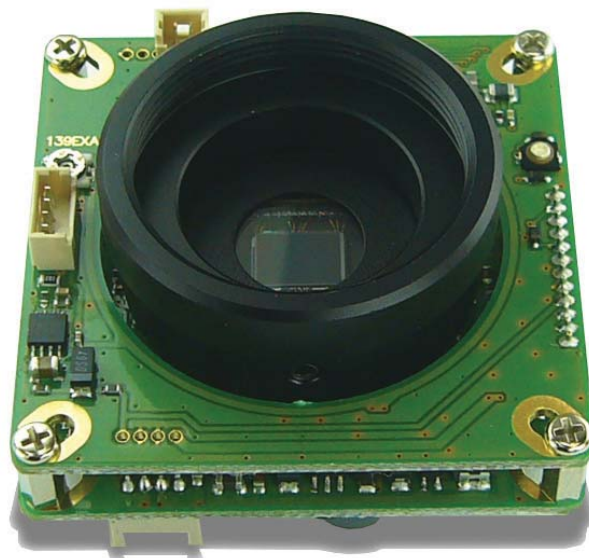


# **Watec**

## **W-01MAB2**



## W-01MAB2

### Operation Manual

This Operation Manual covers safety, camera functions, installation and the correct operating procedure for the W-01MAB2. First, we ask you to read this Operation Manual thoroughly, then install and operate the W-01MAB2 as advised. In addition, for future reference, we also advise safekeeping of this manual.

Please contact the distributor or dealer from which the W-01MAB2 was purchased, if you do not understand the installation, operation or safety instructions laid out in this manual. Not understanding the contents of the Operation Manual sufficiently may cause damage to the camera.

## Guide to the Safety Symbols

The meanings of the symbols used in this operation manual are:



When you do not adhere to or take notice of the "Danger" sign, it may lead to serious accident such as death or injury caused by fire or electric shock.



When you do not adhere to or take notice of the "Warning" sign, it may cause severe damage such as a physical injury.



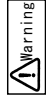
When you do not adhere to or take notice of the "Caution" sign, it may incur injury and cause damage to peripheral objects in the immediate surroundings.

## Cautions for Safety

The W-01MAB2 is designed to be used safely; however, it may lead to physical accident caused by fire and electric shock if not used correctly. Therefore, please keep and read the "Cautions for safety" for protection against accidents.



- Do not disassemble and/or modify the W-01MAB2.
- Do not operate the W-01MAB2 with wet hands.



- Use only the AD901-120/230 or equivalent power adaptor for the W-01MAB2.

The recommended voltage is DC+12V ± 10%

- Do not expose the W-01MAB2 to wetness or high moisture conditions.

The W-01MAB2 is designed and approved for indoor use only. The W-01MAB2 is not water-resistant or waterproof. If the location of the camera is outdoors or in an outdoor like environment, we recommend that you use an outdoor camera housing.

- Protect the W-01MAB2 from condensation. Keep the W-01MAB2 dry at all times, during storage and operation.
- Should the camera not work properly, switch off the power immediately. Then, check the camera according to the "Trouble Shooting" section.



- Avoid the striking of hard objects or dropping the W-01MAB2.

The W-01MAB2 uses high quality electrical parts and precision components.

- Do not connect any power supply directly to the video out terminal of the unit.

Do not connect the W-01MAB2 with any monitor using a video/power single transmission terminal. The W-01MAB2 is not designed for use with this type of equipment. We also advise you to read the operation manual of the monitor you plan to use before any connections are made.

- Do not install the W-01MAB2 in a position subject to direct sunlight. Sunlight shining directly onto the W-01MAB2 lens can cause damage to the CCD.

- Select a stable place for installation of the W-01MAB2.

Always fix the camera securely. See [Mounting Holes] section.

- Do not move the W-01MAB2 with the cables connected. Before moving the W-01MAB2, always remove the video cable and power cable from the rear of the camera first.
- Avoid using the W-01MAB2 near any strong electromagnetic field.

After installing into main equipment, if the W-01MAB2 is exposed to electromagnetic waves causing the monitored image to become distorted, we recommend the camera be shielded by appropriate protective casing.

## Problems and Trouble Shooting

If any of the following problems occur when using the W-01MAB2,

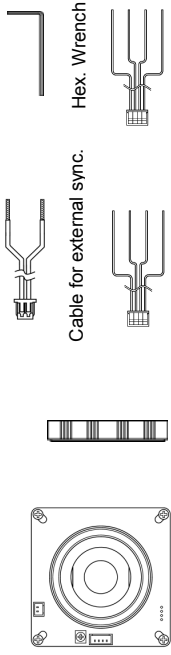
- An optimal picture cannot be obtained, after checking that all the cables and connections are correctly in place
- Smoke or any unusual odor emerges from the W-01MAB2.
- An object becomes embedded or a quantity of liquid seeps into the camera
- More than the recommended voltage or/and amperage has been applied to the W-01MAB2 by mistake
- Anything unusual occurring to any equipment connected to the W-01MAB2.

Disconnect the camera immediately according to the following procedures:

- 1) Switch off the main power supply to the camera.
- 2) Remove the power and video cables connected to the W-01MAB2.
- 3) Contact the distributor or dealer from which the W-01MAB2 was purchased.

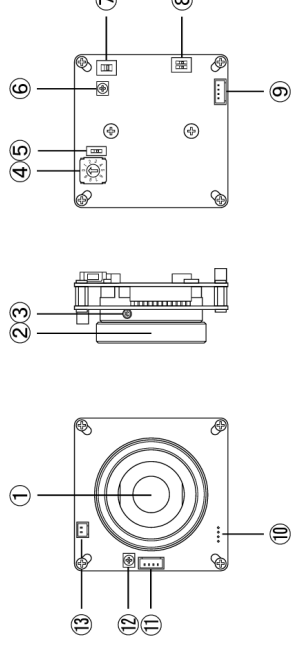
## Contents

Using the contents figures below, check to make sure all parts are present before use.



W-01MAB2 Lens cap Cable for power supply and video Cable for DC iris

## Description of Parts



### 1) CCD FRONT FACE

- The light receiving face of the CCD camera (Dirt, water or oil deposits on the CCD will cause an unclear picture on the monitor. Attach the lens cap to protect the lens and CCD from contamination and damage.)

### 2) LENS MOUNT

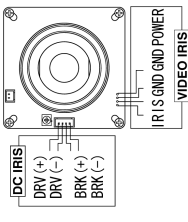
- Mount for the lens (Thread type)
- FOCUSING ADJUSTMENT SCREWS
- There are 3 hex. adjustment screws each placed at intervals of 120° for fine focusing of the lens.

### 4) AE MODE CONTROL SWITCH

- The switch for the shutter speed mode control according to the object being monitored.

## Auto-iris Lens

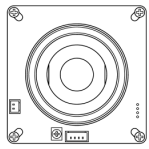
There are two output terminals on the W-01MAB2. One for Video auto-iris lenses and one for DC auto-iris lenses. Please pay attention to the correct wiring configuration, as shown in the figure on the right. When a DC auto-iris lens is used, see the [Power Supply and Wiring] section.



NB. Damage will occur if the correct wiring configurations are not adhered to.

## Mounting Holes

As shown in the figure on the right, the W-01MAB2 provides four mounting holes, one in each corner of the circuit board. Take the M2 screws from the mounting holes in each corner, then fix the unit securely using the M2 screws again. Once the board is secured proceed with the following steps below.



## Set-up and Operation

- 1) Ensure that the power to the W-01MAB2 and the peripheral equipment is turned off before making any connections.
- 2) Remove the lens mount cap from the W-01MAB2 and attach the CS-mount lens. Use the optional C-mount adaptor (30CMA-R) when a C-mount lens is used.
- 3) Connect the iris cable to the W-01MAB2 as shown above in [Auto-iris Lens] section, when an auto-iris lens is being used.

- 4) Connect the attached cable to 9) POWER IN/VIDEO OUT. See the [Power Supply and Wiring] section.

- 5) Connect a coaxial cable with 75Ω impedance, such as an RG-58/U or an RG-6/U to the monitor. Select a monitor with the same television system as the W-01MAB2: EIA or CCIR. A monitor with more than 600TV lines is recommended.

- 6) Turn on the power to the W-01MAB2, monitor and all other allied equipment. When a picture cannot be obtained on the monitor, check and follow the procedure mentioned in the [Problems and Trouble Shooting] section.

- 7) After following the procedure below and the picture is still out of focus, open the iris fully and loosen 3) FOCUSING ADJUSTMENT SCREWS with the hex. wrench and move the lens forwards until a clear picture is obtained.

Manual Lens	Adjust the focus and iris to the best position on the lens.
Video Auto-iris Lens	Adjust the focus on the lens.
DC Auto-iris Lens	Adjust the iris level on the camera, then adjust the focus on the lens. See below.

- 8) Select the shutter mode by 5) ELECTRONIC SHUTTER ON/OFF SWITCH according to your environment. When shutter mode is OFF, the shutter speed will be fixed at EIA 1/60sec., and for CCIR 1/50sec.. When the shutter mode is ON, select the shutter speed mode by 4) AE MODE CONTROL SWITCH.

No.	Mode	Shutter Speeds (Sec.)	
		EIA	CCIR
0	FL	1/100	1/120
1	ES		1/250
2	ES		1/500
3	ES		1/1000
4	ES		1/2000
5	ES		1/5000
6	ES		1/10000
7	ES		1/100000
8	EI: OFF	1/60 – 1/100000	1/50 – 1/100000
9	EI: FL	1/100 – 1/100000	1/120 – 1/100000

- 5) ELECTRONIC SHUTTER ON/OFF SWITCH
- The switch for selecting electronic shutter mode

### 6) MGC VOLUME ADJUSTMENT

- The volume for setting manual gain control
- 7) HI/LO SWITCH FOR GAIN LEVEL
- The switch for selecting HI or LO mode of AGC/MGC.
- 8) FUNCTION SWITCHES
- Functional switches for setting gamma control and AGC.

### 9) POWER IN/VIDEO OUT

- The terminal for power input and video signal output. Use the attached connector with cables for this purpose.

### 10) TERMINAL FOR AUTO-IRIS LENS (VIDEO CONTROL)

- The terminal for a Video-driven auto-iris lens. Do not connect a DC-driven auto-iris lens to this terminal.

### 11) TERMINAL FOR AUTO-IRIS LENS (DC CONTROL)

- The terminal for a DC-driven auto-iris lens. Do not connect a Video-driven auto-iris lens to this terminal. Use the attached connector with cables for this purpose.

### 12) IRIS LEVEL VOLUME

- By controlling the volume, the iris level of a DC iris lens can be adjusted.

### 13) SYNC IN

- BNC terminal for the external synchronization signal input. Use the attached connector with cables for this purpose.

## Power Supply

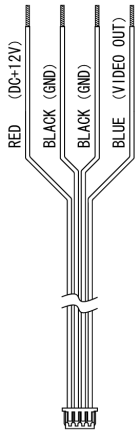
If any other power adaptor besides the AD901-120/230 is used, please use a stabilized power adaptor designed for DC+12V ± 10%, with a current capacity of more than 250mA.

## Wiring

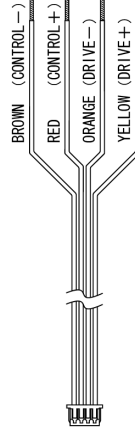
The wiring on the connector must be exact.

Be careful not to touch the other terminal while wiring. Protect the wiring portion by using insulation tape after wiring. If the above care and attention is not adhered to, damage to the W-01MAB2 and power adaptor may occur or may cause fire.

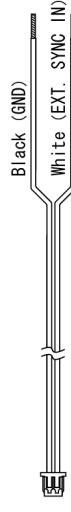
### Cable for power supply and video



### Cable for DC iris



### Cable for external synchronization



- 9) Set the ⑥FUNCTION SWITCHES according to your environment.  
When AGC is selected, set the gain level by ⑦HI/LO SWITCH FOR GAIN LEVEL. When the AGC is OFF(MGC), adjust the gain level by ⑥MGC VOLUME ADJUSTMENT.

Switch	Setting	Effect	Upon Shipment
1. Gamma Correction	ON	Applicable to a general surveillance monitoring system	V
	OFF	When gamma correction is not required for image processing	
2. AGC	ON	When sensitivity is more important than SN ratio, and when an auto iris lens can not be used for general surveillance purposes.	V
	OFF (MGC)	When the environment is constant without change of illumination and when a fixed gain level is required.	

- 10) When the external sync. function is required, input the composite video or the composite sync. signal to ③SYNC IN. The range of the level for composite sync. is 0.2 to 2.0(p-p). The camera has a resistance of 10k $\Omega$ . When more than 75 $\Omega$  termination is required for impedance matching, add the additional  $\Omega$ s to the external sync. signal line.

## Options

To purchase these options, please contact the distributor or dealer from which you purchased the W-01MAB2.



### AC Adaptor (AD901-120/230)

The recommended AC adaptors for the W-01MAB2 for a constant and stable power supply. This adaptor is for one camera only.



### C-mount Adaptor (30CMA-R)

This lens mount adaptor is used to convert a CS-mount to a C-mount.

## Specifications

Model	W-01MAB2 (EIA)	W-01MAB2 (CCIR)
Pick-up Element	1/2 inch interline transfer CCD image sensor	
Number of Total Pixels	811(H) x 508(V)	795(H) x 596(V)
Number of Effective Pixels	768(H) x 494(V)	752(H) x 582(V)
Unit Cell Size	8.4 $\mu$ m(H) x 9.8 $\mu$ m(V)	8.6 $\mu$ m(H) x 8.3 $\mu$ m(V)
Sync. System	Internal / External (CVBS, VBS, BBS)	
Scanning System	2:1 interlace	
Video Output	Composite video, 1.0V(p-p) 75 $\Omega$ (Unbalanced)	
External Sync. System	C. video / C. sync.	
External Sync. Signal Level	Sync. Signal portion 0.2-2.0V(p-p)	
Resolution (H)	More than 570TVL (Center)	
Minimum Illumination	0.0003 lx F1.4	
S/N	More than 50dB (AGC=5dB, $\gamma$ =1.0)	
	OFF	1/60 sec.
	FL	1/100 sec.
	ES	1/250, 1/500, 1/1000, 1/2000, 1/5000, 1/10000, 1/100000, 1/1000000 sec.
EI	1/60 - 1/1000000 sec.	1/50 - 1/1000000 sec.
AGC	HI: 5 - 50 / LO: 5 - 32dB	
MGC	HI: 32 - 50 / LO: 5 - 32dB	
Gamma Characteristics	$\gamma$ $\approx$ 0.45(ON) / $\gamma$ = 1.0(OFF)	
Power Supply	DC+12V $\pm$ 10%	
Power Consumption	1.56W (130mA)	
Operating Temperature	-10 - 40 $^{\circ}$ C	
Operating Humidity	Less than 95% RH (Without condensation)	
Storage Temperature	-30 - 70 $^{\circ}$ C	
Storage Humidity	Less than 95% RH (Without condensation)	
Lens Mount Size	CS-mount 42(W) x 42(H) x 21(L) (mm)	
Weight	Approx. 35g	

- Design and specifications are subject to change without notice.
- Watec is not responsible for any inconvenience or the attendant damages to the video and monitoring recording equipment caused by misuse, misoperation or improper wiring of our equipment.
- If for any reason the W-01MAB2 does not work properly, or if you have any questions regarding installation or operation, please contact the distributor or dealer from which it was purchased.

## Contact information

**Watec** Watec Co., Ltd.

Addr.: 254-2 Nihonkoku, Daihoji, Tsuruoka-Shi,  
Yamagata-Ken, 997-0017 Japan  
TEL: +81-235-23-4400 FAX: +81-235-23-4409  
E-mail: info-o@watec.co.jp  
URL: http://www.watec.net

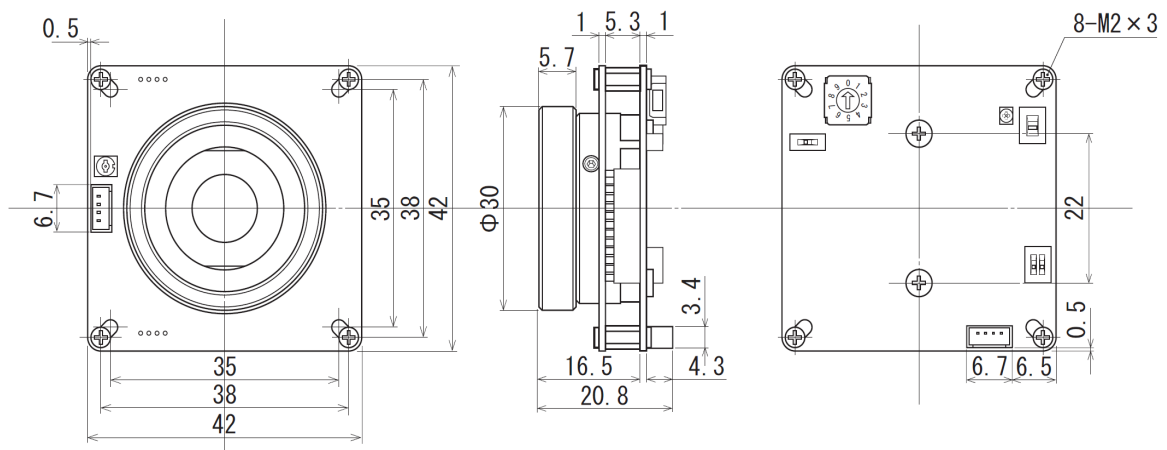
139Z00-Y2200003

## SPECIFICATIONS

Model		W-01MAB2 (EIA)	W-01MAB2 (CCIR)
Pick-up element		1/2 inch interline transfer CCD image sensor	
Number of total pixels		811(H) × 508(V)	795(H) × 596(V)
Number of effective pixels		768(H) × 494(V)	752(H) × 582(V)
Unit cell size		8.4μm(H) × 9.8μm(V)	8.6μm(H) × 8.3μm(V)
Synchronizing system		Internal / External (CVBS, VBS, BBS)	
Scanning system		2:1 interlace	
Video output		Composite Video, 1Vp-p, 75ohms, unbalanced	
Resolution (Horizontal)		570TVL (Center)	
Minimum illumination		0.0003lx F1.4	
S/N		More than 50dB (AGC=5dB, γ=1.0)	
AE mode	Fixed	1/60, 1/100sec.	1/50, 1/120sec.
	EI	1/250, 1/500, 1/1000, 1/2000, 1/5000, 1/10000, 1/100000 sec.	1/50 - 1/100000 sec.
		1/60 - 1/100000 sec. 1/100 - 1/100000 sec.	1/120 - 1/100000 sec.
AGC		HI: 5 - 50dB / LO: 5 - 32dB	
MGC		HI: 32 - 50dB / LO: 5 - 32dB	
Gamma characteristics		γ ≐ 0.45(ON) / γ = 1.0(OFF)	
Lens iris		Video / DC (EIAJ arrangement)	
Power supply		DC+12V±10%	
Power consumption		1.56W (130mA)	
Operating temperature		-10°C - +40°C	
Storage temperature		-30°C - +70°C	
Operating / Storage humidity		Less than 95% RH (Without condensation)	
Lens mount		CS mount	
Weight		Approx. 35g	

※Design and specifications are subject to change without notice.

## DIMENSIONS (mm)

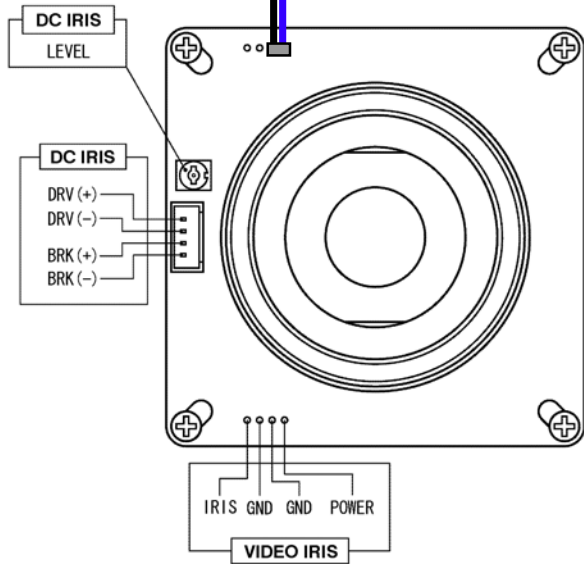
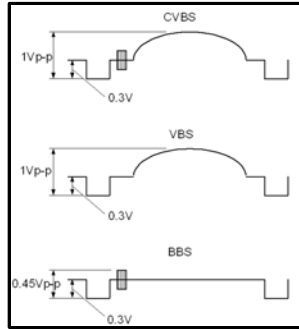


# W-01MAB2

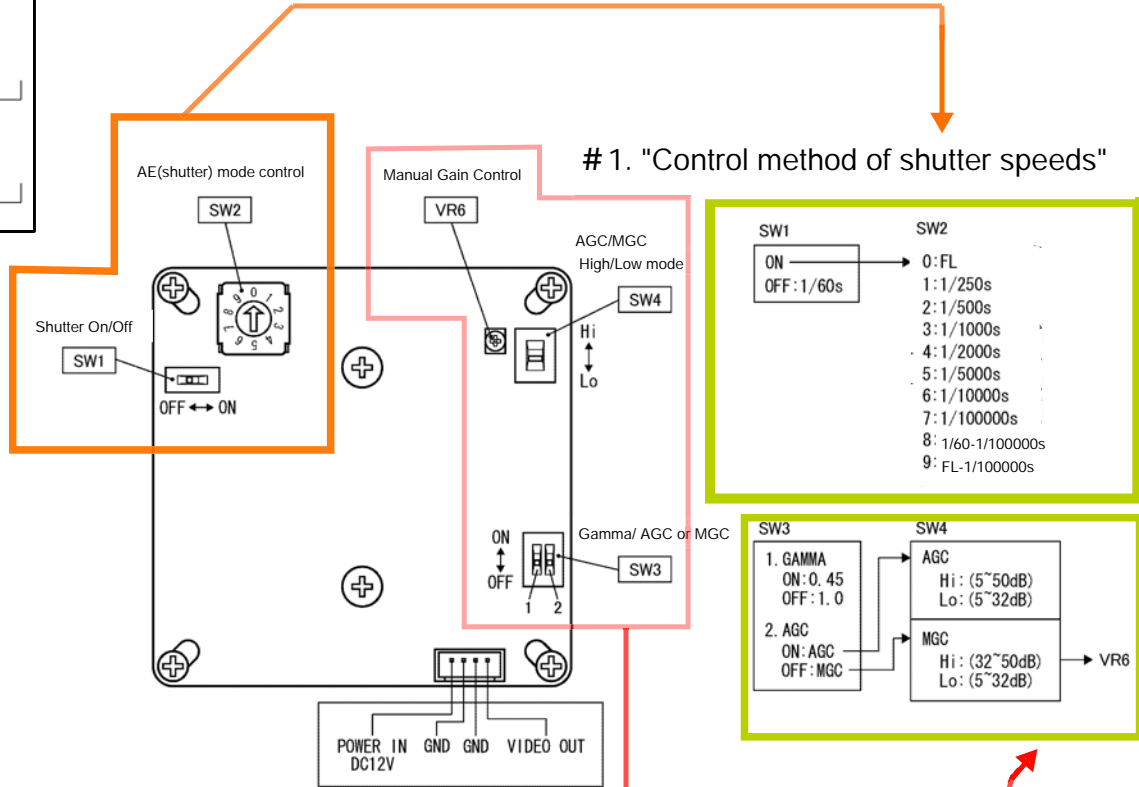
Input slot for External sync.

Notify: The range of external sync. is 0.2-2.0 V(p-p).

The camera has a resistance of 10k ohm inside the camera.  
(input signal " is terminated at high impedance (Type.10k Ω))



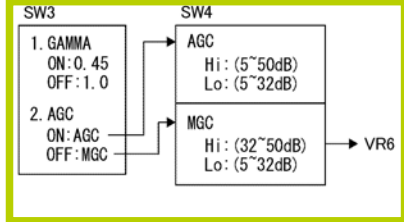
Front side



Back side

## # 1. "Control method of shutter speeds"

SW1	SW2
ON	0: FL
OFF	1: 1/250s
	2: 1/500s
	3: 1/1000s
	4: 1/2000s
	5: 1/5000s
	6: 1/10000s
	7: 1/100000s
	8: 1/60-1/100000s
	9: FL-1/100000s



## #2. "Setting method of Gamma & AGC/MGC"

### \* Accessory

1. DC Iris cable: 15cm tinned cable with male Molex connector
2. Video/Power cable: 30cm tinned cable and male Molex connector
3. External sync.cable: 30 cm tinned cable and male Molex connector
4. Hexagonal wrench

Commercial accessory  
30 cm cable with Molex connector and BNC connector

一般公差 mm	16mm以下	±0.1	16をこえ63mm以下	±0.2	63をこえ250mm以下	±0.3	一般角度公差	± 30'
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# W-01MAB2

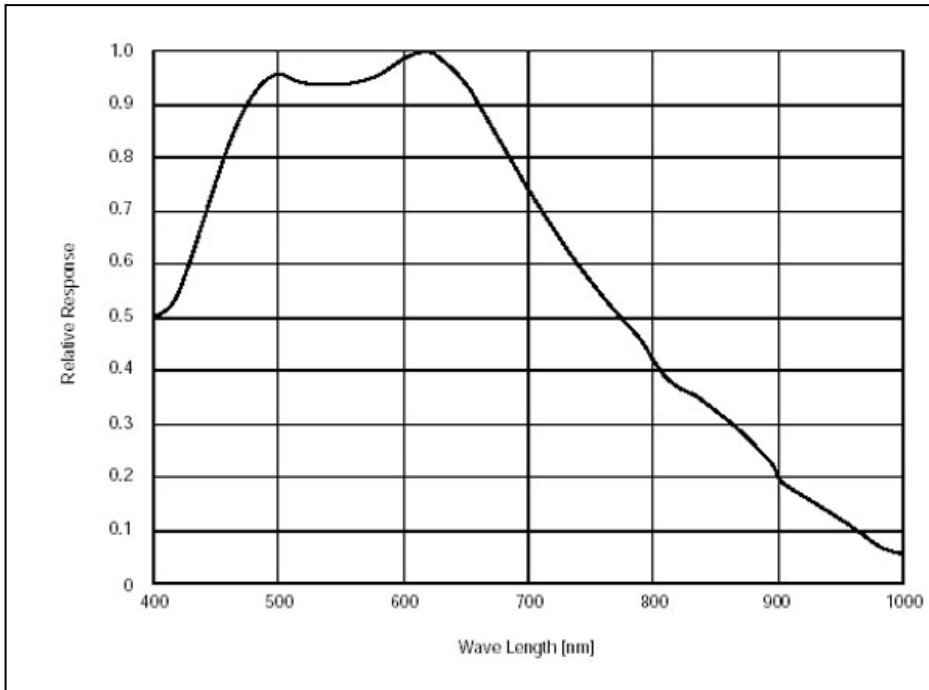
## Relative Response Chart

### Features

1. Visibility is assured in conditions with a minimum illumination of 0.0003 lux (F1.4)
2. Sensitive to 940nm. An infrared illuminator (700nm~950nm) can be used to monitor an object in absolute darkness.
3. High resolutions of 380K(EIA), 440K(CCIR) pixels (570 horizontal TV lines).

### CCD Response

Visibility is assured in conditions with a minimum illumination of 0.0003 lux (F1.4).



**W-01MAB2**

*CCD Imager Sensitivity*