

CIS

English

**FULL HD CMOS
AF ZOOM Camera Module
VCC-HD10ZM**

**Product Specifications
& Operational Manual**

CIS Corporation

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1. Handling Precautions

The camera module must not be used for any nuclear equipments or aerospace equipments with which mechanical failure or malfunction could result in serious bodily injury or loss of human life. Our warranty does not apply to damages or defects caused by irregular and/or abnormal use of the product.

All specifications contained herein are subject to change without prior notice. Reproduction in whole or in part is prohibited.

Please observe all warnings and cautions stated below.

Our warranty does not apply to damages or malfunctions caused by neglecting these precautions.

- Do not use or store the camera in the dusty or humid places. Regardless of its usage conditions, dust-proof measures and humidity resistance measures shall be taken.
- Do not apply excessive force, vibration, or static electricity that could damage the camera. Handle the camera with caution.
- Do not shoot direct images that are extremely bright (e.g., light source, sun, etc.), and when camera is not in use, please put the lens cap on. When extremely strong light source is shot, smear or blooming may occur.
- Follow the instructions in Chapter 6, "External Connector Pin Assignment" for connecting the camera module. Improper connection may cause damages not only to the camera module but also to the connected devices.
- Confirm the mutual ground potential carefully before connecting the camera to other equipments. AC leaks from the connected devices may cause damages or destroy the camera.
- Do not apply excessive voltage. (Use only the specified voltage.) Unstable or improper power supply voltage may cause damages or malfunction of the camera assembly.
- Since VCC-HD10ZM is a highly-densed camera module, appropriate heat dissipation shall be considered. We recommend using a metal base or others to install the camera. Operating this camera assembly without appropriate heat dissipation considered may cause damages or malfunction.

2. Product Outline

VCC-HD10ZM is a full HD color camera module with x18 auto focus zoom lens, utilizing a 1/3 type CMOS sensor. Video output 1080 60p/59.94p/50p (3G-SDI), 1080 60i/ 59.94i/ 50i/ 30p/ 29.97p/ 25p/ 24p/ 23.97p (HD-SDI), and 720 60p/ 59.94p/ 50p (HD-SDI) are corresponded.

Features

- Features CIS own designed Image Signal Processor, "Clairvu™" for superb imaging quality.
- Small foot print: 60mm × 55mm × 98.8mm (without protruding portion)
- X18 auto focus zoom lens
- Gen Lock function (3 values analog signals or black burst)
- Camera can be controlled by RS-232C
- LTC (Longitudinal Time code)
- Connecting to an optional remote controller, camera settings can be set by OSD (On Screen Display).

* This model uses μ T-Kernel source code based on μ T-License of T-Engine Forum (www.t-engine.org).

3. Bundled Items

3.1. Standard Bundled Items

- Camera module, VCC-HD10ZM
- Lens cap
- 6pins connector for power

3.2. Packaging

- Individual carton
- Master carton (10pcs/carton)
- * Master carton may change depends on the quantity to be shipped per delivery.

3.3. Optional Items

- RS-232C conversion cable (ϕ 3.5mm plug <->9pin D-sub) (Planning)
- Remote controller (Planning)

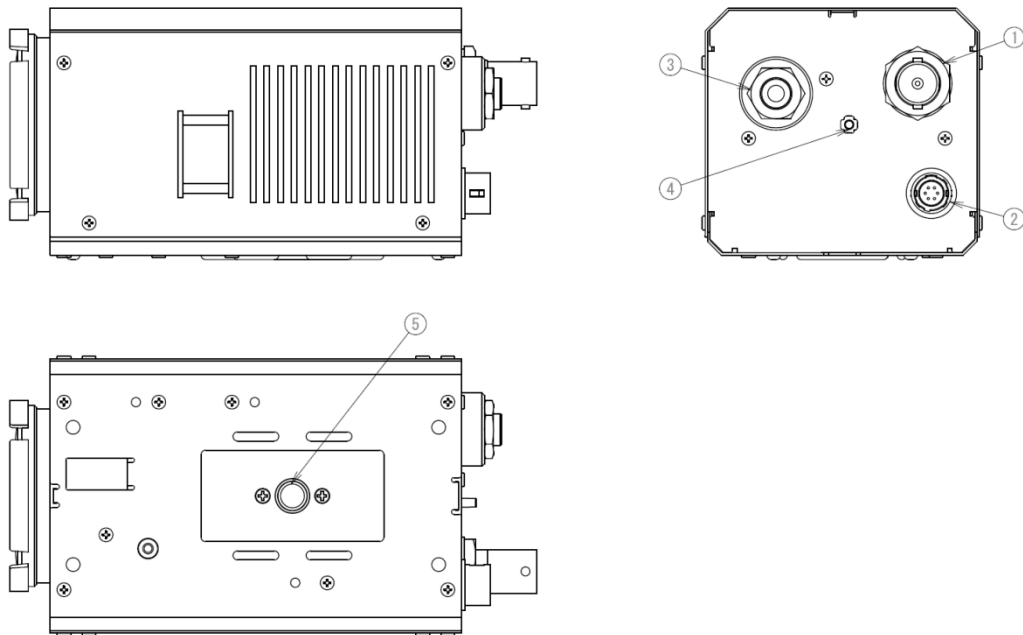
4. Specifications

4.1. General Specifications

(1) Pickup Device	Device Type	1/3 type CMOS sensor (color)
	Effective Pixel Numbers	1944(H) × 1213(V)
	Unit Cell Size	2.75μm(H) × 2.75μm(V)
	Chip Size	5.346mm(H) × 3.336mm(V) (Effective pixels)
(2) Resolution	1080p,1080i :	1920(H) × 1080(V)
	720p :	1280(H) × 720(V)
(3) Aspect Ratio	16 : 9	
(4) Video output format	1920 x 1080p @60fps(Level A)	3G-SDI
	1920 x 1080p @60fps(Level B)	3G-SDI
	1920 x 1080p @59.94fps(Level A)	3G-SDI
	1920 x 1080p @59.94fps(Level B)	3G-SDI
	1920 x 1080p @50fps(Level A)	3G-SDI
	1920 x 1080p @50fps(Level B)	3G-SDI
	1920 x 1080i @60fps	HD-SDI
	1920 x 1080i @59.94fps	HD-SDI
	1920 x 1080i @50fps	HD-SDI
	1920 x 1080p @30fps	HD-SDI
	1920 x 1080p @29.97fps	HD-SDI
	1920 x 1080p @25fps	HD-SDI
	1920 x 1080p @24fps	HD-SDI
	1920 x 1080p @23.97fps	HD-SDI
	1280 x 720p @60fps	HD-SDI
1280 x 720p @59.94fps	HD-SDI	
1280 x 720p @50fps	HD-SDI	
(5) Sync Systems	Internal / External Sync.	
(6) Video output standard	3G-SDI/HD-SDI : Y/Pb/Pr(4:2:2 10bit) BNC 75Ω terminal	
(7) Sensitivity	F5.6 2000lx	
(8) Minimum illumination	F1.6 1.5lx	
	Conditions : VIDEO 50%, AGC 30dB, Electric shutter OFF	
(9) Dust or stains in optical systems	No dust or stain shall be detected on the testing screen with setting the camera aperture at F12.	
(10) Power requirement	DC+10 ~ +15V	
(11) Power consumption	6.5W at DC+12V IN	
(12) Dimensions	Refer to overall dimension drawing	
(13) Weight	Approx. 280g	
(14) Lens	x 18 auto focus zoom lens	
	Focal length: fw=4.7mm , ft=84.6mm Zoom ratio: Nominal x 18	
	Maximum aperture ratio: wide F1.6 , tele F2.8	
(15) Gain setting	AGC (Maximum gain : 0dB ~ 30dB)	
	Manual : 0dB ~ 30dB	
(16) Shutter speed variable range	Manual : 1/8000s ~ 1/4s	
	Auto : 1/8000s ~ 1/4s (Upper limit and lower limit can be set.)	
(17) White balance adjustment range	AUTO, AUTO(Outdoor), ATW, 7 kinds of Preset, MANUAL, User Preset 1 ~ 5, One Push Preset:	
	Daylight(5500K), Cloudy(6500K), Shade(8000K), Tungsten(3200K), Fluorescent(White),	
	Fluorescent(Neutral White), Fluorescent(Daylight) 6500K	
(18) IR Cut Filter In/Out	In/Out/Auto selectable	
(19) Auto exposure detection	Average/Center-Weighted/Spot/Backlight Compensation	
(20) Flicker cancel	ON,OFF (typ.)	
(21) Edge enhancement	OFF,1 ~ 7 (typ.3)	

(22) Color correction	Standard, Fluorescent Light, Tungsten Lamp		
(23) Color saturation adjustment	0%(B/W) ~ 100%(typ.) ~ 200%		
(24) Color compression	OFF, 1 ~ 7(typ.5)		
(25) Noise Reduction	OFF, 1 ~ 6		
(26) Gamma compensation	Contrast-2, Contrast-1, Standard, Contrast+1, Contrast+2		
(27) Master Pedestal	-100 ~ 0 ~ +100		
(28) Pedestal (R,G,B)	Each RGB -100 ~ 0(typ.) ~ +100		
(29) Color Balance	Each RGB 50 ~ 100(typ.) ~ 150		
(30) Pixel defect (White spot) correction	Corrected at factory setting before shipment.		
(31) LTC	OFF, ON: External SMPTE Time code can be input via LTC IN terminal. (Internal free-running time can be reset.)		
(32) Preset (camera setting)	1,2,3,4 (4 kinds of preset can be set.)		
(33) Remote control operation	The camera can be controlled via RS-232C communications with ϕ 3.5 (4 poles) plug. Camera settings can be controlled by control software via PC. And, with connecting an optional remote controller, camera settings can be set by OSD (On Screen Display).		
(34) Safety/Quality standards	UL: Conform to UL Standard including materials and others. RoHS: Conform to RoHS. CE Emission : EN55022:2010(Class B) Immunity : EN61000-6-2:2005 FCC Class A Digital Device This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.		
(35) Durability	Vibration	Frequency : 5 ~ 25 Hz (Simple Harmonic Vibration) Total Amplitude : 2mm Direction : X,Y, and Z, 3 directions Variable Cycle : 2min Testing time : 60min for each direction	
	Shock	No malfunction shall be occurred with 490m/s ² (50G) for \pm X, \pm Y, and \pm Z, 6 directions.	
(36) Operation environment	Performance guaranteed	0 ~ +40°C	Humidity: With no condensation 20 ~ 80%RH
	Operation guaranteed	5 ~ +45°C	Humidity: With no condensation 20 ~ 80%RH
	※Performance guaranteed: All the specifications specified in this manual is guaranteed under the performance guaranteed temperature.		
	※Operation guaranteed : All the camera functions operate normally under the operation guaranteed temperature.		
(37) Storage environment	Storage Temperature: -25 ~ +60°C Humidity : 20 ~ 80%RH with no condensation		

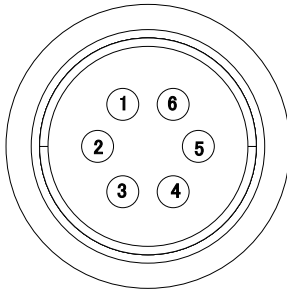
5. Part Names and Functions



- ① Video Signal Output
With BNC cable, connect to a 3G-SDI input monitor or HD-SDI input monitor. (Analog monitors cannot be connected.)
BNC cables with high frequency characteristic correspond to 3G-SDI or HD-SDI shall be used.
- ② Connector for Power input, Gen Lock, and LTC input connector
Please refer to the external connector pin assignment.
- ③ $\phi 3.5$ (4 poles) Connector (RS-232C)
Connector for RS-232C
Please refer to the external connector pin assignment.
Refer to the other material for the details of serial communications.
* Do not connect it to any audio equipment such as earphones and headsets. Connecting to such equipments may cause malfunction.
- ④ OSD Operational Switch
Select from up, down, right, and left. Set with the center.
- ⑤ Screw Hole for camera installation
Screw hole to install the camera (1/4"-20UNC)
Please use screws less than 5mm for tripod attachment since the effective screw depth is 5mm.

6. External Connector Pin Assignment

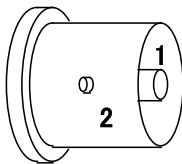
6.1. 6 pins Circular Connector



Model Name: HR10-7R-6PA (HIROSE)

Pin No.	Description
1	Power IN DC+12V
2	EXT SYNC IN
3	LTC IN
4	N.C.
5	GND
6	GND

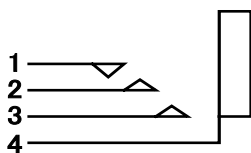
6.2. BNC



Model Name: BCJ-BPLHA (CANARE)

Pin No.	Description
1	3G-SDI/HD-SDI output
2	GND

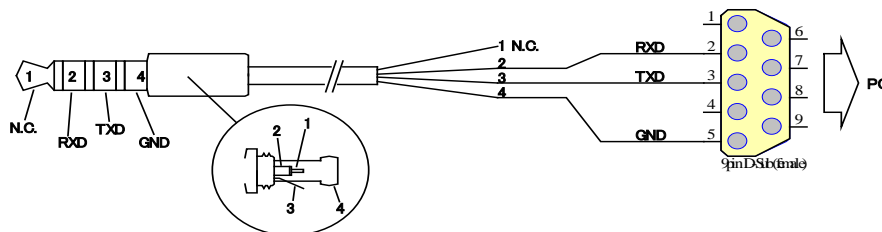
6.3. φ3.5mm 4poles (RS-232C) connector



Model Name: MJ

Pin No.	Description
1	Power(+5V) *optional
2	TXD(Camera)
3	RXD(Camera)
4	GND

φ3.5(4poles) Connection (RS-232C)



7. GenLock

Gen Lock function is available by inputting Analog External Sync signal (Black burst or 3-value SYNC) into the EXT SYNC IN terminal of 6pins connector. Corresponding external sync signals vary depends on the camera output format. Please refer to the chart below for the details.

		EXT SYNC IN				
CAMERA FORMAT	1080p60A			1080i60	720p60	1080p30
	1080p59.9A	NTSC		1080i59.9	720p59.9	1080p29.9
	1080p50A		PAL	1080i50	720p50	1080p25
	1080p60B			1080i60	720p60	1080p30
	1080p59.9B	NTSC		1080i59.9	720p59.9	1080p29.9
	1080p50B		PAL	1080i50	720p50	1080p25
	1080i60			1080i60	720p60	1080p30
	1080i59.94	NTSC		1080i59.9	720p59.9	1080p29.9
	1080i50		PAL	1080i50	720p50	1080p25
	1080p30			1080i60	720p60	1080p30
	1080p29.9	NTSC		1080i59.9	720p59.9	1080p29.9
	1080p25		PAL	1080i50	720p50	1080p25
	1080p24					1080p24
	1080p23					1080p23.9
	720p60			1080i60	720p60	1080p30
	720p59.9	NTSC		1080i59.9	720p59.9	1080p29.9
720p50		PAL	1080i50	720p50	1080p25	

Input Black Burst signal for NTSC/PAL signals. Input 3-value SYNC signals for other than NTSC/PAL signals. EXT SYNC IN is terminated with 75Ω. (When camera power is OFF, it will be high-impedance.)

When external signals specified the above are input, the camera will be in external sync mode automatically.

When no external signal is input, the camera will operate in internal sync mode.

Right after external signals are input, images may be disturbed but this is not malfunction.

When a signal other than the specified above chart is input to the EXT SYNC IN terminal, disturbed image or no image may be shown.

8. LTC (Longitudinal Time code)

Time code can be inserted to 3G/HD SDI signals.

External time code can be inserted with inputting LTC code to the LTC IN terminal of the 6pins connector.

And, when no signal is input into the LTC IN terminal, internal time code can be inserted.

Internal time code starts with 00:00:00.00 when power is turned ON, and when any signals are input into the LTC IN terminal, it will be changed to external time code.

With this situation, if no signal is input into the LTC IN terminal, it becomes self-running from the set time code.

Signals: SMPTE Time code Signal Level: 0.5 ~ 2 [Vp-p]

9. Notes for CMOS Pixel Defect

9.1. Precaution for Pixel Defect

If you execute pixel defect correction and SAVE, the correction data set at the factory setting will be overwritten and the data cannot be returned to the factory setting even if you execute INIT command.

If you SAVE after executing INIT, the selected preset value (Camera Setting) will be overwritten by the factory setting value. If you do not wish the pre-set value overwritten, load the pre-set value before SAVE.

All the defective pixel correction data will be saved in one destination regardless of their preset numbers.

Pixel defect correction is only for White pixel defect but not for black pixel defect. Also please be noted that the corrected results may not be the same depending on temperature, noise, and other conditions.

Please be sure to execute the command with blocking out lights and follow the proper procedures.

Neglecting this instruction may cause not only inappropriate pixel defect correction but also failure of getting proper images.

9.2. How to run "Defective Pixel Correction"

Execute INIT to get it back to the factory setting. Then, start Pixel Defect Correction. The lens diaphragm will close automatically to start correction and go back to the position. SAVE when correction is completed.

10. Serial Communication

10.1. Serial Communication Settings:

Baud Rate : 9600bps
 Data length : 8bit
 Start Bit : 1bit
 Parity Bit : NO
 Stop Bit : 1bit

10.2. Command:

Command	Parameter 1	Parameter 2	Function
GU	Command number	Usually None	Acquire the camera data
SU	Command number	Data 1, Data 2...	Set the camera data
SAVE	None	None	Save the camera data
INIT	None	None	Initialize the camera settings

There are three kinds of commands, GU (Get User) command to acquire the camera data, SU (Set User) command to set the camera data, and SAVE command to save the set data.

Separate each command with a space. Input the command in capital letters.

Parameters with 0x are regarded as Hexadecimal, the one with 0 are as Octal, and the one as-is are as Decimal.

Do not input any letter other than numbers (0~9), Decimal Point, and Hexadecimal (0~9, and a~f).

Identifiable letters from the head are to be analyzed. A command from the head to the linefeed code, [¥r]or[¥n], is to be regarded as one command to be analyzed. The returned command from the PC will be received by the camera, and then echoed back.

Please do not input any numbers or letters other than the specified above and in the Command List in Section 10.3.

【Example for Get Command】

To get the information on the Command No.10

[Send] GU[sp]10[¥r] or[¥n]

[Returned value] 50[¥r] [¥n]

[Acquired data + Linefeed]

[Returned value] [¥r] [¥n]

[Linefeed]

[Returned value] >[sp]

[Prompt + Space]

[¥r]=CR(0x0D)
[¥n]=LF(0x0A)
[sp]=Space(0x20)

【Example for Set Command】

To set 30 to the Command No.10

[Send] SU[sp]10[sp]30[¥r]or[¥n]

[Returned value] [¥r] [¥n]

[Linefeed]

[Returned value] >[sp]

[Prompt + Space]

【Example for SAVE】

[Send] SAVE[¥r]or[¥n]

[Returned value] [¥r] [¥n]

[Linefeed]

[Returned value] >[sp]

[Prompt + Space]

10.3. Command List

Video Format 1				
	Command No.	Set Value	Initial Value	How to set the command. And other information.
Video Format	1	0: 1080p 60fps LevelA	6	To set video format.
		1: 1080p 59.94fps LevelA		
		2: 1080p 50fps LevelA		
		3: 1080p 60fps LevelB		
		4: 1080p 59.94fps LevelB		
		5: 1080p 50fps LevelB		
		6: 1080i 60fps		
		7: 1080i 59.94fps		
		8: 1080i 50fps		
		9: 1080p 30fps		
		10: 1080p 29.97fps		
		11: 1080p 25fps		
		12: 1080p 24fps		
		13: 1080p 23.97fps		
		14: 720p 60fps		
		15: 720p 59.94fps		
16: 720p 50fps				

AE related 2~19				
	Command No.	Set Value	Initial Value	How to set the command. And other information.
Gain Mode	2	0: Manual	1	To set gain mode. Since Gain Mode is automatically set when HDR Mode is ON(Manual/Auto1/Auto2), changing the setting value by the command is restricted.
		1: Auto		
Gain Value	3	Magnification×0x10000 x1(0dB) ~ x32(30dB)	0x10000 (65536)	To set gain value when gain mode is at Manual. Ex.) To set x2 (6dB): SU 3 0x00020000 ※Refer to 10.4 Quick Reference Matrix for Settings.
Gain Max Value	4	Magnification×0x10000 x1(0dB) ~ x32(30dB)	0x200000 (2097152)	To set the Max gain value when gain mode is at Auto. ※Refer to 10.4 Quick Reference Matrix for Settings.
Shutter Mode	5	0: Manual	1	To set shutter mode. Since Shutter Mode is automatically set when HDR Mode is ON(Manual/Auto1/Auto2), changing the setting value by the command is restricted.
		1: Auto		
Shutter Value	6	Exposure time [s]×0x100000 1/4s ~ 1/8000s	0x4444 (17476)	To set shutter value (exposure time) when shutter mode is at Manual. ※Refer to 10.4 Quick Reference Matrix for Settings.
Shutter Limit	7	The 1 st Param: Max value Exposure time [s]×0x100000 1/4s ~ 1/8000s	0x40000 (262144)	To set the shutter range when shutter mode is at Auto. Ex.) To set Max=1/60s, Min=1/8000s: SU 7 0x4444 0x83 ※Refer to 10.4 Quick Reference Matrix for Settings. ※If Max < Min is specified, it will be an error.
		The 2 nd Param: Min value Exposure time [s]×0x100000 1/4s ~ 1/8000s	0x83 (131)	
Metering Mode	8	0: Average	1	To set metering mode.
		1: Center-Weighted		
		2: Spot		
		3: Backlight Compensation		
Spot Block	9	1 st Param: X value: 0 ~ 15	7	To set X, Y, W, and H values at Spot metering. X: Far left of metering field, Block X coordinate Y: Top of metering field, Block Y coordinate W: Width of metering field (Block number) H: Height of metering field (Block number) Ex.) SU 9 7 7 2 2
		2 nd Param: Y value: 0 ~ 15	7	
		3 rd Param: W value: 1 ~ 16	2	
		4 th Param: H value: 1 ~ 16	2	
AE Speed	10	0 ~ 15	10	To set AE convergence speed.
Exposure Compensation Value	11	0(-18dB) ~ 18(0dB) ~ 36 (18dB) / per 1dB	18	To set exposure compensation value.
Flicker Cancel	12	0: OFF	0	To set flicker cancel, ON/OFF.
		1: ON		

	Command No.	Set Value	Initial Value	How to set the command. And other information.
Gain Value, Plus Minus	13	-1	None	Lower the gain value by 1dB from the current one. Valid when gain mode is at Manual. (Write Only)
		1		Raise the gain value by 1dB from the current one. Valid when gain mode is at Manual. (Write Only)
Shutter Speed, Plus Minus	14	-1	None	Lower the shutter speed by 1 step (1/4EV) from the current one. (Shutter value becomes bigger.) Valid when shutter mode is at Manual. (Write Only)
		1		Raise the shutter speed by 1 step (1/4EV) from the current one. (Shutter value becomes smaller.) Valid when shutter mode is at Manual. (Write Only)
Iris(F-number), Plus Minus	15	-1	None	Lower the Iris F number by 1 Step (1/4EV) from the current one. (Aperture value becomes bigger.) For the maximum aperture, the value up to F1.6 can be set regardless of zoom position. However, the actual maximum aperture achieved will change (be limited) as the zoom position is moved. Valid when Iris Mode is at Manual. (Write Only)
		1		Raise the Iris F number by 1step (1/4EV) from the current one. (Aperture value becomes smaller.) For the maximum aperture, the value up to F1.6 can be set regardless of zoom position. However, the actual maximum aperture achieved will change (be limited) as the zoom position is moved. Valid when Iris Mode is at Manual. (Write Only)

WB related 20~29				
	Command No.	Set Value	Initial Value	How to set the command. And other information.
WB Mode	20	0: Auto	0	To set white balance mode.
		1: Auto (Outdoor)		
		2: DayLight (Sunlight)		
		3: Cloudy		
		4: Shade		
		5: Tungsten (Light bulb)		
		6: Flw (Fluorescent light White)		
		7: Fln (Fluorescent light noon/daytime White))		
		8: Fld (Fluorescent light daylight)		
		9: Auto(ATW)		
		10: OnePush		
		11: Manual		
		12: Preset1		
		13: Preset2		
		14: Preset3		
		15: Preset4		
16: Preset5				
Preset	21	1: Preset1	None	Store the current WB value as a preset value. Stored value will not be saved unless otherwise executing SAVE. (Write Only)
		2: Preset2		
		3: Preset3		
		4: Preset4		
		5: Preset5		
Blue Gain	22	0 ~ 800(%)	159	To set B gain when WB mode is at Manual.
Red Gain	23	0 ~ 800(%)	356	To set R gain when WB mode is at Manual.
One Push Trigger	24	1: Trigger Start	None	To start operation when WB mode is at One Push. (Write Only)

<i>Image Quality related 30~59</i>				
	Command No.	Set Value	Initial Value	How to set the command. And other information.
Edge Level	30	0: Off	3	To set the level of edge enhancement.
		1:1		
		2:2		
		3:3		
		4:4		
		5:5		
		6:6		
		7:7		
HDR Mode	31	0: OFF	0	To set HDR ON/OFF and Auto/Manual. OFF: HDR is not valid. ON (Manual): HDR is valid. Gain, shutter, iris, and HDR Ratio are to be set manually. ON (Auto1/2): HDR is valid. Gain, shutter, iris, and HDR Ratio are to be set automatically. Auto2 controls clipped whites and clashed shadows better than Auto1. Since Gain Mode, Shutter Mode, and Iris Mode are to be set automatically when HDR Mode is ON(Manual/Auto1/ Auto2), changing these values by the command is restricted.
		1: ON (Manual)		
		2: ON (Auto1)		
		3: ON (Auto2)		
HDR Ratio Value	32	The 1 st Param: 0 fixed	0	To set the magnification of exposure time when HDR Mode is ON(Manual) Only the specified value is valid. Ex.) To specify x2: SU 32 0 0x200
		The 2 nd Param: Magnification x0x100	0x200 (x2)	
		0x200: (x2)		
		0x400: (x4)		
		0x800: (x8)		
0x1000: (x16)				
0x2000: (x32)				
HDR MBC Mode	34	0: OFF	0	Type 1: Controls false color noticeable in the active area. Type 2: Controls false color and blur of moving objects in the active area.
		1: ON(Type1)		
		2: ON(Type2)		
Contrast	35	0: Contrast -2	2	To set contrast.
		1: Contrast -1		
		2: Standard		
		3: Contrast +1		
		4: Contrast +2		
Master Pedestal	37	-100 ~ +100	0	To set master pedestal.
Red Pedestal	38	-100 ~ +100	0	To set Red pedestal.
Green Pedestal	39	-100 ~ +100	0	To set Green pedestal.

Blue Pedestal	40	-100 ~ +100	0	To set Blue pedestal.
Red Balance	41	0 ~ 200 (%)	100	To set Red balance.
Green Balance	42	0 ~ 200 (%)	100	To set Green balance.
Blue Balance	43	0 ~ 200 (%)	100	To set Blue balance.
Color Saturation	45	0 ~ 200 (%)	100	To set color saturation control.
	Command No.	Set Value	Initial Value	How to set the command. And other information.
Shading Correction	48	0 : OFF	0	ON/OFF of shading correction
		1 : ON		
Shading Correction Level	49	0 ~ 100 (%)	100	To set shading correction level.
Noise Reduction	51	0 (OFF) ~ 6	0	To set noise reduction. 0 (OFF) 1 (less) ~ 6 (strong)
Color Correction	52	0: Standard	0	To set color correction. 0: Standard 1: Suitable for fluorescent light 2: Suitable for tungsten lamp
		1: fluorescent light		
		2: Tungsten lamp		
Color Suppression	53	0 ~ 7	5	To set color suppression. 0(OFF) 1(less) ~ 7(strong)

<i>Lens Control related 60~</i>				
	Command No.	Set Value	Initial Value	How to set the command. And other information.
Iris Mode	61	0: Manual 1: Auto	1	To set Iris control mode. Since Iris Mode is automatically set when HDR Mode is ON(Manual/Auto1/Auto2), changing the setting value by the command is restricted.
Aperture Value [Set]	64	Aperture Value calculated as described below is set. Aperture Value = $0x100000 / (F \times F)$ Note, F=F number Setting range: 0x64000(F1.6) ~ 0x800(F22)	0x64000 (F1.6)	Ex.) To set F2.0 SU 64 0 0x40000 ※Refer to 10.4 Quick Reference Matrix for Settings. ※For the maximum aperture, the value up to the equivalent of F1.6 to F22 can be set regardless of zoom position. However, the actual maximum aperture achieved will change (be limited) as the zoom position is moved. Refer to 10.5 Quick Reference Matrix for the Maximum Aperture.
Aperture Value [Get]	64	The 1 st Param: Mode 0: Value set by a command 1: The Maximum Aperture	0x64000 (F1.6)	When Mode is 0: The current Aperture Value set by the command is acquired. When Mode is 1: The Aperture Value correspond to the maximum aperture with the current zoom position is acquired. ※Refer to 10.5 Quick Reference Matrix for the Maximum Aperture The actual F number becomes the bigger one out of two acquired by Mode 0 and Mode 1. (For Aperture Value, it becomes the smaller one.)

	Command No.	Set Value	Initial Value	How to set the command. And other information.
Aperture Limit	65	The 1 st Param: Max Aperture Value 0x64000 ~ 0x800	0x6400 0 (F1.6)	The variable range of Aperture Value when Iris Mode is set to Auto. Ex.) To set the minimum F number to be F2.0 and the maximum F number to be F8.0, SU 65 0x40000 0x4000 ※If Max < Min is specified, it will be an error.
		The 2 nd Param: Min Aperture Value 0x64000 ~ 0x800	0x800 (F22)	
Zoom Drive [Set]	66	The 1 st Param: Drive Mode 0: Specified zoom position 1: Relatively specified zoom position 2: Zoom change, specify Start/Stop	None	To select how to change the zoom position.
		The 2 nd Param When Mode is 0: (Wide)0 ~ 1024(Tele) When Mode is 1:-1024 ~ 1024 When Mode is 2:-1 ~ 1 1: Start moving (Tele) -1: Start moving (Wide) 0: Stop	0	Mode = 0, to specify the zoom position. Mode = 1, to specify the zoom position relatively to the current position. Negative number: Move to the Wide side from the current position. Positive number: Move to the Tele side from the current position. 0: Zoom position does not change. Mode = 2, When ±1 is set, zoom starts moving. When 0 is set, zoom stops. ※When zoom moves to the edge of Tele or Wide, it stops automatically.
		The 3 rd Param: Zoom moving speed 0 ~ 88	None	To set the speed of zoom moving.
Zoom Drive [Get]	66	The 1 st Param : 0 fixed	0	Set 0
		The 1 st returned value: 0 fixed	0	
		The 2 nd returned value: (Wide)0 ~ 1024(Tele): zoom position -1: Undetermined zoom position	None	To acquire the current zoom position. The zoom position is undetermined right after turning the power ON because it detects the initial lens position.
The 3 rd returned value: Moving speed of zoom 0 ~ 88	To acquire moving speed of the current zoom.			

	Command No.	Set Value	Initial Value	How to set the command. And other information.
Focus Drive(Set)	67	The 1 st Param: Drive Mode 0: To specify focus position 1: To specify the focus position relatively 2: To specify Start/Stop of focus position	None	To select how to change the focus position.
		The 2 nd Param When Mode is 0: (Far)0 ~ 3840(Near) When Mode is 1:-3840 ~ 3840 When Mode is 2: 1: Move to the Near side -1: Move to the Far side 0: Stop	None	Mode=0, To specify the focus position. Mode=1, To specify the focus position relatively from the current position. Negative number: Move to the far side from the current position. Positive number: Move to the Near side from the current position. Set Mode=2,±1 to start moving focus position. Set 0 to stop moving focus. ※ If it moves to the Near edge or to the Far edge, it stops automatically.
		The 3 rd Param: Moving speed of focus. 0 ~ 88	None	To set moving speed of focus.
Focus Drive(Get)	67	The 1 st Param : 0 fixed	0	To set 0.
		The 1 st returned value: 0 fixed	0	
		The 2 nd returned value: (Far)0 ~ 3840(Near) -1: Undetermined focus position	None	To acquire the current focus position. The focus position is undetermined right after turning the power ON because it detects the initial focus position.
		The 3 rd returned value: Moving speed of focus 0 ~ 88		To acquire the moving speed of the current focus.
Focus Mode	68	0: Auto Focus mode	0	To set focus mode.
		1: Manual Focus mode		
		2: One Push Trigger AF mode		
Focus One Push Trigger(Set)	69	1:Trigger on	None	Initiate One Push Trigger AF.
Focus One Push Trigger(Get)	69	0: Stop	None	To acquire the condition/state of One Push Trigger AF.
		1: In operation		

	Command No.	Set Value	Initial Value	How to set the command. And other information.
IR Cut Filter Mode	75	0: IR cut filter Out	1	To set IR cut filter mode. When Auto is set, IR cut filter Out/In will be controlled automatically by the Gain Value.
		1: IR cut filter In		
		2: IR cut filter Auto		
Auto ICF Threshold	76	The 1 st Param: Out Threshold 0x10000 ~ 0x200000	0x200000	To set IR cut filter Out/In Auto Control Threshold. Out Threshold: Gain Value that IR cut filter changes from IN to OUT. In Threshold: Gain Value that IR cut filter changes from OUT to IN.
		The 2 nd Param: In Threshold 0x10000 ~ 0x200000	0x10000	

<i>OSD related 90~</i>				
	Command No.	Set Value	Initial Value	How to set the command. And other information.
OSD UP button	90	0: 1 push	None	Command to operate OSD. Send the commands every 60msec for continuous push.
		1: continuous push		
OSD DOWN button	91	0: 1 push	None	
		1: continuous push		
OSD R button	92	0: 1 push	None	
		1: continuous push		
OSD L button	93	0: 1 push	None	
		1: continuous push		
OSD CENTER button	94	0: 1 push	None	Use as Set button.
		1: continuous push		
Menu Color	95	0: Black 1: Blue 2: Green 3: Cyan 4: Red 5: Magenta 6: Yellow 7: White	7	To set the font color of OSD.
Highlight Color	96	0: Black 1: Blue 2: Green 3: Cyan 4: Red 5: Magenta 6: Yellow 7: White	3	To set the selected letter's font color of OSD. If the same color as the menu color is specified, it will be an error, because the selected letters cannot be recognized.

<i>Others in 100s</i>				
	Command No.	Set Value	Initial Value	How to set the command. And other information.
Camera Setting Store	100	0 ~ 3	Initial is 0	4 kinds of camera settings can be stored. The stored values cannot be saved until SAVE command is executed. The stored data and set values will not be initialized by executing INIT command. ※The last saved camera settings will be reflected when turning the power ON.
Camera Setting Load	101	0 ~ 3	Initial is 0	To reflect the stored setting values set by Camera Setting Store, to the camera. The set value will not be initialized by executing INIT command. *When Camera Setting Store is executed, the setting values forcibly become the one set by Camera Setting Store.
LTC OFF/ON	103	0: OFF 1: ON	0	To set LTC signals OFF/ON.
LTC Reset	104	None	None	(Write Only) To reset the internal free-running timer of LTC.

<i>No Command Numbers</i>				
	Command No.	Set Value	Initial Value	How to set the command. And other information.
SAVE	None	None	None	To save camera settings. SAVE with capital letters. *As to pixel defects correction, only one table can be saved.
INIT	None	None	None	To initialize the camera settings. INIT with capital letters.
GVI	None	1: Microcomputer's version 2: FPGA's version	None	To acquire the firmware's version. The letter strings such as 0.1 shall be responded.
SDDW	None	512	0	To start detection of pixel defects Please refer to the Section 9. Notes for CMOS Pixel Defect, for the details.

10.4. Quick Reference Matrix for Settings

Gain Settings				
	Magnification	dB	GainValue (Magnification×0x10000)	
			DEC	HEX
0	1.000	0.000	65536	00010000
1	1.122	1.003	73561	00011F59
2	1.260	2.007	82570	0001428A
3	1.414	3.010	92681	00016A09
4	1.587	4.014	104031	0001965F
5	1.782	5.017	116771	0001C823
6	2.000	6.021	131072	00020000
7	2.245	7.024	147123	00023EB3
8	2.520	8.027	165140	00028514
9	2.828	9.031	185363	0002D413
10	3.175	10.034	208063	00032CBF
11	3.564	11.038	233543	00039047
12	4.000	12.041	262144	00040000
13	4.490	13.045	294246	00047D66
14	5.040	14.048	330280	00050A28
15	5.657	15.051	370727	0005A827
16	6.350	16.055	416127	0006597F
17	7.127	17.058	467087	0007208F
18	8.000	18.062	524288	00080000
19	8.980	19.065	588493	0008FACD
20	10.079	20.069	660561	000A1451
21	11.314	21.072	741455	000B504F
22	12.699	22.076	832255	000CB2FF
23	14.254	23.079	934175	000E411F
24	16.000	24.082	1048576	00100000
25	17.959	25.086	1176986	0011F59A
26	20.159	26.089	1321122	001428A2
27	22.627	27.093	1482910	0016A09E
28	25.398	28.096	1664510	001965FE
29	28.509	29.100	1868350	001C823E
30	32.000	30.103	2097152	00200000

Shutter Settings		
Exposure Time [s]	Shutter Value (Exposure Time [s]×0x100000)	
	DEC	HEX
1/4	262144	00040000
1/8	131072	00020000
1/15	69905	00011111
1/30	34952	00008888
1/60	17476	00004444
1/90	11650	00002D82
1/100	10485	000028F5
1/125	8388	000020C4
1/180	5825	000016C1
1/250	4194	00001062
1/350	2995	00000BB3
1/500	2097	00000831
1/725	1446	000005A6
1/1000	1048	00000418
1/1500	699	000002BB
1/2000	524	0000020C
1/3000	349	0000015D
1/4000	262	00000106
1/6000	174	000000AE
1/8000	131	00000083

Iris Settings		
F number	Aperture Value ((1/F ²)×0x100000)	
	DEC	HEX
CLOSE	0	00000000
22.6	2048	00000800
19.0	2896	00000B50
16.0	4096	00001000
13.5	5792	000016A0
11.3	8192	00002000
9.51	11585	00002D41
8.00	16384	00004000
6.73	23170	00005A82
5.66	32768	00008000
4.76	46340	0000B504
4.00	65536	00010000
3.36	92681	00016A09
2.83	131072	00020000
2.38	185363	0002D413
2.00	262144	00040000
1.68	370727	0005A827
1.6	409600	00064000

10.5. Quick Reference Matrix for the Maximum Aperture

Zoom position	Maximum Aperture F number (Aperture Value) (DEC)
0	409600
64	402324
128	395206
192	386585
256	378344
320	369660
384	358619
448	346962
512	336000
576	321305
640	308461
704	296440
768	286791
832	283438
896	289006
960	286839
992	228503
1024	171543

10.6. Focus Position and subject distance

Focus Position	Distance [mm]
0	Over Inf
256	30000
512	10000
768	6000
1024	3000
1280	2000
1536	1500
1792	1300
2048	1150
2304	1000
2560	830
2816	300
3072	200
3328	100
3584	50
3840	10

※ The above correspondence is only as a guide.

11. How to Operate the Camera with OSD Function

You can operate the camera with OSD menu on a monitor screen by using the rear switch for OSD operation, or by connecting an optional remote controller to the camera remote controller terminal.

11.1. Switch Operation of OSD Menu by Remote Controller

[CENTER]: To indicate OSD top menu on your monitor screen when it is not shown. And, it is also used to settle the selected menu.

[▲] Go up the selected item by one.

[▼] Go down the selected item by one.

[◀] Change the options.

[▶] Change the options.

11.2. Indication of OSD Menu

Menu with ▼ at the line end indicates that submenu can be opened with the CENTER button.

Menu with ▶ at the line head indicates that the item is settled with the CENTER button.

11.3. Switch Operation by Remote controller when OSD Menu is not Shown

[▲] Move the Zoom position to Tele side.

[▼] Move the Zoom position to Wide side.

[◀] Move the Focus position to Far side.

[▶] Move the Focus position to Near side.

11.4. OSD Menu

Top Menu	Setting Menu	Selected Items	Explanation
EXIT	None	None	Push the CENTER button to close OSD menu.
Output Format	Set Video Format	1080p 60fps (Level A)	To set video format. Select video format with ◀ / ▶ button, then push the CENTER button to confirm.
		1080p 59.94fps (Level A)	
		1080p 50fps (Level A)	
		1080p 60fps (Level B)	
		1080p 59.94fps (Level B)	
		1080p 50fps(Level B)	
		1080i 60fps	
		1080i 59.94fps	
		1080i 50fps	
		1080p 30fps	
		1080p 29.97fps	
		1080p 25fps	
		1080p 24fps	
		1080p 23.97fps	
		720p 60fps	
		720p 59.94fps	
720p 50fps			

Top Menu	Setting Menu	Selected Items	Explanation
Gain/Shutter/Iris	Gain Mode	Manual/Auto	To set Gain Mode.
	Gain Value	0 ~ 30dB	To set the Gain Value when Gain Mode is at Manual. ※Note 1 / ※Note 2
	Gain Max Value	0 ~ 30dB	To set the Max Gain Value when Gain Mode is at Auto. ※Note 1 / ※Note 2
	Shutter Mode	Manual/Auto	To set Shutter Mode.
	Shutter Value	1/4,1/5,1/6,1/7,1/8, 1/9,1/11,1/13,1/15, 1/18,1/21,1/25,1/30, 1/36,1/42,1/50,1/60, 1/75,1/90,1/100, 1/105,1/120,1/125, 1/150,1/180,1/210, 1/250,1/300,1/350, 1/420,1/500,1/600, 1/700,1/840,1/1000, 1/1200,1/1400,1/1700, 1/2000,1/2400,1/2800, 1/3400,1/4000,1/4800, 1/5600,1/6800,1/8000	To set Shutter Value when Shutter Mode is at Manual. ※Note 1 / ※Note 2

Top Menu	Setting Menu	Selected Items	Explanation	
Gain/Shutter/IRIS	Shutter Min Limit	Same as Shutter Value	To set the Min Shutter Limit when Shutter Mode is at Auto. ※Note 1 / ※Note 2	
	Shutter Max Limit	Same as Shutter Value	To set the Max Shutter Limit when Shutter Mode is at Auto. ※Note 1 / ※Note 2	
	Set Shutter Limit	None	Push the CENTER button to settle the shutter limit. When Max < Min is set, the setting will not be valid.	
	Iris Mode	Manual		To set Iris Mode
		Auto		
	F Number	F1.6,F1.8,F2,F2.2 F2.4,F2.6,F2.8,F3 F3.4,F3.6,F4,F4.4 F4.8,F5.2,F5.6,F6.1 F6.7,F7.3,F8,F8.7 F9.5,F10,F11,F12 F13,F15,F16,F17 F19,F20,F22,CLOSE	To set F number when Iris Mode is at Manual. ※Note 1 ※Note 2 ※Note 3	
	Iris OPEN / CLOSE	OPEN		To select Iris Open / Close.
		CLOSE		
	Set OPEN / CLOSE	None	To set Iris Open / Close.	
	Iris Min Limit	Same as F Number (Except for CLOSE)	To select Iris Min Limit when Iris Mode is at Auto.	
	Iris Max Limit	Same as F Number (Except for CLOSE)	To select Iris Max Limit when Iris Mode is at Auto.	
	Set Iris Limit	None	To set the Iris Limit when Iris Mode is at Auto.	
	AE Speed	0 ~ 15	To set AE convergence speed.	
	ExpCompValue	-18 ~ 0 ~ 18 [dB]	To set exposure compensation value.	
	HDR Mode	OFF		To set HDR mode. Auto2 controls clipped whites and clashed shadows better than Auto1
		Manual		
		Auto1		
		Auto2		
	HDR Ratio Value	1:2		To select exposure time ratio when HDR Mode is at Manual.
		1:4		
1:8				
1:16				
1:32				
1:64				
Set HDR Ratio	None	To set HDR Ratio.		
HDR MBC Mode	OFF		Type 1: To control the false color occurred in the active area when HDR is ON. Type 2: To control the blur and the false color occurred in the active area when HDR is ON.	
	ON(Type1)			
	ON(Type2)			

	Metering Mode	Average	To set metering mode.
		Center	Average: Averaging metering
		Weighted	Center Weighted: Center weighted metering
		Spot	Spot: Spot metering
		Backlight Comp	Backlight Compensation: Backlight compensation metering
	Spot Block X	0 ~ 15	To select Block X coordinate in the far left of metering field when Metering Mode is at Spot metering.
	Spot Block Y	0 ~ 15	To select Block Y coordinate in the top of metering field when Metering Mode is at Spot metering.
	Spot Block W	1 ~ 16	To select the width of metering field (number of block) when Metering Mode is at Spot metering.
Spot Block H	1 ~ 16	To select the height of metering field (number of block) when Metering Mode is at Spot metering.	
Set Spot Block	None	Push the CENTER button to confirm Spot Block X, Y, W, and H.	
Flicker Cancel	ON/OFF	To set flicker cancel.	

※Note 1: If you prefer setting further details, please set them via serial commands.

※Note 2: The values set via serial commands will be reflected to key operation.

※Note 3: For the maximum aperture, the value up to F1.6 can be set regardless of zoom position. However, the actual maximum aperture achieved will change (be limited) as the zoom position is moved.

Top Menu	Setting Menu	Selected Items	Explanation
White Balance	WB Mode	Auto	Select and set WB Mode with ◀ / ▶ button.
		Outdoor	
		Daylight (Sun ight)	
		Cloudy	
		Shade	
		Tungsten	
		Flw (Fluorescent White)	
		Fln (Fluorescent noon white)	
		Fld (Fluorescent day light)	
		Auto(ATW)	
		One push	
		Manual	
		Preset1	
		Preset2	
	Preset3		
	Preset4		
Preset5			
WB Red Gain	0 ~ 800	To set Red when WB Mode is at Manual.	
WB Blue Gain	0 ~ 800		
One Push Start	None	Valid only when WB mode is at One Push. Execute One Push WB with the CENTER button.	
Set Preset Number	1 ~ 5	Select the preset number with the ◀ / ▶ button, and push the CENTER button to save the current WB value.	

Top Menu	Setting Menu	Selected Items	Explanation	
Image Control	Red Balance	50 ~ 150	To set Red Balance. ※Note 4	
	Green Balance	50 ~ 150	To set Green Balance. ※Note 4	
	Blue Balance	50 ~ 150	To set Blue Balance. ※Note 4	
	Master Pedestal	-100 ~ 100	To set Master Pedestal.	
	Red Pedestal	-100 ~ 100	To set Red Pedestal.	
	Green Pedestal	-100 ~ 100	To set Green Pedestal.	
	Blue Pedestal	-100 ~ 100	To set Blue Pedestal.	
	Edge Level	0 ~ 7	To set the edge enhancement Level. 0 is OFF.	
	Contrast		Contrast -2	To set Contrast.
			Contrast -1	
			Standard	
			Contrast +1	
			Contrast +2	
	Shading Correction	OFF/ON	Shading correction OFF/ON.	
	Shading Level	0 ~ 100	To set the level when shading correction is ON.	
Noise Reduction	0 ~ 6	To set Noise Reduction. 0(OFF) 1(less) ~ 6(strong)		
Color Saturation	0 ~ 200	To set color saturation control. 0 ~ 200 (%)		
Color Correction		Standard	To set color correction.	
		fluorescent		
		Tungsten		
Color Suppression	0 ~ 7	To set color suppression. 0(OFF) 1(less) ~ 7(strong)		

※Note 4: The values 0 ~ 200 can be set via serial command.

Top Menu	Setting Menu	Selected Items	Explanation
Lens Control	Focus Mode	Auto Focus	To select Focus Mode.
		Manual Focus	
		AF One Push Trigger	
	Set One Push Focus	None	To execute One Push Focus when Focus Mode is at AF One Push Trigger.
	Focus Position	0 ~ 3840	To set Focus Position when Focus Mode is at Manual.
	Focus Speed	1 ~ 88	To set Focus speed.
	Zoom Position	0 ~ 1024	To set Zoom Position.
	Zoom Speed	1 ~ 88	To set Zoom speed.
	IR Cut Filter Mode		Out
In			
Auto			

	IR Cut Out Threshold	Same as Gain Value	To select Out Threshold when IR Cut Filter Mode is at Auto.
	IR Cut In Threshold	Same as Gain Value	To select In Threshold when IR Cut Filter Mode is at Auto.
	Set IR Cut Threshold	None	To set the Threshold between On⇔Off when IR cut filter mode is at AUTO.

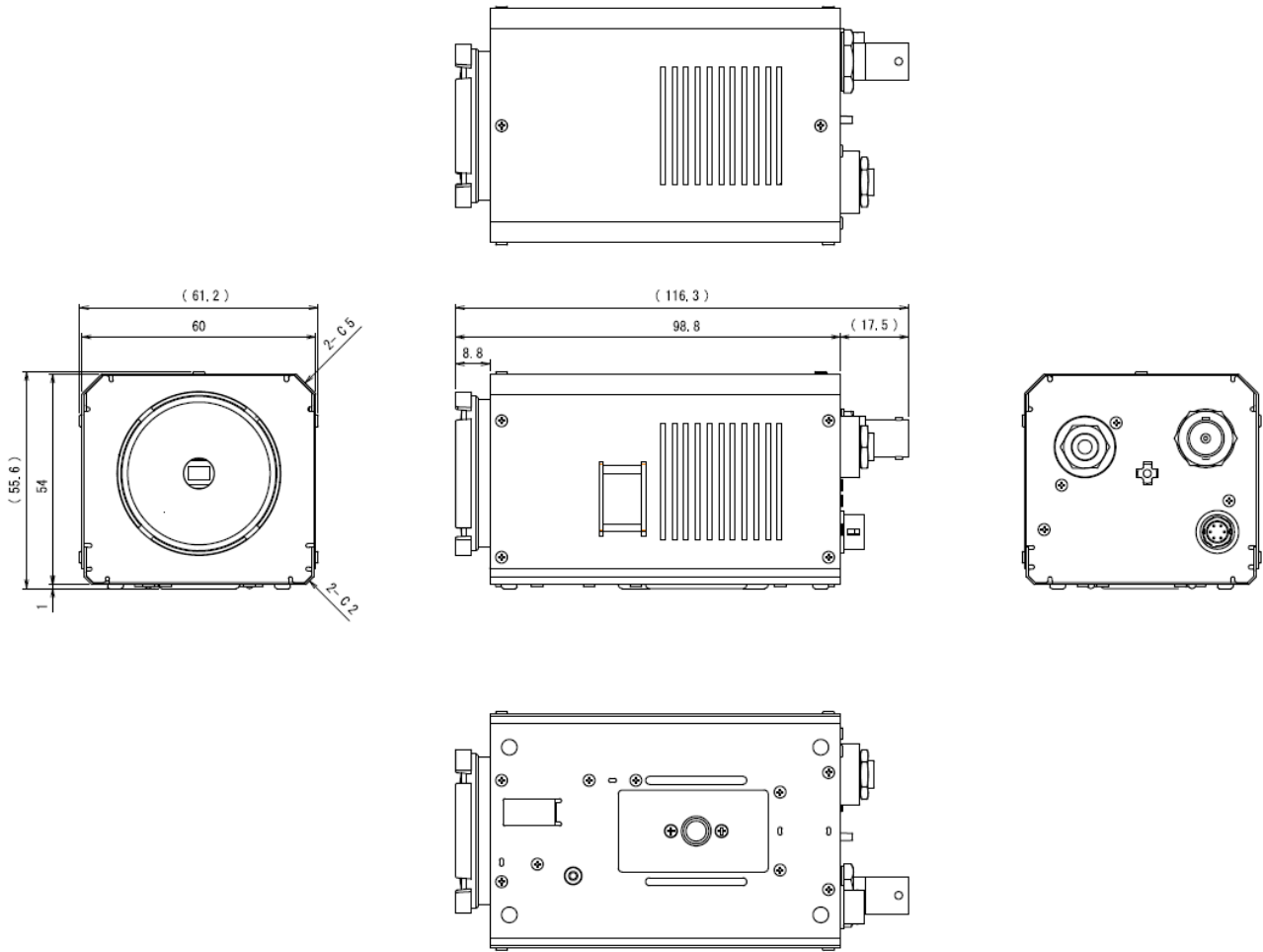
Top Menu	Setting Menu	Selected Items	Explanation
LTC	LTC	OFF/ON	LTC OFF/ON.
	Set LTC Reset	None	Reset LTC with the CENTER button.

Top Menu	Setting Menu	Selected Items	Explanation
OSD Color Change	Default Set(White & Cyan)	None	To get the OSD color back to the default setting with the CENTER button.
	User Setting		To set the color to display the OSD menu.
	Menu Color	Black	To select the color to display the OSD menu with the ◀ / ▶ button.
		Blue	
		Green	
		Cyan	
		Red	
		Magenta	
Yellow			
White			
Highlight Color	Same as Menu Color	To select the highlight color to display on the OSD menu with the ◀ / ▶ button.	
Set Color	None	Confirm the menu color and the highlight color with the CENTER button. When the same colors are specified for both menu color and highlight color, they will not be settled.	
INIT	None	None	To get the camera settings back to the initial settings with the CENTER button.
Save/Load	Set Save Data	0 ~ 3	To save the data to the preset number with the CENTER button.
	Really?	NO/YES	To make sure if you really want to save the data to the selected preset.
	Enter	None	To execute SAVE or NOT SAVE, then get back to the original screen.
	Get Save Data	0 ~ 3	To call up the data of the selected preset number and reflect it on the screen with the CENTER button.

12. Factory Settings

Items		Initial Settings
Video Format Setting		1920 x 1080i @60fps
Gain Mode		Auto
Gain Value(Manual Gain)		65536(0dB)
Max Gain		2097152(30dB)
Shutter Value(Manual Shutter)		17476(1/60)
Shutter Mode		Auto
Shutter Limit Max		17476(1/60)
Shutter Limit Min		131(1/8000)
Iris Mode		Auto
Aperture Value		0x64000(F1.6)
Aperture Limit, MAX/MIN		0x64000(F1.6)/0x800(F22)
AE Speed		10
Exposure Compensation Value		18(0dB)
HDR Mode		OFF
HDR Ratio		1:2
HDR MBC Mode		OFF
Metering Mode		Center-Weighted
Spot Block		X=7,Y=7,W=2,H=2
Flicker Cancel		OFF
White Balance Setting		Auto
Manual Red Gain		356
Manual Blue Gain		159
Color Balance(RGB)		100
Master Pedestal		0
Pedestal(RGB)		0
Edge Level		3
Contrast		Standard
Shading Correction		0(OFF)
Shading Correction Level		100
Noise Reduction		0
Color Saturation		100
Color Correction		Standard
Color Suppression		5
Zoom Position		0
Focus Position		256
Focus Mode		0(Auto)
IRCut Filter Mode		IR cut filter In
Auto ICF Threshold	Out Threshold	0x200000(30dB)
	In Threshold	0x10000(0dB)
Menu Color		White
Highlight Color		Cyan
LTC		OFF

13. Dimensions



14. Cases for Indemnity (Limited Warranty)

The term of warranty of this product is within 1.5 years from the date of shipping out from our factory.

If you use the product properly and discover a defect during the warranty period, and if that was caused by designing or manufacturing, CIS Corporation, at its option, repairs or replaces it at no charge to you. Products out of warranty period will be subject to charge. CIS repairs the products as long as it is repairable.

CIS shall be exempted from taking responsibility and held harmless for damages or losses incurred by the following cases.

- In case damages or losses are caused by earthquake, lightning strike, fire, or other acts of God.
- In case damages or losses are caused by deliberate or accidental misuse by the user, or failure to observe the information contained in the instructions in this Product Specification and Operational Manual.
- In case damages or losses are caused by repair or modification conducted by the customer or any unauthorized party.

15. CMOS Pixel Defect

CIS compensates the noticeable CMOS pixel defects found at the shipping inspection prior to our shipment. On very rare occasions, however, CMOS pixel defects might be noted with time of usage of the products. Cause of the CMOS pixel defect is the characteristic phenomenon of CMOS sensor itself and CIS is exempted from taking any responsibilities for them. Should you have any questions on CMOS pixel defects compensation please contact us.

16. Product Support

Should you have any problems in function of the product you purchased, and if you need our further analysis and/or repair, please contact the dealer you purchased it from.

Camera Control Sample Software is downloadable via our web but we shall be exempted from taking responsibility and held harmless for damage or malfunction of your hardware and software caused by using this control software.

The purpose of the control software prepared is for you to check operation and evaluate our products. Please be noted that CIS does not customize the program nor provide source code.

URL: <http://www.ciscorp.co.jp>