Specification	
Issued Date	
Revision	

SPECIFICATIONS

HIGH RESOLUTION CCD monochrome CAMERA

VGA Standard speed operation 29*29*67㎜

VCC-G25V30

Approved	Approved	Checked	Issued

CIS Corporation

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1. Scope of application

This specification describes our VCC-G25V30 CCD Camera.

Specification described in this document may be revised without advanced notice.

2. Notice

The camera must not be used for any atomic and/or aerospace applications where may damage and loss of human life may occur by in the eventuality of a defect or malfunction. No damage and/or no defect due to a wrong connection are guaranteed.

Refer to Clause 11. Handling Notice for detail.

3. Outline

VCC-G25V30 is high resolution mono-chrome camera which adopts 1/3 inch Interline mono-chrome progressive scan CCD.

By using effective 330K CCD image sensor (square pixels), high sensitivity, high resolution, distortion free, no-lag and clear image is realized.

Feature

- HD/VD external sync. input signals and internal sync. signal output are available.
- 2 mode of scanning system (1/30sec progressive scan (1N mode) and 1/60sec 2:1 interlace scan(1I mode)) are available.
- External trigger mode supports the above 1N mode and 1I mode.
  Trigger pulse width control shutter and switch control shutter are available. And as sync reset mode and sync non-reset mode are available for VCC-G25V30, trigger type shutter which is suitable for progressive camera is adopted to shutter system of VCC-G25V30.
- Long exposure mode with restart / reset mode is available.
- Light weight and compact

  As the camera overall dimension is 29(H)*29(W)*67(D) mm (excluding protrusion of lens mount portion) and the mass is light-weight 75g (1.42 oz), VCC-G20V30XT1 can be installed in small space .

4 Configuration

4.1 Contents

- Camera

4.2 Carton

- Individual carton
- Master carton (20 units)

Note) It may be changed by shipping quantity accordingly.

5 Specification

5.1 General specification

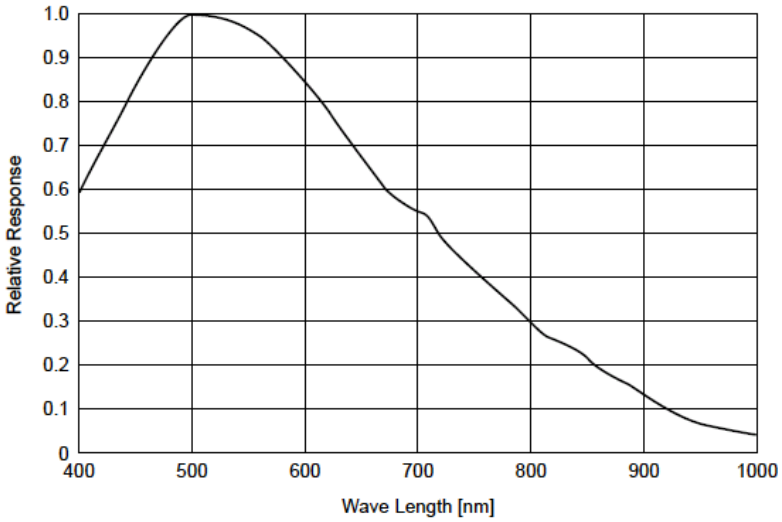
Ｉｔｅｍ	Specification	Remarks
Power consumption	1.6 W（Rated power supply）	
Power requirements	DC +12V ± 10%	
Operation environment	(Performance Guaranteed) 0℃～+40℃ (32F～104F) with RH 20～80% (Operation Guaranteed) -5℃～+45℃ (23F～113F) with RH 20～80% Note: No dewing is allowed	
Storage environment	-25 to +60℃（-13 to +140F） with humidity of 20 to 90% Note ：No dewing is allowed.	
Mass	75g (2.65 oz)	
Dimension	29(H) X 29(W) X 67(D) mm (1.142(H) X 1.142 (h) X 2.638 (D) inch) Excluding protrusion : Refer to overall dimension drawing (clause 10)	
Lens mount	C mount（Flange back：17.562mm (0.69inch)（fixed）	
Back Focus	10.99mm （0.433inch）	
Optical axis accuracy	Image center ≦ ± 0.1 mm (0.004 inch)	
Pick up device	1/3” Interline transfer mono-chrome CCD Effective pixel number 659(H) × 494(V) Active pixel number 648(H) × 494(V) nit cell size 7.4μm(H) × 7.4μm(V) square pixel	ICX4244AL(SONY) Progressive
Video output signal	ＶＳ output 1.0V(p-p)、Sync: Negative,75Ωunbalanced, DC coupled	
	White clip level 820 ± 50mVp-p	
	Setup level 25 ± 10mVp-p	
	Sync level 290 ± 30mVp-p	
	VS DC level 0 ± 100mV	
Horizontal Resolution	480TV lines	
The spectral sensitivity characteristic	Refer to CCD spectral sensitivity characteristic clause 5.3	

Item	Specification	Remarks
Scanning system	1N MODE 1/30sec Non-interlace Progressive scan Horizontal frequency 15.734 KHz Vertical frequency 29.97 Hz Pixel clock 12.272 MHz 1I MODE 1/60sec 2:1 Interlace field accumulation Horizontal frequency 15.734 KHz Vertical frequency 59.94 Hz Pixel clock 12.272 MHz	
Sensitivity	F8 400 lx (Progressive、Gain 0dB、3200K)	
Minimum illumination	F1.4 0.5lx (Progressive、GAIN MAX、VS 50 IRE)	
Video signal S/N ratio	56 dB (1I mode、GAIN 0dB)	

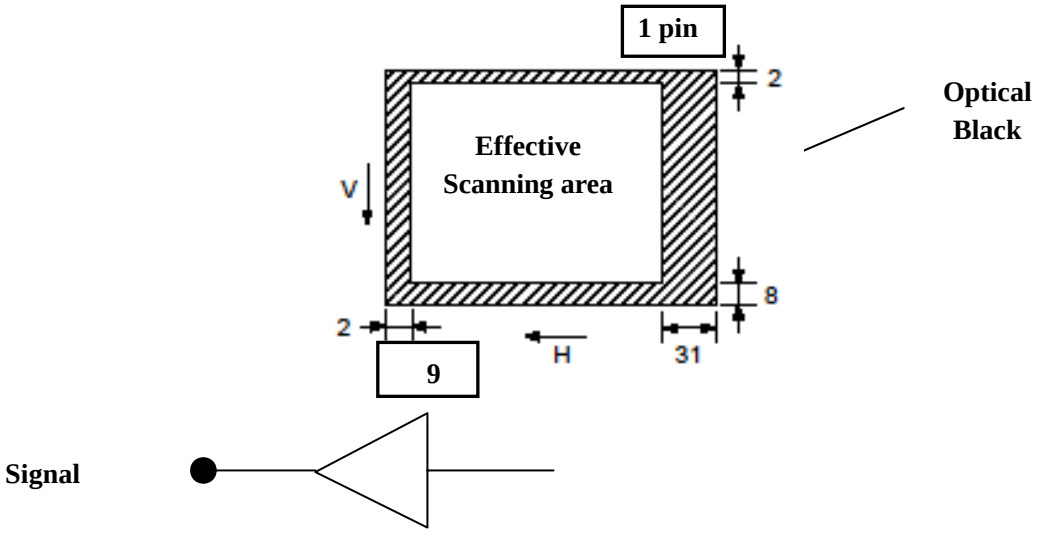
5.2 Camera output signal specification

Item	Specification	Remarks
Sync. system	Internal Sync. HD/VD External Sync. Input signal level 2～5Vp-p, TTL input Automatic change by detecting external HD Frequency allowance : ±1% H jitter : ≦ 50ns	75Ω termination with inner Jumper resister
Trigger input	Input signal TRIG Polarity: Positive rising edge Input signal level Low 0.5Vmax , High 4Vmin Trigger pulse width 10μs ～ 250ms	
Standard shutter mode	Rear panel switch setting OFF,1/125,1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, 1/10,000sec	
External trigger shutter mode	Rear panel switch setting 1/60, 1/125, 1/250, 1/500, 1/1,000, 1/2,000, 1/4,000, 1/10,000 sec Trigger pulse width setting 10μs ～ 250ms (1/100,000sec ～ 1/4s)	
Gain	Fixed 0dB Manual -3 ～ +15dB	
γ (Gamma correction)	Fixed 1.0	

5.3 CCD spectral sensitivity characteristic (typical)



5.4 Optical black position



Top View
H:659 , V:494

5.5 Function setting

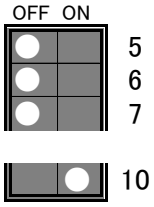
Function list

Function	Standard mode	Restart-Reset mode	Trigger mode (Sync Reset type)	Trigger mode (Sync Non-reset)
Fixed Switch Shutter	Yes	No	Yes	Yes
Pulse Width Shutter	No	No	Yes	Yes
2:1 Interlaced Scan※2	No	Yes	Yes※1	Yes※1
External HD/VD Input	Yes HD/VD	Yes HD/VD	Yes HD	Yes HD/VD
Internal HD/VD Output	Yes	No	Yes	No

※1 On trigger shutter mode, only Odd field can be read out.

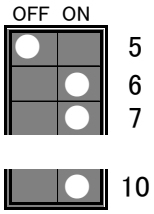
Standard mode

As for Standard mode, Scanning system is progressive scan 30f/s or 2:1 interlace scan 60fld/s.
External HD/VD input is available. By detecting external HD, automatically sync. system changes from internal sync.mode to external sync. mode.



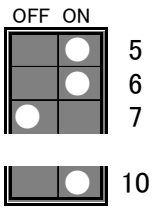
Long exposure mode (restart/reset)

On the long exposure mode, with long external VD input (Ext_VD≧1VD) at any timing and external HD input, One frame image signal can be read out.
When sufficient sensitivity cannot be obtained with exposure time in the standard mode, or when shooting the path taken by moving object is required, the long exposure mode is suitable for those purposes.
As the exposure time depends on the interval of EXT_VD input, rear panel switch setting becomes invalid.



External trigger mode (Sync reset type)

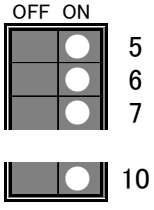
Although EXT_HD input is available, Ext. VD input is prohibited.
As internal VD is reset right after the exposure completion and reading out begins, the video signal is output at minimum timing.
Exposure time can be set with trigger pulse width setting switch (SW 6 on), or fixed shutter speed setting switch (SW6 off).
To output camera internal HD/VD, set Switch 10 off.



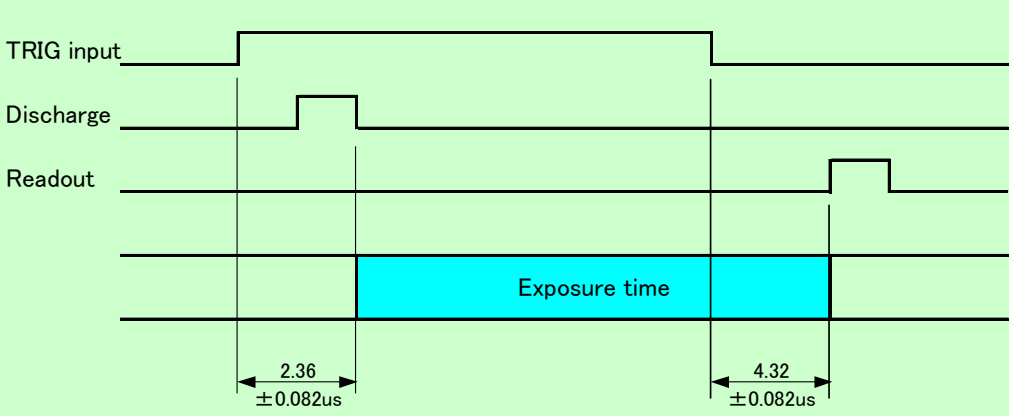
* Note When the following trigger is input before a trigger is input and the video signal based on the trigger is output, the following trigger affect the outputting video signal.

External trigger mode (Sync non-reset type)

Be sure to input EXT_VD and EXT_HD which are matched at the falling edge.
After the exposure completion, reading out of the video signal is available at any timing after EXT_VD is input.
Exposure time can be set with trigger pulse width setting switch (SW 6 on), or fixed shutter speed setting switch (SW6 off).

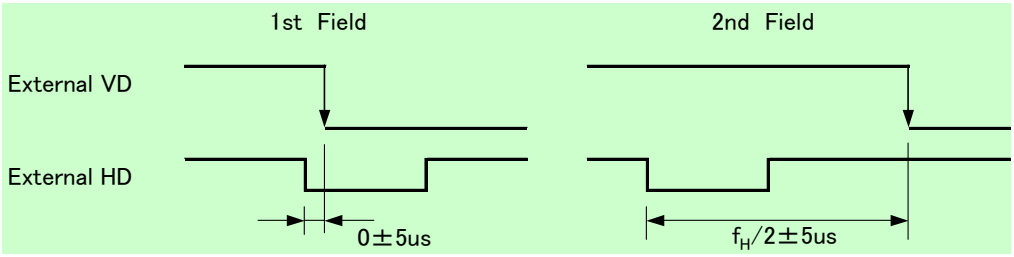


Relation between trigger pulse and exposure (Pulse width shutter)
Beginning and end of the exposure is independent on HD sync. signal.



Phase specification of the External HD/VD

On the progressive scan mode, please refer to only following 1st field phase specification as input sync. phase specification.



※ OFF indicates default position.

Standard shutter mode (Controlled by the rear panel switch setting: SW1, SW2, SW3)

E2 1	E1 2	E0 3	shutter speed	actual time on the standard mode	actual time on the trigger shutter mode
OFF	OFF	OFF	OFF	33.3 ms (1/30fps 1N mode) 16.7ms (1/60fldps 1I mode)	24.5 ms
OFF	OFF	ON	1/125 sec	8.0 ms	8.1 ms
OFF	ON	OFF	1/250 sec	4.0 ms	4.0 ms
OFF	ON	ON	1/500 sec	2.0 ms	2.0 ms
ON	OFF	OFF	1/1,000 sec	980 μs	986 μs
ON	OFF	ON	1/2,000 sec	478 μs	484 μs
ON	ON	OFF	1/4,000 sec	223 μs	232 μs
ON	ON	ON	1/10,000 sec	98 μs	106 μs

Scanning mode selection switches on the rear panel SW4,SW9

SCAN 4	
OFF	Progressive Scan (1N mode)
ON	2:1 Interlaced Scan (1I mode)

Shutter mode selection switch on the rear panel SW5,SW6,SW7

MODE2 5	MODE1 6	MODE 7	Scanning mode	
OFF	OFF	OFF	Standard mode	
OFF	ON	ON	Long time exposure mode (Restart・Reset operation)	
ON	OFF	OFF	External trigger with switch setting	(SYNC reset type)
ON	OFF	ON	External trigger with switch setting	(SYNC non-reset type)
ON	ON	OFF	External trigger with pulse width control	(SYNC reset type)
ON	ON	ON	External trigger with pulse width control	(SYNC non-reset type)

※ Please do not set switch setting combination other than the above.

Gain selection switch on the rear panel: SW8

8		
OFF	Fixed Gain	0 dB
ON	Manual Gain	-3 ～ 15 dB

Sync mode selection switch on the rear panel: SW9 (invalid)

9	
OFF	invalid

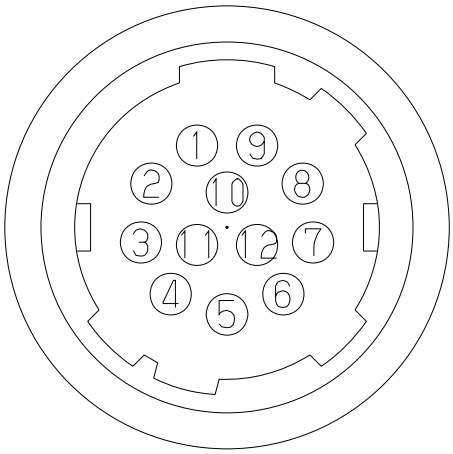
HD/VD Input/Output selection switch on the rear panel: SW10

10	Valid mode
OFF	HD/VD output valid on only the standard mode
ON	HD/VD input Standard mode, long exposure mode, external trigger mode (non-reset) HD input External trigger mode (reset)

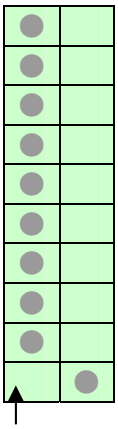
6. External connector pin assignment

6.1 12 pins Circular connector HR10A-10R-12PB

Pin no.	
1	GND
2	POWER IN DC +12V
3	GND
4	VIDEO OUT
5	GND
6	HD IN/OUT
7	VD IN/OUT
8	GND
9	Trig in
10	NC
11	NC
12	GND



6.2 Function setting of 10 bits Dip-switch on the rear panel



1	E2	◇Electronic shutter speed (3bit) 8step
2	E1	OFF ～ 1/10,000 sec
3	E0	
4	INTERLACE	◇1N_MODE / 1I_MODE
5	MODE2	◇FUNCTION 3bit
6	MODE1	Standard_MODE / R.R_MODE
7	MODE0	TRIGGER_MODE
8	GAIN	◇FIX 0dB / MANUAL GAIN -3～15dB
9		◇RHD/VD input、output ON: INPUT

OFF

○ Knob ○ indicates default setting position.

7. Environmental specification and Standard

Ｉｔｅｍ	Specification	Remark
Operation temperature range	a） After leaving the camera 1hour at the operation temperature upper limit (with no dew), and then turning on camera power, the performance of the camera meet the specification. b） After leaving the camera 1hour at the operation temperature lower limit (with no dew), and then turning on camera power, the performance of the camera meet the specification.	日本語版には記載なし
Standard	Conform to UL standard (materials and others) CE Marking EN 50081-2 (Emission) Standard for testing EN55022：1988 Class A conforms to the above regulation EN 50082-2 (Immunity) Standard for testing EN61000-4-1～4-6 conforms to the above regulation	
The chassis grounding The insulation status	The chassis grounding: As the camera chassis is grounded, when insulation is needed, please use insulation -type tripod adapter.	

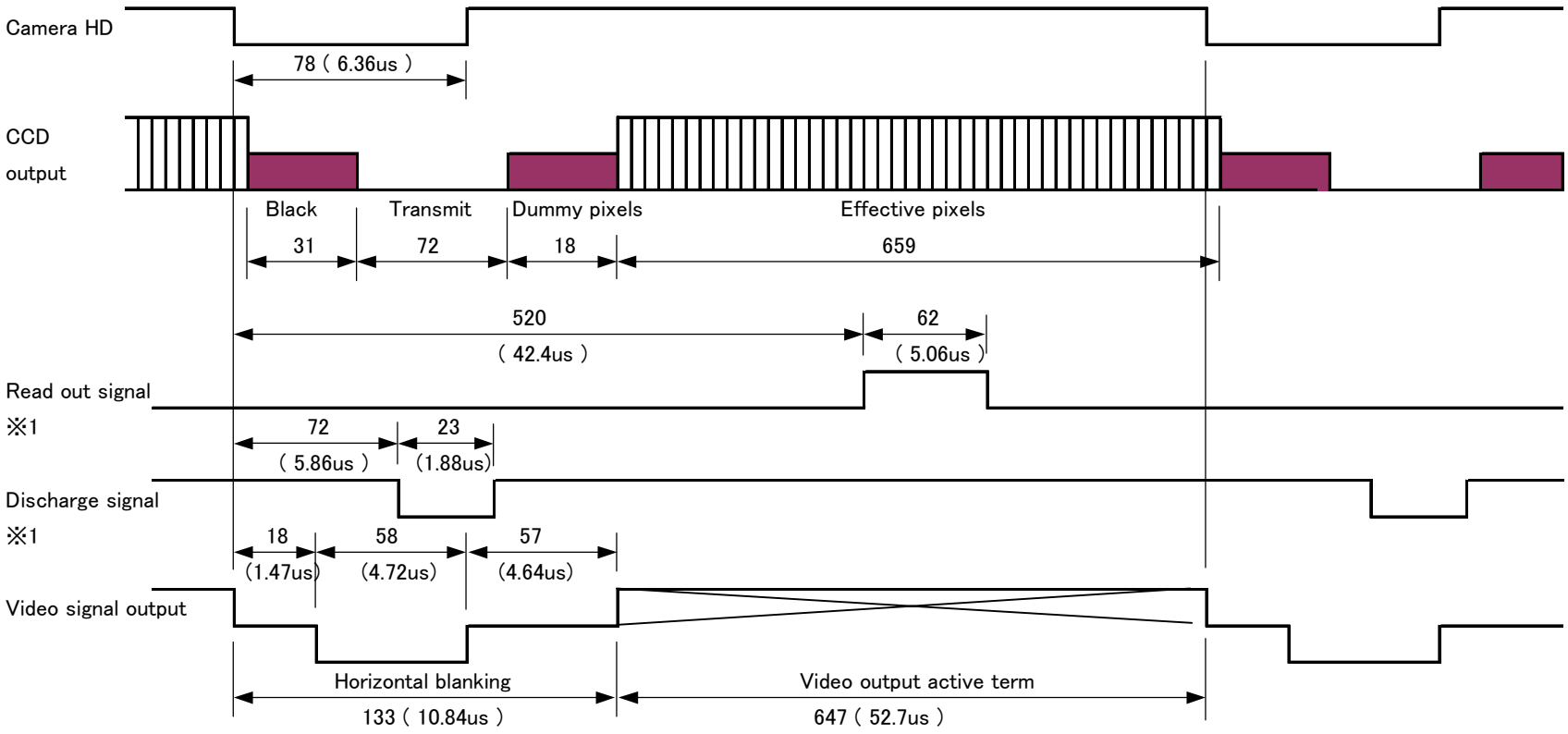
8. Durability

Ｉｔｅｍ	Specification	備　考
Vibration resistance	Acceleration 98 m/s^2 (10.0G) Vibration frequency 20～200Hz Sine wave Sweep interval 300sec (日本語版には記載なし) Direction X Y Z 3 directions Testing time 10min for each direction No malfunction occurs, after above testing.	
Shock resistance	Acceleration 490 m/s^2 (50G) Direction 6 direction	

9. Timing Chart

Horizontal synchronous timing

Clock = 12.2727MHz

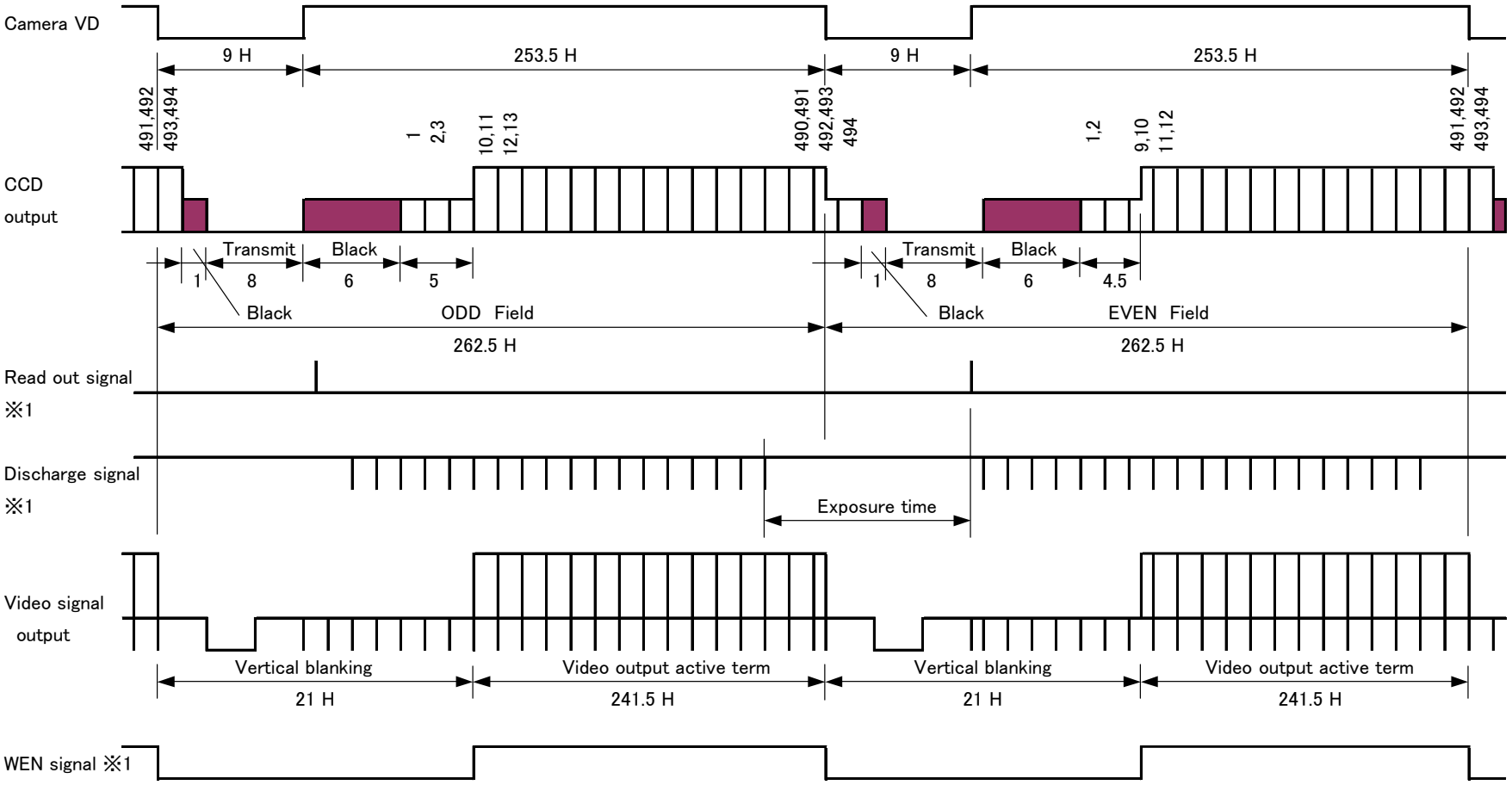


Horizontal scanning (1H) = 780 (63.56us)

※1 Camera Internal signal

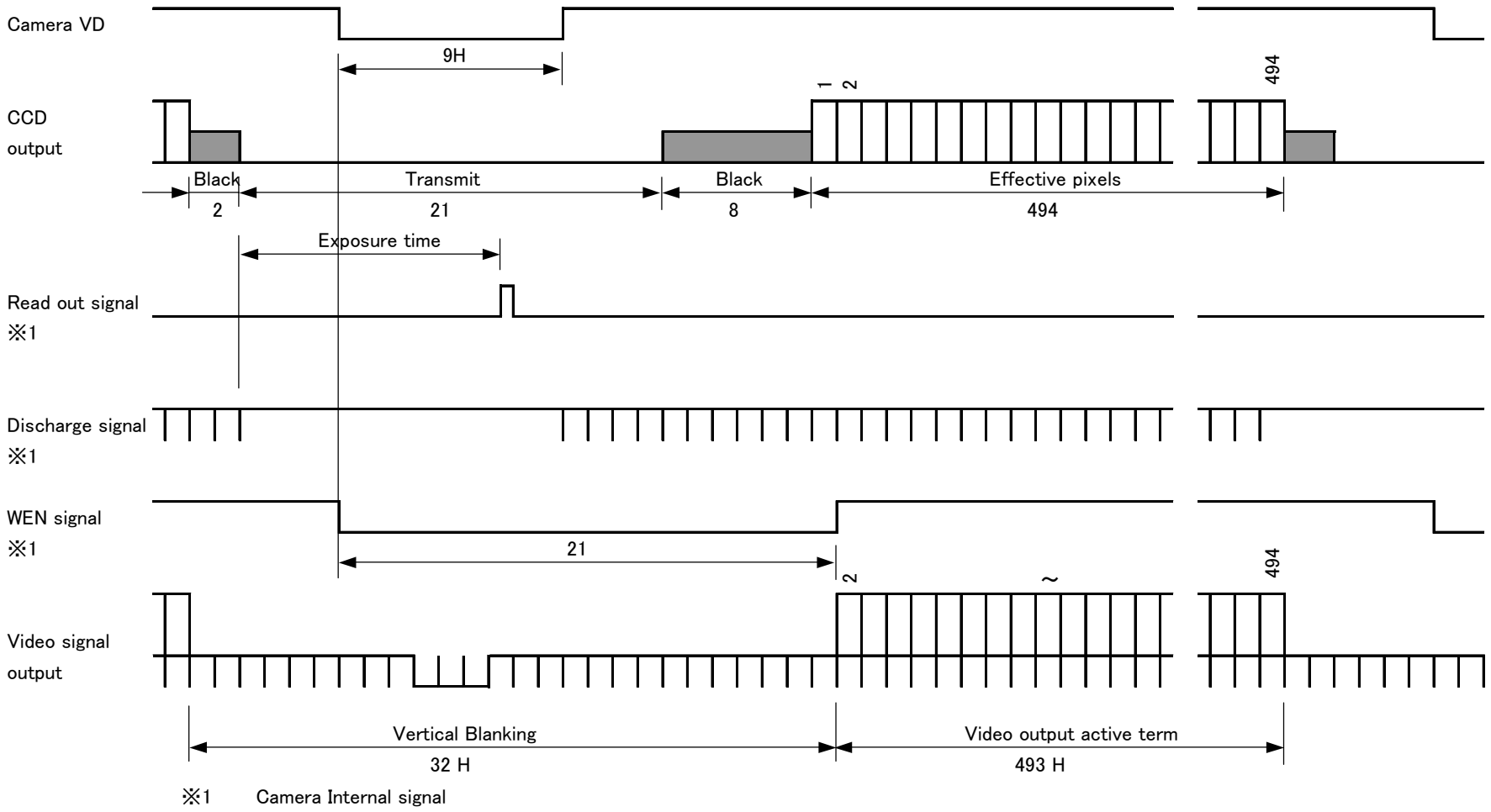
9. 2 Vertical synchronous timing of Interlaced scan （ 1I mode : 2 to 1 Interlaced ）

1V = 262.5H (59.94Hz , 1H=63.56us)

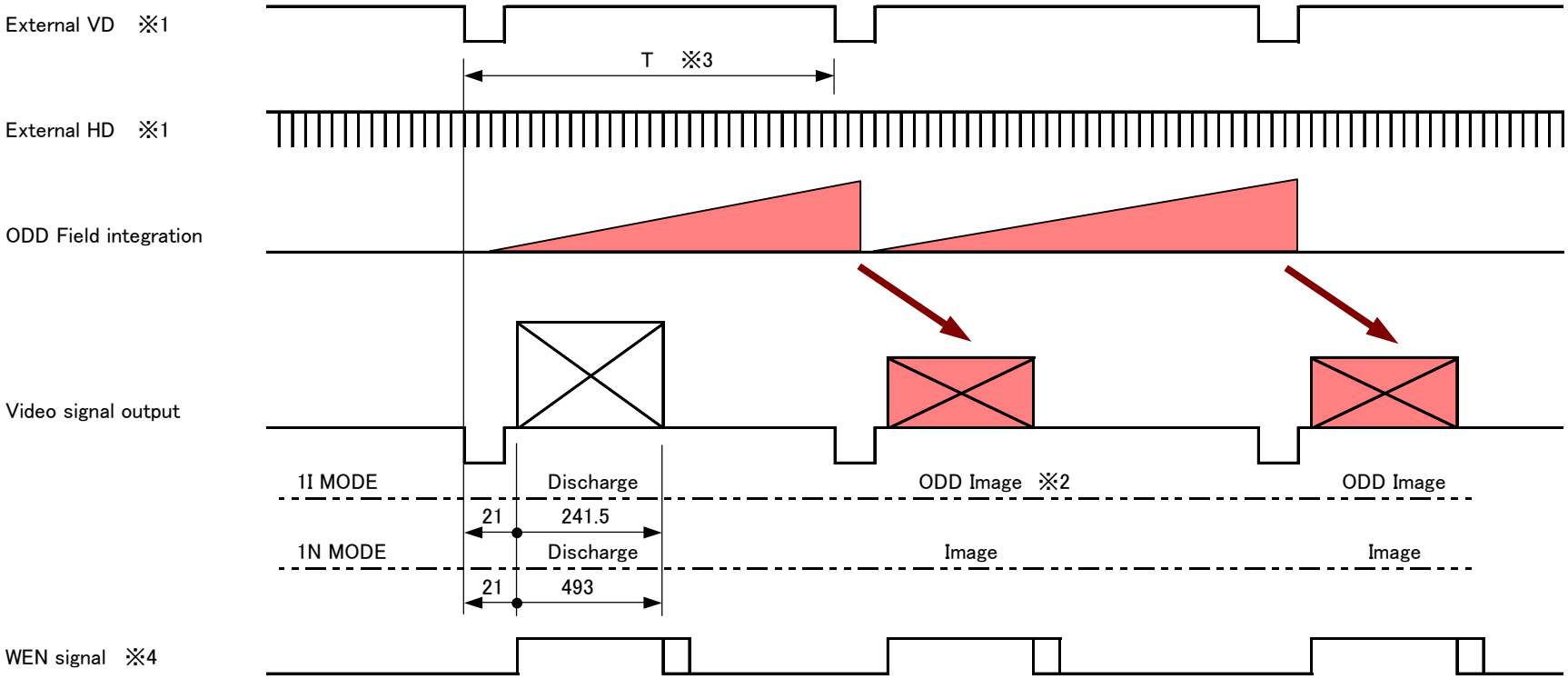


※1 Camera Internal signal

9.3 Vertical synchronous timing of Progressive scan （ 1N mode: Non_interlaced ）　　1V = 525H (29.97Hz ,1H=63.56us)



9.4 Long time exposure mode timing (Restart_Reset operation)



※1 Please be sure to input External HD/VD signals.

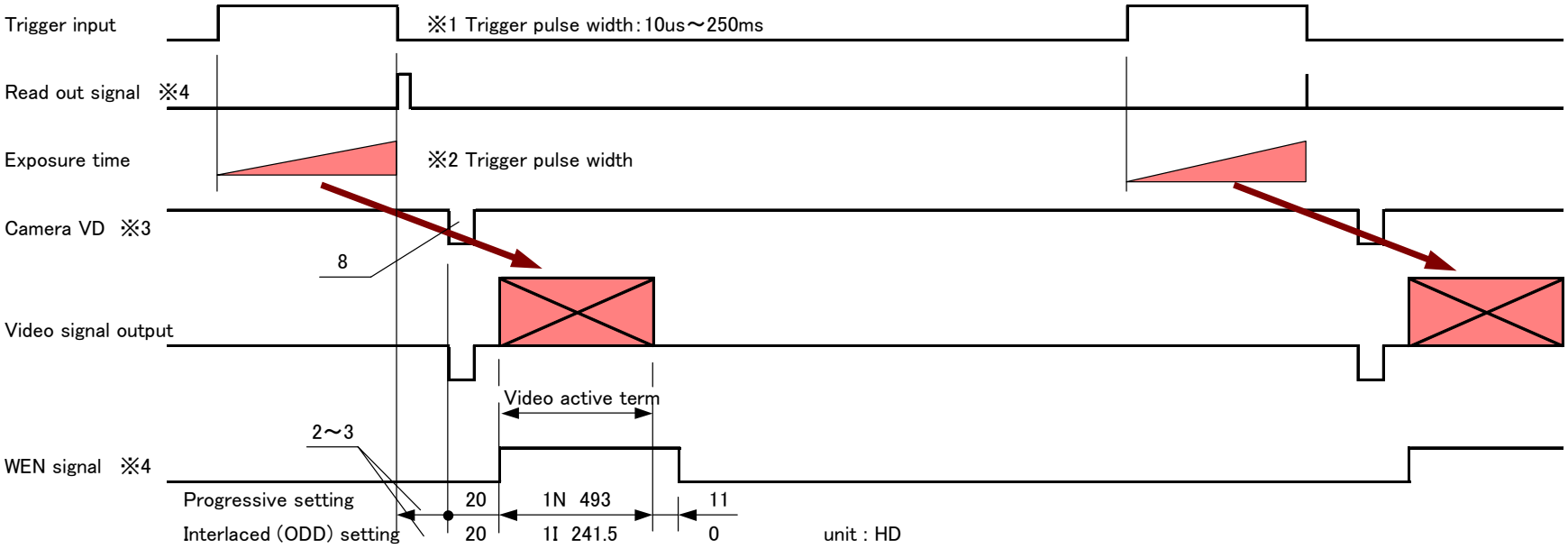
※2 ODD/EVEN field is determined by the phase of External HD/VD signals.

※3 Please set the Exposure time T as more than 1V (1I: 262.5H ,1N: 525H) and 0.5 seconds or less.

※4 Camera Internal signal

9.5 External trigger operation timing by pulse width setup （ SYNC Reset type ）.

Trigger operation which does not use External VD input.



※1 Please use the pulse width of a trigger input in the range of 10us ～ 250ms.
An image is outputted to the shortest timing by the reset action. However,
It will become unstable operation if a trigger is again inputted before an image output is completed.

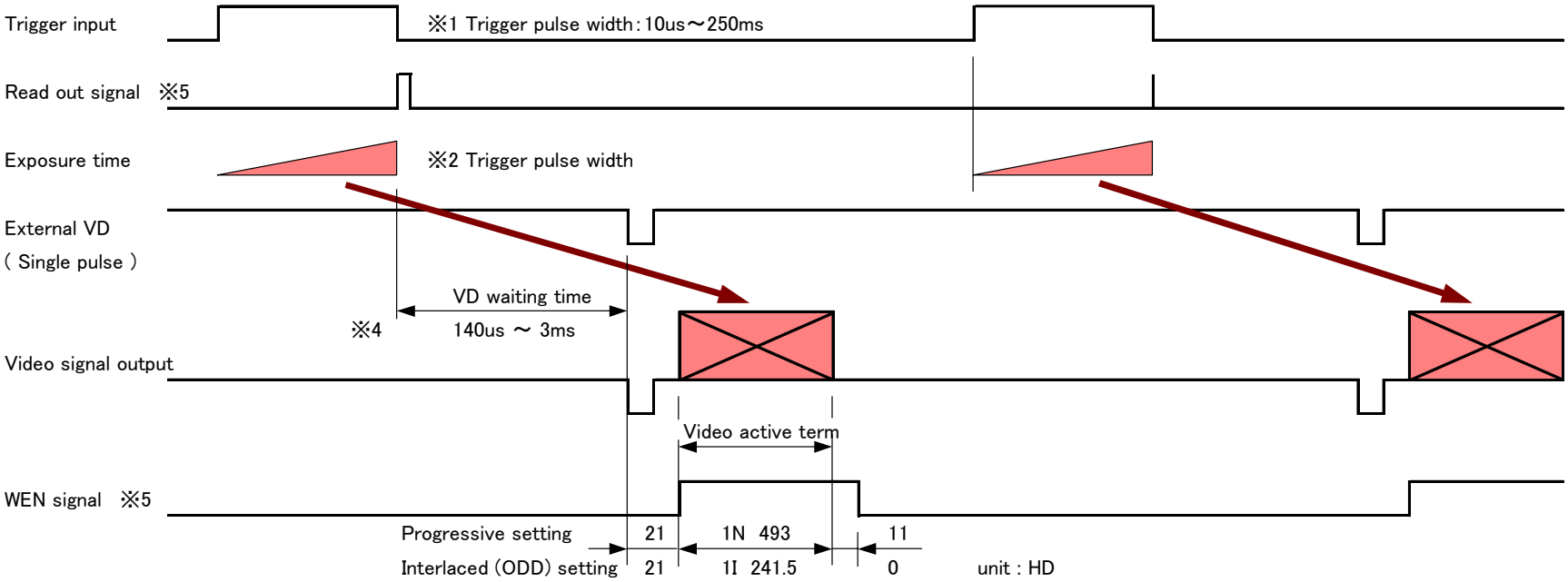
※2 Exposure time is determined by the input width of Trigger.
about, Exposure time = Trigger input width + 2us.

※3 External HD input is possible, but External VD input is forbidden.
When you use the camera HD/VD output, please set SW10 to the OFF side.

※4 Camera Internal signal

9.6 External trigger operation timing by pulse width setup （ SYNC Non_reset type ）.

Trigger operation which uses the VD/HD input other than a Trigger input



※1 Please use the pulse width of a trigger input in the range of 10us ～ 250ms.
An image is outputted to the shortest timing by the reset action. However,
It will become unstable operation if a trigger is again inputted before an image output is completed.

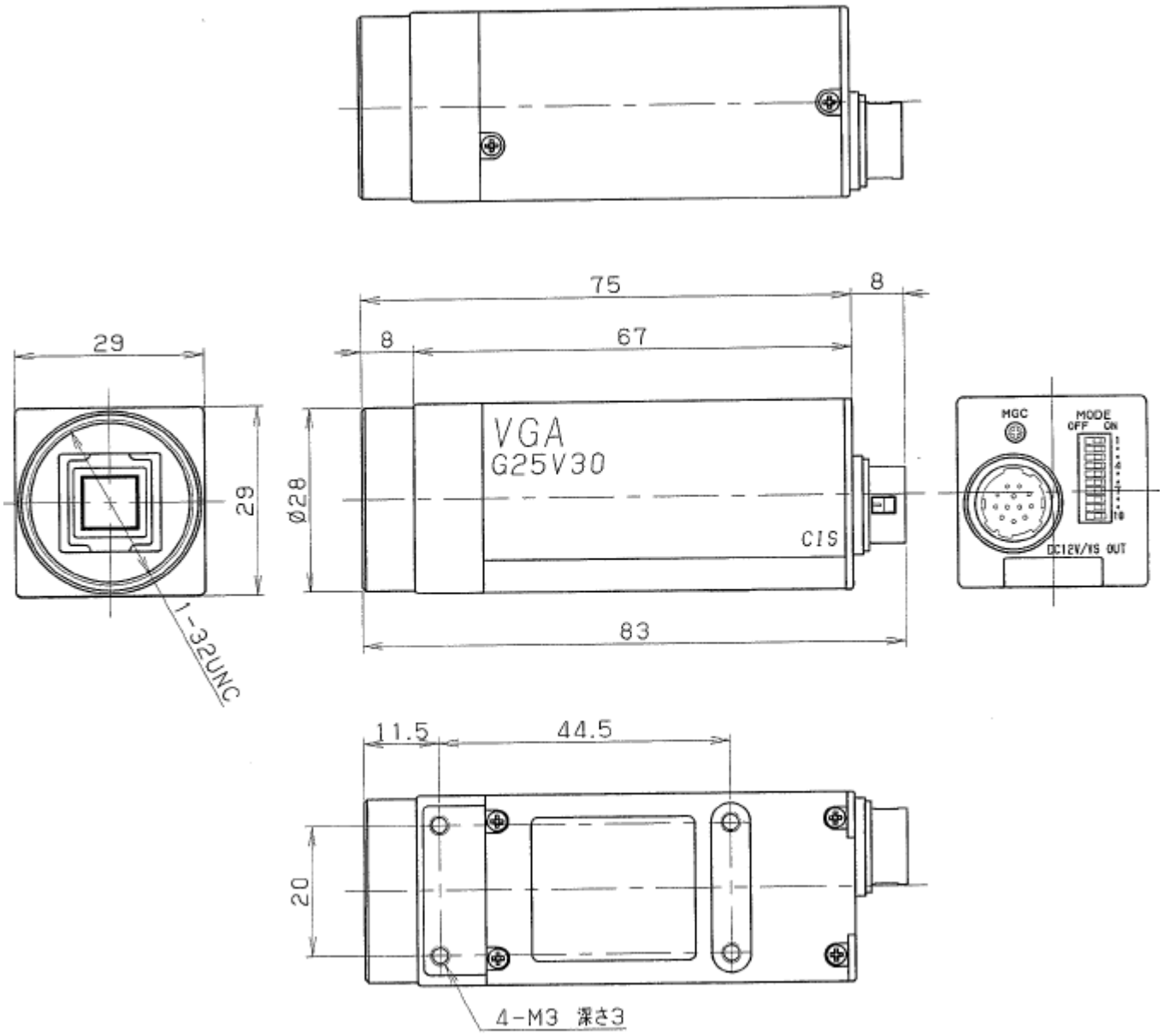
※2 Exposure time is determined by the input width of Trigger.
about, Exposure time = Trigger input width + 2us

※3 The external input of Single pulse EXT_VD and EXT_HD should surely unite the phase of a falling waveform.

※4 Surely, since a Trigger signal falling, the input of EXT_VD should go to the section for 140us to 3ms.

※5 Camera Internal signal

10. Dimension 999-316-00-00



11. Handling notice

【Important】Please keep the following notes carefully when handling a camera.

Any defect and/or trouble without following notice are not guaranteed.

- Do not use a camera in dusty or highly humid environment.

- Camera is sensitive device. Strong shock or high-voltage by static electricity may cause damage to a camera. Please handle the camera carefully to avoid damage.

- To protect CCD image device, do not shoot sunshine or very bright object directly. When camera is not in use, put a cap on the lens.

- Follow the connecting information (clause 6 External connector pin assignment) to connect a camera. Improper connection may cause damage to not only a camera but also connected peripheral.

- If there is AC leaks of the devices connected with the camera such as monitor, computer and etc, it may cause damage to camera or destroy the camera. So, confirm the mutual ground electrical potential carefully and then connect the devices to the camera.

- Supply proper specified voltage to camera. Unstable or improper power may cause damage and mal-operation of a camera.

- Before turning on the camera system, please confirm whether connection between the camera and peripheral equipment is properly or not (especially as for INT/EXT sync. signal setting). Mis-connection may cause damage to the camera or the connected equipment.

- Please turn on the camera again at least 2 seconds after turning off the camera, otherwise the camera may not work.

11. Revision

No.	Revised date	Revision Record	Planned	Checked	Approved