOCK/ON Locks automatically after recording

- 022-LOCK/OFF Does not lock automatically after recording

- Press [ENT] button and complete the settings

7.6 CUE / SEARCH

A When [CUE] button is pressed during recording, it memorizes the position of the time and the time can be called easily in playback

B When [SEARCH] button is pressed, it jumps to the last CUE point in the selected Block, and to the next CUE point with a second press. Every [SEARCH] press jumps back to the former CUE point and once it reaches to the first CUE point in the selected Block, it jumps to the last CUE point of the Block.

C Pressing [◀] [▶] buttons instead of pressing [SEARCH] button jumps to the CUE points between Blocks.

D CUE point can be assigned max. 10 points per a Block

E PREROLL Setting is available(Refer to the following settings). Pressing either one of [PREROLL 1] [PREROLL 2] [PREROLL 3] buttons on the top of the Slow Controller as each light is On, pressing [SEARCH] button or [◀] [▶] buttons jumps by offsetting the second of 3 digits that are set (0.1sec) to the past. Press each button that is lit On again to release PREROLL function

- How to change each PREROLL Settings
- Check [1] button of the CUE MODE SEL button's light is On on the top of the Slow Controller. If the [1] button's light blinks, press either [1] or [ESC] button to make it On
- Press [MENU] button
- Press [7(↑)] [4(↓)] buttons as you see on the display of the Slow Controller and select >CONSOLE, then press [ENT] button.
- Press [7(↑)] [4(↓)] buttons and select each Hi2Preroll-1 / Hi2Preroll-2 / Hi2Preroll-3
- Press [5 (-)] [6 (+)] buttons and select value, and press [ENT] button to confirm
- Press [MENU] button to complete the settings

7.7 Non Functional Buttons

A The following buttons are non functional

- [SAVE] button
- [A1] [A2] buttons on EDIT line
- [UB] [TC] [CTL] [RESET] buttons on TC line ([TC] button is usually lit)
- [2] [3] [4] buttons in PORT line ([1] and [2] buttons are used in 3D application)
- [2] [3] buttons in CUE MODE SEL line
- [IN] [OUT] buttons

8 Recording Speed and its Correlated Time Table

8.1 See the following table when recording with preset recording speed. Each box shows the recording time in sec when the Memory is not divided into Blocks.

CAPTURE SIZE		1080		720	
Available Recording Frames		11425		25441	
REC TIME EXTENDED		OFF(default)	ON	OFF(default)	ON
Recording Speed	24	476	952	1060	2120
	30	380	760	848	1696
	50	228	456	508	1016
	60	190	380	424	848
	100	114	228	254	508
	120	95	190	212	424
	150	76	152	169	338
	180	63	126	141	282
	240	47	94	106	212
	300	38	76	84	168
	400	28	56	63	126
	500	44	44	50	100
	600	38	38	42	82
	800	28	28	63	63
	1000	22	22	50	50
	1200	---	---	42	42

The setting of REC TIME EXTENDED ON/OFF is at ENGINEER MENU (1/2) > SYSTEM MAINTENANCE

The recording time can be extended by NAC's proprietary image process with minimum image deterioration.

9 Description of Camera Head Menu

9.1 There are two ways to set the Camera Head Menu. One way is to go into the Camera Head Menu by pressing [MENU] button on the side of the Camera Body as you see on VF, and the other way is from OCP as you see on Picture Monitor 1 output

A How to set the Camera Head Menu from Camera Head

1 Press [MENU] button and HEAD MENU Character appears on the VF.

2 Rotate the Jog Wheel to select, and push down the Jog Wheel to confirm the setting.

3 Press [MENU] button to clear the HEAD MENU Character after all the setting is completed.

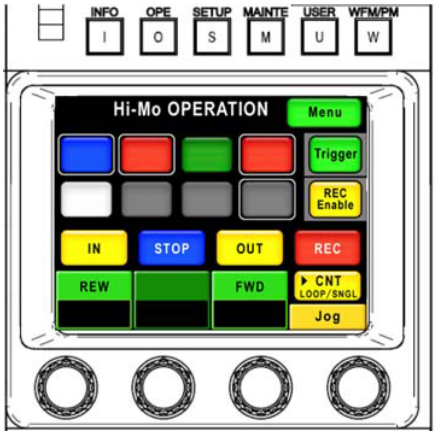
4 The above 1, 2, 3 procedure does not allow you to set ENGINEER MENU from Camera Head. Press [MENU] key as you press [SHIFT] key at the same time to be able to set ENGINEER MENU.

B How to set the Camera Head Menu with OCP

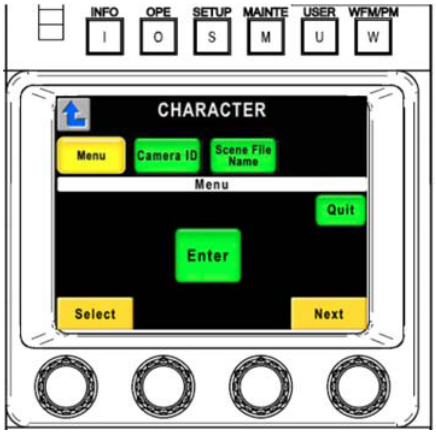
1 Press [OPE] button on OCP as you see on Picture Monitor 1 output

2 Stop all the Block Recording and Playback as it displays Camera Operation Screen

3 Press [MENU] button on the top right of the OCP screen and PM1 and HEAD MENU appears on PIM1/PM2



4 Go to the desired menu by using Select Knob or Next Knob, and press [ENTER] button to confirm.



5 After all the setting is finished, press [QUIT] button to complete the settings. No need to reboot the system.

9.2 Descriptions for each Camera Head Menu

1 MENU(1/2)

- RECORDING :
  - □ Here explains the setting of Imager for recording. The FPN changes if these settings are changed, therefore please do not forget to perform Auto Black Balance by pressing [ABB] button after any setting has changed

FRAME RATE	PRESET, CUSTOM	24F/S - 1000F/S
	Changes the recording Frame Rate. 24-1200fps is available at CAPTURE SIZE 720. Variable Frame Rate setting(every 1 frame) is available when CUSTOM is selected.	
SENSITIVITY	-3dB, 0dB, +3dB, +6dB	
	Changes the Sensitivity. Lower noise level is achieved than the Gain setting on OCP therefore this setting is recommended to be done before the Gain setting on OCP for night games.	
SHUTTER SPEED	PRESET, CUSTOM	1.0% - 100.0%
	Changes the Shutter Speed. Variable setting(every 1% step) is available when CUSTOM is selected.	
COLOR TEMP	3200K, 5600K, 6300K, 7500K	
	Changes the Color Temperature electrically.	
CAPTURE SIZE	1080, 720	
	Changes Capture Size of the sensor. Refer to 4.2.	
IMAGE FLIP	NORMAL, L-R, T-B, LRTB	
	Image Output is flappable without delay when 3D application. L-R for Left/Right flip, T-B for Top/Bottom flip, and LRTB for Top/Bottom, Left/Right.	

- SLOW CONTROLLER
  - □ Refer to 3 for more details

TRIGGER MODE	START, CENTER, END, CUSTOM	0% - 100%
	Trigger timing setting when the Trigger button(REC) is pressed.	
BLOCK REC MODE	CONT, SINGLE, LOOP	
	Setting for Block Recording Mode	
LOCK AFTER REC	YES, NO	
	Auto Lock Function for the Blocks after recording.	
PLAY REF SPEED	25F/S, 30F/S-→29.97F/S, 50F/S, 60F/S→59.94F/S	
	Setting for Playback speed when PLAY button is pressed	
PLAY POSITION	START, CENTER, END, CUSTOM, TRIG	0% - 100%
	Setting for the Playback position that displays as the first when the Block is selected	
MEMORY BLOCK	PARTITION	1 – 8

	SELECT	1 – 8	FREE, LOCK
	Setting for the number of Blocks, selection, and Lock/Unlock function		

- VF DISPLAY
  - □ Settings for images on VF and no effect on main output.

VF CHARACTER	Setting for ON/OFF of Characters displayed on each VF,MON、Picture Monitor 1, Picture Monitor 2	
VF DTL	0 – 100	
	Setting for details for VF output image.	
MARKER/CHAR LVL	0-100	
	Setting for the Brightness of Marker and Character that is overlaid on the screen.	
FRAME MARKER	ON-16:9, ON-14:9, ON-13:9, ON-4:3, OFF	
	Setting for Aspect Ratio of Frame Marker.	
VF ASPECT	16:9, 4:3	
	Setting for Aspect Ratio of VF	
SIDE MASK	OFF, ON-4:3, ON-13:9, ON16:9	
	Setting for Aspect Ratio of Side Mask.	
CONTRAST	0 – 100	
	Setting for Aspect Ratio of Contrast on Side Mask	
BRIGHT	0 – 100	
	Setting for Brightness on Side Mask.	
SAFETY AREA	ACTION, TITLE	
	Setting for SAFETY AREA. 93% for ACTION, 89% for TITLE	
SAFETY MARKER	ON-4:3, ON-16:9, OFF	
	Setting for Aspect Ratio of Safety Marker. It also clears the line that is set at SAFETY AREA when it is OFF.	
CENTERMARKER	ON, OFF	
	Setting for ON/OFF of Center Marker	
ZEBRA INDICATOR	ZEBRA1 DETECT	30% - 109%
	Setting for the detection level of ZEBRA 1	
	ZEBRA2 IND	ON, OFF
	Setting for ON/OFF of ZEBRA2 Indicator	
	ZEBRA2 DETECT	30% - 109%
	Setting for the detection level of ZEBRA 2	
	ZEBRA IND LVL	1-100
	Setting for Brightness of ZEBRA Indicator	
VF REC TALLY	G, R, OFF	
	Setting for Tally color on VF when recording	
COLOR VF	AUTO, ON	

	Setting for Automatic Recognition Function when Color VF is connected
FRONT TALLY	ENABLE, DISABLE
	Setting for Front Tally on Color VF. ENABLE/DISABLE can only be changed when COLOR VF ON. ENABLE is only selectable when COLOR VF OFF(DISABLE is not displayed)

- VIDEO OUTPUT MODE

VF OUT SEL	LIVE, PLAY
	VF Output can be selected from LIVE or REPLAY
MON OUT SEL	LIVE, PLAY,RET IN
	LIVE, PLAY：MON OUT from Camera can be selected. RET IN：This feature only available when in Stand Alone Style. Image that is input can be displayed on the viewfinder by pressing RET keys on the lenses.. *The displayable image is only one channel no matter the position of the RET SEL or RET key 1/2, and this does not function when CCU is connected.
Under 0%	DISABLE, ENABLE
	Setting for the cut of output image's video level.

- LEVEL ADJUST

* LEVEL ADJUST cannot be changed when CCU is connected. This only works when in Stand Alone Style.

MASTER GAMMA	-100 - +100
	Setting for Master Gamma
MASTER PED	-100 - +100
	Setting for Master Pedestal
MASTER FLARE	-100 - +100
	Setting for Master Flare
DTL GAIN	-100 - +100
	Setting for DTL Gain
ADJ CLR	READY/PUSH_SET→CLR/CANCEL
	Set the value that is selected in LEVEL ADJUST to default

- PROCESS MODE
  - □ Not yet functional as development in process
- FLICKER CORRECTION
  - □ Not yet functional as development in process
- TIME
  - □ Edits the current time. Set it to the local time as this Time Code displays on Picture Monitors
- INFORMATION
  - □ Displays the following status information
  - □ WORKING TIME : Total Operating Time
  - □ SUB TIME : Resettable Operating Time
  - □ MEM SIZE : Information of Memory Size on each RGB channel
  - □ SNS TEMP : Information of Temperature around Sensors

□ VERSION : Information of Firmware Version on each part

2 MENU(2/2)

- SCAN FORMAT SELECT

SCAN MODE	1080I59, 720P59, 1080P59, 1080I50, 720P50, 1080P50
	Changes Image Output Format of the Camera. The Format has to be identical with CCU Format when Camera is connected to CCU

- AUTO IRIS SETTAUTO SETUP MODE

IRIS SET MODE	OFF,ON
	Setting for ON/OFF of each Auto Iris Control
IRIS LEVEL SET	-100 - +100
	Setting for Auto Iris Range
PEAK RATIO SET	-100 - +100
	Setting for Iris Correction when the Contrast is high.
IRIS GAIN	1 – 100
	Setting for Iris Response Sensitivity
IRIS SPEED	1 – 100
	Setting for Iris Response Speed
IRIS LIMIT	F22, F20, F18, F16
	Setting for Iris Limit Value in close direction when in Auto Iris Mode
LENS ADJUST	OFF, F2.8, F16
	Setting for Control Voltage Output of Lens Iris Adjustment

- AUTO SETUP MODE

AWB WITH A.IRIS	ON, OFF
	Setting for ON/OFF of Auto Iris Control when AWB performed
AWB REFERENCE	ON, OFF
	Setting for validity of AWB converge value
REFERENCE SET	AWB, ABB
	Performing this command after desired B/W setting stores the R/G and B/G as Reference

- SW ASSIGN

RET-1 (HANDLE)	RET-1, ZOOM-, FOCUS-, NONE
	Assigns the selected functions on RET-1 (HANDLE)
RET-2 (HANDLE)	RET-2, ZOOM+, FOCUS+, NONE
	Assigns the selected functions on RET-2 (HANDLE)
ZOOM SPEED	1 – 100
	Setting for Zoom Speed when RET1 and 2 is assigned for.
FOCUS SPEED	1 – 100
	Setting for Focus Speed when RET1 and 2 is assigned for.

MID GAIN	-3dB - +12dB
	Setting for Gain when Gain switch was set as “M” It limits the level less than the Gain set at HIGH GAIN
HIGH GAIN	-3dB - +12dB
	Setting for Gain when Gain switch was set as "H". It limits the level more than the Gain set as HIGH GAIN
FUNC SW SET	FUNC1 – 6
	Assigns the Short Cut functions on Function Switches. It is 4-6 when 1-3 and SHIFT key are used together

- MIC GAIN CONTROL

MIC1 STEP	-60dB, -50dB, -40dB, -30dB, -20dB, -10dB, 0dB, +4dB
	Setting of Gain for MIC1 at Camera rear panel.
MIC1 FINE	-100 - 100 STEP:10
	Fine-tuning of Gain for MIC1 at Camera rear panel.
MIC2 STEP	-60dB, -50dB, -40dB, -30dB, -20dB, -10dB, 0dB, +4dB
	Setting of Gain for MIC2 at Camera rear panel.
MIC2 FINE	-100 - 100 STEP:10
	Fine-tuning of Gain for MIC2 at Camera rear panel.

- H PHASE CONTROL

H PHASE	-100 - +100
	Setting for Horizontal Phase of GENLOCK and this is available when in Stand Alone Style. H PHASE can be controlled from CCU Menu when CCU is connected.

- LENS SELECT

LENS SERIAL I/F	ON, OFF
	Setting for ON/OFF of Lens Serial Interface. Set it ON usually

- SYSTEM

BATTERY WARNING	BATT WARN VOLT	10.5 - 13.5V
	Warning displays on VF/PM1/PM2 when the selected Input Voltage on DC IN Connector recognizes lower voltage	
BARS MODE	BARS MODE	FULL, MULTI
	Setting for Color Bar Signal	
	BARS ON	ON, OFF
	Setting for ON/OFF of Color Bar output	
CPU SYSTEM CONTROL	SEMI SELF MODE	ON, OFF
	Setting for CPU System Control when OCP is not connected. ON leaves some part of the settings and OFF clears all the setting to default	
	SEMI REMOTE MODE	ON, OFF

	Setting for CPU System Control when OCP is not connected. ON accepts the switch control of the Camera Head, and OFF does not accept

- PRESET FILE LOAD

FILE SELECT	ENGINEER, FACTORY
	Selection of the file for uploading. ENGINEER is for User Setting File, and FACTORY is for Factory Setting
LOAD START	READY, START, CANCEL
	Uploads the Preset File selected in FILE SELECT

3 ENGINEER MENU(1/2)

- SENSOR MAINTENANCE
  - □ For Sensor Maintenance purpose and do not use usually.

- SYSTEM MAINTENANCE

FPN CORRECTION	FPN CANCEL	OFF, ON, EXECUTE
	Setting for ON/OFF of Sensor FPN Correction. It updates the FPN Correction Data if EXECUTE is selected. Set it ON usually since this works together with ABB	
	FRAME COUNT	The setting related to FPN and the DEFAULT is 64.
	D-LVL	The setting related to FPN and the DEFAULT is 64.
	OB CLAMP	Development in Process
	OB MODE	
	OB LEVEL	
DOT NOISE CANCEL	DOT NOISE CANCEL	Normally CANCEL ON and set LEVEL as256.
	LEVEL	
FLICKER CORRECTION	MOVING AVERAGE (LIVE)	OFF, ON
	The function for Flicker Correction when in Live view. DEFAULT is ON.	
3D CONTROL	MASTER, SLAVE	
	Synchronizes 2 Cameras as Master and Slave in 3D application	
TEMP LIMIT	FRONT	Setting for Threshold for alarming abnormal temperature(℃)
	SENSOR	
	PROC1	
	PROC2	
INFORMATION	Maintenance Menu for Manufacturer	
REC TIME EXTEND	ON,OFF	
	OFF prioritizes the image quality at all the Frame Rate setting. ON prioritizes the Recording Time at all the Recording Speed	
DEBUG CONTROL	MEM BOARD TEST PATTERN	Maintenance Menu for Manufacturer
	SNS BOARD TEST PATTERN	

	MEM BOARD ACCESS	
	SNS BOARD ACCESS	
	PIF BOARD ACCESS	

- AUTO DPC
  - □ Currently No Function

- FIBER SINGLE MODE CONT

SINGLE MODE	ON,OFF
	ON does not provide Power from Optical Fiber Cable. Use this Mode in the case using Single Fiber etc

- CAMERA ID SETUP

PROGRAM NO.	OFF, 1 - 99	Setting for Program and ID number value
ID NO.	1 - 40	

- MATRIX PRESET DATA
  - □ Assigns Preset Data of SMPTE/EBU/ITU-709 into 1-3 of MATRIX PRESET DATA.

- MATRIX USER1 DATA SET
  - □ Setting for the above value

- MATRIX USER2 DATA SET
  - □ Setting for the above value

4 ENGINEER MENU(2/2)

- ENGINEER SET FILE RENEW

DATA RENEW MODE	Saves all the setting value as ENGINEER setting

- UPDATE

I/F PART UPDATE	Updates each part from USB interface on the side of the Camera Body
PROC PART UPDATE	

10 Trouble Shooting

10.1 Possible troubles during system initialization

A No image output

1 Reboot Camera and CCU as a whole system.

B Noise on image output. There are three ways to perform trouble shooting.

1 Press ABB button on OCP.
2 If 1 does not solve the problem, reboot Camera and CCU as a whole system.
3 If 2 does not solve the problem, change the setting of FRAME RATE、SENSITIVITY、COLOR TEMP etc temporarily to see if the problem will be solved, and set it back to the previous settings if solved.

C CCU repeats booting

1 Disconnect the GENLOCK signal. When the System Format and the GENLOCK signal are not identical, the system does not boot up correctly when the GENLOCK signal is in. Check both are identical first as you disconnect the GENLOCK signal after the system is initialized.
2 At normal mode when the System Format and the GENLOCK signal are identical, the system does the second BOOTING… because the system first initializes with internal signal and then initializes with external signal by recognizing GENLOCK signal

3 When the Camera System Format is at 1080/50i or 720/59.94p, there will be BOOTING… for two time after initialization, but this is not a failure. This is because Hi-MotionII first initializes with 1080/59.94i then changes to the selected format after the system check.

D Screen Burn-In

1 Close the lens iris and press ABB button. The lens iris automatically closed by pressing ABB button when the lens cable is properly connected to the Camera.

10.2 Known Issues as of Feb 1st 2012 (Improve in future updates)

A MON and RET terminals on the Camera rear panel, MON works properly, but RET does not.

B When the Remaining Playback Time is more than 225sec, the character is fixed as 255sec. (Refer to 5.1.2)

11 Attention when SHED-HDX. Systems of Telecast Fiber Systems, Inc is used.

11.1 Setup and Connection

A Hi-MotionII supports SHED-HDX. Systems of IKEGAMI.

B Set up and connect all the necessary cables according to its User Manual

C Open the front panel of CCU and find AUX board. There are two red switches in the front part of AUX board and set the one of the switch at upper part as “SINGLE MODE ON”

11.2 Order of Power On process

A First, power on CCU

B Second, power on Camera and HDX. At this time, it does not matter whether Camera or HDX to be powered on first or second.

11.3 Attention

A If you do not follow 11.2, the system will not work properly. This is because Hi-MotionII initializes by recognizing whether CCU is connected or not at the time of initialization. Camera initializes as OB Style when CCU is connected and Stand Alone Style when CCU is not connected. When the system is initialized as Stand Alone Style and if CCU is powered on later on, the Camera does not recognize and the image output from CCU becomes blacked out. In this case, reboot the Camera power as CCU power is On, then the system recognizes as OB Style.

B When the system is powered on as SINGLE MODE switch on the AUX board is off, it starts to show “alert” on Picture Monitors and OCP. In this case, set the SINGLE MODE switch on the AUX board On, then reboot CCU so the “alert” disappears.

C Depending on the timing, it is possible that the Camera control cannot be recognized as showing “OFF LINE” on the Slow Controller display. In this case, reboot the system then the Slow Controller display shows Time Code properly. We are in the process to find a solution.