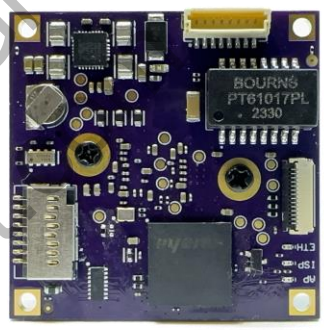
Videology®
Industrial-Grade Cameras
an inTEST Company

201-IP-462-xC

2MP Color IP Camera



Videology Industrial-Grade Cameras

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Our deep commitment to the customer experience delivers performance excellence throughout the entire customer journey. This is Videology's brand difference and it's our company's most important priority in serving the needs of our customers across the globe.

Our Brand Promise
How do we support our brand difference? We do so with a sincere promise we make to every Videology customer as follows: We provide competence, attention to detail and personal care with a level of excellence that will delight every customer in every interaction. This is Videology's brand promise and it's been the key to our growth and success – from a small start-up more than 25 years ago to a global leader in today's imaging industry.

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1. Prior to Using

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2. Warning and Safeguards

- **Read instructions before operating camera.**
- Please read/follow all instructions and reed all warnings before operating the camera.
- Installation and servicing should only be done by Qualified Service and Installation Personnel.
- Installation shall be done in accordance with all local and national electrical and mechanical codes.
- Avoid mounting in direct sunlight.
- To reduce the risk of fire or electric shock, do not expose this appliance to rain, water or wet locations.
- If the camera is to be mounted outdoors a secondary waterproof enclosure should be used.

2.1 Precautions

- Do not put objects inside the unit. Make sure that no metal objects or flammable substances get inside the camera. It could cause fire, short-circuits or damage.
- Be careful when handling the unit.
- To prevent damage, do not drop the camera or subject it to strong shock or vibration.
- Install away from electric or magnetic fields.
- Protect from humidity and dust.
- Protect from high temperature.
- Be careful when installing the camera close to the ceiling, in a kitchen or boiler room, as the temperature may raise to high levels.
- Cleaning - Dirt can be removed from the cabinet only by wiping it with a soft cloth moistened with a soft detergent solution.
- Mounting Surface - The mounting surface material must be strong enough to secure the camera.
- Avoid viewing a very bright object (such as light fittings) during an extended period.

2.2 Care of the Unit

- Remove dust or dirt on the surface of the lens with a blower (commercially available).
- Avoid the use of volatile solvents such as thinners, alcohol, benzene and insecticides. They may damage the surface finish and/or impair the operation of the camera.
- Be careful not to spill water or other liquids on the unit.

2.3 Operating and Storage Location

- Extremely hot or cold places; operating temperature -40^{0}C- 60^{0}C (-40^{0}F – 140^{0}F)
  however, we recommend that the unit be used within a temperature range of 0^{0}C – 45^{0}C (32^{0}F – 113^{0}F)
- Damp or dust places
- Places exposed to rain
- Places subject to strong vibration
- Close to generators of powerful electromagnetic radiation such as radio or TV transmitters.
- 
  If the product is to be put out of operation definitively, take it to a local recycling plant for disposal which is not harmful to the environment.

3. Document History

Document History

Revision	Issue Date	Reason
A	01/17/2024	Initial Creation
B	04/29/2024	Added Video Recording + Real time clock (pag10-pag12)

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4. Introduction

This document will explain how to set up your 201-IP-462-xC, an IP camera with the following highlighted features:

- 2 Megapixel, 1/2.8" IMX462 CMOS Starvis sensor
- RTSP video streaming
  - 5 pre-configured RTSP-streams
- Fast Ethernet (also known as 10/100 Ethernet)
  - Full duplex communication
- SD card storage
  - Supports different storage sizes
- HTTP, SSH and FTP server functionality
- Linux RISC-V architecture - Open-source processor and operating system
- Fully configurable via Videology's HTTP API interface

5. Configuration

5.1 Hardware

A multi pin connector is used to supply both power and the network connections. The package includes a break-out cable to a standard 12VDC power connector and a RJ45 network jack. Connect the cable to a 12VDC power source and a network that supports DHCP.

5.2 Find network address

The first step to access the camera is finding its IP address, as it comes from factory with a dynamic configuration. The recommended tool for this task is Advanced IP Scanner, which can be downloaded for free on advanced-ip-scanner.com.

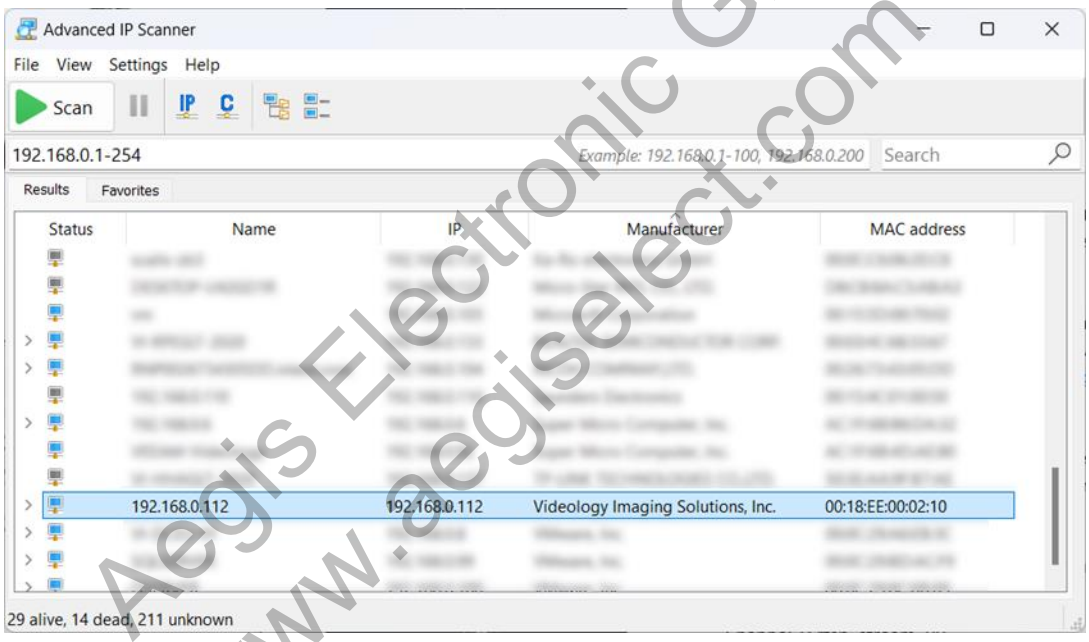


Figure 1 Advanced IP Scanner

The device may be found by the manufacturer name, "**Videology Imaging Solutions, Inc.**".

Remember to use the correct range for your LAN.

5.3 Get a video stream

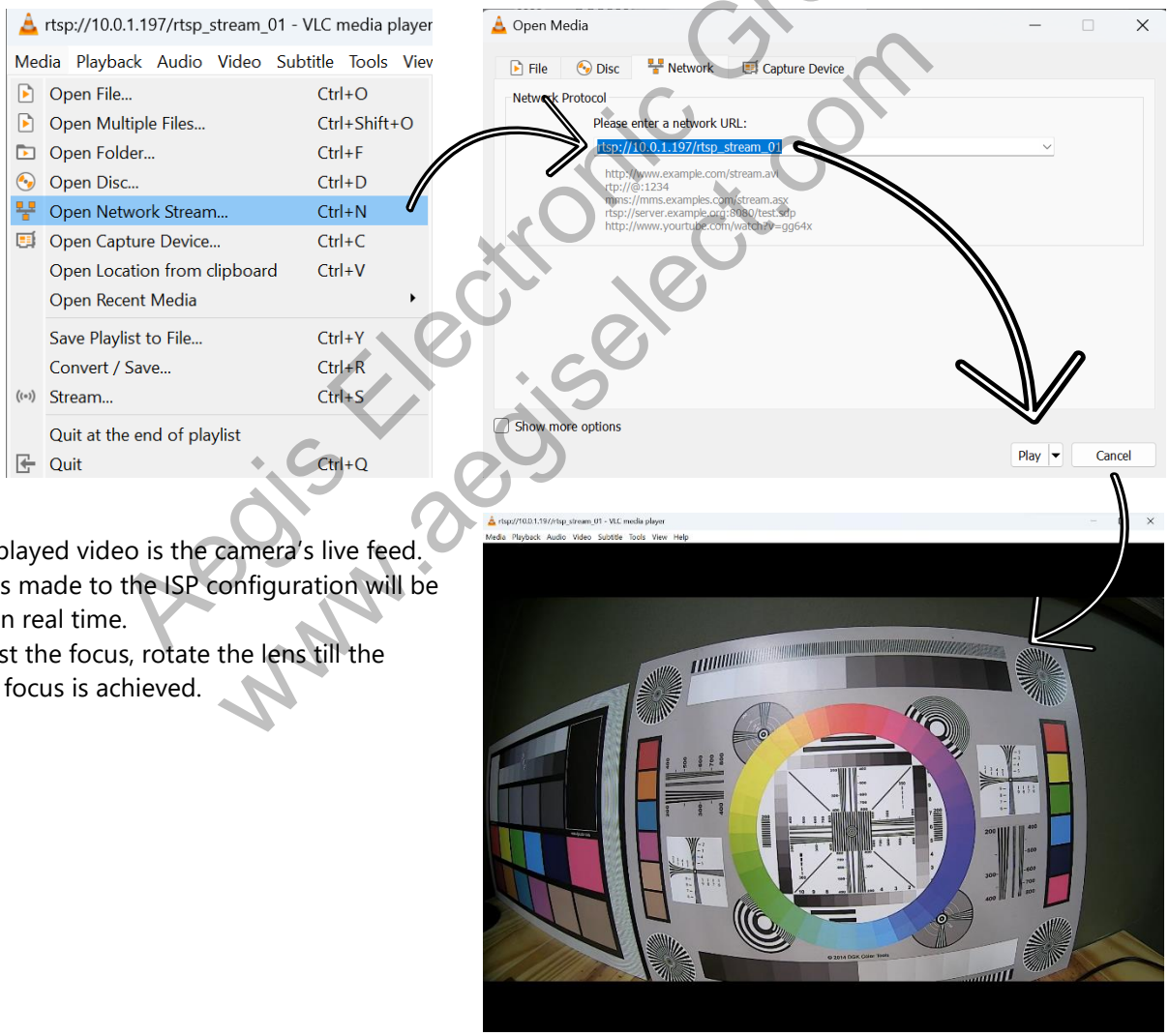
Now that you know your IP address, you may stream video! For that, you will need a media player that supports RTSP streaming, such as the VLC media player or even Windows 11's media player.
Use the address with the camera's IP (here 192.168.0.197) and the following suffix:

rtsp://192.168.0.197/rtsp_stream_00

The last two digits determine which channel is streamed. The difference between each channel lies in their resolution and framerate of the video, so they are used to pick these configurations.

Channel 1: rtsp_stream_00 – highest resolution
Channel 2: rtsp_stream_01
Channel 3: rtsp_stream_02
Channel 4: rtsp_stream_03
Channel 5: rtsp_stream_04 – lowest resolution

For instance, on VLC, open the **Media** menu and select **"Open Network Stream…"**



The displayed video is the camera's live feed. Changes made to the ISP configuration will be shown in real time.
To adjust the focus, rotate the lens till the desired focus is achieved.

Figure 2 Get a video stream

5.4 HTTP API

The main way to communicate with the camera is through the HTTP API. It works by typing on an internet browser address bar. The address is composed by the camera's IP (here 192.168.0.201), followed by the command and arguments. Here is an example of how the video's brightness level is adjusted:

http://192.168.0.201/cgi-bin/video?EBTD=255

Camera's IP address | Configuration command | Input arguments

Every configuration command follows the same structure. All commands will be explained in chapters 7 and 8.

5.5 Video configuration

The full list of "video" input arguments is on the last section of this document, *Appendix: list of configuration IDs*

5.6 Video recording

Video recording will start automatically when the camera is turned on or rebooted with an SD card inserted. The SD card must be formatted in a specific way that will be explained ahead.

The video files may be accessed through FTP, on the /media folder. They are saved as multiple two-minute files with the following pattern: timestamp-start seconds-end seconds.

24-04-24_17-41-45-00000-00120.mp4
24-04-24_17-41-45-00120-00240.mp4
24-04-24_17-41-45-00240-00360.mp4
24-04-24_17-41-45-00360-00480.mp4

Every time the camera is rebooted, the timestamp will be updated to the current time and the start and end seconds reset from zero.

When the camera is turned off, or the SD card removed, the last two minutes of recording will be lost.

The recording is continuous and once the SD card becomes full, it starts overwriting from where it started. The duration of the recording depends on the size of the SD card and the scene of the recording. In average, it lasts for:

32GB – 1,5 days
64GB – 3 days
128GB – 6 days
256GB – 12 days
512GB – 24 days
1TB – 1 month and 12 days

If the SD card is removed, the camera needs to be rebooted to resume recording.

5.7 SD card formatting instructions

1. Format using SD memory card formatter.

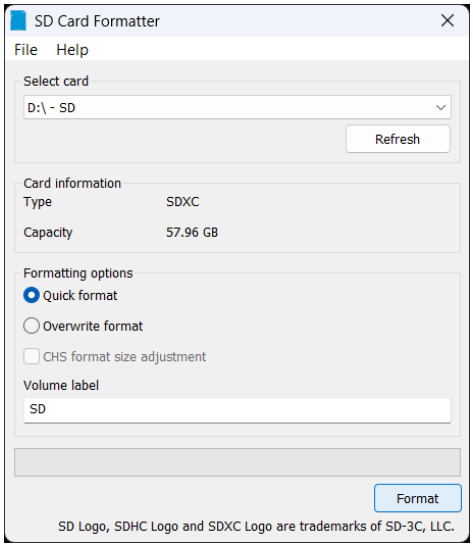


Figure 3 SD Card Formatter

2. This will ensure the partition is created with the correct leading space.
3. Reformat with FAT32Format, choosing block sizes of 32 kilobytes.

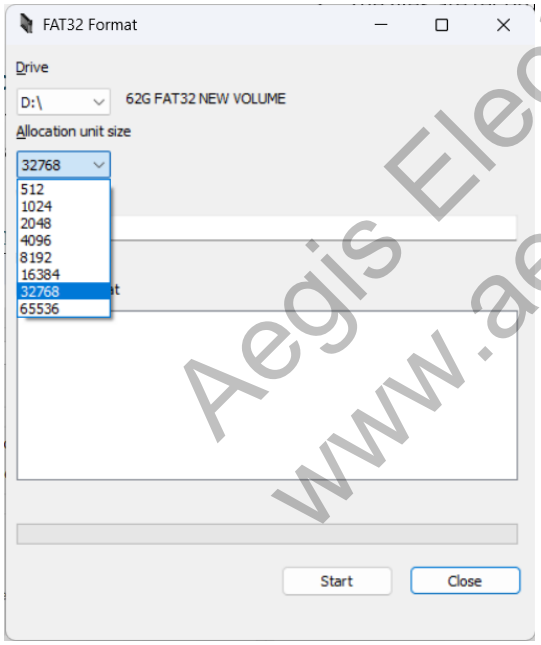


Figure 4 FAT32 Format

5.8 Real time clock

To set the real time clock, the camera needs a one-time connection to the internet, where it will acquire the time from a time server. After that, the camera no longer needs internet connection to keep the correct time.

The time zone is set by editing the file on /etc/profile.d/set-timezone.sh. Further instructions are on that file itself. After setting your timezone, reboot the camera.

5.9 IP address

Set fixed IP address:

`http://192.168.0.201/cgi-bin/ip?192.168.0.23/24`

IP address — Network mask

⚠ If you forget the network mask, it will not work.

Set dynamic IP address (DHCP): `http://192.168.0.201/cgi-bin/ip?dhcp`

5.10 Web interface

⚠ The web interface is in beta stage, may contain bugs and is subject to changes.

The easiest way to control the camera is through its web interface. Simply type its IP in an internet browser and you will be taken to it:

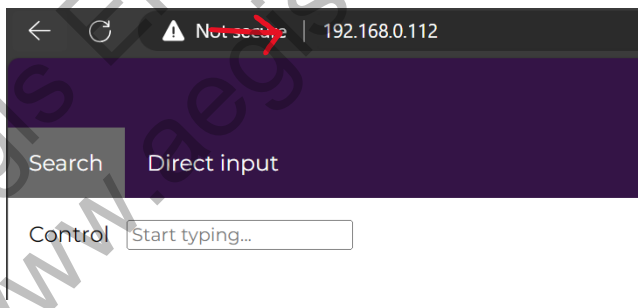
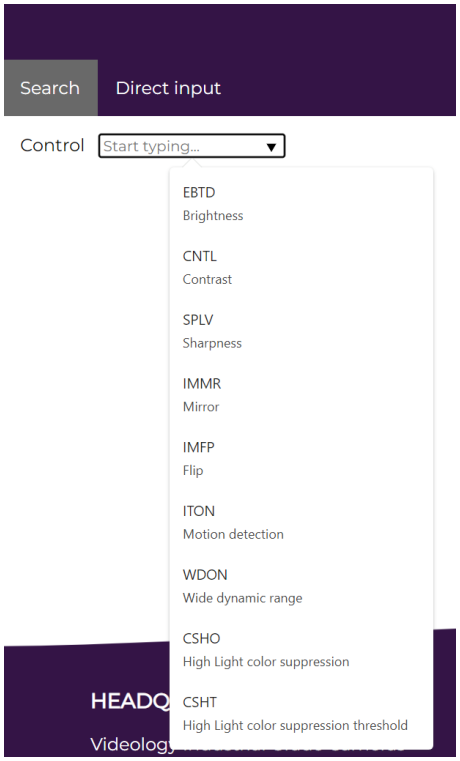


Figure 5 Web interface

On the top left is the search tab, followed by the direct input tab. Just below the main bar is the control search box. Click on the box to open the camera options menu.
In the menu, there are controls for brightness, contrast, sharpness, mirror, flip, motion detection, wide dynamic range, high light color suppression and high light color suppression threshold.

Select the desired option and its control will be displayed. To go back to the full list, delete all text from the control search box.



Brightness
Brighten or darken the image.

Contrast
Darken the dark areas of the image and lighten the light areas.

Sharpness
Adjusts the contrast between detected edges.

Mirror, Flip
Toggle between a normal video view and a mirrored video view.

Motion Detection
Detect motion within the video image.

Wide Dynamic Range
Improve image with large difference between light and darks areas.

High Light Color Suppression
Removes artificial color in over saturated areas of the image.

High Light Color Suppression Threshold
Sets the amount of color to be removed in the tool above.

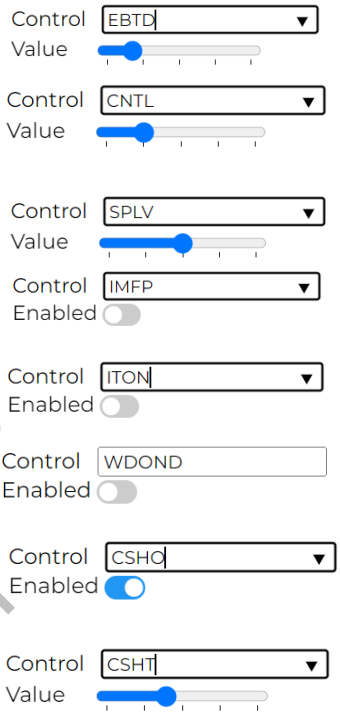


Figure 6 Control options

6. Dimensions

6.1 Dimensions

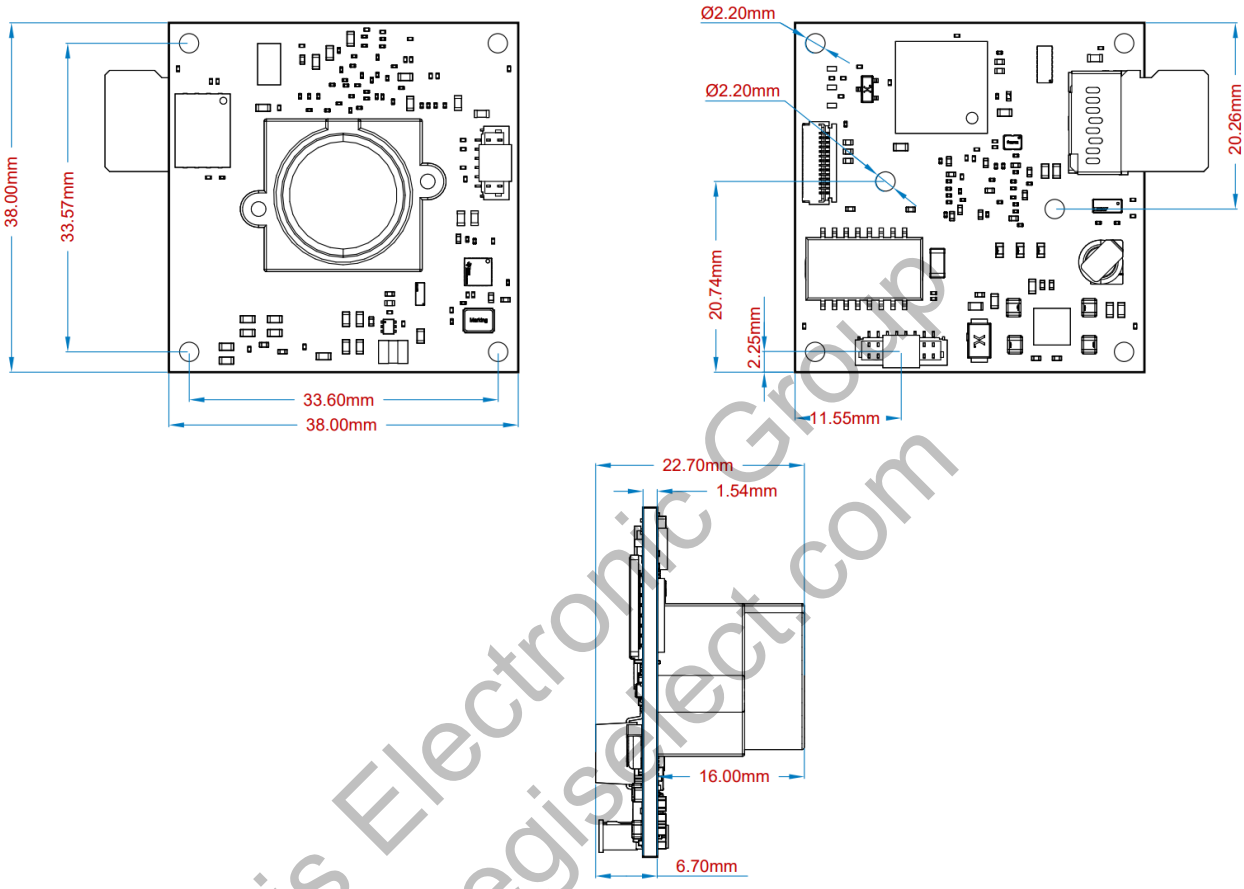


Figure 7 Camera Dimensions

7. Software interfacing

Communicating with the camera through code is also straightforward: it is done using HTTP requests. Any language that supports it may be used, or use your favorite browsers plugin for HTTP requests. Here is an example in Python (here camera IP=192.168.0.201):

First, the HTTP library must be installed:

```
pip install requests
```

Then, on the code, the dependencies imported:

```
import requests
```

To get a property value:

```
r = requests.get('http://192.168.0.201/cgi-bin/video?EBTD')
print(r.text)
```

`30` or `FAILURE`

Operation successful — Operation unsuccessful

To set a property value:

```
wr = requests.get("http://192.168.0.201/cgi-bin/video?EBTD=50")
print(r.text)
```

`SUCCESS` or `FAILURE`

Operation successful — Operation unsuccessful

8. Appendix: list of configuration IDs

8.1 Exposure

Sets the target brightness through AE (Auto Exposure) function.

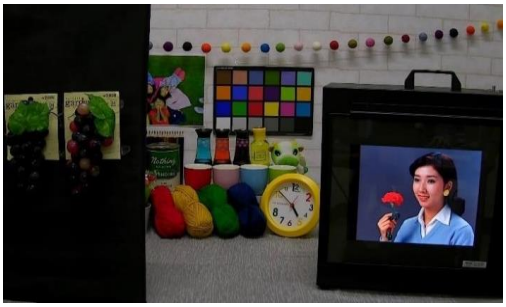
ID	Feature	Description	Range
EBON	AeOn	Auto Exposure operation. (0: OFF, 1: ON)	0 ~ 1
EBTD	Brightness	Set the brightness.	0 ~ 255
EBTN	AgcTarget	Set the AGC target. (0~100 %of normal brightness) A situation in which AGC is entered in AE control may determine that the current scene is dark. Setting the same brightness as a bright scene in a dark scene can be unnatural, so set the brightness to a percentage of normal brightness when AGC is entered.	0 ~ 100
ESON	AntiSatOn	The ability to improve image saturation due to SPOT. (0: OFF, 1: ON)	0 ~ 1
ESWT	SatBrt	Sets the strength of the ANTI SAT. (Min: 0 ~ Max: 20) The larger the value, the more visible for saturation areas, but the surrounding area becomes darker.	0 ~ 20
ESSB	Stabilizing	Sets the degree of control stabilization for changes in SPOT images. (0: OFF (immediate response), 1: LOW (15FPS), 2: MIDDLE(30FPS), 3: HIGH(60FPS))	0 ~ 3
EION	Iris	ELC will pull IRIS full open, and ALC will control brightness with IRIS. DC iris (0: ELC, 1: ALC), piris & AF iris (0: MANUAL, 1: AUTO)	0 ~ 1
ESHT	Shutter	Sets sensor shutter control method. (0: AUTO, 1: MANUAL, 2: FLICKER)	0 ~ 2
ESHN	ShtMin	Sets the Shutter Min Exposure Time (Sec) in AUTO mode (0: 1/30, 1: 1/60, 2: 1/120, 3: 1/250, 4: 1/500, 5: 1/1000, 6: 1/2000, 7: 1/4000, 8: 1/8000, 9: 1/15000, 10: 1/30000)	0 ~ 10
ESHD	DeblurMin	Sets the Deblur Min Shutter Exposure Time (Sec) in AUTO mode (0: 1/30, 1: 1/60, 2: 1/120, 3: 1/250, 4: 1/500, 5: 1/1000, 6: 1/2000, 7: 1/4000, 8: 1/8000, 9: 1/15000, 10: 1/30000)	0 ~ 10
ESHM	ShtMax	Sets the Shutter Max Exposure Time (Sec) in AUTO mode (0: 1/30, 1: 1/60, 2: 1/120, 3: 1/250, 4: 1/500, 5: 1/1000, 6: 1/2000, 7: 1/4000, 8: 1/8000, 9: 1/15000, 10: 1/30000)	0 ~ 10
ESHP	ShutSpd	Sets the Shutter Exposure Time (Sec) in MANUAL mode. (0: 1/30, 1: 1/60, 2: 1/120, 3: 1/250, 4: 1/500, 5: 1/1000, 6: 1/2000, 7: 1/4000, 8: 1/8000, 9: 1/15000, 10: 1/30000)	0 ~ 10
EMDC	DcMode	Sets Auto Exposure Control mode when Iris settings are ALC. (0: INDOOR, 1: OUTDOOR, 2: DEBLUR) **INDOOR** Full Shutter fixation to prevent indoor Flicker generation, AE control mode with IRIS. At this time, the Shutter is automatically changed to Full Shutter. **OUTDOOR** In outdoor situations, the setting for AE control with IRIS is fixed to the SHUTTER MIN when IRIS control is performed.	0 ~ 2

		However, when the surrounding environment becomes dark and IRIS becomes full open, it controls AE with the shutter and operates up to SHUTTER MAX. **DEBLUR** It will operate the same as DEBLUR mode in IRIS Full Open & ShtMode. (see below)	
EMSH	ShtMode	Sets Auto Exposure Control mode when Iris settings are ELC. (0: NORMAL, 1: DEBLUR) **NORMAL** IRIS is a mode that controls AE with a Full Open and a Shutter. **DEBLUR** It is a function to minimize the Blur phenomenon that occurs as you go to Slow Shutter. To minimize the Blur, AGC is applied to improve the Shutter speed quickly.	0 ~ 1
EDSS	Dss	Sets mode for Long shutter (>1Frame). The ability to compensate for insufficient light by increasing the exposure time of the sensor but decreases the frame rate. (0: OFF, 1: X2, 2: X4, 3: X8, 4: X16, 5: X32, 6: X64, 7: X128)	0 ~ 7
EAGC	Agc	Sets max control range for Sensor AGC.	0 ~ 255
EISP	IrsSpeed	Sets IRIS control speed.	0 ~ 20
ESGP	ShtSpeed	Sets Shutter Control Speed.	0 ~ 20
EGCP	AgcSpeed	Sets Agc control speed.	0 ~ 20
ESHR	rAeSht	Read sensor shutter value (read only)	-
EAGR	rAeAgc	Read sensor AGC value (read only)	-

Table 1. Exposure Control

Example:

AntiSatOn 0 (Off)



AntiSatOn 1(On/Lv10)

Iris 0(ELC)

Iris 1(ALC)

Figure 8 Exposure example

8.2 WDR

Setting Function to WDR (Wide Dynamic Range).

ID	Feature	Description	Range
WDON	WdrOn	WDR operation ON. (0: OFF, 1: ON)	0 ~ 1
WMOD	*WdrMode	WDR method setting. (0: ISP FRAME WDR, 1: LINE HDR)	0 ~ 1
WLMD	WdrLine	Set LINE HDR mode (0: 2Page, 1: 3Page)	0 ~ 1
WWTL	WdrWgt	WDR intensity setting. (0: LOW, 1: MIDDLE, 2: HIGH)	0 ~ 2
WBTL	AE_WDR_LTGT_OFST2	The brightness (Iris, AGC, Shutter) of the dark domain is established in the WDR mode.	0 ~ 511
WBTS	AE_WDR_STGT_OFST2	The brightness (Iris, AGC, Shutter) of the bright domain is established in the WDR mode.	0 ~ 511
WBTM	AE_WDR_MTGT_OFST2	The brightness (Iris, AGC, Shutter) of the medium domain is established in the WDR mode.	0 ~ 255
WBTN	AE_WDR_LTGT_NIGHT	The brightness (Iris, AGC, Shutter) of the dark domain is established in the WDR mode at night. 0~100 Percent(%) of the daytime brightness	0 ~ 100
WBTD	ACEWDR1_TH	The brightness (ISP Gain) of the whole-area in the WDR mode.	0 ~ 255
WCNT	ACEWDR2_TH	The contrast (ISP Contrast) of the whole-area in the WDR mode.	0 ~ 255
WGMM	GammaWdr	Gamma Settings in WDR Mode. (0: 0.45, 1: 0.5, 2: 0.55, 3: 0.6, 4: 0.65, 5: 0.7, 6: 0.75, 7: Adaptive, 8: Default)	0 ~ 8
WGMD	GammaWdrDay	Day gamma settings in gamma adaptive mode with WDR. (0: 0.45, 1: 0.5, 2: 0.55, 3: 0.6, 4: 0.65, 5: 0.7, 6: 0.75)	0 ~ 6
WGMN	GammaWdrNgt	Night gamma settings in gamma adaptive mode with WDR. (0: 0.45, 1: 0.5, 2: 0.55, 3: 0.6, 4: 0.65, 5: 0.7, 6: 0.75)	0 ~ 6

Table 2. WDR Control

⚠ *WdrMode[WMOD] is reflected in Initial only when the initial value of SSID meets the condition. See SSID parameter.

WdrOn 0 (off) WdrOn 1

Figure 9 WDR WdrOn

8.3 Color

AWB (Auto White Balance) is a function of automatically balancing colors according to the color temperature characteristics of the input image.

ID	Feature	Description	Range
WBMD	AwbMode	The AWB Mode consists of AUTO, AUTOext, PRESET, and MANUAL Mode (0: AUTO, 1: AUTOext, 2: PRESET, 3: MANUAL) **AUTO** White Balance is automatically performed through the default color temperature band. **AUTOext** Color temperature range extension mode compared to AUTO mode **PRESET** White Balance does not automatically renew. When using the PresetHold function, the color temperature at the time is maintained. **MANUAL** The White Balance is proceed based on the fixed color temperature (3000K, 5000K, 8000K). RGAIN and BGAIN can be established additionally.	0 ~ 3
WBPS	AwbPresetHold	If you write 1, It get the color temperature information at the time. When color temperature acquisition is finished, the 'AwbPresetHold' parameter is changed to 0. In Awb 'PRESET' mode, the held color temperature information is fixed.	0 ~ 1
WBMT	AwbMnlTemp	In the Manual mode, the color temperature is established (0: 3000K, 1: 5000K, 2: 8000K)	0 ~ 2
WBMR	AwbMnlRgain	In the Manual mode, the weight about red color is controlled	0 ~ 255
WBMB	AwbMnlBgain	In the Manual mode, the weight about blue color is controlled	0 ~ 255
WBSR	SaturationR	Function that adjusts the overall color of the image in the red direction	0 ~ 255
WBSG	SaturationG	Function that adjusts the overall color of the image in the green direction	0 ~ 255
WBSB	SaturationB	Function that adjusts the overall color of the image in the blue direction	0 ~ 255

Table 3. Color Control

⚠ Change DebugMode[DBMD] into 3 to display the AWB window area.

AWB off

AWB 0 (Auto)

AWB 1 (Autoext)

Figure 10 AWB example

AwbMnl 0(3000K)
(light source: CWF)

AwbMnl 1(5000K)
(light source:

AwbMnl 2(8000K)
(light source: CWF)

Figure 11 AwbMnlTemp example

SaturationR SaturationG SaturationB

Figure 12 Saturation example

8.4 HUE & CHROMA

Hue and chroma are controlled as the means for customizing color.

ID	Feature	Description	Range
HYRG	Yellow_HUE_RedToGreen	Adjust Yellow Hue from Red to Green (0: Red, 255: Green)	0 ~ 255
HYCH	Yellow_CHROMA	Adjust Yellow Chroma	0 ~ 255
HRYB	Red_HUE_YellowToBlue	Adjust Red Hue from Yellow to Blue (0: Yellow, 255: Blue)	0 ~ 255
HRCH	Red_CHROMA	Adjust Red Chroma	0 ~ 255
HBGR	Blue_HUE_GreenToRed	Adjust Blue Hue from Green to Red (0: Green, 255: Red)	0 ~ 255
HBCH	Blue_CHROMA	Adjust Blue Chroma	0 ~ 255
HGBY	Green_HUE_BlueToYellow	Adjust Green Hue from Blue to Yellow (0: Blue, 255: Yellow)	0 ~ 255
HGCH	Green_CHROMA	Adjust Green Chroma	0 ~ 255

Table 4. HUE & CHROMA Control

Default Blue CHROMA Blue_HUE_GreenToRed

Figure 13 HUE & CHROMA example

8.5 Color suppression

Color suppression mode is a function to correct the problems generated in color reproduction. There are three functions: low light color, edge color, and high light color.

ID	Feature	Description	Range
CSHO	HSUP_ON	High Light color suppression on/off (Y domain control) (0: OFF, 1: ON) Corrects problems in color reproduction caused by differences caused by different RGB saturation points	0 ~ 1
CSHT	HSUP_TH	High Light color suppression threshold (Y domain control) The standards of the saturation point of time is established.	0 ~ 255
CSEN	CES_NOR	Edge color suppression weight in normal Corrects the problem that occurs when color is affected at the edge during RGB interpolation	0 ~ 40
CSEW	CES_WDR	Edge color suppression weight in WDR Corrects the problem that occurs when color is affected at the edge during RGB interpolation	0 ~ 40
CSLO	LSUP_ON	Low Light color suppression on/off (0: OFF, 1: ON) Function to suppress the occurrence of color noise when entering AGC	0 ~ 1

Table 5. Color suppression Control

HSUP_ON 0 (Off) HSUP_ON 1 (On)

Figure 14 Color suppression example

8.6 DNR

Settings related to noise reduction.

ID	Feature	Description	Range
DN3L	Adnr3D	Setting the intensity of 3D DNR (0: OFF, 1~25: LOW, 26~75: MIDDLE, 76~177: HIGH, 178~255: VERY HIGH)	0 ~ 255
DN3N	Adnr3D_Ngt	Setting the intensity of night 3D DNR (0: OFF, 1~25: LOW, 26~75: MIDDLE, 76~177: HIGH, 178~255: VERY HIGH)	0 ~ 255
DN3I	DnrIncrease	The ability to interlock the control strength of the 3D DNR according to the AGC value (0: OFF, 1: ON) The larger the AGC value, the larger the 3D DNR strength	0 ~ 1
DN2D	Adnr2D	Setting the intensity of 2D DNR (0: OFF, 4: LOW, 8: MIDDLE, 16: HIGH, 17~255: VERY HIGH)	0 ~ 255
DN2N	Adnr2D_Ngt	Setting the intensity of night 2D DNR (0: OFF, 4: LOW, 8: MIDDLE, 16: HIGH, 17~255: VERY HIGH)	0 ~ 255
DN2E	EdgeLv	2D DNR edge level	0 ~ 4

Table 6. DNR Control

Adnr3D 0 (Off)

Adnr3D 51 (On)

Figure 15 DNR example

8.7 Sharpness

Settings related to sharpness.

ID	Feature	Description	Range
SPLV	Sharpness	Setting the intensity of sharpness The function of emphasizing the edge of the image	0 ~ 255
SPEB	ShpEdgeBoost	Edge Enhancement	0 ~ 255
SPEL	ShpEdgeLimit	Edge Limitation in Low Lighst	0 ~ 255
SPBE	ShpBigEdge	Sharpness for Big edge image	0 ~ 255
SPSE	ShpSmallEdge	Sharpness for Small edge image	0 ~ 255

Table 7. Sharpness Control

Sharpness 0

Sharpness 128

Figure 16 Sharpness example

8.8 Gamma

Set the gamma parameter.

ID	Feature	Description	Range
GMML	Gamma	Gamma setting (0: 0.45, 1: 0.5, 2: 0.55, 3: 0.6, 4: 0.65, 5: 0.7, 6: 0.75, 7: Adaptive) Set to Adaptive, you can set up separate Gamma settings for Day and Night	0 ~ 7
GMMD	GammaDay	Day gamma settings in gamma adaptive mode (0: 0.45, 1: 0.5, 2: 0.55, 3: 0.6, 4: 0.65, 5: 0.7, 6: 0.75)	0 ~ 6
GMMN	GammaNgt	Night gamma settings in gamma adaptive mode (0: 0.45, 1: 0.5, 2: 0.55, 3: 0.6, 4: 0.65, 5: 0.7, 6: 0.75)	0 ~ 6
GMUM	UserGammaMode	User Gamma Mode Selection (0 = Low Saturation, 1 = Traditional Mode, 2 = SW Par Custom gamma)	0 ~ 2
GMY0~G	UserYGma00 ~ 16	User Gamma Mode2 - YGamma	0~1023
GMC0~G	UserCGma00 ~ 16	User Gamma Mode2 - CGamma	0~1023
GMML	Gamma	Gamma setting (0: 0.45, 1: 0.5, 2: 0.55, 3: 0.6, 4: 0.65, 5: 0.7, 6: 0.75, 7: Adaptive) Set to Adaptive, you can set up separate Gamma settings for Day and Night	0 ~ 7
GMMD	GammaDay	Day gamma settings in gamma adaptive mode (0: 0.45, 1: 0.5, 2: 0.55, 3: 0.6, 4: 0.65, 5: 0.7, 6: 0.75)	0 ~ 6

Table 8. Gamma Control

8.9 Contrast

Set contrast and ACE, DEFOG that clearly corrects images with narrow Contrast such as Fog situation.

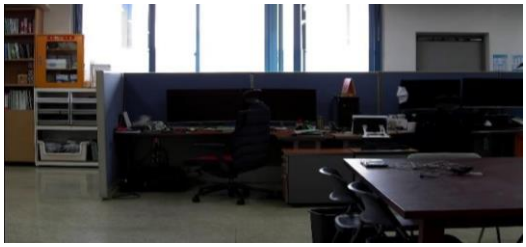
ID	Feature	Description	Range
CNTL	Contrast	Contrast setting	0 ~ 255
ACLV	Ace	ACE (0: OFF, 1: LOW, 2: MIDDLE, 3: HIGH)	0 ~ 3
ACWT	AceGmgn	ACE intensity setting	0 ~ 255
ACBT	*AceBrt	Brightness Setting of ACE & DEFOG	0 ~ 64
DFON	Defog	DEFOG (0: OFF, 1: LOW, 2: MIDDLE, 3: HIGH)	0 ~ 3
DFMD	DefogMode	DEFOG Mode consists of MANUAL and AUTO Mode. (0: MANUAL, 1: AUTO) **MANUAL** The intensity of the DEFOG mode is established as manual **AUTO** The intensity of the DEFOG mode is established automatically	0 ~ 1

Table 9. Contrast Control

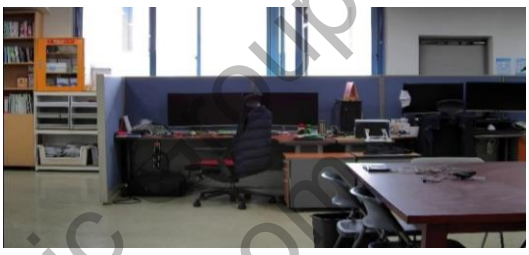
⚠ Ace Brt[ACBT]: The settings are equally applicable to DEFOG.

Contrast 0

Contrast 255



Ace 0 (Off)



Ace 3 (High)

Figure 17 Contrast example

8.10 Mirror

Set to invert the image vertically or horizontally.

ID	Feature	Description	Range
IMFP	Flip	Image FLIP function (0: OFF, 1: ON)	0 ~ 1
IMMR	Mirror	Image MIRROR function (0: OFF, 1: ON)	0 ~ 1

Table 10. Mirror Control

Mirror 1 (On)

Flip 1 (On)

Figure 18 Mirror example

8.11 Dzoom

Set the digital zoom parameter.

ID	Feature	Description	Range
DZLV	DZoom	Digital Zoom (0 ~ DZLR-1 = OFF, DZLR ~ 6400 = x1.0 ~ x DZLV/DZLR)	0 ~ 6400
DZLR	DZoomCtrlRes	Digital Zoom control resolution	10 ~ 100
DZPH	DZoomPosH	Horizontal Start Position of Digital Zoom (2M resolution: 30 ~ 1890)	0 ~ 1890
DZPV	DZoomPosV	Vertical Start Position of Digital Zoom (2M resolution: 17 ~ 1063)	0 ~ 1063

Table 11. Dzoom Control

⚠ - The DZOOM function is activated only when there is a "DZOOM YC Input".
- For “DZOOM YC Input”, the YC with the largest resolution is selected among the generated YCs.
  1. DZOOM function is not applied to YC selected as “DZOOM YC input”.
  2. case 0) YC0=5M / YC1=2M / YC2=1M
- DZOOM Input YC: YC0(5M), DZOOM applies only to YC1, YC2.
- If there are multiple YCs with the largest resolution, DZOOM is assigned with the highest YC number first.
  3. case 1) YC0=5M / YC1=5M / YC2=1M

DZOOM Input YC: YC1(5M), DZOOM applies only to YC0, YC2.

DZoom 10 (x1) DZoom 100 (x10)

Figure 19 Dzoom example

8.12 Motion

Settings related to motion detection.

ID	Feature	Description	Range
ITCH	MotionCh	Select the Motion detect input source (0: Sensor, 1~4: Digital Input CH, 20~255: Auto)	0 ~ 255
ITON	MotionOn	Motion detect (0: OFF, 1: ON)	0 ~ 1
ITST	MotionSens	Motion detect Sensitivity The ability to set sensitivity for motion detection	0 ~ 255
ITMO	MotionBoxOn	Function to display OSD related to Motion Detection (0: OFF, 1: ON)	0 ~ 1
ITDT	MotionWinBoxType	The ability to display the Motion Detection ROI region (0: Normal image 1: 50 % Blending 2: 75 % Blending 3: 100 % Blending 4: ROI Outline)	0 ~ 4
ITRF	MotionDetBoxFill	Color box display of object area where motion is detected (0: OFF, 1: ON)	0 ~ 1
ITAL	MotionDetFontOn	Text Alarm is a function that displays text on the screen when motion occurs (0: OFF, 1: ON)	0 ~ 1
ITCM	MotionCamMovingTH	Function to prevent false detection of motion by camera movement	0 ~ 20
ITBC	MotionBrightChgTH	Function to prevent false detection of motion by changes in screen brightness	0 ~ 200
ITSO	MotionGpioSigOn	Function to output a signal through GPIO when motion occurs (0: OFF, 1: ON)	0 ~ 1

Table 12. Motion Control

MotionOn 1 – Object

Figure 20 Motion detection example

8.13 Focus assist

A function that helps focusing. This function is usually used to adjust the manual lens.

ID	Feature	Description	Range
FADJ	FocusAdj_On	Edge area emphasis for focus control of manual lens. (0: OFF, 1: ON)	0 ~ 1
FTHS	FocusThrs	Edge level.	0 ~ 20
FACS	FocusAdjColorSel	Edge color. (0: WHT, 1: YEL, 2: CYN, 3: RED, 4: BLU, 5: BLK)	0 ~ 5

Table 13. Focus Assist Control

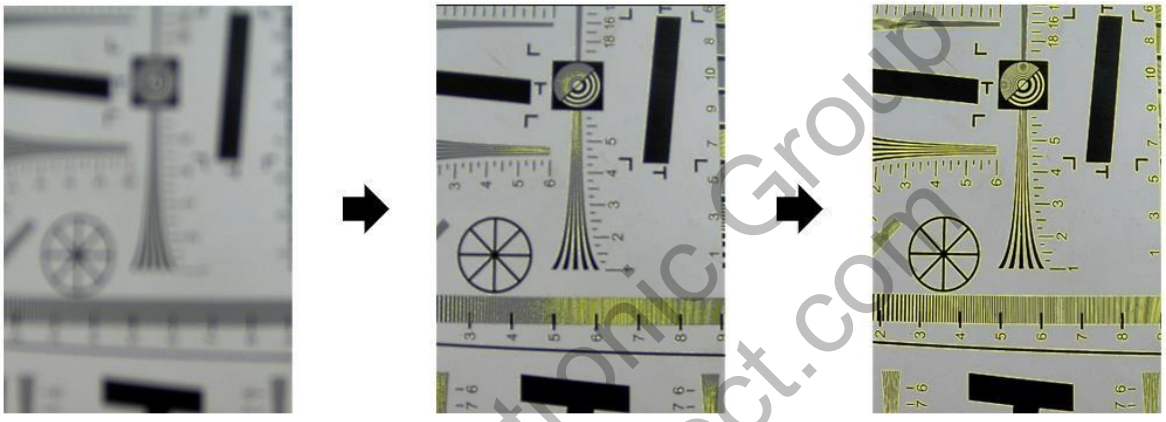


Figure 21 Focus assist example

8.14 Stat config

Set the statistic function configuration.

ID	Feature	Description	Range
SWDS	StatWinDispSel	Display STAT window (0: OFF, 1: AE, 2: AF, 3: AWB)	0 ~ 3
EWDS	AeWinDispNumSel	Display STAT AE window select (bit [0] no use, [1] AE window 2, [2] AE window 3, [3] AE window 4, [4] AE window 5, [5] AE window 6)	0 ~ 63
FWDS	AfWinDispNumSel	Display STAT AF window select (bit [0] AF window 1, [1] AF window 2)	0 ~ 3
WWDS	AwbWinDispOsdSel	Display STAT AWB white point (0: OFF, 1: ON)	0 ~ 1
MWDS	MotionWinDispNumSel	Display STAT MOTION window select (bit [0] Motion window 4, [1] Motion window 3, [2] Motion window 2, [3] Motion window 1)	0 ~ 15

Table 14. Stat config Control

8.15 AE window

Set the AE Window.

ID	Feature	Description	Range
EWX2	AeWinStartX2	AE window 2 X start position, (4095 = default window)	0 ~ 4095
EWY2	AeWinStartY2	AE window 2 Y start position, (4095 = default window)	0 ~ 4095
EWW2	AeWinSizX2	AE window 2 X width size, (4095 = default window)	0 ~ 4095
EWH2	AeWinSizY2	AE window 2 Y height size, (4095 = default window)	0 ~ 4095
EWX3	AeWinStartX3	AE window 3 X start position, (4095 = default window)	0 ~ 4095
EWY3	AeWinStartY3	AE window 3 Y start position, (4095 = default window)	0 ~ 4095
EWW3	AeWinSizX3	AE window 3 X width size, (4095 = default window)	0 ~ 4095
EWH3	AeWinSizX3	AE window 3 Y height size, (4095 = default window)	0 ~ 4095

Table 15. AE window Control

- If the initial value is larger than 4095, it operates as a default window and stores the window size in the parameter.
- To implement the same function as the existing BLC, set the window to the desired size.

ex) EWX2,3 = RPHW/2 - (EWW2,3 / 2)
EWY2,3 = RPVW/2 - (EWH2,3 / 2)
EWW2,3 = RPHW/5 (20%)
EWH2,3 = RPVW/5 (20%)

8.16 AE config

Set the AE slice, clip parameter.

ID	Feature	Description	Range
ECS2	AeConfSlice2	AE window 2 Slice value (0~255: fix slice value, 4095: set AE default operation)	0 ~ 4095
ECC2	AeConfClip2	AE window 2 Clip value (0~255: fix clip value, 4095: set AE default operation)	0 ~ 4095
ECS3	AeConfSlice3	AE window 3 Slice value (0~255: fix slice value, 4095: set AE default operation)	0 ~ 4095
ECC3	AeConfClip3	AE window 3 Clip value (0~255: fix clip value, 4095: set AE default operation)	0 ~ 4095

Table 16. AE config Control

8.17 AWB window

Set the AWB window.

ID	Feature	Description	Range
WWX1	AwbWinStartX	AWB window X start position, (4095 = default window)	0 ~ 4095
WWY1	AwbWinStartY	AWB window Y start position, (4095 = default window)	0 ~ 4095
WWW1	AwbWinSizeX	AWB window X width size, (4095 = default window)	0 ~ 4095
WWH1	AwbWinSizeY	AWB window Y height size, (4095 = default window)	0 ~ 4095

Table 17. AWB window Control

⚠ If the initial value is larger than 4095, it operates as a default window and stores the window size in the parameter.

8.18 AWB config

Set the AWB slice, clip parameter.

ID	Feature	Description	Range
WCS1	AwbConfSlice	AWB window Y Slice value (0~255: fix slice value, 4095: default value)	0 ~ 4095
WCC1	AwbConfClip	AWB window C Slice value (0~255: fix clip value, 4095: default value)	0 ~ 4095

Table 18. AWB config Control

⚠ If the initial value is larger than 4095, it operates as a default window and stores the window size in the parameter.

9. Contact Information

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Founded in 1995, Videology is a global leader in the design, engineering and manufacturing of industrial-grade embedded video cameras, related systems, software and solutions. For more than 25 years we have been providing performance excellence in a broad spectrum of applications including biomedical devices, life sciences, banking, aerospace, traffic management, pipe inspection, and more. In October 2021, Videology was acquired by inTEST Corporation and currently is a part of the Process Technologies Division.

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