

FC, CE
RoHS

Operation Manual Ver. 1.1

Analog Black & White CCD Camera

TV format

Model

PXA30SHE (with ND filter)

PXA35SHE (no ND filter)



Primetech Engineering Corp.


Introduction

Thank you for your purchase of the Primetech Engineering product.
We ensure that you will enjoy this and other products from Primetech Engineering for many years.

- Keep this manual and warranty card handy for future reference.

For Safe Use of the Product

To ensure the safe use of this product, carefully read the warnings and cautions provided below prior to use:

	Warning	Failure to follow the warning message may result in death or serious injury.
	Caution	Failure to follow the caution message may result in injury or property damage.

Warning – Safety Precautions –

- Never disassemble or modify the product.
- Do not touch the connection cable pins or metal parts with wet hands.
- Do not use the product in a place exposed to rain or water droplets or where toxic gases (liquids) are generated nearby.
- If the product will not be used for an extended period of time, unplug the connection cable from the camera.
- When installing, inspecting or handling the product in a high place, implement sufficient measures beforehand to prevent the device and parts from falling.
- If you see smoke, smell a bad odor or hear an abnormal noise, immediately turn off the power supply and unplug the cable from the product.
- Do not use this product in a system that may cause a serious accident if the product exhibits an abnormality.

Caution – Precautions on Use –

- Use the product within the operating temperature range (-5 to +45°C).
- Use the product at the specified power-supply voltage (+12 VDC).
- Avoid any strong impact or vibration to the product.
- Provide sufficient space around the installed product to prevent the product's internal temperature from rising.
- If the product is used in a dusty environment, be sure to implement dust-protection measures.
- Be sure to turn off the power supply after the cable has been unplugged and then plugged in again with the power on.
- Dust and smudges on the surface of the cover glass will appear as black stains on the image. Blow away any dust with air, etc., and wipe off any smudges using a cotton swab moistened with ethyl alcohol. When cleaning smudges, be careful not to scratch the surface of the cover glass.
- It is recommended to use a daylight-color fluorescent lamp or other light source that is free from infrared light. When using a halogen lamp or other light source containing infrared light, use an infrared cutoff filter.
- Do not share the power supply with a motor or other type of noise-generating device.
- The SG (signal ground) and FG (frame ground) are connected inside the camera. Design the system in such a way as to prevent the looping caused by ground potential difference.

Supplemental Note

- A period of 10 to 20 minutes of aging after turning on the power allows more stable images to be captured.

Disclaimer

Primetech Engineering shall assume no responsibility for the following under any circumstance:

- Loss arising from fire, earthquake, a man-made disaster or an act of God; willful or accidental misuse of the product; or use of the product by a third party in an abnormal manner;
- Loss arising from repair or modification performed by the customer;
- Incidental loss (lost business profit, suspension of business, etc.) arising from the use of or inability to use the product; and
- Loss arising from malfunction, etc., caused by the combined use of connected devices.

Revision History

Revision	Date of revision	Description of change
1.0	2019/03/14	Released the initial version.
1.1	2020/07/15	Correction of errors

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1. Overview

This operation manual describes functions and procedures for the industrial analog camera (B/W).

1.1. Characteristics

• **Diverse mode setting**

The following settings can be used by toggling the switch on the rear panel.

- Gain control
- Gamma correction
- Synchronous input/output
- 75 Ω termination
- Shutter function: Normal/triggered shutter

• **External synchronization**

Depending on a VD or HD signal input, the camera operates with external synchronization.

• **Internal synchronizing signal output**

Synchronizing signals (VD, HD) can be output via the 12-pin connector by toggling the switch on the rear panel.

• **External triggered shutter function**

A still image can be obtained by inputting a trigger. It allows stable capture of an object that moves at high speed.

• **Restart/reset function**

CCD images can be accumulated according to the length between VD pulses by continuously inputting synchronizing signals (VD, HD) from an external device.

(2VD or more)

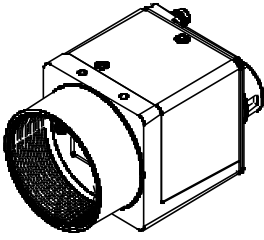
It is effective for long-time exposure.

• **Camera module fixing**

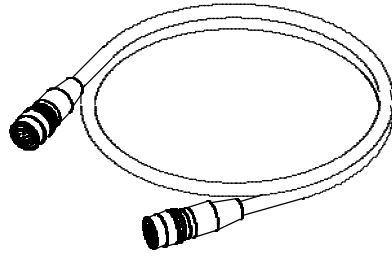
The screw holes for fixing the camera module are located on the lower surface of the front panel that includes the CCD reference plane. Fixing the camera module on the front panel can minimize deviation of the optical axis.

• **Complies with the new 12-pin EIAJ assignment**

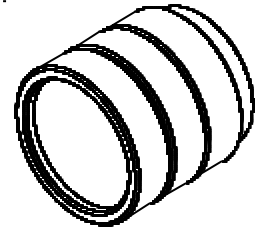
2. System Configuration



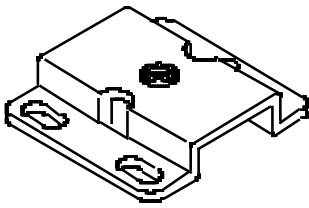
<Camera module>



<Camera cable>

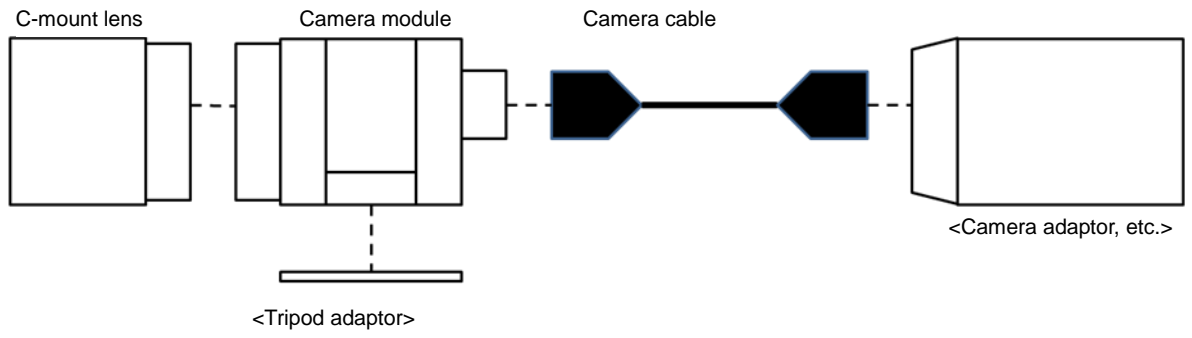


<C-mount lens>



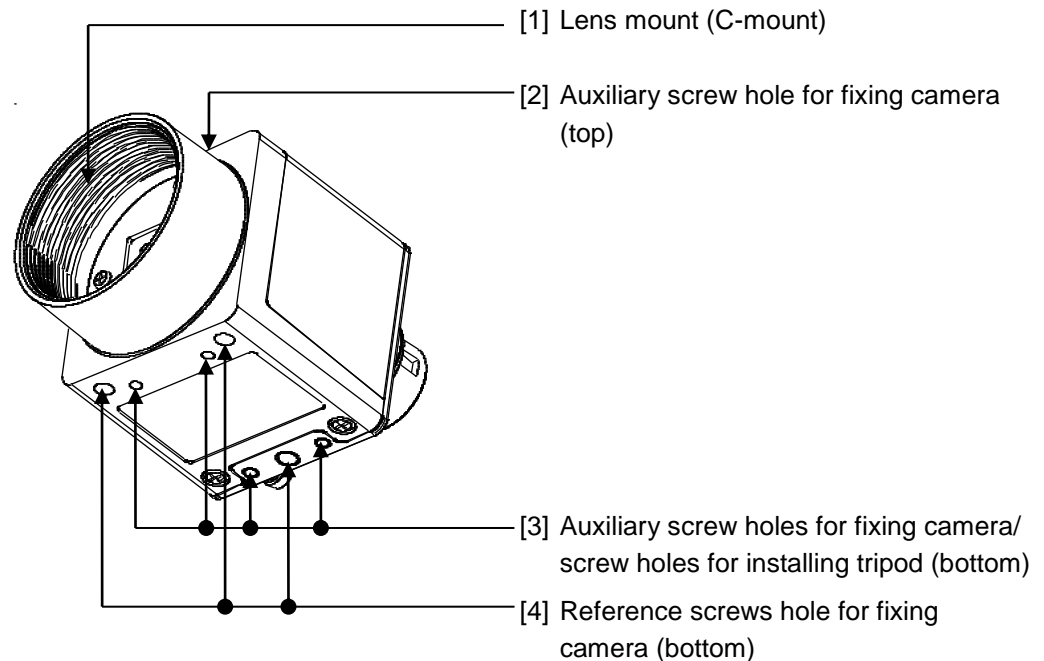
<Tripod adaptor>

3. Connection Diagram



4. Specifications of Camera Parts

4.1. Front/Top/Bottom



[1] Lens mount (C-mount)

Attach a C-mount lens or other optical equipment.

Caution

Use a C-mount lens that does not project more than 9 mm from the lens mount surface.

Be careful to select the lens to attach the camera, as the resolution of the video output from the camera may differ depending on the lens performance. Moreover, the lens performance may vary depending on the aperture value even with a single lens. When sufficient resolution is not attained, change the aperture value.

[2] Auxiliary screw hole for fixing camera (top)

[3] Auxiliary screw holes for fixing camera/screw holes for installing tripod (bottom)

When using a tripod, use these 4 holes to attach a tripod adaptor.

[4] Reference screw holes for fixing camera (bottom)

These holes are used to fix the camera module. Fix the camera module using these holes to minimize the deviation of the optical axis.

Installing a tripod

Install the tripod adaptor (separately sold) onto the camera module before attaching the module to the tripod.

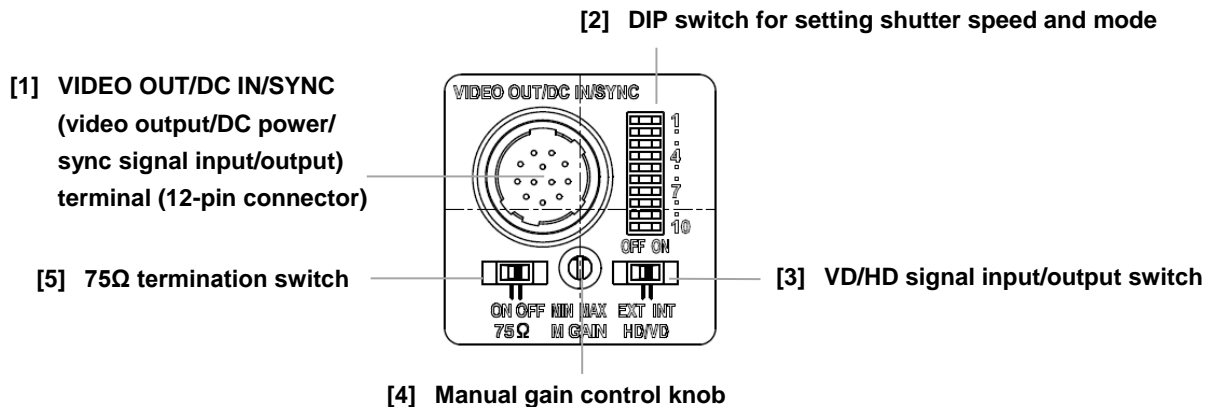
Use a screw that protrudes from the installation surface by 5 mm maximum (ℓ) and firmly tighten it using a hand driver.

Ensure that the protrusion never exceed 5 mm.

Caution

When installing a tripod adaptor (separately sold), be sure to use the screws provided with the adaptor.

4.2. Rear panel

**Caution**

Turn off the module before setting switches.

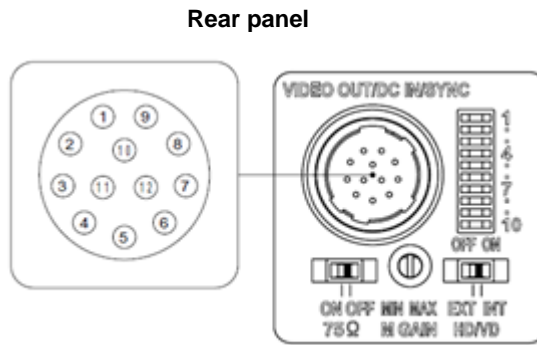
- [1] VIDEO OUT/DC IN/SYNC (video output/DC power/synchronizing signal input/output) terminal (12-pin connector)
By connecting a camera cable, the +12V DC power is supplied and a video signal is output from the camera module. When a synchronizing signal generator is connected and an external synchronizing signal (VD/HD signal) is input, the camera module can be operated in synchronization with an external device.
- [2] DIP switches for setting shutter speed and mode
- Shutter speed setting (bits 1 to 4)
Set a shutter speed suitable for shooting conditions. The factory setting for the shutter speed is OFF.
 - Charge storage mode (bit 5)
The factory setting for the high-rate scanning is FRAME.
 - Restart/reset/externally triggered shutter mode switch (bits 6 to 8)
The factory setting for the switch is NORMAL.
 - Gamma correction ON/OFF switch (bit 9)
This switch toggles ON and OFF for Gamma correction. The factory setting is OFF.
 - Gain toggle switch (bit 0)
This switch toggles MGC (manual control) and AGC (auto control) modes. The factory setting is MGC.
- [3] VD/HD signal input/output toggle switch
Set the switch to the INT side to output VD/HD signals, and set it to the EXT side to input VD/HD signals from an external device. The factory setting for the switch is the EXT side.
- [4] Manual gain control knob
This knob can be used to adjust the gain when manual adjustment is selected using the gain toggle switch among the DIP switches ([2]).
The factory setting for the knob is Mechanical Center.

Caution

When select FRAME on Charge storage mode, please adjust this control knob from Mechanical Center to MAX side. (Due to the characteristics of CCD)

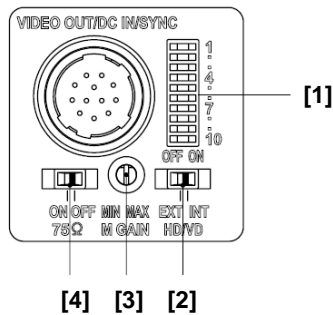
- [5] 75 Ω termination switch
Set the switch to ON for termination. The factory setting is OFF.

4.3. Pin assignment for VIDEO OUT/DC IN/SYNC (video output/DC power/synchronizing signal input/output) terminal



Pin assignment for VIDEO OUT/DC IN/SYNC (Video output/DC power/synchronizing signal input/output) terminal

Pin No.	Camera synchronizing signal output	External synchronizing signal (VD/HD)	Restart/reset	Externally triggered shutter
1	Ground	Ground	Ground	Ground
2	+12 VDC	+12 VDC	+12 VDC	+12 VDC
3	Video output (ground)	Video output (ground)	Video output (ground)	Video output (ground)
4	Video output (signal)	Video output (signal)	Video output (signal)	Video output (signal)
5	HD output (ground)	HD input (ground)	HD input (ground)	HD input (ground)
6	HD output (signal)	HD input (signal)	HD input (signal)	HD input (signal)
7	VD output (signal)	VD input (signal)	Reset (signal)	VD input (signal)
8	–	–	–	–
9	–	–	–	–
10	–	–	–	WEN output (signal)
11	–	–	–	Trigger pulse input (signal)
12	VD output (ground)	VD input (ground)	Reset (ground)	VD input (ground)

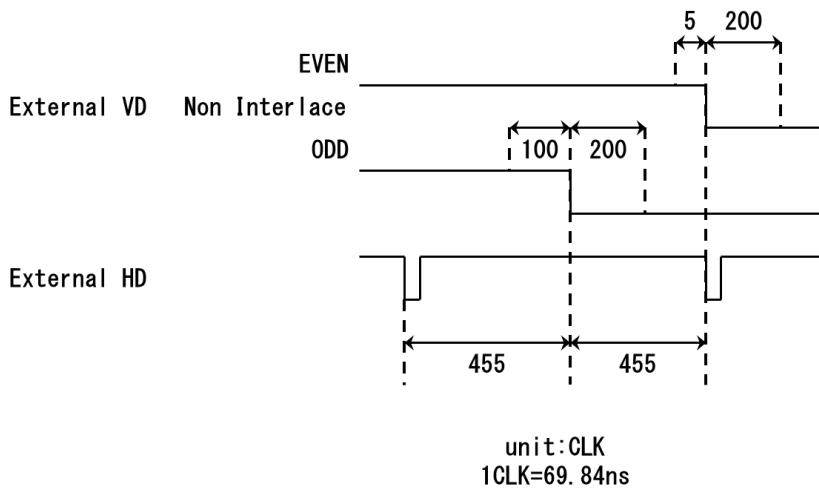


Factory setting mode on the rear panel

No.	Name of switch	Factory setting mode
[1]	DIP switches for setting shutter speed and mode	Shutter speed setting (bits 1 to 4)
	Charge storage mode (bit 5)	FRAME
	Restart/reset/external triggered shutter mode switch (bits 6 to 8)	NORMAL
	Gamma correction ON/OFF switch (bit 9)	OFF
	Gain Binning toggle switch (bit 0)	MGC
[2]	VD/HD signal input/output toggle switch	EXT
[3]	Manual gain control knob	Mechanical Center*
[4]	75 Ω termination switch	OFF

* When the gain toggle switch is set to MGC, the gain is variable within the range from 0 to 18 dB.

4.4. Input phase specifications for external VD/HD signal



Set the phase relationship for external VD and HD signals as shown in the above figure. Note that inputs other than those specified above can cause unstable internal reset.

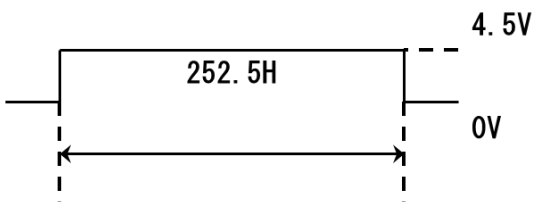
For normal shutter mode

Continuous VD/HD signals

For restart/reset/externally triggered shutter mode

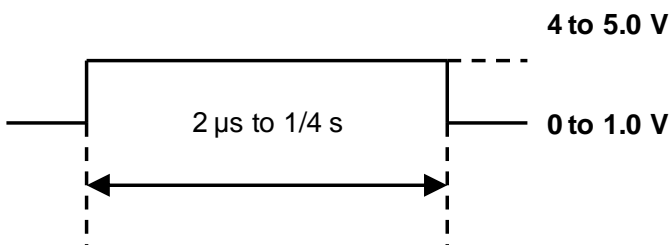
Continuous HD signal. Arbitrary timing for VD signal with the phase relationship between VD and HD within the above specifications

4.5. WEN output specifications



Amplitude levels are representative values when the output terminates at 10 kΩ.

4.6. Trigger pulse specifications



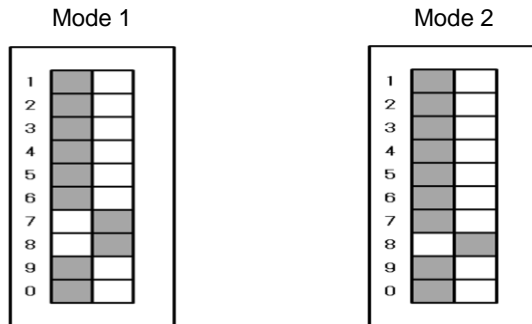
- Input impedance: 10 kΩ or more
- Input the pulse width between 100 μs and 1/4 s for DIP switch setting.

Input impedance: Enter the voltage value measured at over 10 kΩ.

4.7. Externally triggered shutter speed setting according to trigger pulse width

Set all DIP switches 1 to 4 on the rear panel to "0".

Setting the trigger pulse width within the range from 2 μ s to 250 ms will achieve an arbitrary shutter speed.



Shutter speed: trigger pulse width
 Trigger pulse width + 97 μ sec



























































































Caution

- DIP switch 5 is optional, but field (FL) setting is recommended. The field setting can obtain about twice the sensitivity compared with the frame (FR) setting. next trigger is input before the video output corresponding to the latest trigger is finished, the video is affected.
- If the next trigger is input before the video output corresponding to the latest trigger is finished, the video is affected.

5. Normal Shutter Mode

This mode is to clearly capture high-speed moving objects with a shutter function using continuously obtained video signals.

Setting of the DIP switches on the rear panel

OFF	1/125	1/250	1/500	1/1000
1  2  3  4  5  6  7  8  9  0 	1  2  3  4  5  6  7  8  9  0 	1  2  3  4  5  6  7  8  9  0 	1  2  3  4  5  6  7  8  9  0 	1  2  3  4  5  6  7  8  9  0 
1/2000	1/4000	1/10000	Flicker less 1/100	
1  2  3  4  5  6  7  8  9  0 	1  2  3  4  5  6  7  8  9  0 	1  2  3  4  5  6  7  8  9  0 	1  2  3  4  5  6  7  8  9  0 	

(Units : sec)

Cautions

- DIP switch 6, 7 is optional.
- DIP switch 5 is optional, but field (FL) setting is recommended. The field setting can obtain about twice the sensitivity compared with the frame (FR) setting.

6. External Triggered Shutter

Inputting a trigger from an external device will enable capturing of high-speed moving objects at a correct position.

Set DIP switches 6, 7, and 8 on the rear panel to those specified for mode 1 or 2. (See the figures on the following pages.)

When the trigger pulse width is set to 1/3 s or more, the output is switched to a normal video signal.

There are two modes for the timing of obtaining videos

- Mode 1 (non-reset mode)

A video synchronous with the VD signal is output after a trigger input in this mode.

- When an external VD/HD signal is input: The video synchronizes the external VD signal.*

- When an external VD/HD signal is not input: The video synchronizes the internal VD signal.

- Mode 2 (reset mode)

In this mode, the internal VD signal is reset, and the video is output after a certain period of time has elapsed since a trigger pulse is input.

- For individual timing charts, see pages 19 to 26.

The shutter speed can be specified by either setting the DIP switches or specifying trigger pulse widths.

- For how to specify trigger pulse widths, see page 13.

Setting with DIP switches on the rear panel



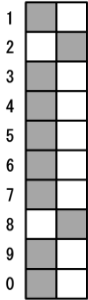
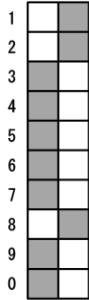


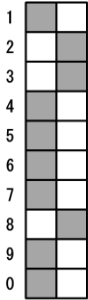
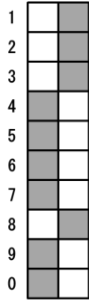
Mode 1 (non-reset mode)

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(Units : sec)

Setting with DIP switches on the rear panel

Mode 2 (Reset mode)

1/100	1/125	1/250	1/500
1 2 3 4 5 6 7 8 9 0 	1 2 3 4 5 6 7 8 9 0 	1 2 3 4 5 6 7 8 9 0 	1 2 3 4 5 6 7 8 9 0 
1/1000	1/2000	1/4000	1/10000
1 2 3 4 5 6 7 8 9 0 	1 2 3 4 5 6 7 8 9 0 	1 2 3 4 5 6 7 8 9 0 	1 2 3 4 5 6 7 8 9 0 

(Units : sec)

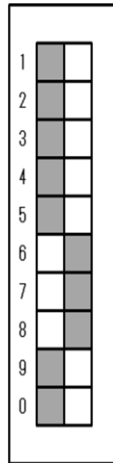
Cautions

- DIP switch 5, 9, 0 is optional.

7. Restart/reset

By inputting restart/reset signals (VD/HD) from an external device, you can obtain information for one screen at an arbitrary timing. To specify this mode, set DIP switches 6, 7, and 8 on the rear panel of the camera as shown in the following figure.

Specifying the restart/reset function using the DIP switches on the rear panel



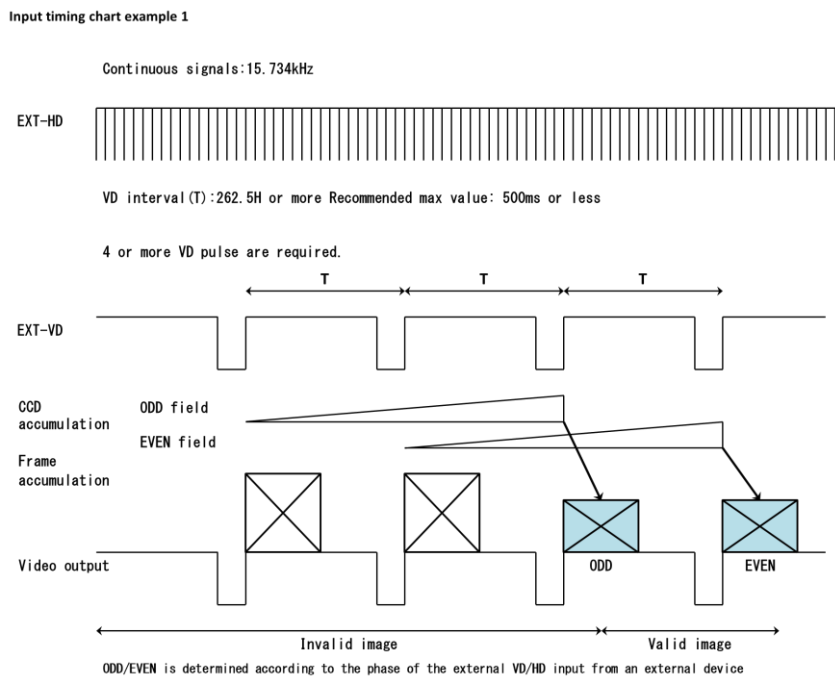
Long-time exposure

By extending the CCD accumulation time using the restart/reset function, you can obtain high-sensitivity images. It is useful when sensitivity is insufficient under normal usage conditions, or to observe the tracks of a moving object. To do this, input a VD signal that has a longer period between VD pulses (T in the figure) from an external device.

Caution

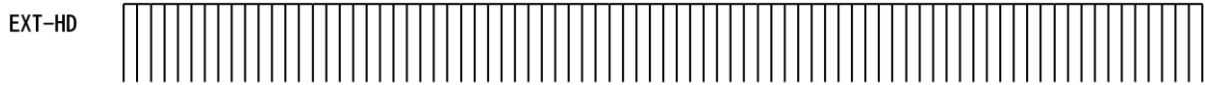
During long-time exposure, noticeable white flecks may appear.

Timing chart



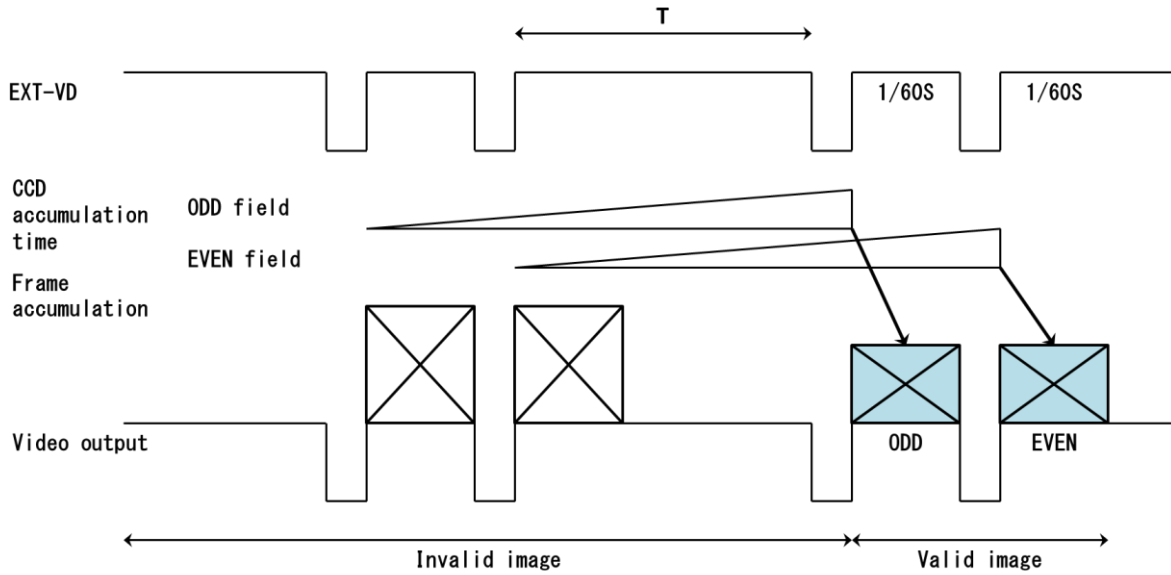
Input timing chart example 2

Continuous signals: 15.734kHz



VD interval (T): 262.5H or more Recommended max value: 500ms or less

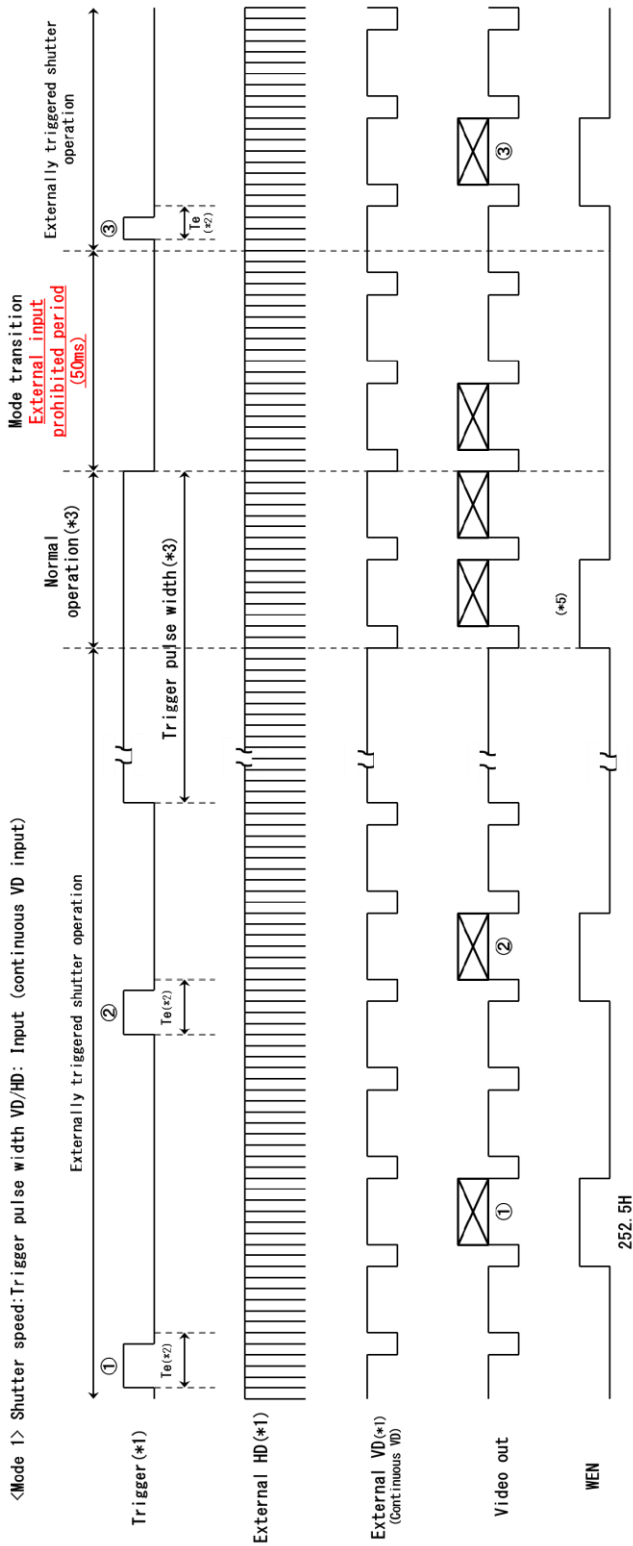
4 or more VD pulse are required.



ODD/EVEN is determined according to the phase of the external VD/HD input from an external device
 When the camera module is set to field accumulation, it becomes video output in units of CCD field accumulation time.

8. Timing Chart for Individual Modes

8.1. Mode 1



*1 A signal input from an external device. Always input VD and HD together.

*2 Shutter speed T_e
 $T_e = \text{Trigger pulse width} + 97 \mu\text{sec (EIA)}$
 (The trigger pulse width valid for an externally triggered shutter operation is $2 \mu\text{s}$ to $1/4\text{s}$.)

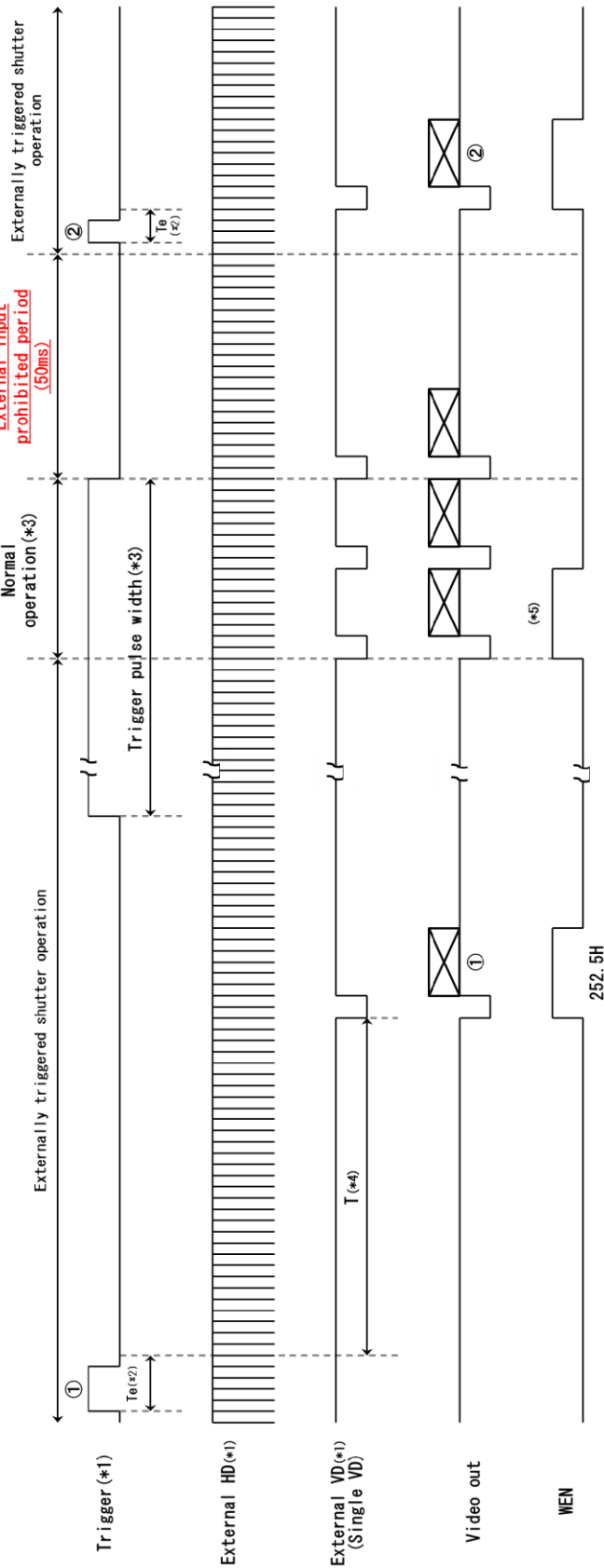
*3 Setting the trigger pulse width to $1/3\text{s}$ or more returns to a normal operation. Externally triggered shutter operation resumes upon the falling of the trigger. An input from an external device is prohibited for 50ms after the falling. Therefore, operations related to a trigger input during this period cannot be guaranteed.

*4 If the external VD signal falls during the period less than $-65 \sim +10 \mu\text{s}$ after the falling of the trigger, ([1] and [2] in the figure), the output is undefined, that is, a video is output for the latest falling or the next falling of the external VD signal. (The video is output for the next external VD signal in [1] in the figure, and the video is output for the latest external VD signal in [2].)
 In the above cases, see WEN because it has a one-to-one relationship with the video. In other cases, the video is output for the falling of external VD signals after the falling of the trigger ([3] in the figure).

*5 After the externally triggered shutter operation has changed to a normal operation, one WEN pulse is output.

Caution
 If the next trigger is input before the video output corresponding to the current trigger has finished, the video is affected.

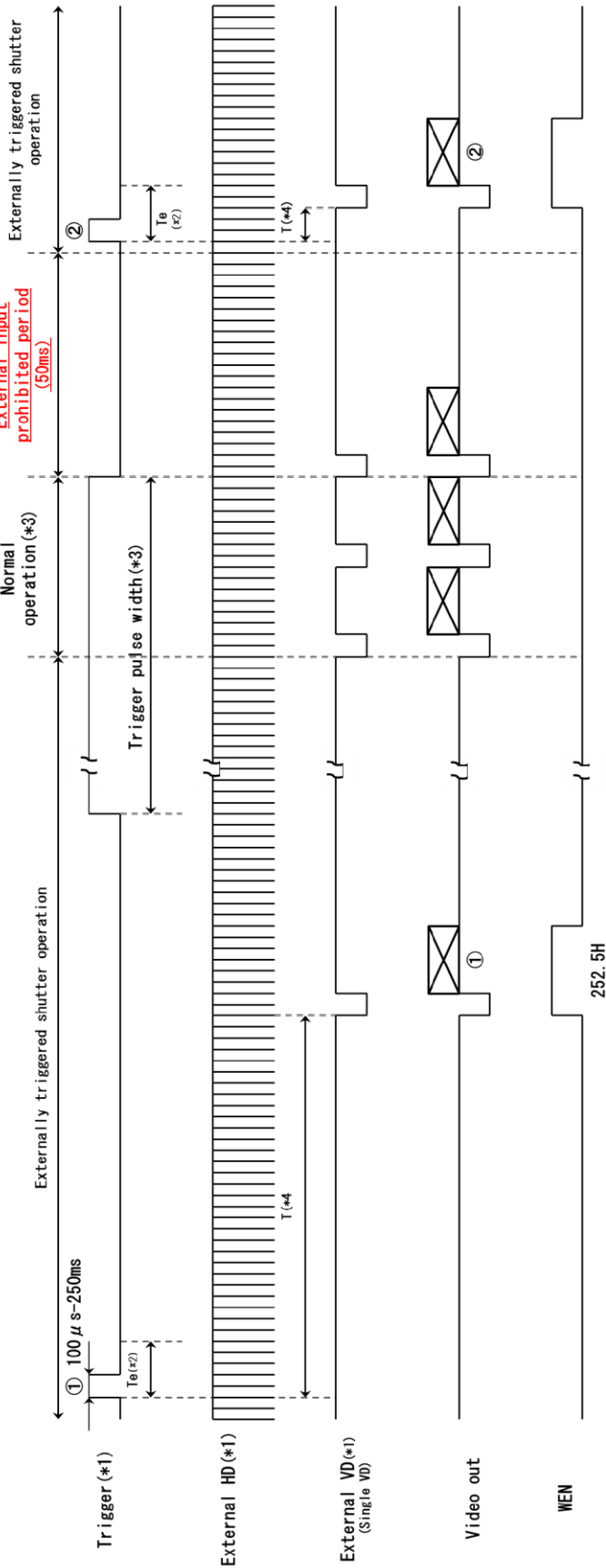
<Mode 1> Shutter speed: Trigger pulse width VD/HD: Input (single VD input, continuous HD)



- *1 A signal input from an external device. Always input VD and HD signals together. Input the phase of the VD signal at the rising of the HD signal.
- *2 The shutter speed T_e
 $T_e = \text{Trigger pulse width} + 97\mu\text{sec}$
 (The trigger pulse width valid for an externally triggered shutter operation is $2\mu\text{s}$ to $1/4\text{s}$.)
- *3 Setting the trigger pulse width to $1/3\text{s}$ or more returns to a normal operation. (If VD is continuously input during this period, a video will be output)
 Externally triggered shutter operation resumes upon the falling of the trigger.
 An input from an external device is prohibited for 50ms after the falling. Therefore, operations related to a trigger input during this period cannot be guaranteed.

- *4 Always input an external VD signal $10\mu\text{s}$ to 65ms after the falling of the trigger. ([1] and [2] in the figure)
 Operations after inputs under conditions other than the above cannot be guaranteed. Should a value outside the standard range be input, input the signals according to the specific conditions. Normal operation resumes after a few μs .
 - *5 After the externally triggered shutter operation has changed to a normal operation, one WEN pulse is output.
- Caution**
 If the next trigger is input before the video output corresponding to the current trigger has finished, the video is affected.
 Always input one VD for one trigger

<Mode 1> Shutter speed: DIP switches VD/HD: Input (single VD input, continuous HD)



*1 A signal input from an external device. Always input VD and HD signals together. Input the phase of the VD signal at the rising of the HD signal.

*2 The shutter speed T_e is determined by the DIP switch setting.

*3 Setting the trigger pulse width to 1/3s or more returns to a normal operation. (If VD is continuously input during this period, a video will be output)

Externally triggered shutter operation resumes upon the falling of the trigger.

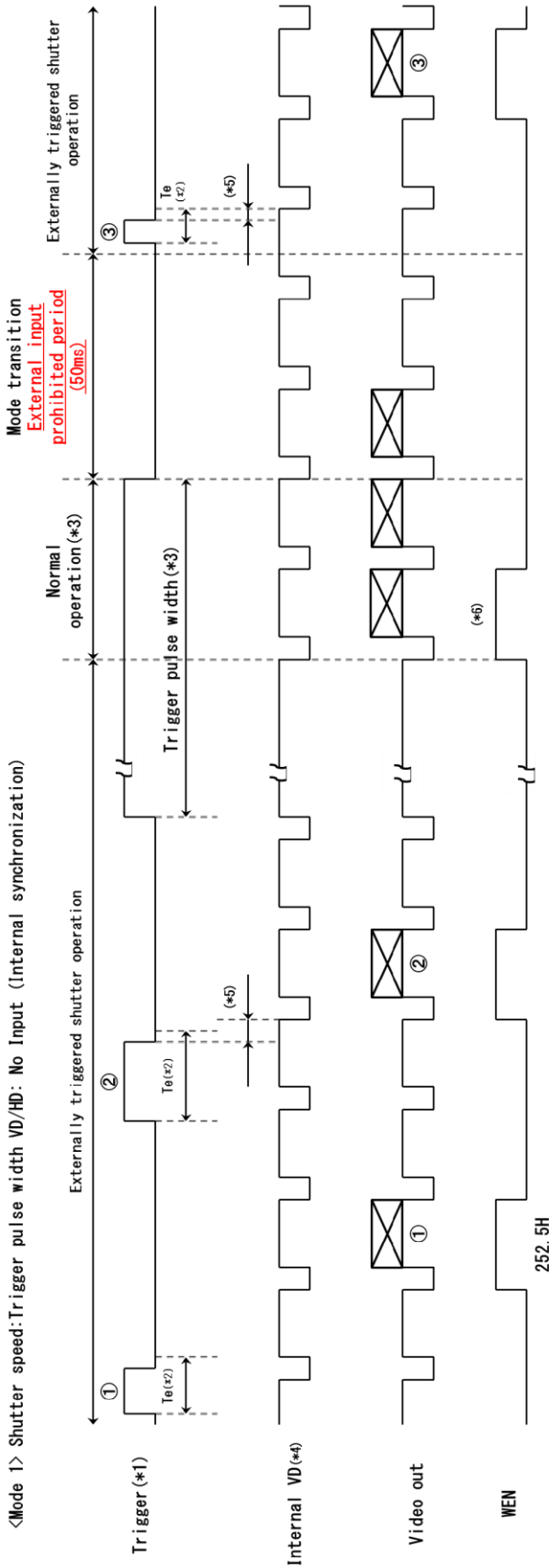
An input from an external device is prohibited for 50ms after the falling. Therefore, operations related to a trigger input during this period cannot be guaranteed.

*4 Always input an external VD signal 10 ms to 75 ms after the rising of the trigger. ([1] and [2] in the figure)

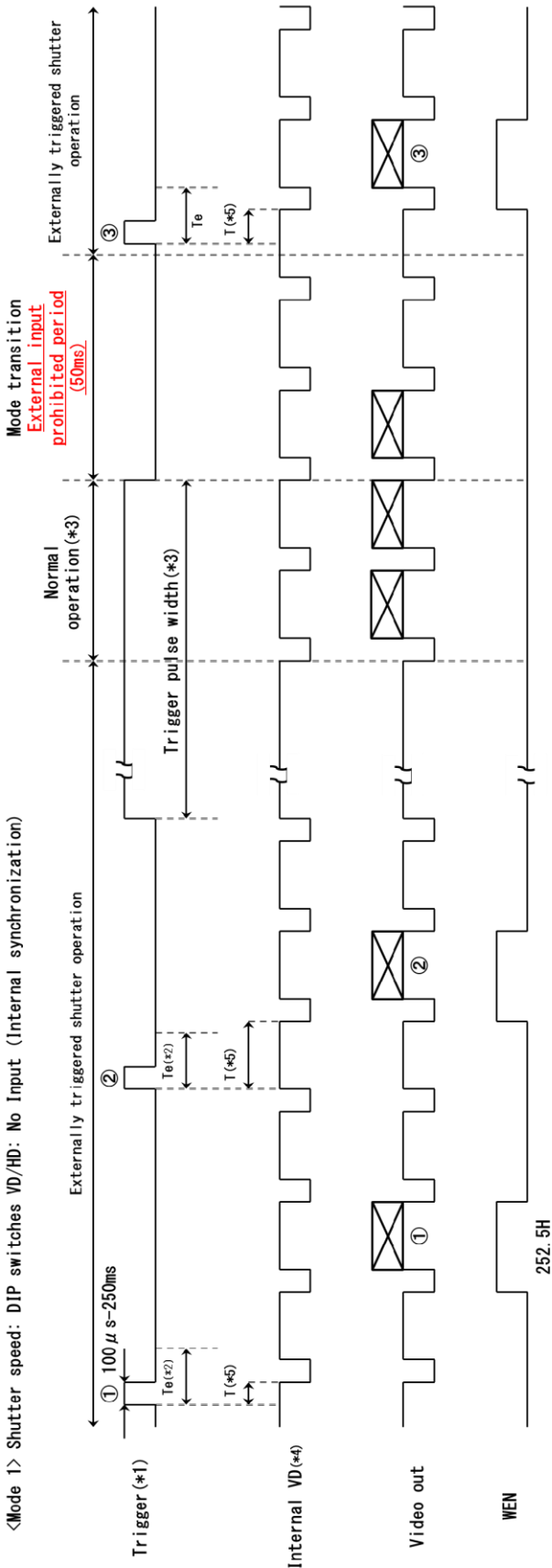
Operations after inputs under conditions other than the above cannot be guaranteed. Should a value outside the standard range be input, input the signals according to the specified conditions. Normal operation resumes after a few Vs.

Caution

If the next trigger is input before the video output corresponding to the current trigger has finished, the video is affected.

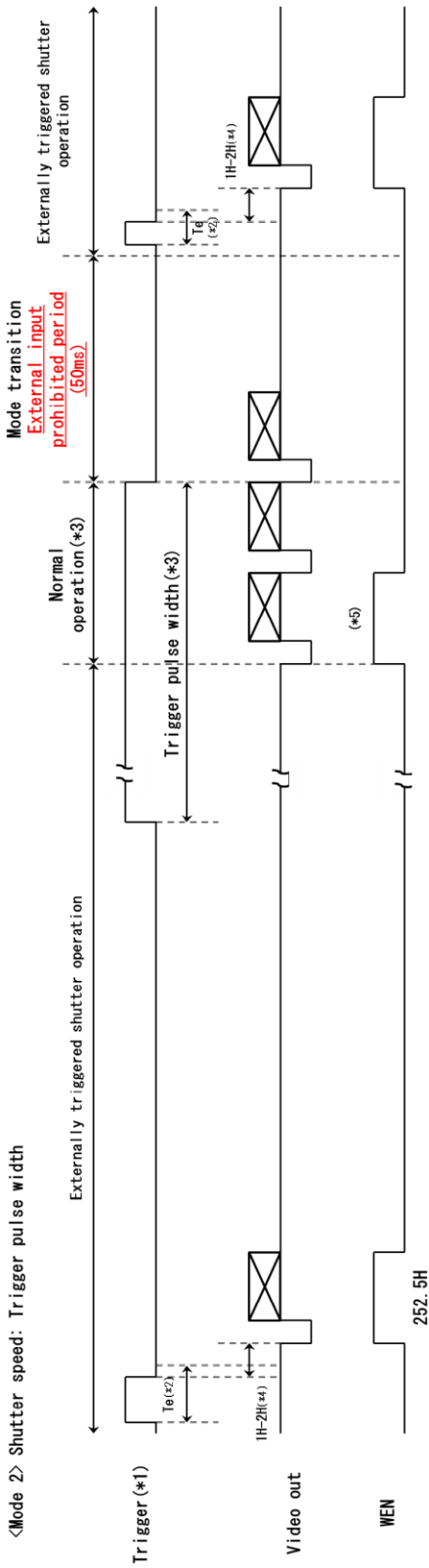


- *1 A signal input from an external device.
 - *2 The shutter speed T_e
 $T_e = \text{Trigger pulse width} + 97 \mu\text{sec}$
 (The trigger pulse width valid for an externally triggered shutter operation is $2 \mu\text{s}$ to $1/4\text{s}$.)
 - *3 Setting the trigger pulse width to 1/3s or more returns to a normal operation.
 Externally triggered shutter operation resumes upon the falling of the trigger.
 An input from an external device is prohibited for 50ms after the falling. Therefore, operations related to a trigger input during this period cannot be guaranteed.
 - *4 Internal VD is output by setting the VD/HD signal input/output toggle switch on the rear panel to the INT side, only when an input from an external device is disabled.
 - *5 In an externally triggered shutter operation, the video is output for the falling of the internal VD signal after the falling of the trigger. ([1] and [2] in the figure) If the period (T in the figure) from the rising of the trigger to the falling of the internal VD signal is less than $10 \mu\text{s}$, the output is undefined, that is, a video is output for the latest falling or the next falling of the internal VD signal. (In [3] in the figure, the video for the next internal VD signal is output.)
 In the above case, see WEN because it has a one-to-one relationship with the video. (The falling of the internal VD signal and the start of equivalent pulses for the V period are in the same phase.)
 - *6 After the externally triggered shutter operation has changed to a normal operation, one WEN pulse is output.
- Caution**
 If the next trigger is input before the video output corresponding to the current trigger has finished, the video is affected.

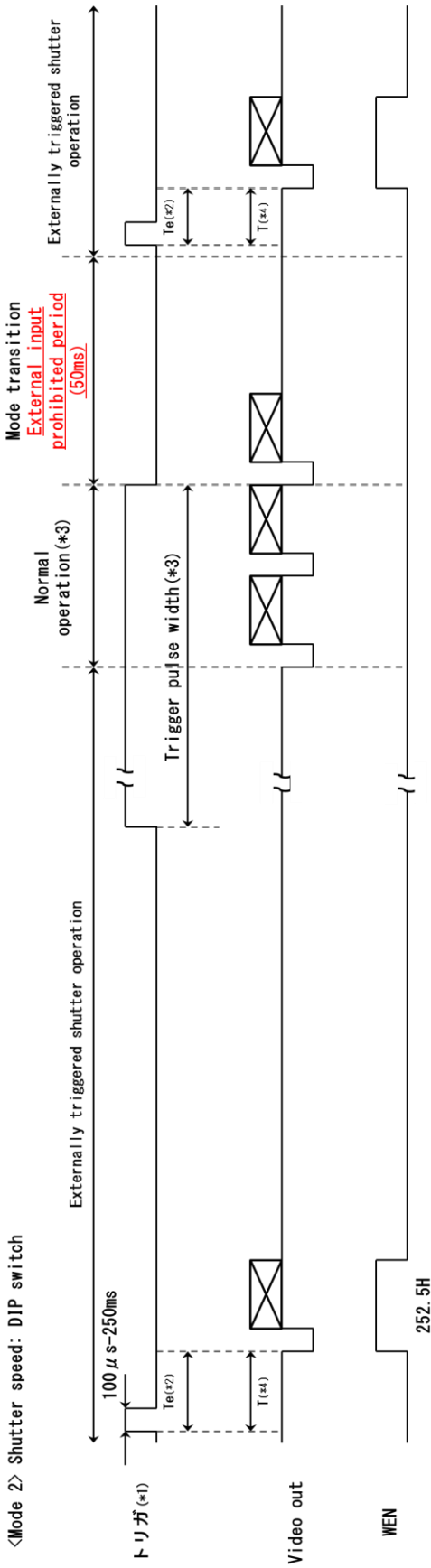


- *1 A signal input from an external device.
 - *2 The shutter speed T_e is determined by the DIP switch setting.
 - *3 Setting the trigger pulse width to 1/3s or more returns to a normal operation. Externally triggered shutter operation resumes upon the falling of the trigger. An input from an external device is prohibited for 50ms after the falling. Therefore, operations related to a trigger input during this period cannot be guaranteed.
 - *4 Internal VD is output by setting the VD/HD signal input/output toggle switch on the rear panel to the INT side, only when an input from an external device is disabled.
 - *5 A video is output for the falling of the internal VD signal 10 ms or more after the rising of the trigger. ([2] and [3] in the figure) If the period (T in the figure) from the rising of the trigger to the falling of the internal VD signal is less than 10 ms, the output is undefined, that is, a video is output for the latest falling or the next falling of the internal VD signal. ([1] in the figure. In the above case, the video for the next internal VD signal is output.) In the above case, see WEN because it has a one-to-one relationship with the video. (The falling of the internal VD signal and start of equivalent pulses for the V period are in the same phase.)
- Caution**
If the next trigger is input before the video output corresponding to the current trigger has finished, the video is affected.

8.2. Mode 2



- *1 A signal input from an external device. Input the trigger so that the input cycle is the trigger pulse width + 1 field + 2H or longer. Operation after inputs in a cycle shorter than the above cannot be guaranteed. Should a value outside the standard range be input, input the signals according to the specified conditions. Normal operation resumes after a few Vs.
- *2 The shutter speed T_e
 $T_e = \text{Trigger pulse width} + 97 \mu\text{sec}$
 (The trigger pulse width valid for an externally triggered shutter operation is $2 \mu\text{s}$ to $1/4\text{s}$.)
- *3 Setting the trigger pulse width to $1/3\text{s}$ or more returns to a normal operation. Externally triggered shutter operation resumes upon the falling of the trigger. An input from an external device is prohibited for 50ms after the falling. Therefore, operations related to a trigger input during this period cannot be guaranteed.
- *4 A VD signal is generated 1H to 2H after the falling of the and a video is output in synchronization.
- *5 After the externally triggered shutter operation has changed to a normal operation, one WEN pulse is output.



*1 A signal input from an external device. Input the trigger so that the input cycle is the trigger pulse width +1 field + 2H or longer. Operation after inputs in a cycle shorter than the above cannot be guaranteed. Should a value outside the standard range be input, input the signals according to the specified conditions. Normal operation resumes after a few Vs.

*2 The shutter speed T_e is determined by the DIP switch setting.

*3 Setting the trigger pulse width to 1/3s or more returns to a normal operation. Externally triggered shutter operation resumes upon the falling of the trigger. An input from an external device is prohibited for 50ms after the falling. Therefore, operations related to a trigger input during this period cannot be guaranteed.

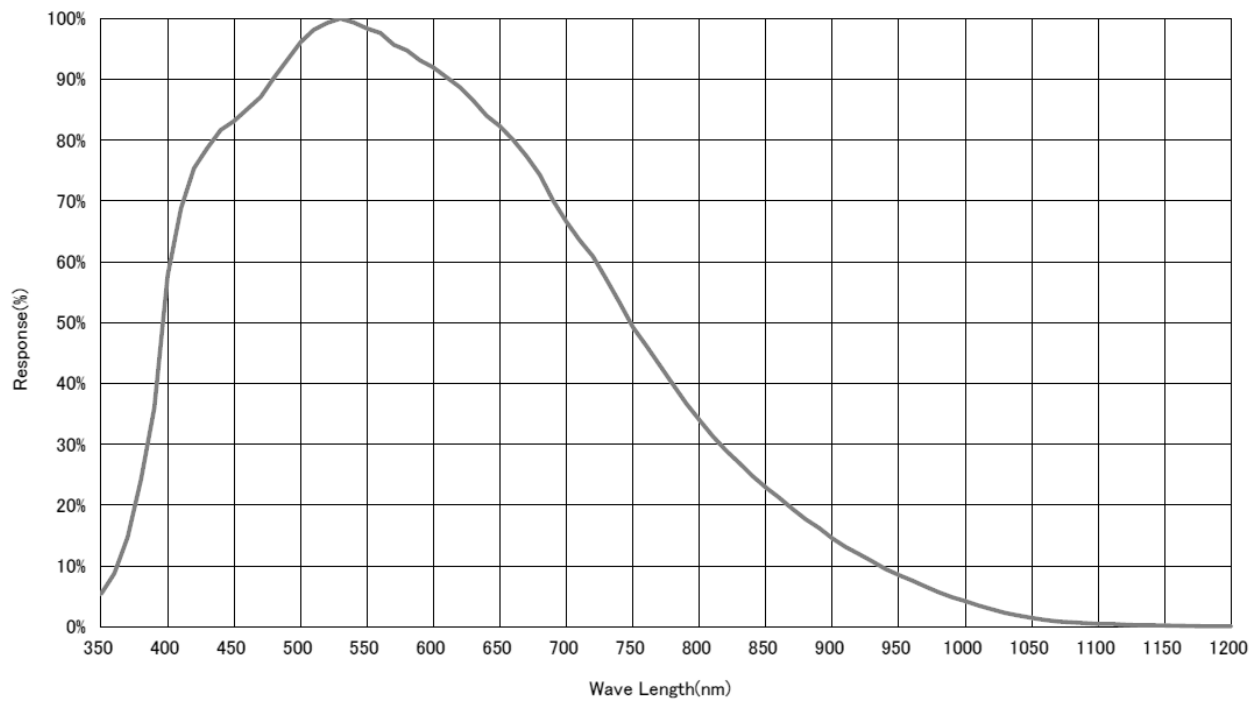
*4 A video is output at the shortest timing after the trigger rises, according to the setting of the DIP switches.

9. Specifications

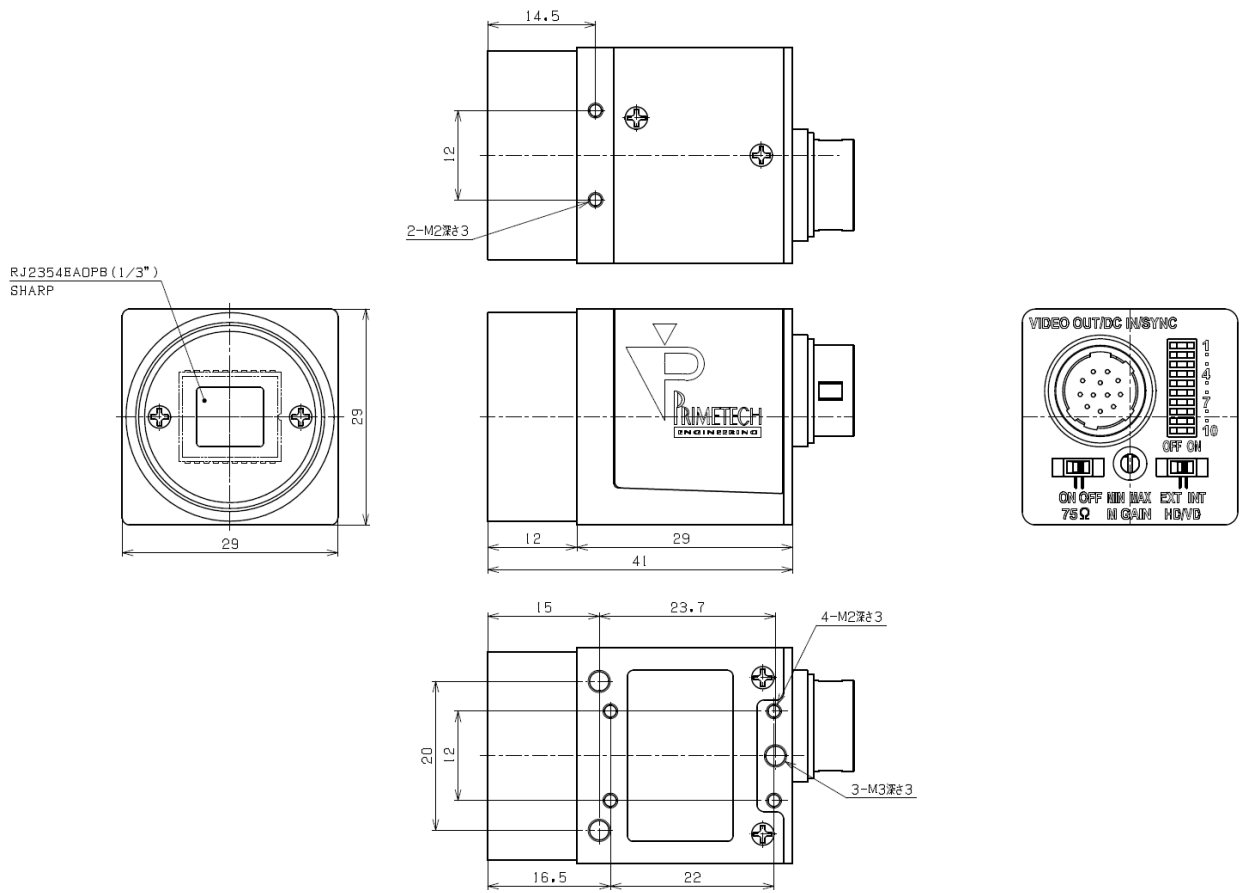
Pickup device	Interline transfer 1/3 type CCD PXA30SHE: with ND filter PXA35SHE: no ND filter
Effective picture elements	768 × 494 (horizontal/vertical)
CCD vertical driving frequency	15.743 kHz
CCD horizontal driving frequency	14.318 MHz
Signaling	EIA
Cell size	6.4 × 7.5 μm (horizontal/vertical)
Lens mount	C-mount
Flange focus	17.526 ±0.05 mm
Synchronization	External synchronization / internal synchronization
External synchronization input/output	VD/HD (1 Vp-p)
Allowable external synchronization frequency deviation	±1% (of horizontal synchronization frequency)
Jitter	±50 ns or less
Scanning method	2:1 Interlace/Non Interlace (at External Sync input)
Sensitivity	PXA30SHE: 400 lx (gain:Min, F4.0, gamma:ON, shutter:OFF) PXA35SHE: 400lx (gain:Min, F11.0, gamma:ON, shutter:OFF)
S/N ratio	60dB
Minimum illumination	PXA30SHE: 0.3 lx (gain:Max, F1.4, gamma:ON, shutter:OFF) PXA35SHE: 0.06lx (gain:Max, F1.4, gamma:ON, shutter:OFF)
Gain	AGC/MGC
Gamma correction	ON/OFF
Shutter function	External trigger shutter
Shutter speed	External trigger shutter: 2 μs to 1/4 s
Power	DC +12V
Power consumption	Approx. 1.44 W
Operating temperature	-5 to +45°C
Operating relative humidity	20 to 80% (no condensation)
Storage temperature	-30 to +60°C
Storage relative humidity	20 to 95% (no condensation)
Vibration resistance	10 G (20 Hz to 200 Hz)
Shock resistance	70 G
External dimensions	W 29 mm × H 29 mm × D 29 mm (connectors excluded)
Weight	Approx. 48g
Standards	CE, FCC
Accessories	Lens mount cap (1), Operation Manual (1)

Specifications and design are subject to change without notice.

9.1. Relative spectral sensitivity characteristics



External Dimensions



Units: mm

The content of this manual is subject to change without notice.

Technical materials and data in this manual are only for reference of actual use. Nothing contained herein shall be construed as granting the rights to practice or use the intellectual properties of our company or any other third party.

Thus we assume no responsibility whatsoever for any violation resulting from such use.

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