



English

**iVISION:security™**  
**1.3M Pixel Intelligent Camera**  
**VCC-V90S**

**Product Specification**  
**& Operation Manual**

**CIS Corporation**

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## 1. Scope of Application

This is to describe VCC-V90S, a high resolution 1/3" 1.3Mpixel CCD image sensor intelligent camera. All specifications contained herein are subject to change without prior notice. Reproduction in whole or in part is prohibited.

## 2. Handling Precautions

The camera must not be used for any nuclear equipments or aerospace equipments with which mechanical failure or malfunction could result in serious bodily injury or loss of human life.

Our warranty does not apply to damages or defects caused by irregular and/or abnormal use of the product.

Please observe all warnings and cautions stated below. Our warranty does not apply to damages or malfunctions caused by neglecting these precautions.

- Do not use or store the camera in the following extreme conditions:
  - Extremely dusty or humid places.
  - Extremely hot or cold places (operating temperature  $-5$  to  $+45$  )°C
  - Close to generators of powerful electromagnetic radiation such as radio or TV transmitters.
  - Places subject to fluorescent light reflections.
  - Places subject to unstable (flickering, etc.) lighting conditions.
  - Places subject to strong vibration.
- Do not apply excessive force or static electricity that could damage the camera.
- Do not shoot direct images that are extremely bright (e.g., light source, sun, etc.) and when camera is not in use, put the lens cap on.
- Connect the camera properly. Improper connection may cause damages not only to the camera but also to the connected devices.
- Confirm the mutual ground potential carefully and then connect the camera to monitors or computers. AC leaks from the connected devices may cause damages or destroy the camera.
- Do not apply excessive voltage. (Use only the specified voltage.) Unstable or improper power supply voltage may cause damages or malfunction of the camera.
- Electric current of the auto Iris Lens must be less than 50mA.
- Protruding portion of the lens from the lens mount surface must be less than 4.8mm.  
If C mount lens is installed while CS adjust is set, it might result in breaking lens or the camera.
- Electronic Iris and Lens iris may cause "hunting" effect, depending on the image subject.
- Electronic iris mode can have a color change when used with fluorescent lights.

### 3. Product Outline

VCC-V90S is an intelligent camera, utilizing a 1/3 inch, 1.25Mpixel CCD image sensor.

#### Features

- CCD uses Ye•Cy•Mg•G mosaic color filter that enables high resolution and sensitivity.
- V90S is built around Texas Instruments' "DaVinci™" technology and enables the camera to be programmable internally.
- Enables NTSC/PAL for monitor video output. Digital image can be output via Ethernet.
- Supports both http and ftp protocol.
- SXGA (1280×720 @30fps), HDV (1280×960 @22.5fps), VGA (640×480 @30fps), QVGA(320 x 480@30fps)
- Wide Dynamic Range Process at VGA resolution.
- Dynamic Range Compression process. Long exposure shutter feature provides brilliant image even in very low light environment. Also supports dynamic range compensation feature by Apical Limited.
- Allows longer shutter speed to provide high quality image in low lighting environment.
- IR Cut filter IN/OUT feature can switch modes with AGC values automatically.
- DC Iris control.
- Enables electronic zoom and focus lens connectivity.
- RS-232C port .
- C/CS Mount ready
- Power can be supplied by both DC+12V
- Audio input and line output
- Integrated I/O switch connector

## 4. Specification

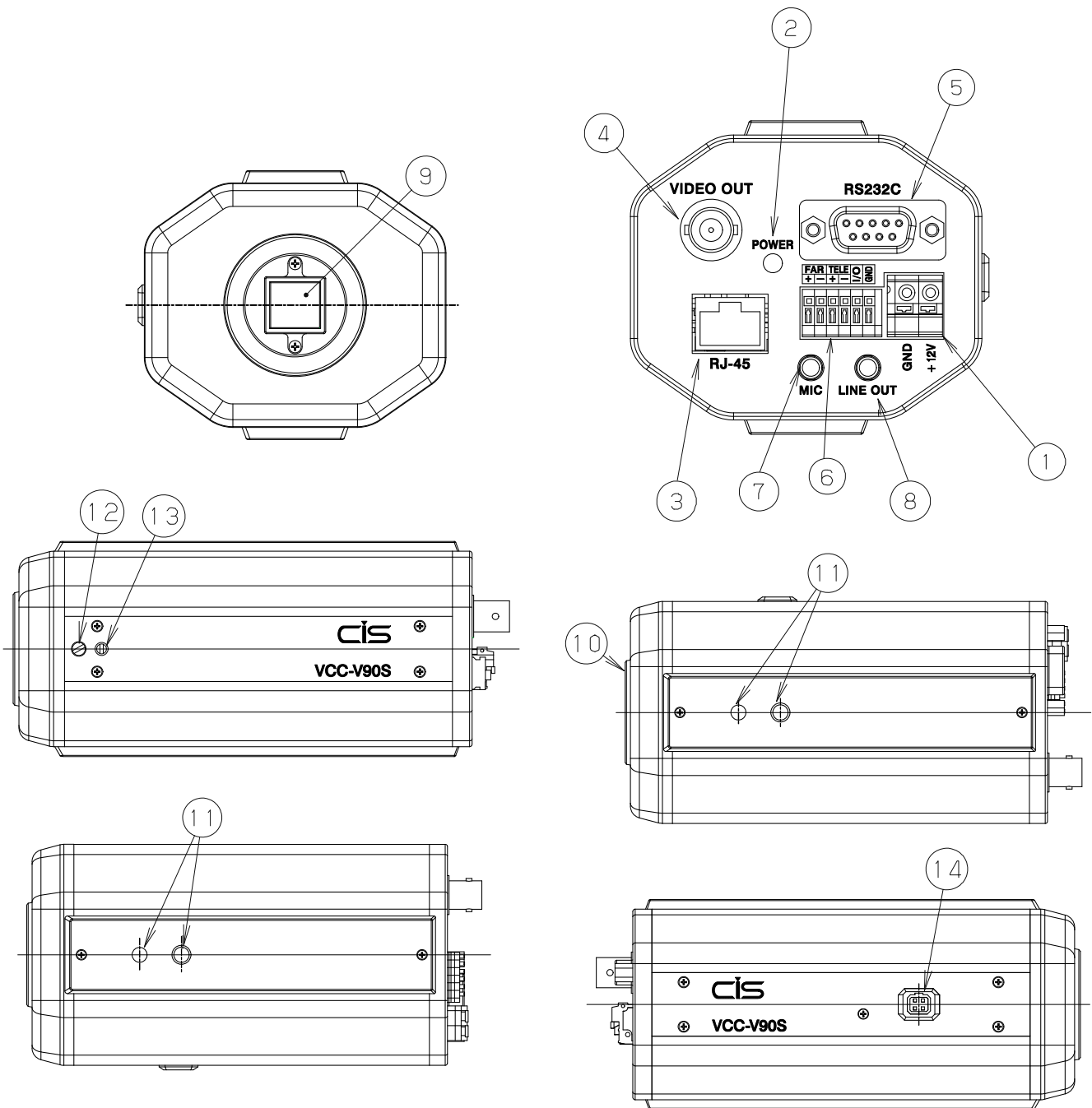
## 4.1. General Specification

(1) Pickup Device	Device Type	1/3" Interline Transfer Color CCD SONY ICX445AKA	
	Total Pixel no.	1348(H) × 976(V)	
	Effective pixel no.	1296(H) × 966(V)	
	Active pixel no.	1280(H) × 960(V)	
	Unit cell size	3.75μm(H) × 3.75μm(V)	
	Chip size	6.26mm(H) × 5.01mm(V)	
(2) Video output frequency (camera->DSP)	SXGA 22.5fps(Progressive scan mode)		
	Pixel Clock	36.00 MHz ±100ppm	
	Horizontal Frequency	22.50 KHz ±100ppm	(1600 CLK)
	Vertical Frequency	22.47 Hz ±100ppm	(1001 H)
	VGA 30fps(4 pixel addition mode)		
	Pixel Clock	36.00 MHz ±100ppm	
	Horizontal Frequency	16.48 KHz ±100ppm	(819 CLK)
	Vertical Frequency	29.97 Hz ±100ppm	(550 H)
	HDV 30fps(Center cut-out mode)		
	Pixel Clock	36.00 MHz ±100ppm	
	Horizontal Frequency	23.37 KHz ±100ppm	(1540 CLK)
	Vertical Frequency	29.9586 Hz ±100ppm	(780 H)
	QVGA 30fps(4 pixel addition mode)		
	Pixel Clock	18.00MHz	
	Horizontal Frequency	8.18 KHz	(2200 CLK)
	Vertical Frequency	29.9 Hz	(273 H)
(3) Video output standard	Ethernet•Monitor (NTSC/PAL)		
(4) Image Pickup Method	Single-board Ye,Cy,Mg,G Mosaic		
(5) Resolution	Monitor	: 330 TV Lines or more (VGA)	
	Ethernet	: 660 TV Lines or more (SXGA,HDV)	
(6) Sensitivity	2000 Lux (Shutter 1/30s, Gain 0dB)		
	VGA	F8 or more	
	HDV	F5.6 or more	
(7) Minimum Illumination	VGA(F1.4 Shutter 1/30s,VIDEO 50%,AGC 30dB)		
	1.0 Lux (IRCUT_IN)		
	0.1 Lux (IRCUT_OUT)		
	HDV(F1.4 Shutter 1/30s,VIDEO 50%,AGC 30dB)		
	2.0 Lux (IRCUT_IN)		
	0.2 Lux (IRCUT_OUT)		
	SXGA(F1.4 Shutter 1/22.5s,VIDEO 50%,AGC 30dB)		
	1.5 Lux (IRCUT_IN)		
	0.15 Lux (IRCUT_OUT)		
(8) Dust or stains in optical system	No dust or stain shall be detected on the testing screen with F16		

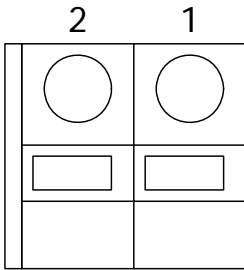
(9) Power requirements	DC+12V±10% (Max voltage not to exceed +13.2V), or IEEE 802.3af CLASS 3 (4.49 to 12.95W)
(10) Power consumption	6.5W (DC+12V IN) 7.5W(IEEE 802.3af)
(11) Dimension	Refer to overall dimension drawing: H:66 mm W:74 mm D:139 mm (excluding projection)
(12) Network connectivity	10Base-T/100Base-TX Ethernet(RJ-45)
(13) Weight	Appx. 490g (Camera part)
(14) Lens mount	C/CS mount (refer to overall dimension drawing)
(15) Monitor output frequency	Horizontal Frequency 15.73KHz Sub carrier Frequency 3.579MHz Vertical Frequency 59.94Hz
(16) Gain	AGC OFF AGC (0dB~+18dB) AGC (0dB~+30dB) MANUAL (0dB~+30dB)
(17) Shutter Speed	AES OFF AES (2sec~1/10000) MANUAL (2sec~1/10000)
(18) White balance	ATW1 ATW2 FIX 3200°K FIX Fluorescent FIX 5600°K MANUAL ONE PUSH
(19) Automatic Iris	DC IRIS: 4 pin square connector <input type="checkbox"/> When used parallel, AES works first and DC IRIS will work after.
(20) Audio input	Microphone input (Plug in power method 2.5V) Monaural input (3.5 Monaural mini-jack) <input type="checkbox"/> Camera uses a stereo mini-jack, however, the other side must use a monaural mini-plug
(21) Audio output	Line output Monaural output (3.5Φ Monaural mini-jack) <input type="checkbox"/> Camera uses a stereo mini-jack, however, the other side must use a monaural mini-plug
(22) I/O	1 I/O Switch control Output: Open collector (PULL UP 10KΩ +5V) Input: Connector set to OPEN identifies "1",les than 1KΩGND, PULL DOWN:"0" (PULL UP 10KΩ +5V)
(23) White clip	714 mV ± 5% (Monitor output, 75Ω NTSC end)
(24) SYNC	286 mV ± 5% (Monitor output , 75Ω NTSC end)
(25) Setup	23 ± 10mV (Monitor output , 75Ω NTSC end, AGC Off)
(26) BURST	286 mV ± 5%( Monitor output , 75 Ω NTSC end)
(27) γ Gamma compensation	γ□0.45
(28) Wide dynamic range	VGA setting allows 2 CCD exposure images can be output, and also the feature can be switched to OFF/On
(29) Dynamic range compensation	VGA setting allows Dynamic Range Compensation process(by Apical Ltd.) and also the feature can be switched to OFF/ON.
(30) IR-CUT IN/OUT	Can be controlled by Gain



5. Description of components



① Power connector



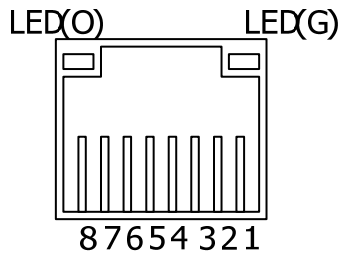
pin		Description
1	DC+12V	Input DC+12V+-10%
2	GND	GND

② POWER LED

It lights when power is supplied properly.

③ RJ-45 10/100Base Ethernet connector

Connect to Ethernet

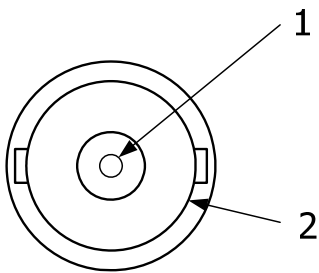


pin		Description		
1	TX+	Transmit twist pair (+)		(Alternative A)
2	TX-	Transmit twist pair (-)		(Alternative A)
3	RX+	Reception twist pair (+)		(Alternative A)
4	SPARE	Spare twist pair		(Alternative B)
5	SPARE	Spare twist pair		(Alternative B)
6	RX-	Reception twist pair (-)		(Alternative A)
7	SPARE	Spare twist pair		(Alternative B)
8	SPARE	Spare twist pair		(Alternative B)

LED(G):Link Status    LED(O): Receive Status

④ VIDEO OUT

Video output connector. Connects to a monitor via BNCconnector cable.

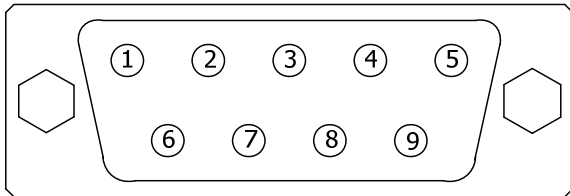


pin		Description
1	VIDEO	VIDEO output signal (75Ω,1Vp-p)
2	GND	GND

⑤ RS232Cconnector

9pin D-SUB(Femal) connector for serial communication

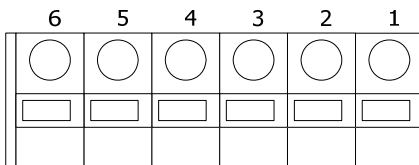
Please use cross cable when connecting with a PC.



pin		Description
1	(N.C.)	Not connected
2	RxD	Receive signal
3	TxD	Transmit signal
4	DTR	Control signal (connect with 6pin internally)
5	GND	GND
6	DSR	Control signal (connect with 4pin internally)
7	RTS	Control signal (connect with 8pin internally)
8	CTS	Control signal (connect with 7pin internally)
9	(N.C.)	Not connected

⑥ I/O connector

Ports for the signal for Electric lens and I/O switch.



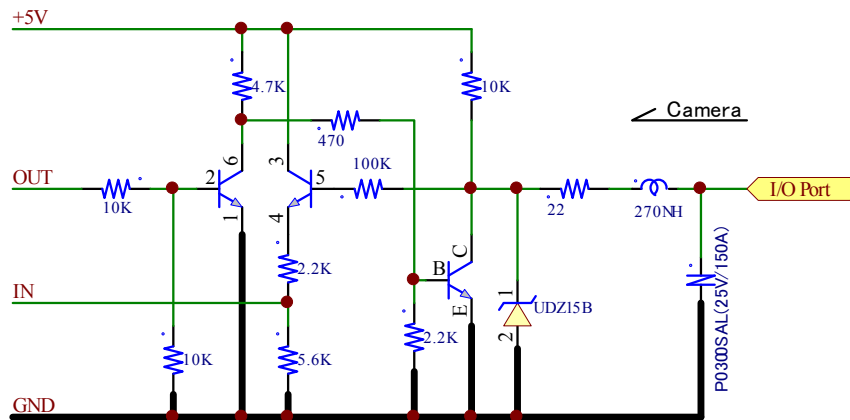
pin		Description
1	GND	GND
2	I/O	I/O switch port
3	LENS TELE-	Electric lens TELE-
4	LENS TELE+	Electric lens TELE+
5	LENS FAR-	Electric lens FAR-
6	LENS FAR+	Electric lens FAR+

## I/O ports

Output is set as Open collector (+5V PULL UP 10K $\Omega$ )(Max.20mA, Max.+5.5V)

Input is set as Emitter Follower (+5V PULL UP 10K)(Max.20mA,Max.+5.5V)

At the time of input, set connector OPEN to identify "1", and connect between a connector and GND as short or less than 1K $\Omega$  to identify "0".



## Output for Electric lens

This connector controls zoom/focus for the Electric lens

TELE+,- : The voltage difference between + and - connectors occurs when electric zoom command is issued.

If change to oppoite direction, the voltage difference direction also changes.

When stops, the pressure becomes 0.

No load operation: +,- connector pressure: 7V

220 $\Omega$  load operation: +,- connector pressure: 6.7V

FAR+,- : The voltage difference between + and - connectors occurs when electric focus command is issued.

If change to oppoite direction, the voltage difference direction also changes.

When stops, the pressure becomes 0.

No load operation: +,- connector pressure: 7V

220 $\Omega$  load operation: +,- connector pressure: 6.7V

## ⑦ MIC IN connector

Input connector for audio.

Plug-in power standard microphone can be connected. (2.5V)

Can be used as a LINE IN

Please use 3.5 monaural mini plug for input

Camera side uses a stereo mini jack, however, please use monaural mini plug

## ⑧ LINE OUT connector

Output connector for audio

Please use 3.5 monaural mini plug for output

Camera side uses a stereo mini jack, however, please use monaural mini plug

## ⑨ Imaging system

Image sensor is installed.

## ⑩ Lens Mount

C/CS mount lens

When installing C mount lens, adjust C/CS mount to C and install.

Lens size: screw length 6mm or less from lens mount, stick out must be less than 9.8mm for C mount lens, and less than 4.8mm for CS mount lens.

## ⑪ Mounts for Tripod

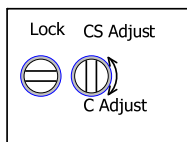
To install a camera on a tripod.

## ⑫ Mount lock screw

## ⑬ Mount adjustment screw

This is used to switch C/CS mount, flange back adjustment and setup. Please set this before mounting a lens.

C/CS mount adjust steps



Please note that if C mount lens is installed while having a CS Adjust setting, lens or camera could be damaged.

Setup:

- (1) Move Lock counter clockwise and unlock
- (2) Move Clockwise for C mount counter clockwise for CS mount, then install lens and adjust back focus.
- (3) When done, move Lock clockwise to lock it.

## ⑭ DC IRIS connector

4pinconnector for DC IRIS

	pin	
	1	DAMP-
	2	DAMP+
	3	DRIVE+
	4	DRIVE-(GND)

When using DC IRIS, use command to enable it, otherwise aperture will be opened.

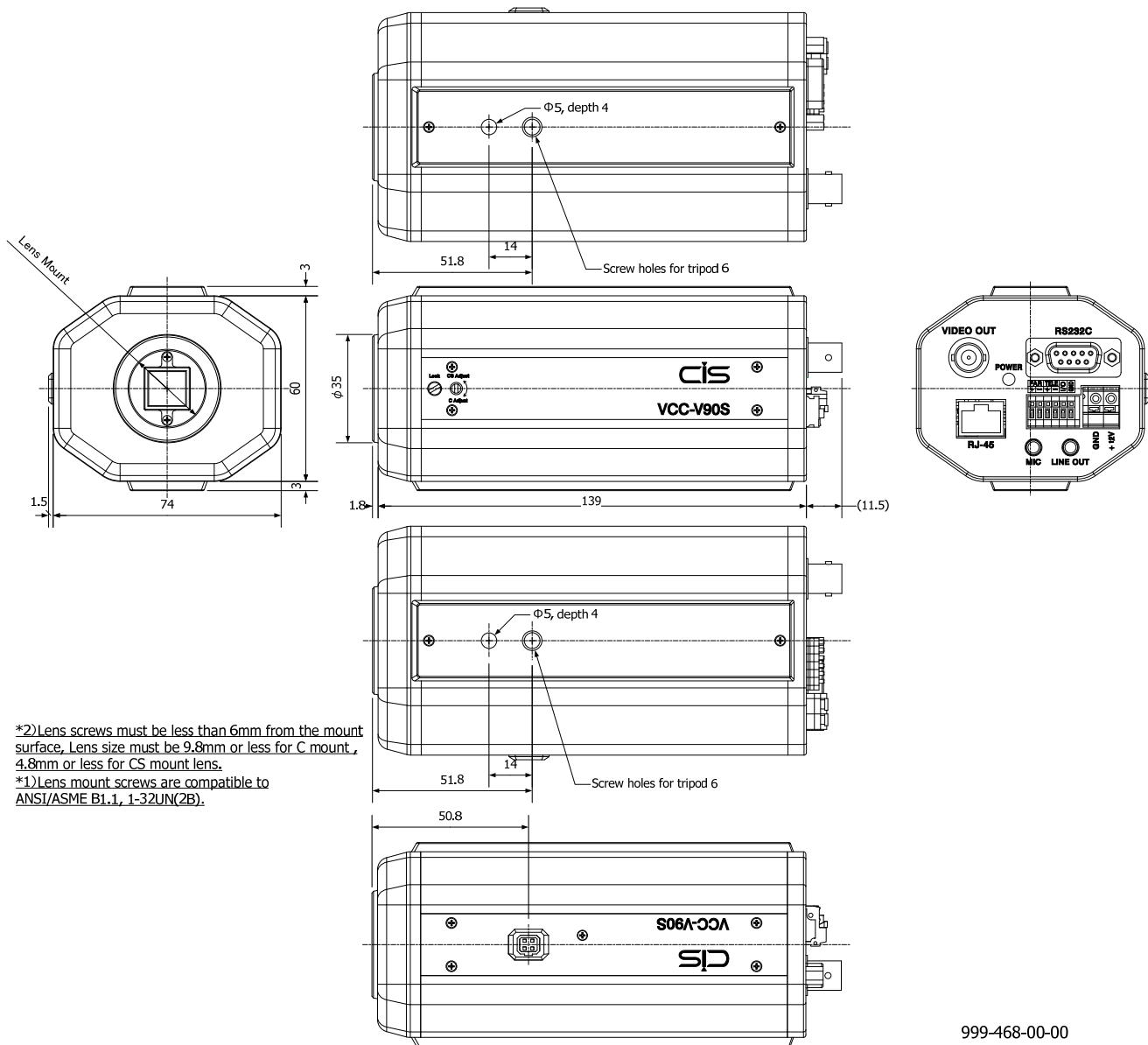
When AES(AUTO SHUTTER) and DC IRIS are both enabled, AES will work first then DC IRIS will work when the environment becomes brighter.

Do not use MANUAL SHUTTER slow side (1/15~2sec) and DC IRIS at the same time. DC IRIS will cause hunching.

## 6. Shipping Settings

▪ Format	VGA
▪ Gain	AGC(0dB~ +18dB)
▪ Shutter	OFF
▪ AE SPEED	10
▪ WB	ATW1
▪ WD	OFF
▪ APICAL	OFF
▪ AE LEVEL NOR	10
▪ AE LEVEL WD	8
▪ D&N	IN
▪ D&N IR_Cut IN	+18dB
▪ D&N IR_Cut OUT	+30dB
▪ DC IRIS	ON
▪ IRIS SPEED	4
▪ LENS ZOOM	STOP
FOCUS	STOP
▪ E ZOOM	0
▪ PAN	0
▪ TILT	0
▪ Audio	Normal Mode

7. Dimensions



999-468-00-00

(Unit:mm)

## 8. Cases for Indemnity (Limited Warranty)

When defects or malfunction of V90S is detected when warranty is in effect, follow the instruction described below at section 10, and CIS will provide necessary repair free of cost.

However, CIS shall be exempted from taking responsibility and held harmless for damages or losses incurred by the user in the following cases. For the repairs beyond warranty period, CIS shall provide appropriate repair at cost.

- ◇ In case damage or losses are caused by fire, earthquake, or other acts of God, acts by third party, deliberate or accidental misuse by the user, or use under extreme operating conditions.
- ◇ In case indirect, additional, consequential damages (loss of business interests, suspension of business activities) are incurred as result of malfunction or non-function of the equipment, we shall be exempted from responsibility for such damages.
- ◇ In case damage or losses are caused by failure to observe the information contained in the instructions in this product specification & operation manual.
- ◇ In case damage or losses are caused by use contrary to the instructions in this product specification & operation manual.
- ◇ In case damage or losses are caused by malfunction or other problems resulting from use of equipment or software that is not specified.
- ◇ In case damage or losses are caused by repair or modification conducted by the customer or any unauthorized third party (such as an unauthorized service representative).
- ◇ Expenses we bear on this product shall be limited to the individual price of the product.

## 9. CCD Pixel Defect

CIS inspects and confirms no unit has CCD pixel defect before shipping out of our factory.

On very rare occasions, however, CCD pixel defects might be noted with time of usage of the products.

Cause of the CCD pixel defects is the characteristics phenomenon of CCD itself. This issue is out of the warranty.

## 10. Product Support

When defects or malfunction of our products occur, and if you would like us to investigate on the cause and repair, please contact your distributors you purchased from to consult and coordinate.