TV Format

0.65M Small Camera

STC-S133 series

[NTSC Output]

STC-S133N	(No lens mount type, Dual Pass Filter)
STC-S133N－NF	(No IR cut filter type, Non-Dual Pass Filter)
STC-S133N－L	(M12 fixed lens mount type, Dual Pass Filter)
STC-S133N－CS	(CS mount type)
STC-S133N－LS	(M12 fixed lens mount type, Holder Short Dual Pass Filter)

[PAL Output]

STC-S133P	(No lens mount type, Dual Pass Filter)
STC-S133P－NF	(No IR cut filter type, Non-Dual Pass Filter)
STC-S133P－L	(M12 fixed lens mount type, Dual Pass Filter)
STC-S133P－CS	(CS mount type, Dual Pass Filter)
STC-S133P－LS	(M12 fixed lens mount type, Holder Short Dual Pass Filter)

Product Specifications

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Table of Contents

Precautions for safe use

Please read carefully this “Precautions for safe use” before use the camera. Then the camera uses correctly with agreeing with below notes.

In this “Precautions for safe use”, notes divides into “Warning” and “Caution” to use the camera safety and prevent to harm and damage.

⚠ Warning	This shows, assumption for possibility of serious accident leading death or serious injury if ignore this note and camera uses incorrectly.
⚠ Caution	This shows, assumption for possibility of bear the damage or physical damage if ignore this note and camera uses incorrectly.

About Graphic symbols


This symbol shows general prohibition.


This symbol shows completion or instruction.

[Environment / condition]

⚠ Warning	
Do not use flammable or explosiveness atmospheres. This will cause of personal injury or fire.	Do not use for “safety for human body” related usage. This camera is designed for use “do not harm human body immediately” if by any chance the camera has malfunction.
⚠ Caution	
Use and store under specified environmental conditions (Vibration, shock, temperature, humidity) in the specifications for this camera. This will cause of fire or damage the camera.	

[Installation and cable wiring]

⚠ Warning	
Do not use with out of power voltage range that is specified in the specifications for this camera. This will cause of fire, electrification or malfunction.	Do not wrong wiring. This will cause of fire or malfunction.

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⚠ Caution	
Do not grounding DC power (+) of all devices that are connect to the camera. The camera housing is connecting to 0 V line of camera inside circuit. There is a risk of short circuit between camera inside ciurcuit and frame ground. This will cause of malfunction.	It is necessary to wiring and mounting that is specified in the specifications for this camera. This will cause of fire or malfunction.
It is necessary to wiring with turn off the camera. This will cause of electrification or malfunction.	It is necessary to mounting the camera without stress for the cable. This will case of electrification or fire.

[Usage instruction]

⚠ Warning	
Do not touch the terminal and PCB board While turn on the camera. This will cause of electrification or accident caused by malfunction.	Do not put combustibles near the camera. This will cause of fire.
Do not use without usage that is specified in the specifications for this camera. This will cause of personal injury or malfunction.	Do not push metals including screw driver into radiation holes. This will cause of electrification or malfunction.
⚠ Caution	
Do not push contamination into opening of the camera. This will cause of electrification or malfunction.	Do not block the radiation holes. This will cause of fire due to increase the camera inside temperature.

[Maintenance]

⚠ Caution	
Do not disassemble or repair the camera. This will cause of fire, electrification or malfunction.	It is turn off the camera when maintaining or inspecting the camera. This will cause of electrification.

[Disposal]

⚠ Caution	
It is necessary to dispose as industrial waste.	

1 Product Precautions

- Do not give shock to the camera.
- Do not haul or damage the camera cable.
- Do not wrap the camera with any material while using the camera. This will cause the internal camera temperature to increase.
- When the camera moving or using the place that temperature difference is extreme, countermeasure for dew condensation (heat removal / cold removal) is necessary.
- While the camera is not using, keep the lens cap on the camera to prevent dust or contamination from getting in the sensor or filter and scratching or damaging it.
  Do not keep the camera under the following conditions.
  - In wet, moist, high humidity or dusty place
  - Under direct sunlight
  - In extreme high or low temperature place
  - Near an object that releases a strong magnetic or electric filed
  - Place with strong vibrations
- Apply the power that satisfies the specified in specifications for the camera.
- The defective pixels may appear due to the sensor characteristics.
- Use below recommend materials (or equivalent materials) to clean the surface of glass.
  - Air dust: Non Freon air duster (NAKABAYASHI Co., LTD.)
  - Alcohol: Propan-2-ol (SAN'EI KAKO Co., LTD.)
  - Non-woven: nikowipe clean room (NKB)
- Use a soft cloth to clean the camera.

2 Warranty

■Warranty period

One year after delivery (However, the camera had malfunction with camera uses correctly)
In below case for a fee even within warranty period.

- The malfunction caused by incorrect usage, incorrect modify or repair.
- The malfunction caused by external shock including the camera dropping after delivery the camera.
- The malfunction caused by fire, earthquake, flood disaster, thunderbolt struck, other natural disaster or wrong voltage.

■Warranty coverage

Exchange or repair the malfunction camera if the malfunction is occurred by our responsibility.
"Warranty" mean is warranty for the delivered camera itself. Please accept the induction damage by the camera malfunction is not included.

3 Introduction

This document describes the specifications of the following cameras

[NTSC Output]
STC-S133N, STC-S133N-NF, STC-S133N-L, STC-S133N-LS, STC-S133N-CS

[PAL Output]
STC-S133P, STC-S133P-NF, STC-S133P-L, STC-S133P-LS, STC-S133P-CS

3.1 Features

- **1/3.2" 1.27Mega pixels CMOS Sensor (Sony, ISX017)**
- **Small sized camera**
- **Gain, electronic shutter and color are adjustable**
- **The image flip function**
- **Day/ Night function**
- **Lens vignetting and distortion correction**
- **Shading correction**
- **Configurable many parameters through the control software**
- **Wide dynamic range (ATR-EX) and defog function**
- **Pixel blemish correction**
- **OSCD (On Screen Character Display) is available for the parameters configuration**

3.2 Naming method

STC-S133x-xx

Suffix
Space: No lens mount type
NF: No IR cut filter type
L: M12 fixed lens mount type
LS: M12 fixed lens mount type, Holder Short
CS CS mount type

Back Panel
N NTSC Output
P PAL Output

3.3 Accessories

Following accessories are available for STC-S133 series camera, please check and purchase necessary accessories.

1) **+12V DC power supply: UN310-1210**
2) **Communication tool (PC can communicate through USB port): JIG-USB2**
3) **Camera to JIG-USB2 cable: KSAF003**
4) **Control software: KSACtrl**
5) **Remote Controller: RC-S133**

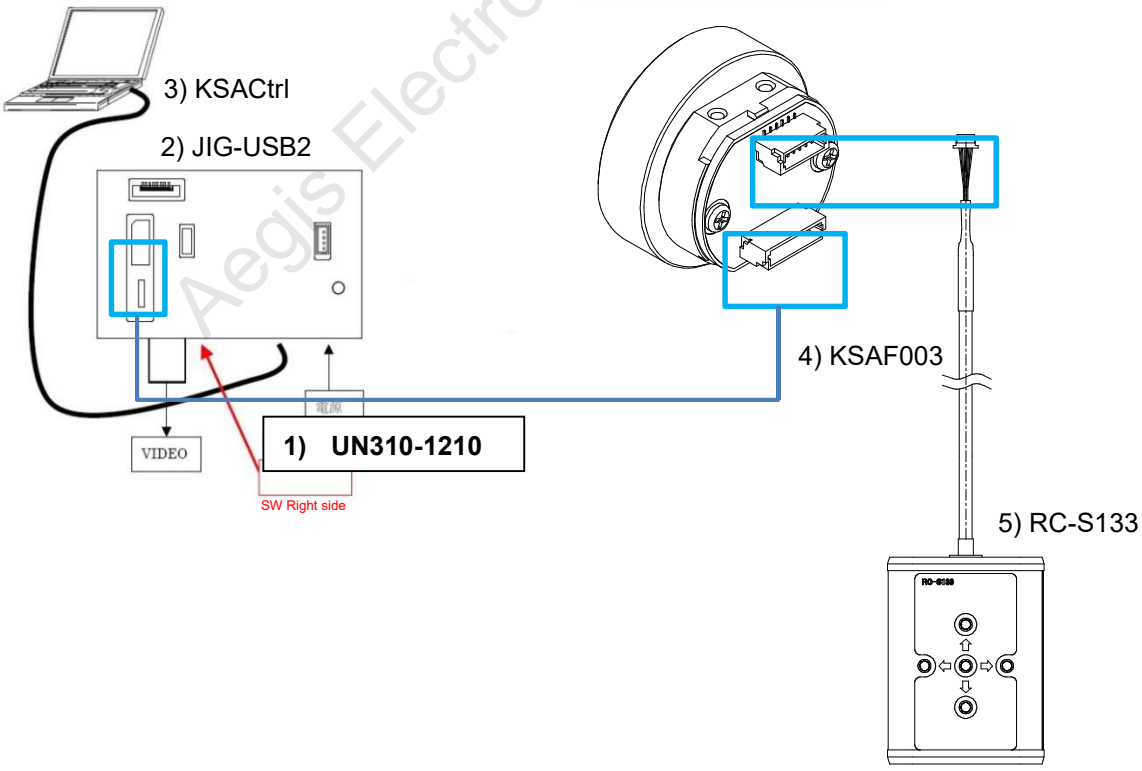
Connection diagram

Camera configuration via PC

1), 2), 3) and 4) are required. As for the procedure, please refer to another chapter.

Camera configuration via OSD_

1), 2), 4) and 5) are required. As for the procedure, please refer to another chapter.



4 Specifications

4.1 Electronic specifications / Mechanical specifications / Environmental specifications

Product			STC-S133N*	STC-S133P*
Electronic specifications	Image sensor		1/3.2" 1.23Mega pixel CMOS (SONY ISX017), Rolling shutter	
	Video signal format		NTSC (SMTPE170M)	PAL (TIU-R BT.1700)
	Active picture elements		1280 (H) x 486 (V)	1211 (H) x 576 (V)
	Optical size		4.48 (H) x 1.70 (V) mm	4.23 (H) x 2.01 (V) mm
	Cell size		3.5 (H) x 3.5 (V) µm	
	Scanning system		21 Interlace	
	Vertical frequency		59.94 Hz	50 Hz
	Horizontal frequency		15.734 kHz	15.625 kHz
	Center resolution		600 TV Line (*1)	
	Image S/N ratio		50 dB	
	Sensitivity		200 Lux	
	Sync system		Internal	
	Video output format		VBS 1.0Vp-p / 75 Ohm	
	Camera functions			
		Electronic shutter	1/60(1/50) to 1/605,000 seconds (**Default: Auto**)	
		Gain	AGC / Fixed gain 0 to 40 dB (**Default: AGC**)	
		White balance	Auto white balance / Manual white balance / Push to set white balance (**Default: Auto**)	
		Image flip	Horizontal flip / Vertical flip / Horizontal and vertical flip / Off (**Default: Off**)	
		Gamma	Manual / Straight (**Default: Manual**)	
		Privacy masking	Up to 16 area (Color, area size and position are adjustable) (**Default: Off**)	
		Color adjustment	Hue and saturation are adjustable	
		Image adjustment	Brightness and contrast are adjustable	
		Day/Night	Available Dual pass filter is built in	
		Lens correction	Vignetting, distortion and shading correction	
		Others	Pixel blemish correction, WDR, Defog, Back light compensation, Flicker correction, High brightness correction, Noise reduction (2D), Negative / Positive image, False color correction	
		Communication	UART communication (UART +3.3V) (Communication baud rate 230,400 bps, 115,200 bps, 57,600 bps, 38,400 bps, 28,800 bps, 19,200 bps, 14,400 bps, 9,600 bps (**Default: 115,200 bps**)) * All camera functions are configurable by the UART communication	
		OSD	Controllable by the remote control or UART communication	
	Power	Input voltage	+5.6 to +13.2 Vdc	
		Consumption	Maximum 0.7W, Typical 0.6W	
Mechanical specifications	Dimensions		STC-S133N(P)-CS: ϕ28 x 14.8 (D) mm (excluding the connectors) STC-S133N(P): 23 (W) x 20 (H) x 8.2 (D) mm (excluding the connectors) STC-S133N(P)-L: 25 (W) x 22 (H) x 17.6 (D) mm (excluding the connectors) STC-S133N(P)-LS: 25 (W) x 22 (H) x 14.4 (D) mm (excluding the connectors) STC-S133N(P)-NF: 22.4 (W) x 19 (H) x 2.72 (D) mm (excluding the connectors) STC-S133N(P)-CS: φ28 x 14.8 (D) mm (excluding the connectors)	
	Optical filter		Dual pass filter built in	
	Interface connector	Power input, Video output and UART communication	CN2: BM8B-SRSS-TB (JST)	
		OSD control	CN1: BM6B-SRSS-TB (JST)	
	Weight		STC-S133N(P): Approximately 6 g, STC-S133N(P)-L: Approximately 11 g STC-S133N(P)-LS: Approximately 10 g STC-S133N(P)-NF: Approximately 2 g, STC-S133N(P)-CS: Approximately 10 g	
Environmental specifications	Operational temperature		STC-S133N(P)-CS: -20 to +60 deg. C, Other models: -20 to +45 deg. C	
	Storage temperature		-20 to +85 deg. C	
	Vibration		20 Hz to 200 Hz to 20 Hz (5 min. / cycle), XYZ 3 directions 30 min. each	
	Shock		Acceleration 38 G, half amplitude 5.7 ms, XYZ 3 directions 3 times each	
	RoHS		RoHS compliance	

(*1) Under STC-S133N-CS with FLCL1614-2M (F5.6) lens

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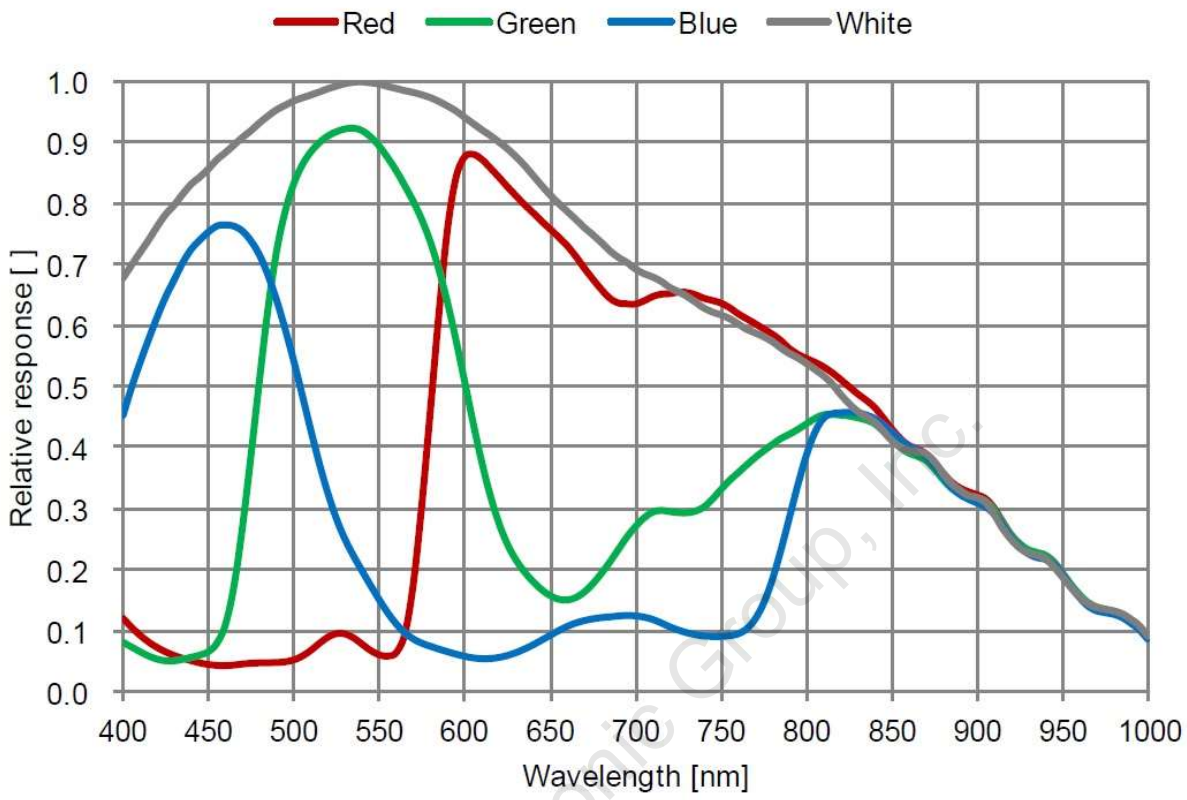
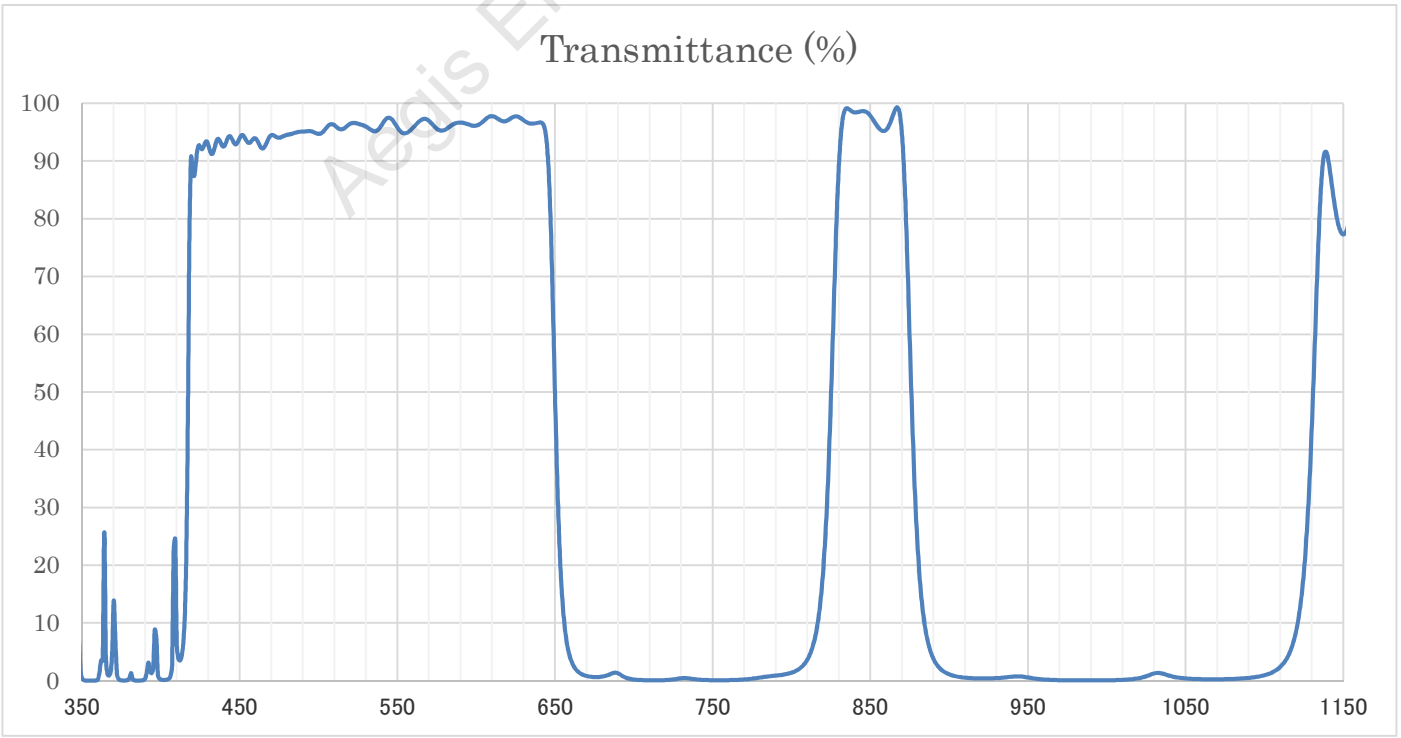
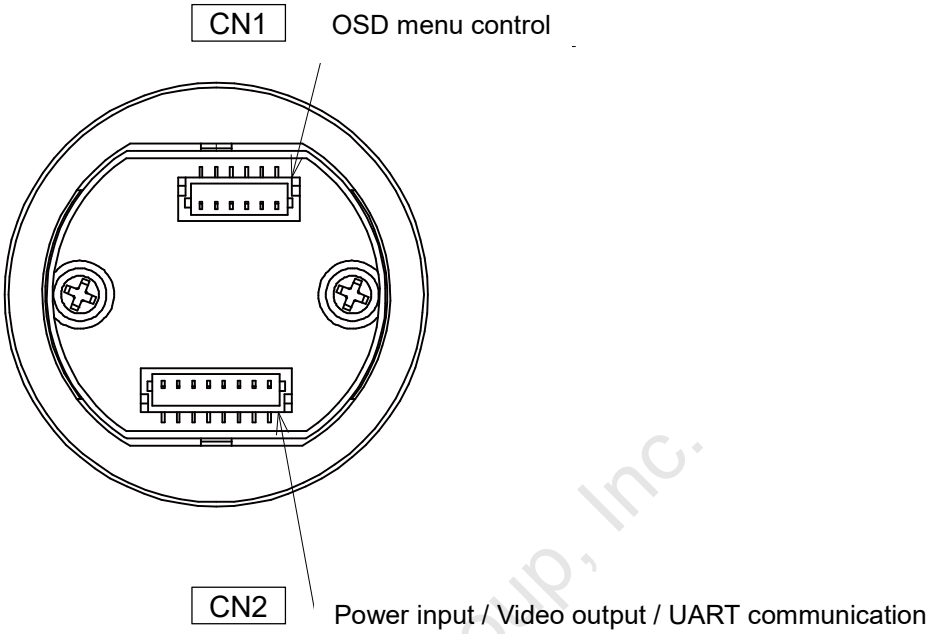
4.1.1 Spectral Sensitivity Characteristics



4.1.2 Dual Pass Filter Spectral Sensitivity Characteristics



4.2 Connector specifications



4.2.1 Power input / video output / UART communication connector

CN2 connector BM8B-SRSS-TB (JST)

Pin assignment

No.	Signal name	Descriptions
1	GND	Power GND
2	DC12V	+12V dc power input
3	GND	Video GND
4	VIDEO_OUT	Video signal output
5	EXSI	UART input (3.3V CMOS)
6	EXSO	UART output (3.3V CMOS)
7	WB_LOCK	White balance lock input *1
8	GND	GND

*1 To use this function as following procedure requires.

①Sets Auto to Push Lock through OSD menu or communication

②Sets WB_LOCK Switch ON and holds white

This setting can't be saved. When power off the camera, and turn on the camera, this WB setting didapper

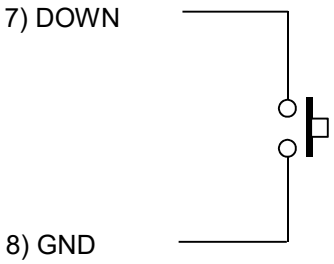
To save the WB setting, OSD menu or communication requires.

White balance lock input (No. 7)

When the “WB_LOCK” pin function is enabled and set “One Push” mode at the white balance mode, the auto white balance starts and the white balance is locked is controllable by the No.7 WB_LOCK.

WB_LOCK	Operation
OPEN	White balance is locked
GND	Auto white balance starts

CN2 Pin assignment



4.2.2 OSD menu control

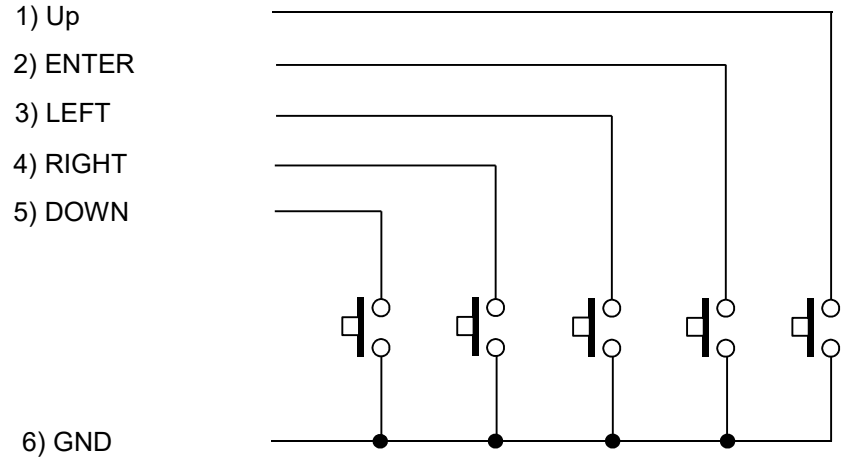
CN1 connector BM6B-SRSS-TB(JST)

Pin assignment

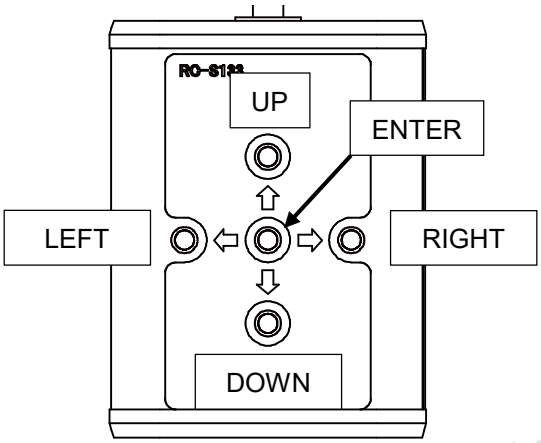
No.	Signal name	Descriptions
1	UP	OSD Menu Up
2	ENTER	OSD Menu Enter
3	LEFT	OSD Menu Left
4	RIGHT	OSD Menu Right
5	DOWN	OSD Menu Down
6	GND	GND

CN1 connecting circuit (user side example)

CN1 Pin assignment

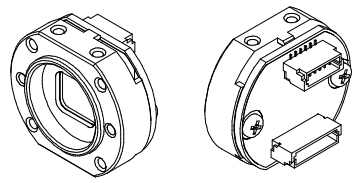


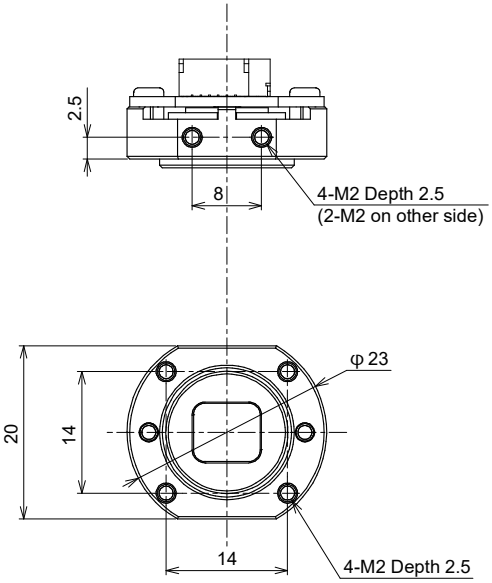
OSD operation can manipulate through Remote controller (RC-S133) connected with CN1.

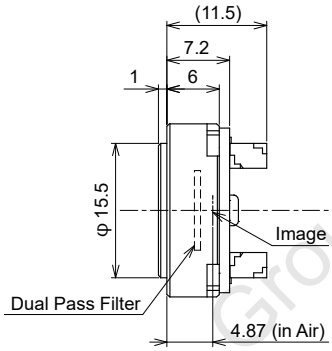


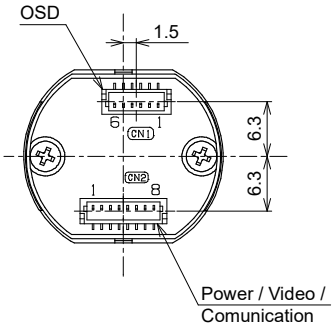
5 Dimensions

5.1 STC-S133N / STC-S133P



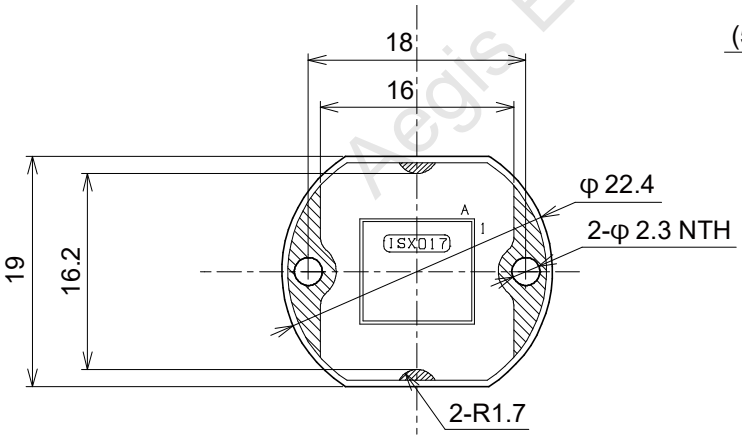


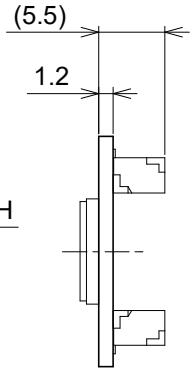


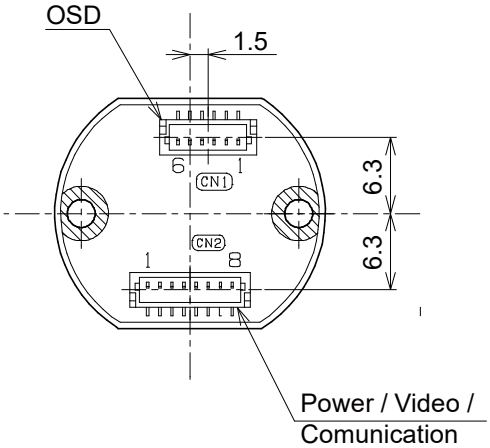


unit mm

5.2 STC-S133N-NF / STC-S133P-NF

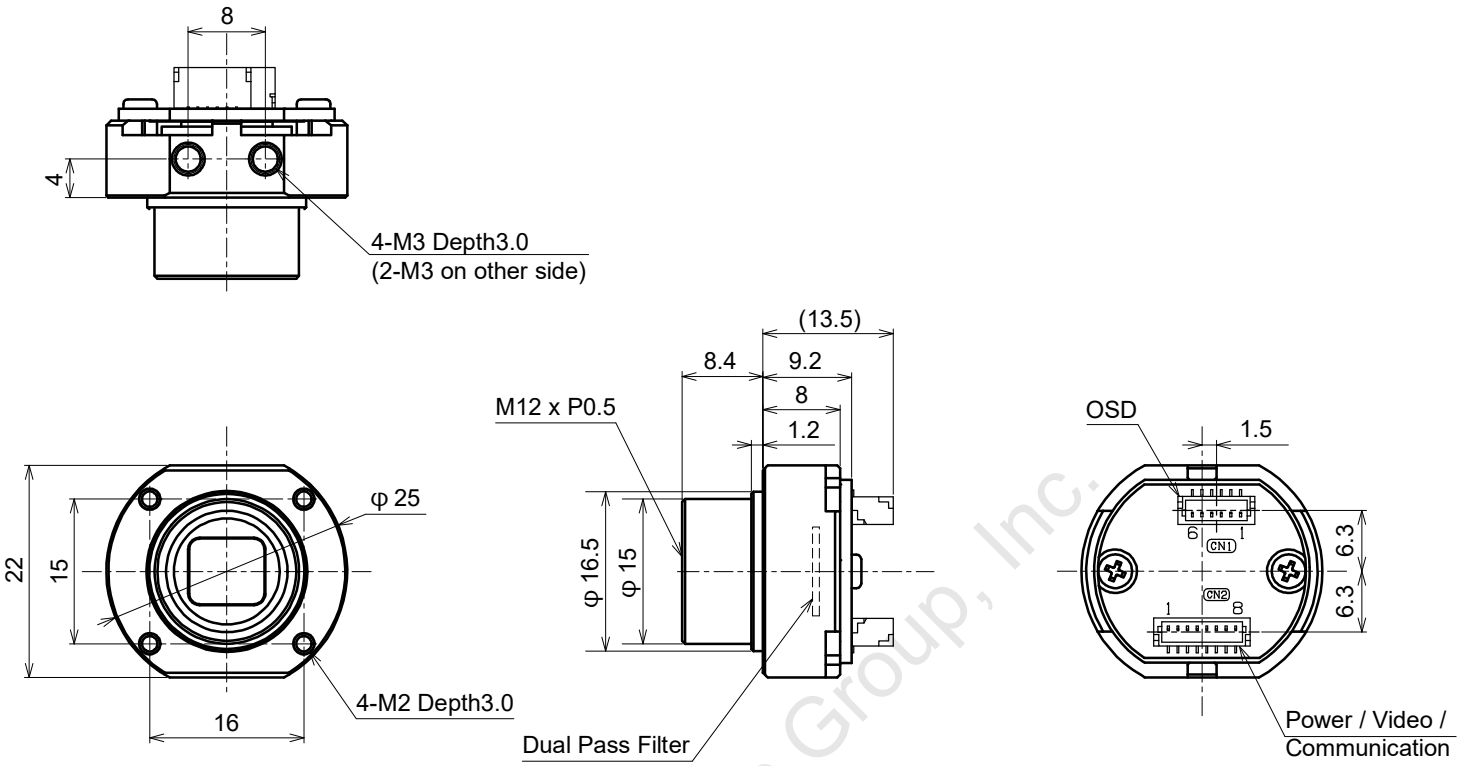






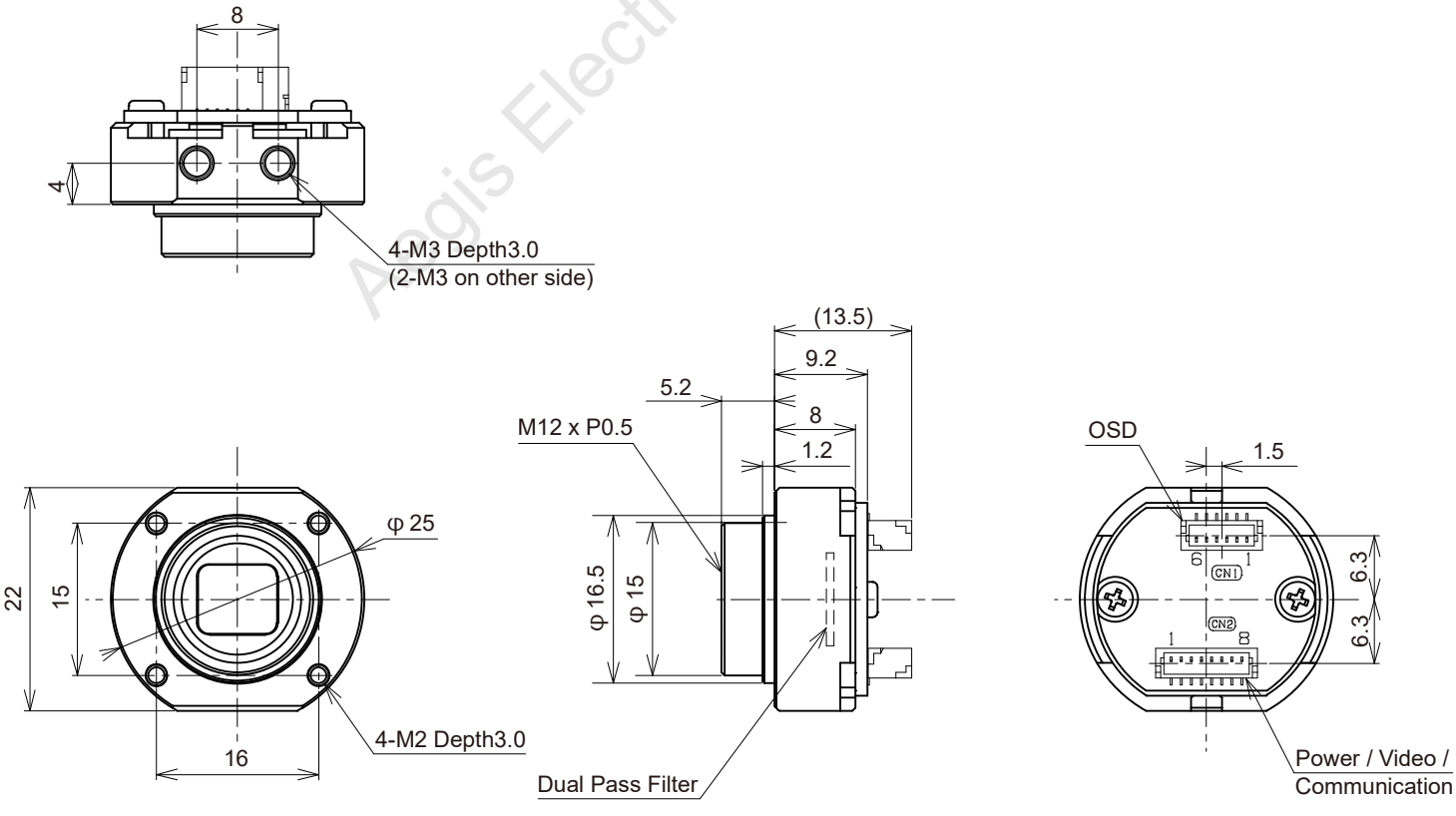
unit mm

5.3 STC-S133N-L / STC-S133P-L



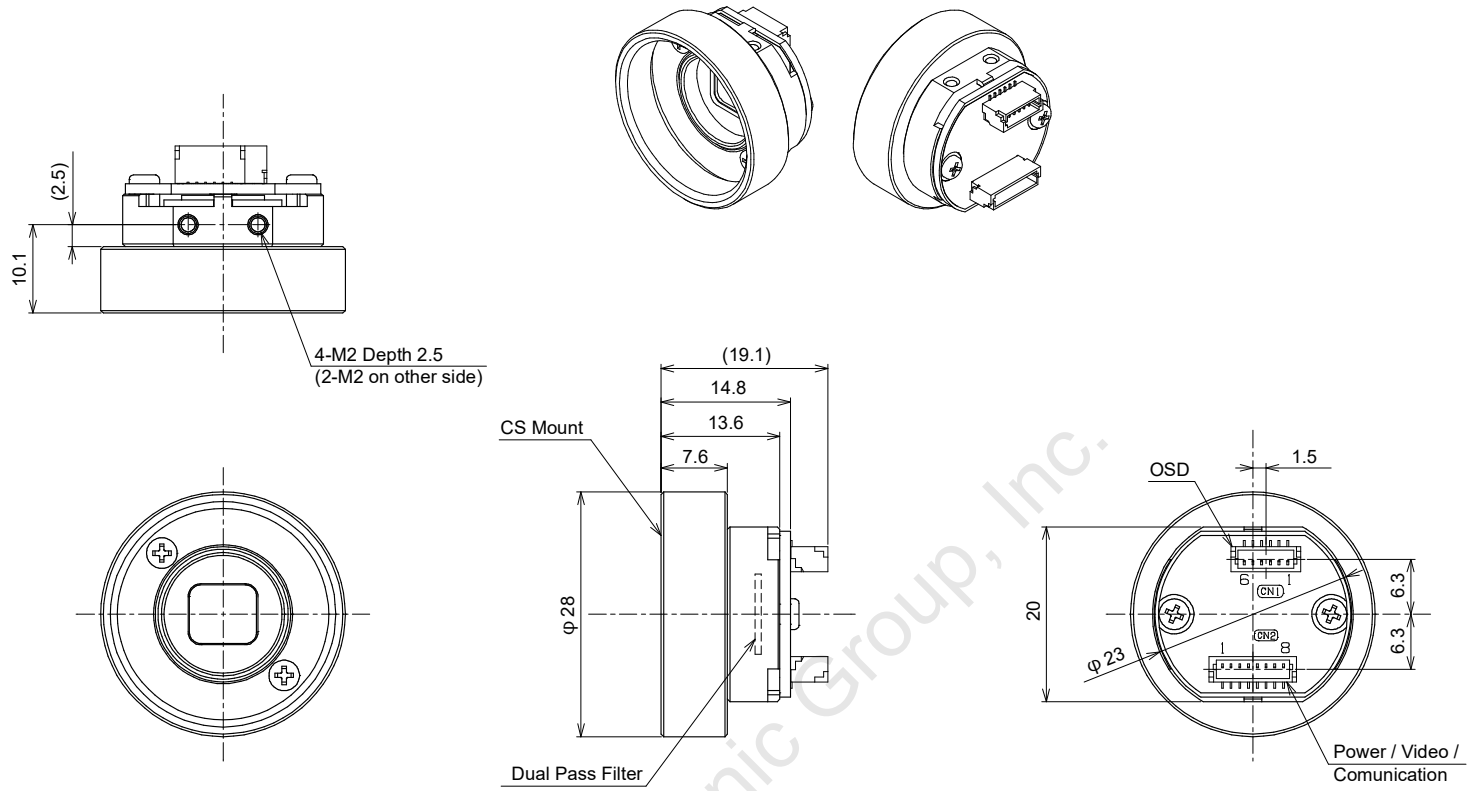
Unit mm

5.4 STC-S133N-LS / STC-S133P-LS



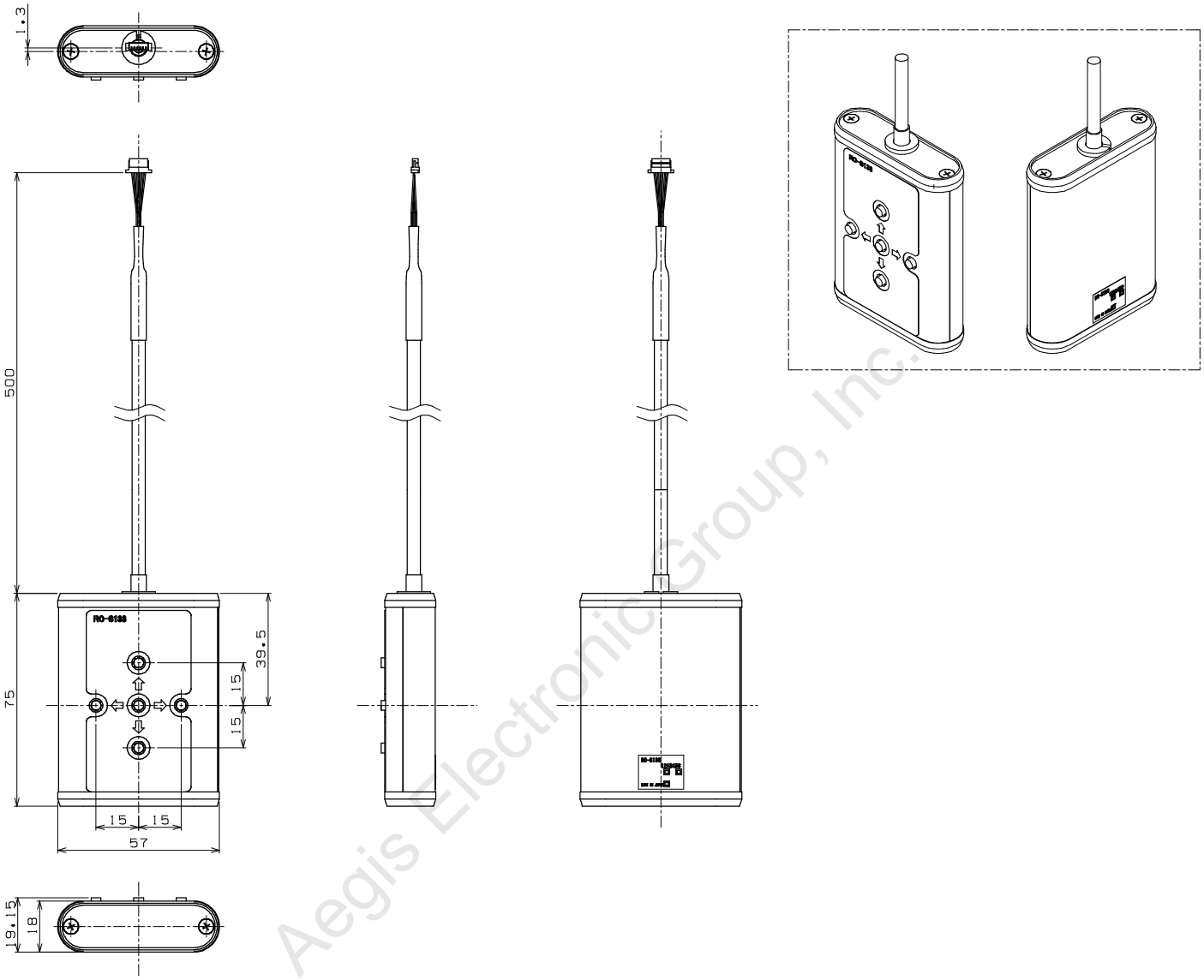
Unit mm

5.5 STC-S133N-CS / STC-S133P-CS



Unit mm

5.6 RC-S133



Unit mm

6 Communication control software users guide

6.1 Requirement software and JIG tool

1) **+12V DC power supply UN310-1210**
2) **Remote controller will be supported**
3) **Communication tool (PC can communicate through USB port) JIG-USB2**
4) **Cable (Camera to JIG-USB2) KSAF003**
5) **Control software KSACtrl**

6.2 Connecting configuration

Please refer to another chapter.

6.3 Communication settings

UART (RS232C compliant), Binary communication

Baud rate	115,200bps
Data bit	8bits
Parity	None
Stop bit	1bit
Flow control	None

6.4 Basic operating procedure

1) The camera communication software (KSACtrl) is usable after install KSACtrl software.

2) Select the COM port number to use the camera communication by selecting “Port Setting” under “Comm (C)” in the menu.

3) Select “Read All” button to read all of the register information from the camera.

4) All of the camera settings are configurable through the camera control software.

6.5 The descriptions for the buttons

Read All

Read out all of the camera information in the camera. Please select this button when the camera power is Turning on every time.
The camera holds the camera settings as the Default: camera settings when reading out the camera setting First time after run this software.

DSP -> FLASH

Save the camera settings (changed settings) in to the Flash memory on the camera.
All changed camera settings save to the Flash memory at once.

Reset

Reboot the camera and read out the camera settings from the camera.
The camera holds the camera settings as the Default: camera settings after read out the camera settings.
Please use this button to synchronize the camera settings and the camera settings information in the camera communication software.

6.6 The descriptions of the functions

Menue

File(F)

Save As[DSP->File]…

Read the camera settings and creates the camera settings file.

Open[File->DSP]…

Load the camera settings from the camera settings file.

Open[File->Flash]…

Load the camera settings from the camera settings file then save the camera settings in to the flash memory.

Comm (C)

Read All,DSP->Flash same function as bottom of main windows button.

PortSetting

The communication port settings are changeable.

Mode(M)

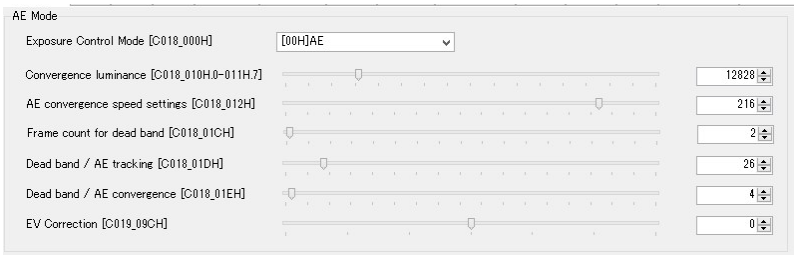
Adjustment

The individual camera settings are adjustable.

One Shot

The camera settings save to the file and load from the file by the function.

Shutter/Gain Tab



Exposure Control Mode

AE

The brightness level is adjusting with the shutter and gain automatically.

It is necessary to set the shutter and the gain at “Normal AE” Tab.

HOLD

The shutter and gain are holding. When the brightness of the target is changed, the camera does not adjust the brightness.

Scale ME

The brightness level is adjusting by the shutter and gain.

User Preset ME

The brightness level is adjusting by the shutter and gain.

Full ME

The brightness level is adjusting the manual by the shutter and gain at “Full ME” Tab.

Convergence luminance

Set the convergence luminance for AE.

AE convergence speed setting

Set the AE convergence speed. When set greater number, the AE convergence speed increases.

Frame count for dead band

Set the number of the frame that use for the AE control start judgement.

Dead band / AE tracking AE

Set the AE convergence finish condition.

AE convergence is finished when AE error is less than this setting and keeps the same condition more than three frames.

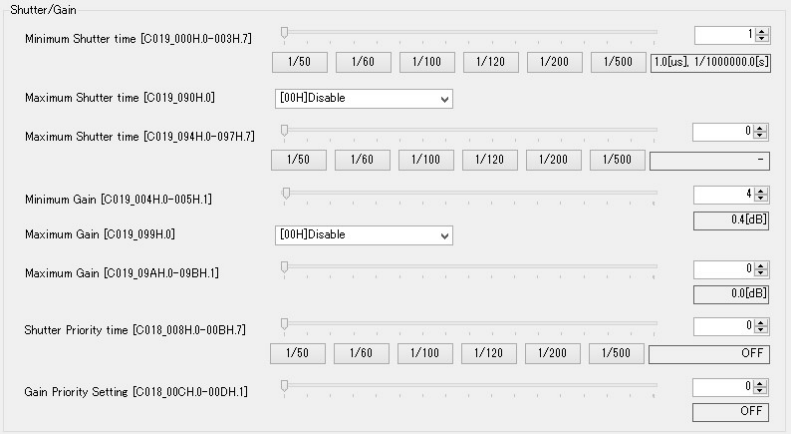
Dead Band / AE convergence AE

Set the AE convergence start condition.

AE convergence starts when AE error is greater than this setting and keeps the same condition more than the frame counter of the dead band.

EV correction

Set the amount of the exposure.



Minimum / Maximum shutter time, Minimum / Maximum Gain

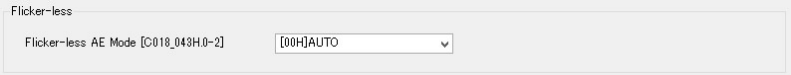
Set the limit for the shutter and gain.

Shutter Priority time

The AE becomes the shutter prioritized AE when set other than “0” while AE mode.
It is necessary to select the value that between the minimum and maximum shutter time.
The shutter is fixed as the selected shutter time and the brightness level is adjusting by the gain.

Gain Priority setting

The AE becomes the gain prioritized AE when set other than “0” while AE mode.
It is necessary to select the value that between the minimum and maximum gain.
The gain is fixed as the selected gain and the brightness level is adjusting by the shutter time.



Flicker-less AE Mode

Auto

When the power on the camera, the Default: setting is “OFF” and the function does not work unless detecting the flicker. The shutter time is adjusting when the flicker less function starts. The flicker less function adjusts the brightness of the target becomes brighter than 1/100seconds or 1/120 seconds, or the flicker less reset function is on.

50Hz/60Hz Forced

This mode forces to 50Hz/60Hz flicker less function.

The outdoor detection and the flicker less reset function do not work for this mode.

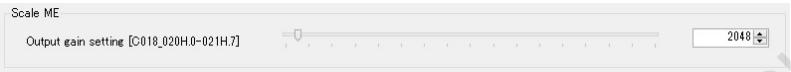
50Hz／60Hz Fixed

This mode forces to 50Hz/60Hz flicker less function.

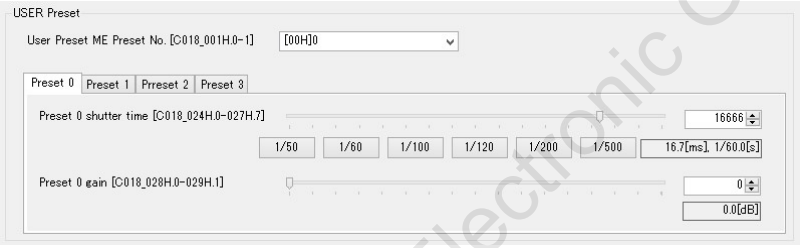
This flicker less function is of when the outdoor detection and the flicker less reset function are working.

OFF

Does not use the flicker-less function.



Set the gain for Scale ME mode.



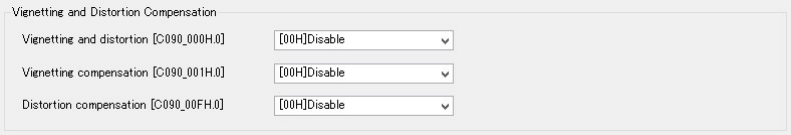
The four sets of shutter and gain for User Preset ME mode are changeable.

Shutter and gain settings for each User Preset are below:

User Preset	Preset 0 (Default)	Preset 1	Preset 2	Preset 3
Shutter	16666	10000	15000	16666
Gain	0	100	150	200

Lens Tab

The lens compensation settings are selectable in this Tab.



Vignetting and distortion

Select “Enable” or “Disable” for the vignetting compensation and distortion compensation functions.

Please select “Enable” if the vignetting or distortion compensation function uses.

Vignetting compensation

Select “Enable” or “Disable” for the vignetting compensation.

Distortion compensation

Select “Enable” or “Disable” for the distortion compensation.

Vignetting compensation settings

The vignetting that caused by the lens or housing, is compensating function.

H. Optical center / V. Optical center

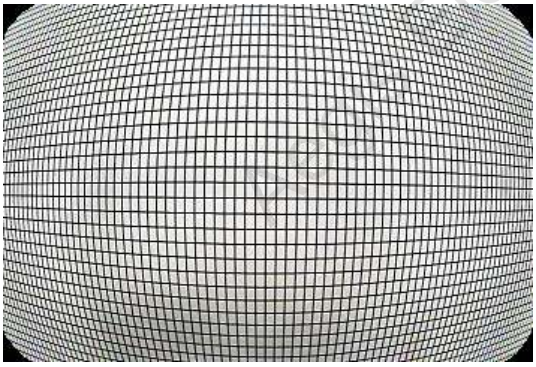
Set the optical horizontal and vertical center position.

Radius

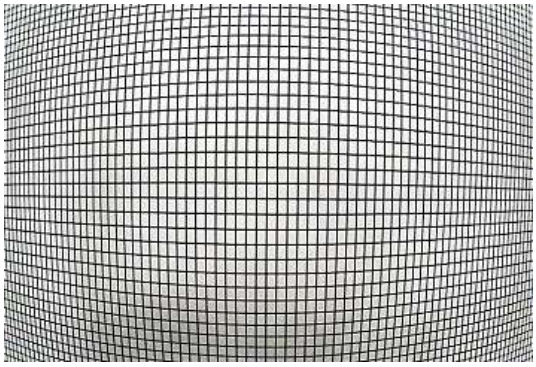
Set the compensation radius from the optical center position.

Ellipticity

Set the ellipticity ratio.

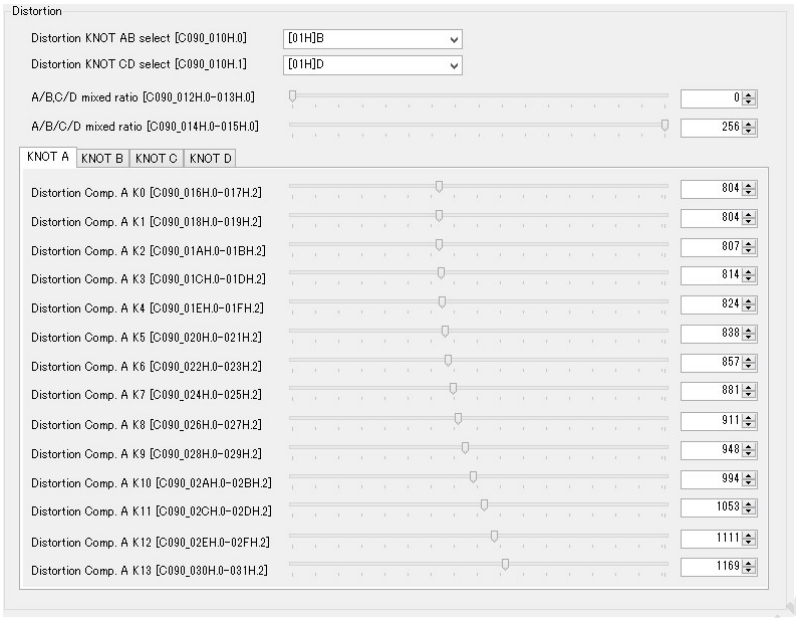


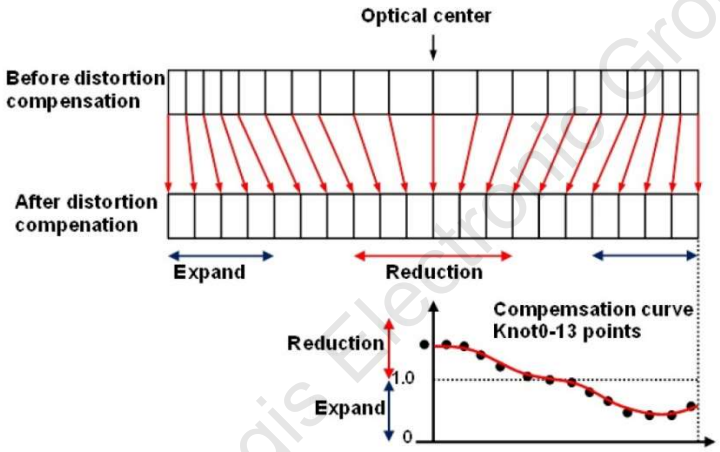
Vegnetting compensation OFF



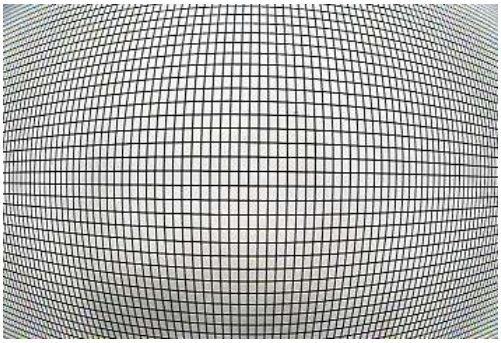
Vegnetting compensation ON

Distortion compensation settings

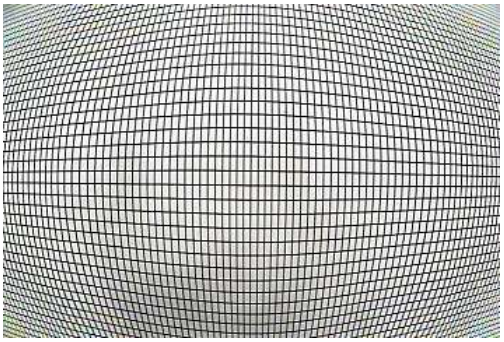




KNOT K0 (optical center) to KNOT K13 (edge) are the compensation points for the distortion compensation. When set the greater value, the distortion is reduced. When set the smaller value, the distortion is extended. There are four types (A, B, C and D) of the compensation points are available.



Distortion compensation OFF

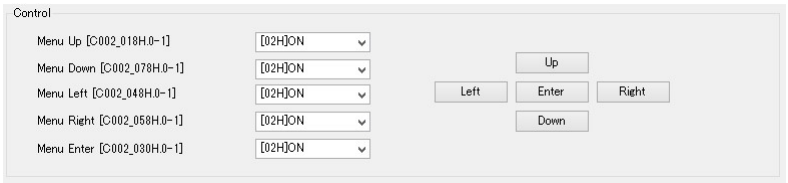


Distortion compensation ON

OMRON

OSD Tab

OSD settings are selectable in this Tab.



For OSD control with the remote control through CN1(Default: Setting)

It is necessary to set “ON” for “Menu Up”, “Down”, “Left”, “Right” and “Enter” then save to the flash memory on the camera.
The OSD function is usable with the remote control that connects to the CN1 after reboot the camera.

For OSD control with the software communication

It is necessary to set “OFF” for “Menu Up”, “Down”, “Left”, “Right” and “Enter” then save to the flash memory on the camera.
The OSD is usable with the control software.

OSD Parameter Load

The camera Default: settings are changed by the OSD when this settings is “ON”.
The camera Default: settings are changed by the communication software when this setting is “OFF”.
Please set “OFF” and save if the settings that changed by the UART communication as the camera Default: settings.

Save button

Save OSD horizontal and vertical start position for the OSD parameter load is valid.
Note OSD horizontal and vertical start position do not save by “DSP->FLASH” button when the OSD parameter load is valid.
It is necessary to use “Save” button to save the OSD horizontal and vertical start position.

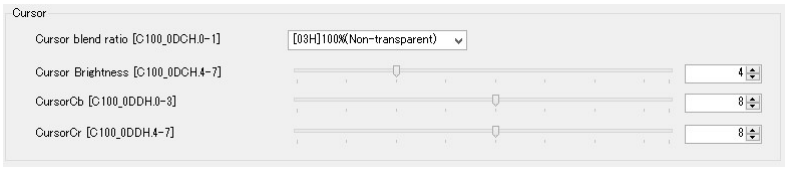
OSD horizontal start position, vertical start position

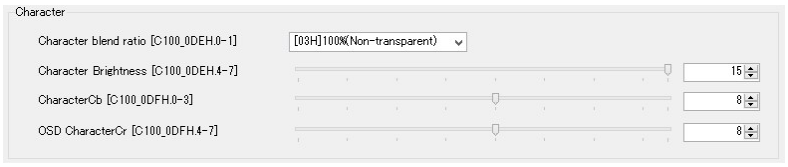
Set the OSD horizontal and vertical start position (display position).

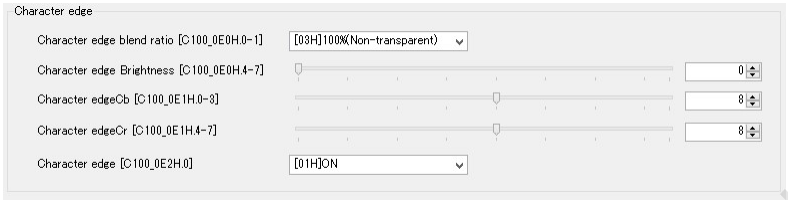
OSD Time out setting

Set the time out setting for the OSD with second unit.
This function is invalid when set 0.

Cursor, character and character edge settings







Cursor blend ratio / Character blend ratio

Set the transparent ratio.

Cursor Brightness / Character Brightness

Set the brightness.

Cursor Cb / Cursor Cr / Character Cb / Character Cr

Set the color (Cb and Cr).

Character edge

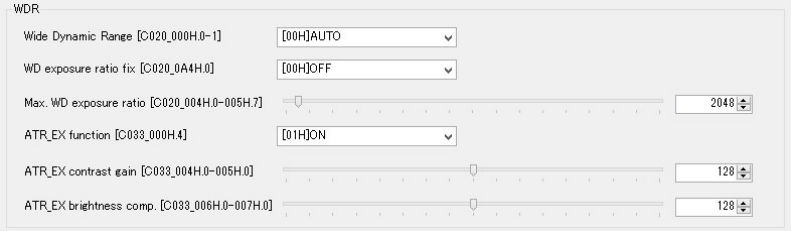
Set “Enable” or “Disable” for the character humming

The Default: settings for cursor, character and character edge are below。

OSD	Y	Cr	Cb	Blend	Notes (color)
Cursor	4 [h]	8 [h]	8 [h]	3 [h]	Gray
Character	F [h]	8 [h]	8 [h]	3 [h]	White
Character edge	0 [h]	8 [h]	8 [h]	3 [h]	Black

WDR Tab

The image is composed with two or three different shutter time images to compensate the clipped white image and crushed shadow image.



Wide Dynamic Range

Auto WDR exposure and long exposure switch automatically for the object condition.

WDR fixed when select “Long exposure fixed” while selecting User Preset ME

Long Exposure fixed Fixed as the long exposure.

WD exposure ratio fix / Max. WD exposure ratio

Set the exposure ratio for WDR.

ATR-EX function / ATR-EX contrast gain / ATR-EX brightness comp.

ART-EX function is improved the visibility based on the brightness information.

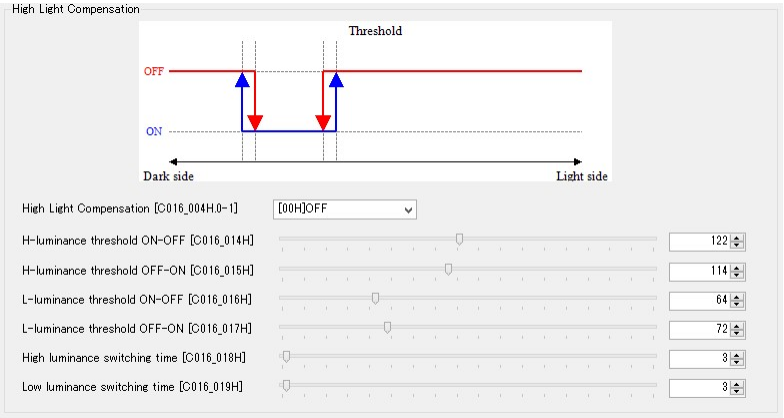
Defog

Defog function is improved the visibility with emphasis the contrast and color saturation for the fogged image.

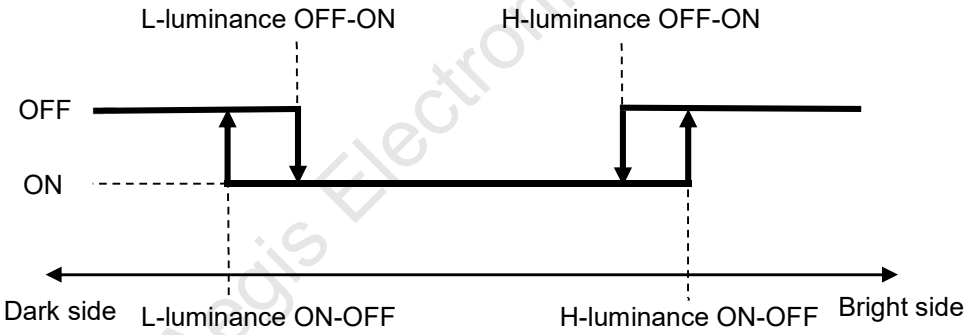
When selecting “Auto” for Defog, the response sensitivity is adjusting with the number of the frame for On and OFF.

High Luminance Compensation (HLC)

The high luminance compensation function is improved the visibility for the license plate under the dark condition with the strong light, with suppression and mask process.

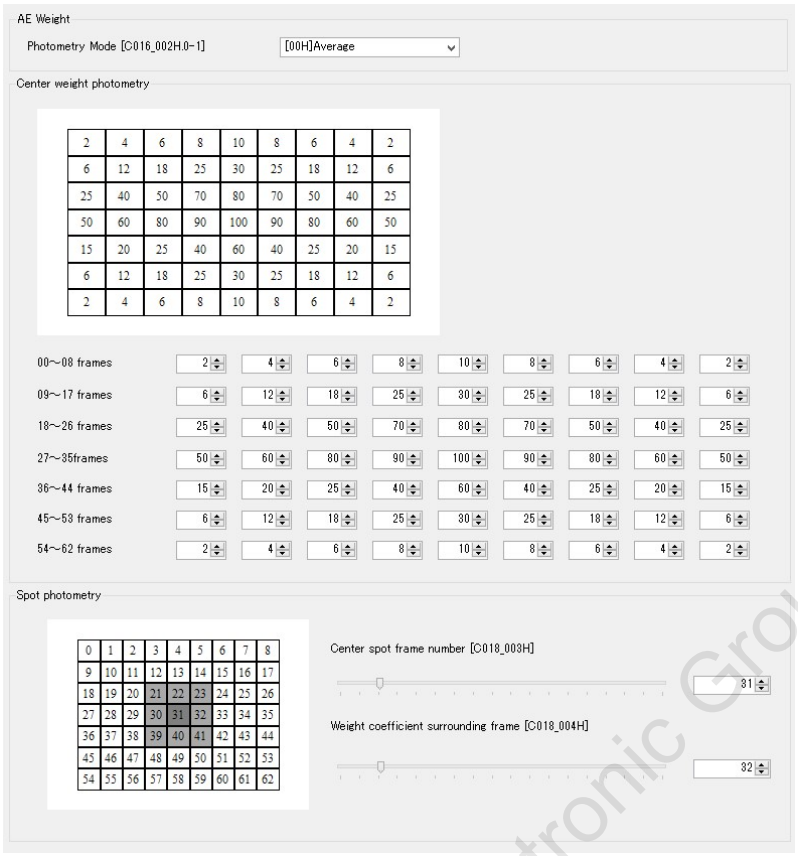


H-luminance threshold ON-OFF	Set the threshold for high luminance compensation from ON to OFF
H-luminance threshold OFF-ON	Set the threshold for high luminance compensation from OFF to ON
L-luminance threshold ON-OFF	Set the threshold for low luminance compensation from ON to OFF
L-luminance threshold OFF-ON	Set the threshold for low luminance compensation from OFF to ON
High luminance switching time	Set the switching time (unit second) for high luminance compensation
Low luminance switching time	Set the switching time (unit second) for low luminance compensation



It is necessary to set L-luminance ON-OFF < L-luminance OFF-ON < H-luminance OFF-ON < H-luminance On-OFF.

AE Weight Tab



Photometry mode

It is possible to keep the brightness level or the specific image are by adjusting the weight of the histogram for the area or the brightness. The photometry mode is selectable from “Average”, “Center”, “Spot” and “Histogram”.

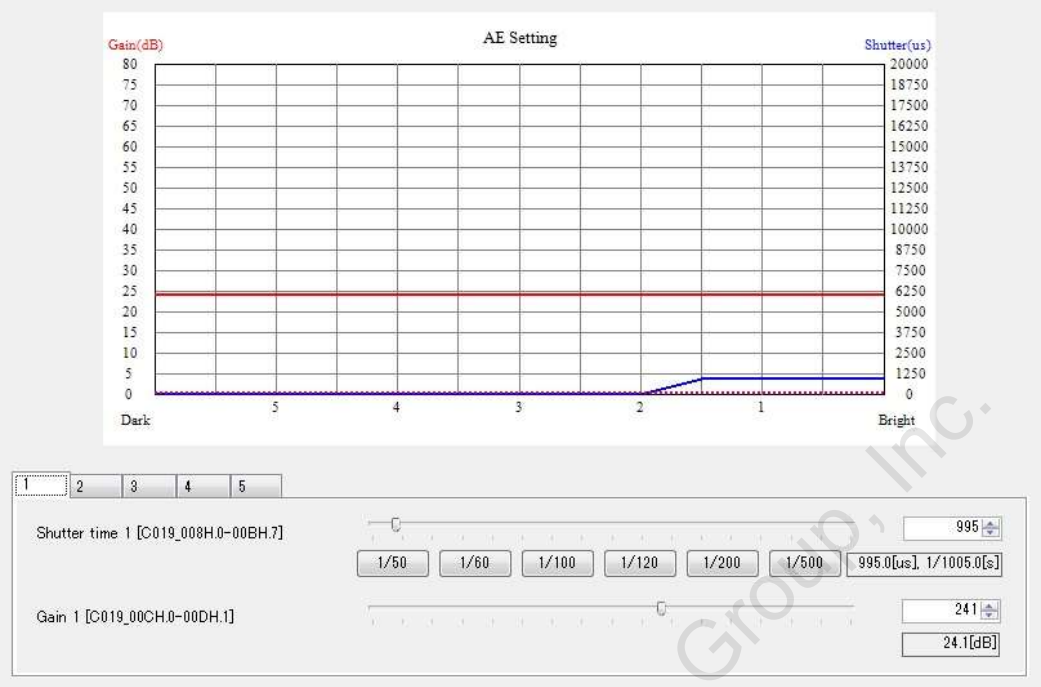
The average brightness of the full image uses for the average photometry mode.

The weighted brightness of 63 areas (7x9 areas) uses for the center photometry mode.

The weighted brightness of surround frame of the target frame uses for the spot photometry mode.

Normal AE Tab

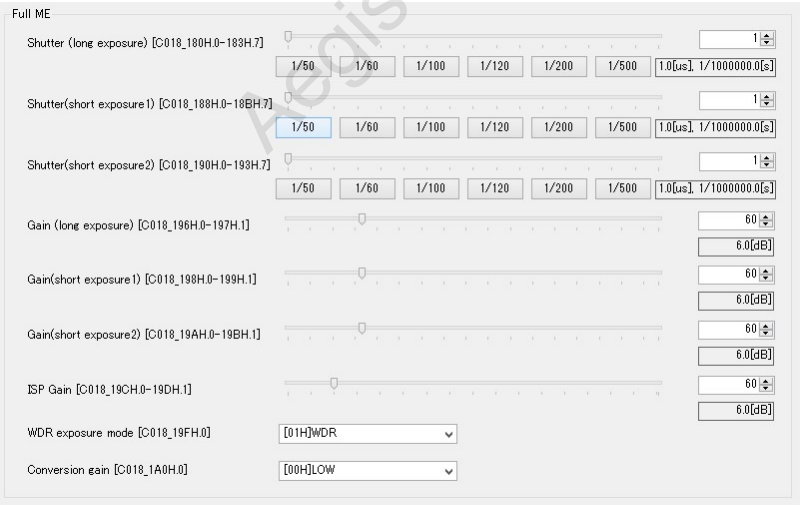
Set the shutter and gain for the normal AE mode.



5 steps control rage for the shutter and gain is selectable for Normal AE.
Please set from 1 (Bright) to 5 (Dark).
Please set with the monotonous inclement.

Full ME Tab

Set the shutter and gain for the full ME AE mode.



Set the shutter speed and gain for the long exposure, short exposure 1 and short exposure 2.

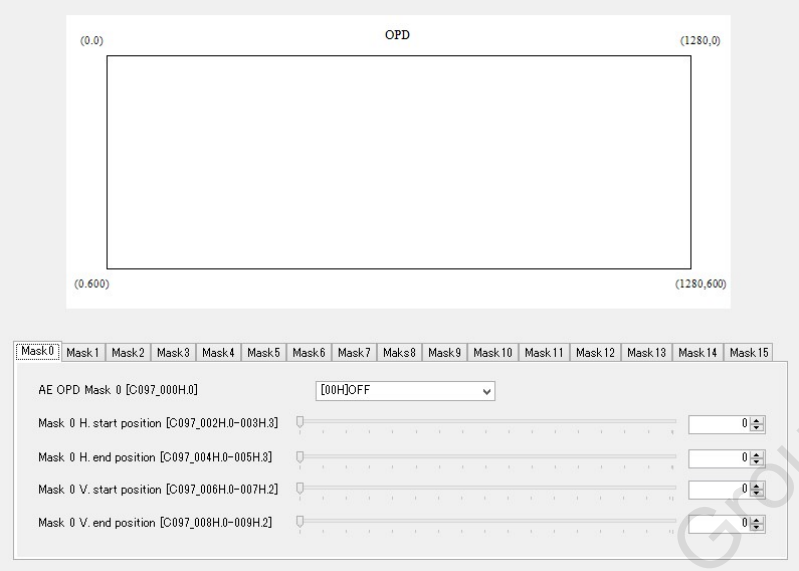
AE Mask Tab

Set the mask frame for AE frame detection.

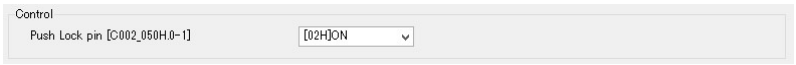
Set mask frame is excluding frame for AE detection.

The mask frame can set up to 16 frames.

In case of the image has vignetting, the optimized brightness of the image can keep it by excluding the vignetting area for AE detection.



WhiteBalance Tab



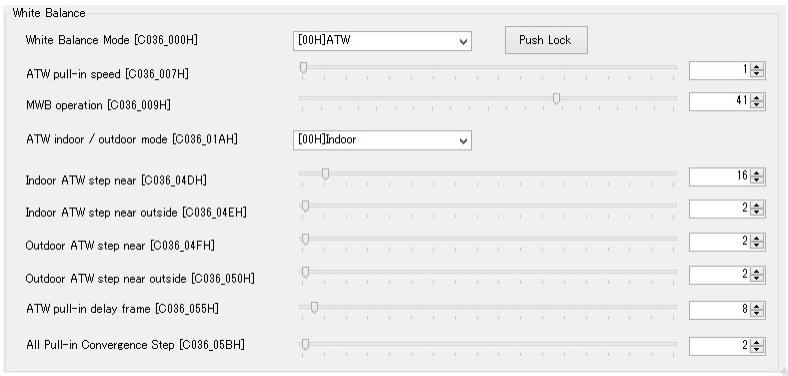
Push lock pin

Set OFF (disable) or ON (enable) for the WB_LOCK on CN2.

Please select “OFF” and save to the camera then reboot the camera if this function does not use it.

Please select “On Push” at the white balance mode.

Note Below “Push Lock” button is disabled when this function is enabled.



White balance mode

ATW mode

The white balance control automatically with the indoor/outdoor judgement and estimate the light source.

ATW mode is less inference for the color saturated target.

All pull in mode

The white balance control automatically without dependence of the indoor/outdoor light source.

The wide rage color pull into the white.

This mode re-adjust the white balance by inference for the color saturated target.

Hold mode

Hold the white balance gain and stop AWB operation.

Saved white balance gain is applied when power on the camera with the hold mode.

MWB mode

The white balance control with the specific color temperature.

User mode

5 sets of the R and B gain are selectable.

OnePush mode

The white balance control automatically by the all pull in then hold the white balance gain and stop the white balance control.

Push Lock button

The white balance control automatically then hold the white balance gain and stop the white balance control.

MWB operation

Set the color temperature for MWB mode.

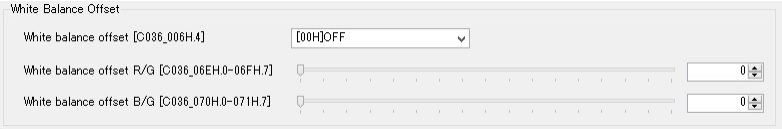
ATW indoor/outdoor mode

Pull in frame for the indoor and outdoor are selectable.

Pull in the blue sky then suppress red at Outdoor (blue sky) mode.

Other settings

Set the sensitivity for ATW mode and all pull in mode.



White balance offset

This function is shifting the convergence point by adding the offset. This function is useful when keep the color.

User mode

Five different use modes are available.

The Default: setting for five user modes are below

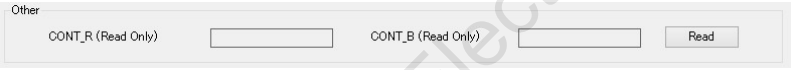
User mode0	Fine weather (shade)	5800K
User mode1	Fluorescent light	4100K
User mode2	Cloudy weather	6500K
User mode3	Halogen light	3200K
User mode4	Incandescent light	2900K

Please follow below procedure to adjust the user mode white balance under the specific light condition

Select all pull in mode with the white target.

Read CONT_R and CONT_B after select “Read” button.

Set value of CONT_R to modex R/G and value of CONT_B to modex B/G. (x 0 to 4 mode number)



Gamma Tab

Gamma offset

Add the offset for the gamma curve. When set the greater offset, the output for the preset point become smaller.

Gamma through

Set the through or magnification for the input data.

Gamma preset (manual gamma)

27 points adjustment is available for the manual gamma.

Black compensation

This function is improved the image by the adjusting the low brightness level.

Chroma Tab

Hue adjustment

Hue is the center adjustment position when set 0[h].

When set 1[h] to 5A[h], the hue changes with the clockwise rotation. When set FF[h] to A6[h], the hue changes with the counter clockwise rotation. The unit is 1deg. / step.

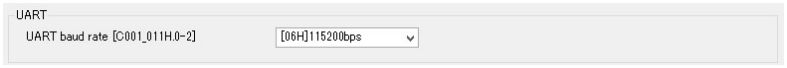
Saturation adjustment

Saturation is the center adjustment position when set 80[h].

When decreases from 80[h] to 0[h], the image becomes low saturation image. When increases from 80[h] to FF[h], the image becomes high saturation image.

0[h] x0 saturation, 80[h] x1 saturation, FF[h] x2 saturation

Other Tab



UART

Changed baud rate is enabled when restart the camera after save the baud rate setting to the flash memory on the camera by selecting “DSP->FLASH” button.

Mirror/Flip

Set the image output with the horizontal flip, vertical flip or horizontal and vertical flip.

Sharpness / Contrast / Brightness / Negative-positive

Adjust each setting for the image.

Pattern Generator

Select the test pattern output.

Noise reduction

Brightness Y-NR

This function keeps the edge component for the middle component of the brightness and the noise reduces at less edge component.

Pixel correlation Y-NR

Pixel correlation Y-NR uses 9x9 next same color pixel and subtracts the same color pixel between the target pixel and around pixel.

Check the subtract with the threshold then the subtract is greater than the threshold then apply the average add to reduce the noise.

Pixel correlation Y-NR function is good function for reduce the noise on the human skin.

Horizontal C-NR

The edge component keeps when the brightness is changed. If the brightness does not change, the noise is strongly reduce at similarity area.

Vertical 3Line C-NR

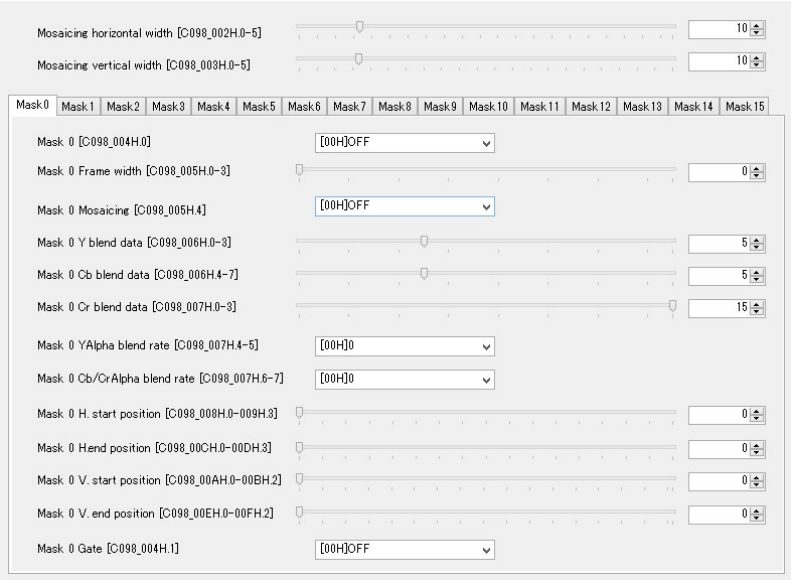
The noise reduces by the flatten process for the microscopic chroma change of the vertical direction.

Vertical IIR C-NR

Observes the vertical direction pixels then control the color gap of the vertical direction.

Privacy Mask Tab

Set the privacy mask setting. Up to 16 frames are available.



Mosaicing horizontal width / vertical width

Set the mosaicing width when the mosicing mask is enabled.

The unit for the horizontal width is an even number of the pixels and the 1 line for the vertical width.

Mask x

Select On/Off for the mask.

Mask x frame width

Set the frame width of the frame for the mask if it is necessary.

When set 0, the frame does not display.

Mask x mosaicing

Select On/Off for the mosicing mask.

Mask x Y / Cb / Cr blend data, Y / Cb / Cr blend rate

Set the brightness and color for the mask.

Examples

Y blend rate	Cb/Cr blend rate	Y blend data	Display color
1.0 3[h]	1.0 3[h]	F[h]	White
1.0 3[h]	1.0 3[h]	0[h]	Black

Mask x H. start position / h. end position / v. start position / v. end position

Set the mask display position.

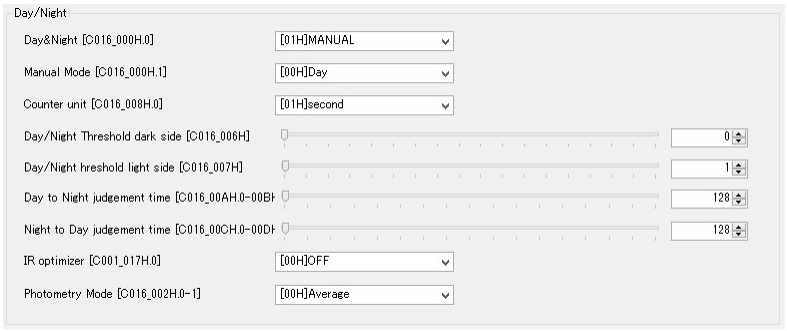
Mask * Gate

When set on this, the masking area is excluding from the AE detection.

Note) The smaller mask number has the priority for mask display.

Day&Night Tab

Set the Day & Night function.



Day&Night

The camera switches automatically based on AE status when set “AUTO”

Manual Mode

Select Day or Night mode when select “MANUAL” at Day&Night.

Counter unit

Select the unit of the judgement time (frame or second)

Day/Night Threshold dark side / threshold light side

Set the threshold for the auto day&night.

It is necessary to set the dark side < light side.

The image hunching may occur when the difference of threshold for dark side and light side is too small.

Day to Night/Night to Day judgement time

Set the judgement time for switching the mode. The unit for the judgement time is set unit at counter unit.

IR optimizer

This function set the optimize exposure for the IR light under the dark condition.

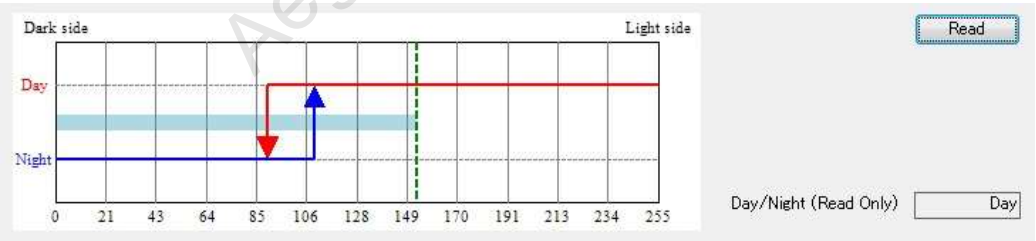
IR photometry mode

This function is enabled when the IR optimize is enabled.

Please check the “AE weight” for the photometry mode operation.

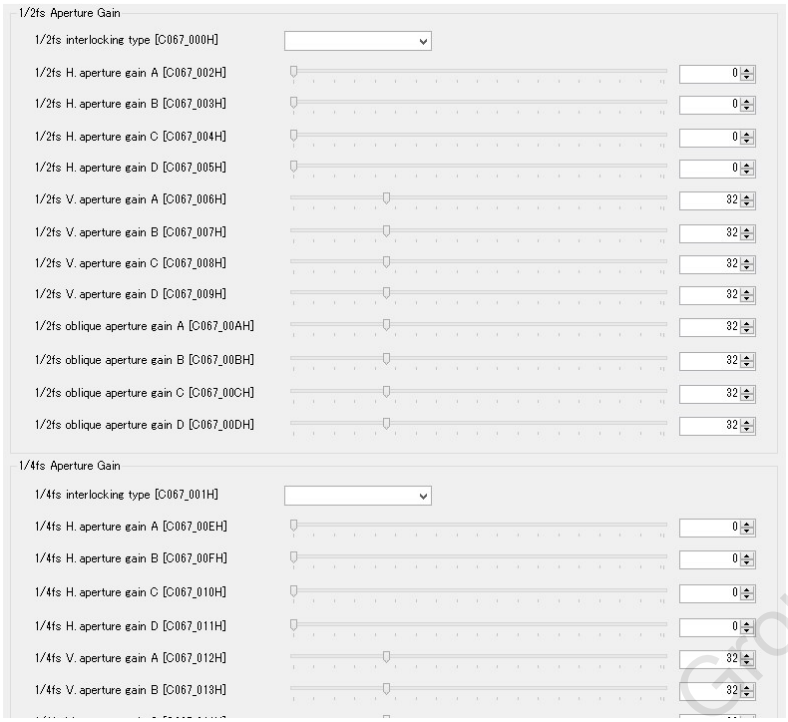
Read

Read camera’s brightness and show on the chart, show the status of Day/Night mode



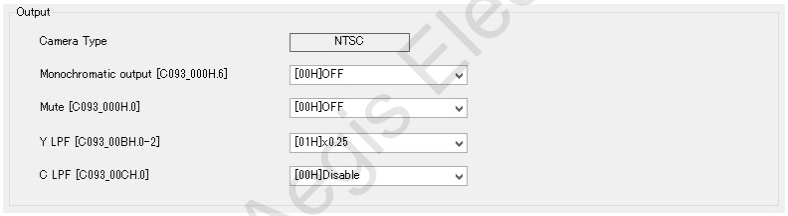
Aperture Tab

Set the enhancement settings for the edge of the image.



Set the horizontal, vertical and oblique aperture gain for 1/2fs (high frequency) and 1/4fs (low frequency).
40[h] x1 enhancement

Analog Tab



Camera Type

Display the camera type, NTSC or PAL.

Monochromatic output

The monochrome image is output when select “ON”.

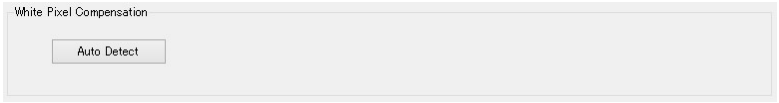
Mute

Set the mute (Disabled video output) of the image.

Y LPF/C LPF

Set the LPF for the Y signal and C (chroma) signal.

Blemish Pixel Tab

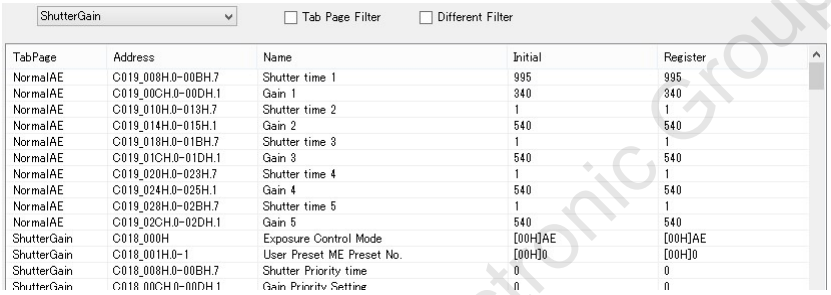


When selecting “Auto Detect” button, the white pixel compensates automatically.
It is necessary to shade the camera before using this function.
Note If the auto detect fails due to the too bright (not shading the camera), saved compensated values are cleared.

Info. Tab

Display the version information of the flash memory data on the camera.

Field Table

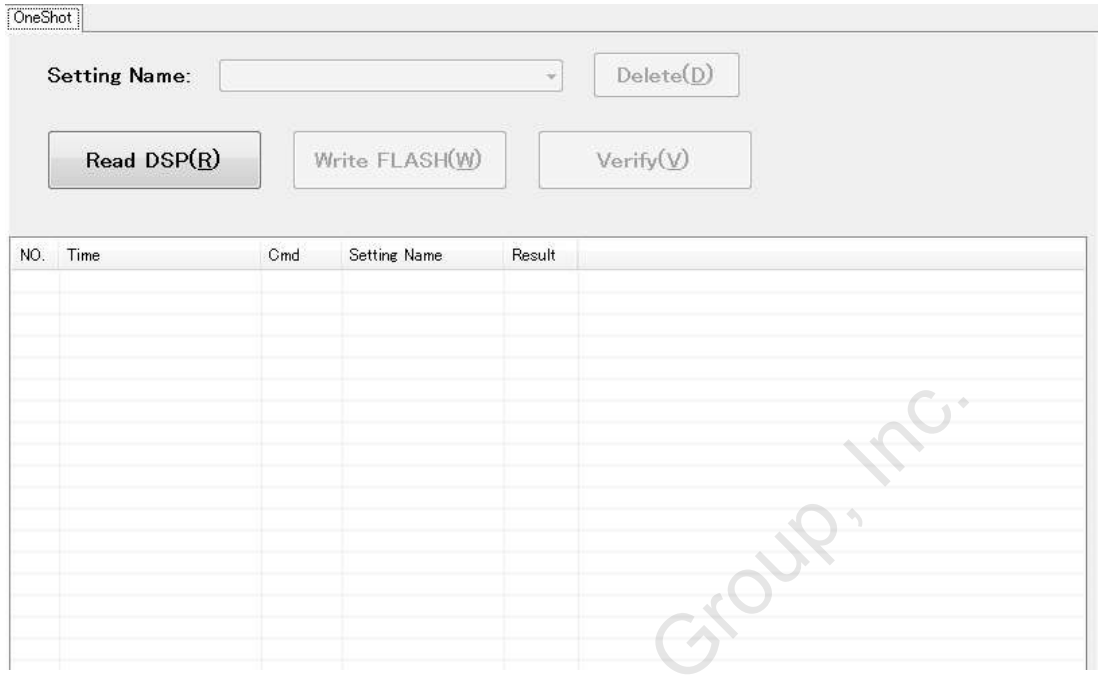


TabPage	Address	Name	Initial	Register
NormalAE	C019_008H.0-00BH.7	Shutter time 1	995	995
NormalAE	C019_00CH.0-00DH.1	Gain 1	340	340
NormalAE	C019_010H.0-013H.7	Shutter time 2	1	1
NormalAE	C019_014H.0-015H.1	Gain 2	540	540
NormalAE	C019_018H.0-01BH.7	Shutter time 3	1	1
NormalAE	C019_01CH.0-01DH.1	Gain 3	540	540
NormalAE	C019_020H.0-023H.7	Shutter time 4	1	1
NormalAE	C019_024H.0-025H.1	Gain 4	540	540
NormalAE	C019_028H.0-02BH.7	Shutter time 5	1	1
NormalAE	C019_02CH.0-02DH.1	Gain 5	540	540
ShutterGain	C018_000H	Exposure Control Mode	[00H]AE	[00H]AE
ShutterGain	C018_001H.0-1	User Preset ME Preset No.	[00H]0	[00H]0
ShutterGain	C018_008H.0-00BH.7	Shutter Priority time	0	0
ShutterGain	C018_00CH.0-00DH.1	Gain Priority Setting	0	0

Display the list of the settings.
Initial is first time read out data after the control software started.

One Shot

One shot mode is selectable by “OneShot” under “Mode” in the menu.
Save or load the settings by the function group.



Read DSP

Read DSP data form the camera and make setting file.

Write FALSH

Write selected setting file into camera’s DSP, and load to Flash and verify.

Verify

Verify DSP register value to setting file.

7 Camera setting by the OSD

This camera can change the camera settings by the On Screen Display function.

7.1 The camera setting change by the on screen display

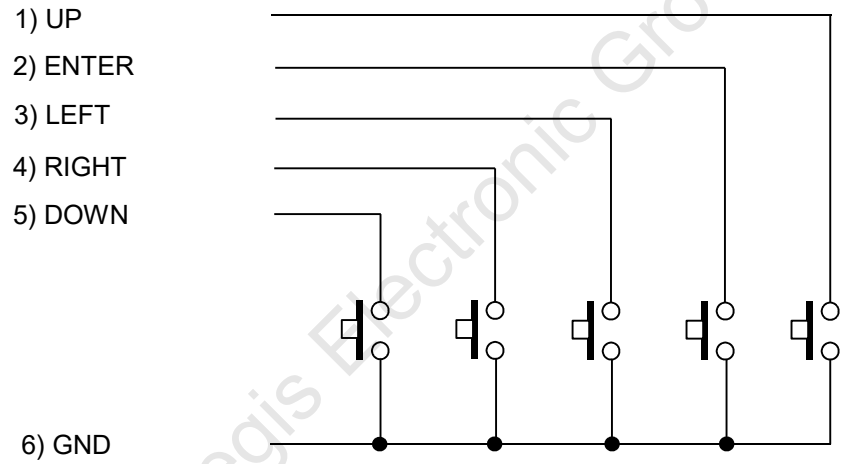
7.1.1 The camera setting change by the controller that connects to CN1

A. It is necessary to enable the OSD switch function by the communication software before use the controller.
(The OSD switch function is enabled for the Default: setting)
Please check the 4-6. OSD tab descriptions.

B. Controller connector on the camera (on rear side of the camera)
Please check the OSD section.

C. Controller circuit

CN1 pin assign



D. Switch button function

Below function is assigned for each button.

ENTER	Display OSD menu, select setting
UP	Select up (menu selection)
DOWN	Select down (menu selection)
LEFT	Select left (setting selection)
RIGHT	Select right (setting selection)

7.1.2 OSD operation by the communication software

A. It is necessary to disable the OSD switch function by the communication software before use it
Please check the 4-6. OSD tab descriptions for details of the operation.

7.1.3 OSD menu

SETUP MENU

Page 1

SHUTTER/AGC	Shutter/ Gain Setting (Default: AUTO)
WHITE BAL	White Balance Setting (Default: ATW)
BACKLIGHT	Back Light Compensation (Default: OFF)
DEFOG	Defog Function (Default: OFF)
WDR/ATR	WDR/ATR Setting (Default: WDR and ATR ON)

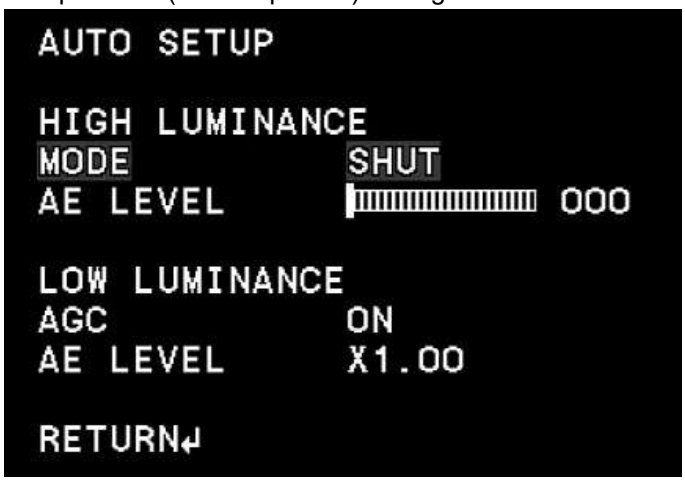
Page 2

DAT/NIGHT	Day Night Setting (Default: AUTO)
PRIVACY	Privacy Mask (Default: OFF)
LANGUAGE	OSD Language (Default: ENGLISH)

SHUTTER/AGC

1) AUTO SETUP

Setup the AE (Auto Exposure) settings



HIGH LUMINANCE

MODE SHUT	Fixed shutter
AE LEVEL	Set the target brightness level for AE (Default:56)

LOW LUMINANCE

AGC	Select AGC mode (ON/OFF) (Default: ON)
AE LEVEL	Set the target brightness level for AE (AGC) (Default: X1.00)

2) MANUAL SETUP

Set up the ME (Manual Exposure) settings

SHUTTER	Select shutter speed (Default: 1/60)
AGC	Set the gain (Default: MIN Gain 0)

WHITE BAL

ATW Auto White balance mode

SPEED	Set pull in speed for ATW (Default: 128)
DELAY CNT	Set delay time for ATW (Default: 8)
ATW FRAME	Select pull in frame for INDOOR/OUTDOOR
ENVIRONMENT	Select pull in frame for ATW (Default: INDOOR)
INDOOR Indoor	(Default: X1.00)
OUTDOOR Outdoor	(Default:X1.00)

AUTO1/2 Indoor / outdoor switch automatically (1 and 2 are sensitivity different mode)

PUSH All pull in white balance mode

USER1, USER2 User white balance mode

Sets B and G Gain on user setting

USER1	B-GAIN(Default:139), R-GAIN (Default: 208)
USER2	B-GAIN(Default:185), R-GAIN (Default: 202)

Set the B gain and R gain for User White balance.

MANUAL Manual White balance mode

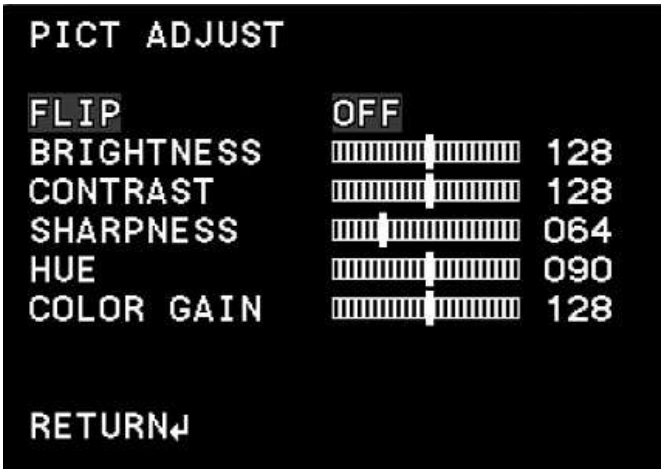
Select the color temperature for the manual white balance

PUSH	LOCK	Push to set White Balance

BACK LIGHT

OFF	Back light compensation is OFF
BLC	Back light compensation is ON
HLC	HLC (High Luminance Compensation) is enabled

PICT ADJUST



FLIP	
OFF	Normal image
H-FLIP	Horizontal flip image
V-FLIP	Vertical flip image
HV-FLIP	Horizontal and vertical flip image
BRIGHTNESS	Set the brightness of the image (Default: 128)
CONTRAST	Set the contrast of the image (Default: 128)
SHARPNESS	Set the sharpness of the image (Default: 64)
HUE	Set the hue of the image (Default: 90)
COLOR GAIN	Set the color saturation of the image (Default: 128)

DEFOG

LEVEL	Set the defog level and sensitivity
LOW	Low
MID	Middle
HIGH	High

WDR/ATR

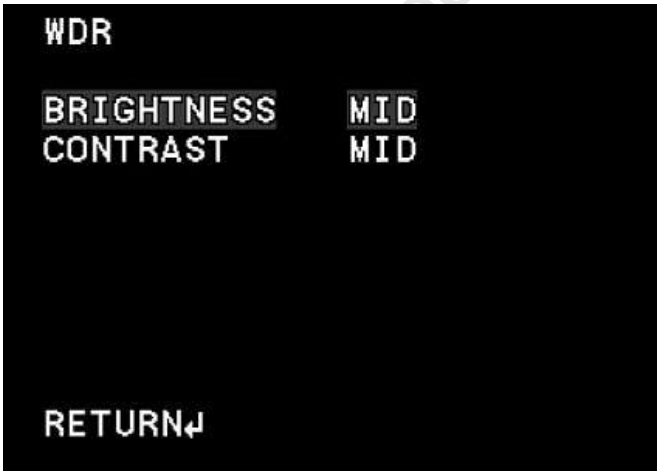
OFF　　Set WDR and ATR function OFF

ATR

BRIGHTNESS　　Set the brightness highlight level
- LOW　Low
- MID　Middle(Default:)
- HIGH　High

CONTRAST　　Set the contrast highlight level
- LOW　Low
- MID　Middle
- HIGH　High

WDR



BRIGHTNESS　　Set the brightness compression level
- LOW　Low
- MID　Middle
- HIGH　High

CONTRAST　　Set the contrast highlight level
- LOW　Low
- MID　Middle
- HIGH　High

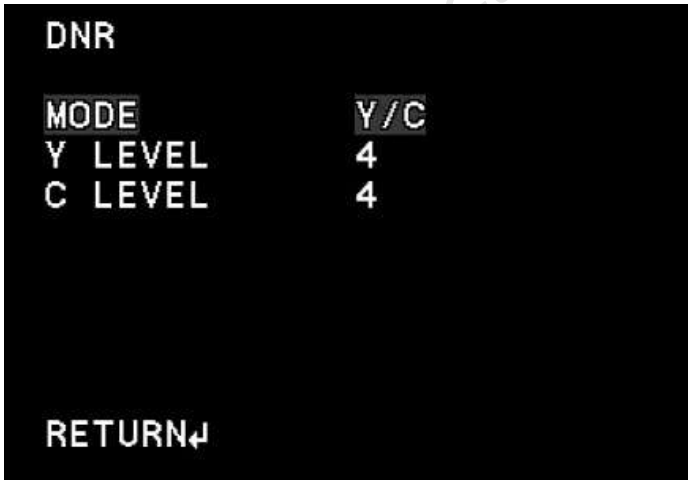
Day/Night

AUTO

DELAY CNT	Set the switch delay between Day and Night mode (Default:5)
DAY→NIGHT	Set the threshold to switch from Day to Night mode (Default: 90)
NIGHT→DAY	Set the threshold to switch from Night to Day mode (Default: 110)
BURST	
OFF	No burst signal
ON	With burst signal

DNR

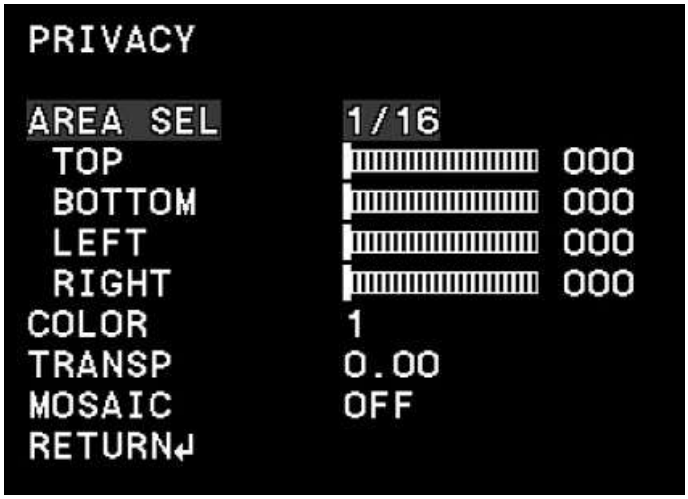
Set the noise reduction settings



MODE	
OFF	Noise reduction is OFF
Y/C	Y/C Filter is ON (Default:)
Y	Y Filter is ON, C Filter is OFF
C	Y Filter is OFF, C Filter is ON
Y LEVEL	Set the Y filter level (Default: 4)
C LEVEL	Set the C filter level (Default:4)

PRIVACY

Set the privacy mask settings



AREA SEL Select the privacy mask frame

TOP, BOTTOM, LEFT, RIGHT Set the privacy mask position (Default: 0)

COLOR Se the color for the privacy mask (Default: 1)

TANSP (0.00, 050, 0.75, 1.00) Set the transparent level for the privacy mask Default: 0.00)

MOSAIC

OFF Mosaic is OFF(Default:)

ON Mosaic is ON

LANGUAGE

Select the language for the OSD menu

CAMERA RESET

Initialize all OSD settings

SAVE ALL

Save all OSD settings to the flash memory on the camera
It is necessary to enable “OSD parameter Load” function to use saved settings

8 Revisions

Rev	Date	Changes	Note
00	2016/06/30	New document	
01	2016/10/04	Added Communication cable information on Camera to JIG-USB	
02	2016/10/19	Revised Initial data on Normal AE	
03	2016/11/21	Revised Maximum value on Normal AE Tab	
04	2017/02/09	Added Remote controller information Revised Storage Temperature information	
05	2017/05/25	Revised Maximum Operational temperature Revised Address, TEL, FAX number for relocation	
06	2017/07/03	Revised Change the name of company	
07	2017/07/28	Revised Change Optical size	
08	2017/08/28	Revised Added -LS model	
09	2018/05/01	Revised Change the dimension drawing for -L and -LS models	

Note: Product specifications would be modified without notification.

OMRON

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