

1/3" CMOS HIGH SENSITIVE DAY/NIGHT HD CCTV



CHDC-21BSDC
HD CCTV CAMERA

THANK YOU FOR CHOOSING ORION

Thank you for choosing ORION Images high quality HD CCTV Camera.

Please read this instruction manual carefully to keep your ORION Images product at peak performance for longer service duration. All ORION Images products are designed and manufactured with utmost care and craftsmanship to provide long life and high quality performance, if it is properly used and maintained as outlined in this manual. This high performance HD CCTV camera is equipped with a 1/3" FHD CMOS sensor, which has extremely wide range of uses in many different applications and conditions.

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CAUTION



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device. Pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one or more of the following measures.

CAUTION:

ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PART RESPONSIBLE FOR COMPLIANCE COULD VOID THE USERS AUTHORITY TO OPERATE THE EQUIPMENT.

Instructions for Disposal of Electrical and Electronic Equipment in Private Households



Disposal of used Electric and Electronic Equipment (Applicable in the European Union and other European countries with waste recycling, disposal and collection regulations)

This symbol on the product, or in the related documents in the package, indicates that this product shall not be treated as normal household waste. Instead, it should be taken to a proper applicable collection point or depot for the recycling of electrical and electronic equipment.

By ensuring this product is disposed of correctly, you will help prevent possible negative consequences for the environment and human health which could otherwise be caused by inappropriate handling of this product. The correct recycling of materials will help to conserve natural resources.

For more detailed information about recycling of this product, please contact your local city authority, your household waste disposal service or the place where you purchased the product.

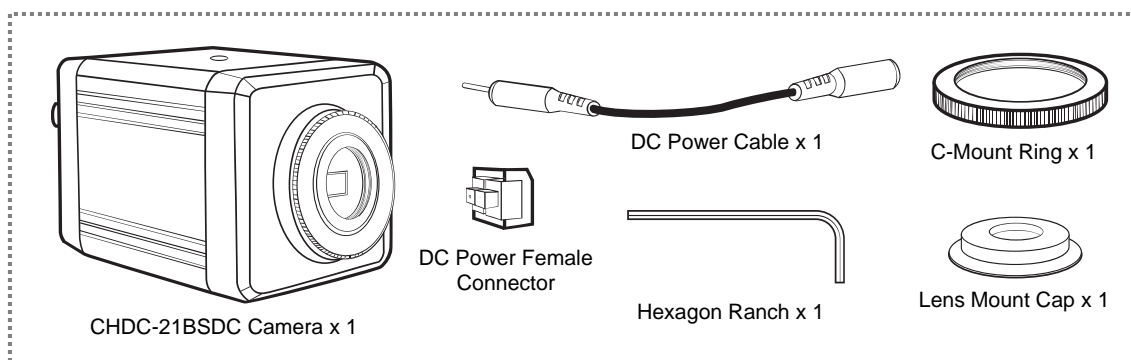
1. HANDLING PRECAUTIONS

- Do not install the camera in a water-splashed or highly humid environment.
- Do not use the camera where the ambient temperature drops below 0° C or rises above +50° C. The images and component parts may be adversely affected or the camera may not function correctly.
- Never open the camera case because there are precision electrical and electronic components inside and an accident may results.
- Do not put anything metallic or any other foreign substances through the vent, as a fire or electric shock may result.
- Be sure to turn off the power before installing or making connections.
- Do not install the camera in places exposed to heat, vibrations and shock.
- Be careful not to drop or give a strong shock to the camera while transporting it.
- Do not touch the image sensor.
- Do not orientate the camera directly towards the sun.
- Some types of lenses may hunt in adverse light conditions. In such cases please re-adjust the lens in line with the instructions in the manual.
- Because of the characteristics of the digital image device, images may look unnatural at high temperatures, this does not mean the camera is faulty.

2. GENERAL

This HD CCTV Camera is provided with a High performance 1/3 inch 2.1M CMOS sensor. The camera features a highly sensitive with high resolution, and is equipped with digital DAY/NIGHT function, intelligent back-light compensation by which you can achieve proper Back Light Compensation, Automatic iris control, Crystal controlled internal sync lock system, Various modes of convenient Automatic while balancing, mirror image, private mask function, motion detection, camera setup and control is also possible locally on the camera real panel, or remote via RS-232C and this setup data is stored in the built-in non-volatile memory. The camera is best suited for HD CCTV surveillance purposes, from single camera operation to large scale integrated systems for visual information management.

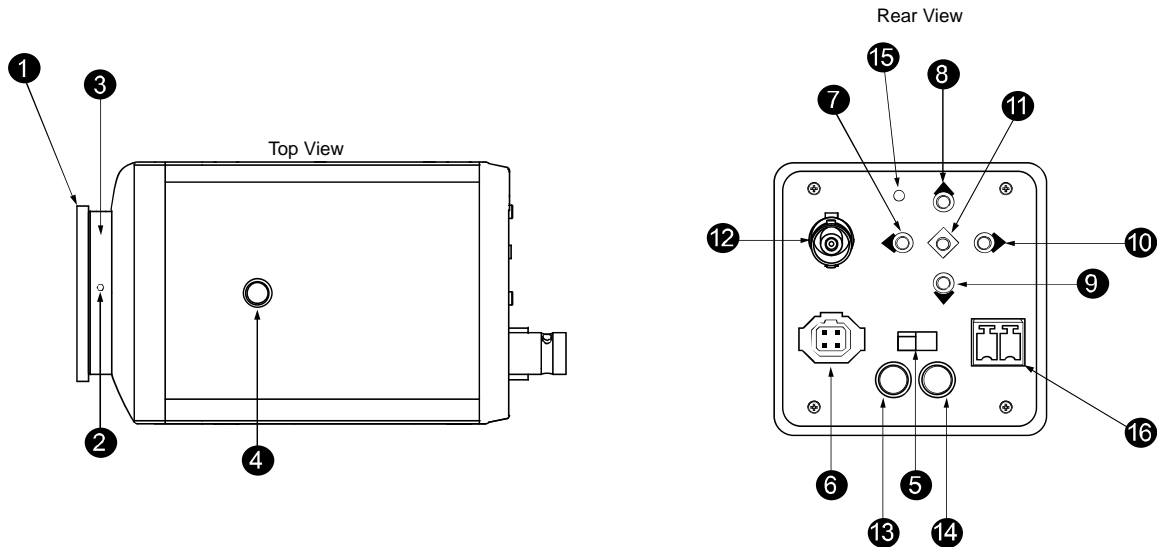
3. PACKAGE OF CONTENT



4. FEATURES

- 1 HD-SDI OUTPUT**
This camera outputs and HD-SDI signal featuring resolutions of 1920 x 1080p (30 / 25) or 1280 x 720p (60 / 50) SMPTE 274M standard.
- 2 TEST COLOR BAR**
A built-in the Test Color Bar signal makes easy for adjustment.
- 3 NTSC / PAL OUTPUT**
This output can be used for a test or an adjustment of the lens or camera angle when installed.
- 4 DAY / NIGHT FUNCTION**
This camera delivers high quality color images during the day. As light diminishes below a certain level, the camera can automatically switch to night mode to make use of near-infrared (IR) light to deliver high-quality, black and white images.
- 5 BACK LIGHT COMPENSATION**
Well-designed BLC, back light compensation, facility is provided which can assign a compensation area for back light compensation to have an optimum balanced clear picture reproduction.
- 6 TWO-WAY AUTOMATIC IRIS CONTROL**
This function is available to switch between Video type iris lens and DC type iris lens. In other words, almost all types of automatic iris CCTV lenses can be used.
- 7 AUTOMATIC OR MANUAL WHITE BALANCE**
In addition to the Auto white balance, this camera provide manually adjustment of Red / Blue Gamma.
- 8 ELECTRONIC SHUTTER**
A smooth control to compensate sensitivity variation with an electronically controlled Auto-shutter. Also manual shutter mode can be selected to capture the fast moving object (manual shutter speed – 1/30, 1/60, 1/120, 1/250, 1 /700, 1/1000, 1/1600, 1/2500, 1/5000, 1/7000, 1/10000, 1/30000).
- 9 PRIVACY MASKING FUNCTION**
The camera comes equipped with privacy masking, which covers sensitive areas in the screen that need to remain unseen. You can assign a maximum of 32 zones with adjustable size area to hide with this masking function.
- 10 LENS FLANGE BACK FOCUS ADJUSTMENT**
An easy adjustment can be done by using a hex driver provided. This may be useful when changing lens from single focal lens, vari-focal lens, long lens, or zoom lenses, or vice versa.
- 11 MOTION DETECTION**
This camera comes with motion detection, which covers sensitive areas in the screen that need to detect the motion. You can assign a maximum of 4 zones with adjustable size area.
- 12 MIRROR IMAGE**
This flips the image horizontally or vertically.
- 13 CAMERA ID**
Information can be inserted in the screen.

5. NAMES OF PARTS AND FUNCTIONS



① **C-MOUNT RING**

This can be removed when used with CS-Mount lens.

② **LENS FLANGE BACK FOCUS SCREW**

To be used to adjust the lens flange back focal distance (distance between lens mounting edge and image focal point), if the camera fails to come into focus with the lens focus ring, this can be used for re-adjustment of lens back focus using a hex driver attached.

③ **LENS MOUNT (CS MOUNT)**

This is used to mount the lens on the camera. Many types of CS mount lens can be used.

④ **CAMERA MOUNT SCREW HOLES**

These holes are used to install and fix the camera on the camera mounting or bracket. Those can be also applicable to normal use tripods which have a quarter inch thread. This mount located on the bottom and top of the camera.

NOTE:

To use these holes to attach the camera on a tripod or other mount, make sure you use suitable size mounting bolts as follows (1/4" -20UNC), they should not be longer than 5.5mm to avoid an un-stable installation.

⑤ **LENS IRIS CONTROL SELECTOR SWITCH**

The switch has two positions, for a video controlled auto-iris lens or a DC auto-iris lens.

⑥ **AUTO IRIS LENS CONNECTOR**

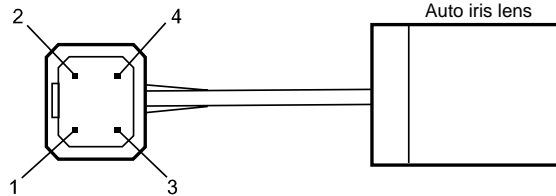
Specifically used to connect the auto iris lens.

FOR THE VIDEO CONTROLLED TYPE AUTO IRIS LENS

Set the lens selector switch to VIDEO position.

-Connector cable leads -

- ① Red (power)
- ② Not used
- ③ White (video)
- ④ Black (shielded)



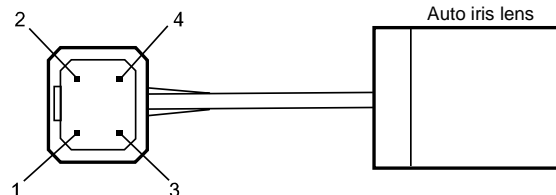
*Make proper isolation on the tip of the green wire to prevent a short-circuit.

FOR THE DC CONTROLLED TYPE AUTO IRIS LENS

Set the lens selector switch to DC position.

-Connector cable wires -

- ① Damping coil (-)
- ② Damping coil (+)
- ③ Driving coil (+)
- ④ Driving coil (-)



*Connect the wires as shown above.
Please refer also to the instruction of the lens to be used.

⑦-⑪ CAMERA SETUP FUNCTION SWITCHES

Please refer to the operation chapter.

⑫ VIDEO OUTPUT CONNECTOR (VIDEO OUT)

For HD-SDI output from camera. Connect this output to HDTV monitor or HDTV switcher, etc. This to be terminated with 75 ohms impedance at the last equipment in a loop when cascade / bridge loop connection is made.

⑬ NTSC / PAL OUTPUT

Use a mini-plug connector.

⑭ RS-232C

This is for data value adjustment.

⑮ POWER INDICATOR (POWER)

The LED indicator stays on in green while the camera power is on. This camera does not have own power on/off switch. Utmost care should be paid when doing repair or service work.

You may download the camera control application from our website to control this camera remotely.

⑯ DC12V POWER INPUT TERMINAL

For power, apply the input power of DC10 – 16V.

*This installation should be made by a qualified service person and should conform to all local codes.

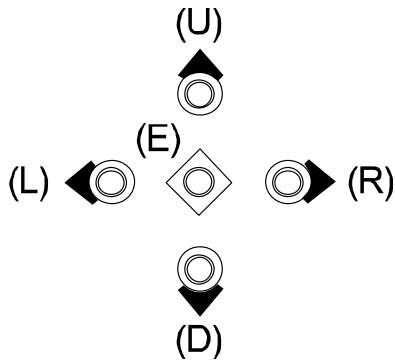
6. OPERATION

6-1. USER SETUP

The CHDC-21BSDC series camera has provision of camera setup and memory function for camera ID setting, sync system selection, various picture quality setups, Back light compensation, Privacy Mask setting, Day/Night, Motion Detection settings for optimum reproduction.

The SETUP can be easily executed using the On-Screen-Menu system. Alteration of these function may be needed for some installations and we recommend that you should spend some time to become acquainted with these functions so that the best results can be obtained from this high performance HD CCTV camera.

6-2. SETUP SWITCHES AND FUNCTIONS



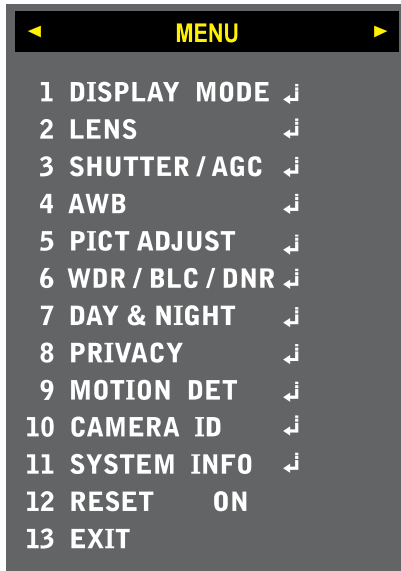
The push buttons and marked as the left are provided on the rear panel on the camera.

- Up Switch (U) ————— To be used for a selection of SETUP parameters (up and down).
- Down Switch (D) —————
- Right Switch (R) ————— To be used to change the settings.
- Left Switch (L) —————
- Enter Switch (E) ————— To be used to enter the setup mode and to save the setup data.


*To enter the setup mode. hold down the E button longer than 1 seconds.

6-3. ENTERING THE SETUP MODE AND ITS BASICS

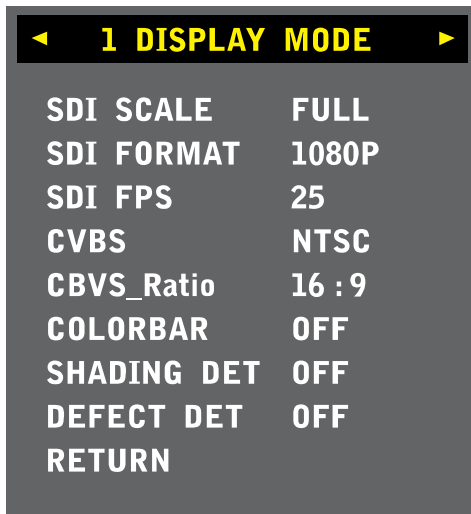
6-3-1. SETUP MENU (Main Menu)



Hold down the E button longer than 1 second, and the menu at left appears on the left top of the screen and press E button one more time to move the menu at the center of screen.

 A highlighted item is now selected.

(1) DISPLAY MODE :



This is to select the output signal including the resolution format, the frame, CVBS aspect ratio and the color bar.

- **SDI SCALE**

Classify the range of digital output signal.

FULL mode- SDI FULL Range Out (0 ~ 255), usually applied on HDMI, DVI, IP (all signal outputs)

COMP mode- SDI Normal Range Out (16 ~ 235), (Black 16, White 235), usually applied on SDI (Setup Level goes up to 7.5 IRE).

- **SDI FORMAT**

1080p- SDI output for resolution is 1920 x 1080p

720p- SDI output for resolution is 1280 x 720p

- **SDI FPS**

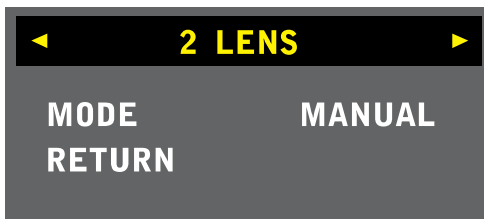
This is to select the frame per second. When selected 1080p format, you can select 30 or 25. When selected 720p format, you can select 60 or 50.

- **CVBS**

This is to select an analog composite signal output format at mini-plug connector ⑬, NTSC or PAL.

- **CVBS-Ratio**
Aspect ratio of NTSC or PAL can be selected in either 16:9 or 4:3.
- **COLOR BAR**
When it is turned ON, SMPTE COLOR BAR signal can be displayed thru the video output connector ⑫.
- **SHADING DET**
This is for shading correction. When you see the difference of illumination on the display area, turn ON to start a scan and save when it's completed.
- **DEFECT DET**
This is to compensate dead pixels of C-MOS sensor. Before running this DEFECT DET, AGC value has to run at 3 or 4 LEVEL. After DEFECT DET IS ON, Press RIGHT key (R) to start a
- **RETURN**
Press ENTER key (E) to exit and return to previous menu.

(2) LENS :

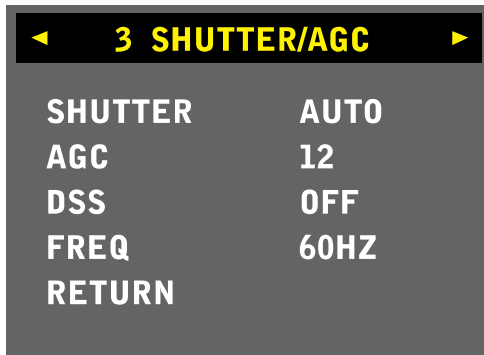


Select DC / Video / manual lens iris.

- **MODE**
This has three positions:
DC- For a DC auto iris lens
VIDEO- For a video controlled auto iris
MANUAL- For a manual iris lens

- **RETURN**
Press ENTER key (E) to exit and return to previous menu.

(3) SHUTTER / AGC :

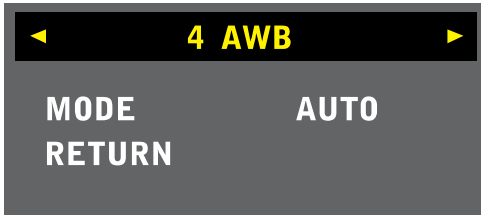


Select Auto/Manual Shutter and adjust AGC

- **SHUTTER**
AUTO- To set in Auto Shutter Mode
MANUAL- To set manual shutter speed in the value of 1/30, 1/60, 1/120, 1/250, 1/700/ 1/1000, 1/1600, 1/2500, 1/5000, 1/7000, 1/10000, or 1/30000 sec when the object is moving fast, select smaller value of the shutter speed to capture the object clearly.
- **AGC**
This is Auto Gain Control. Gain Level can be adjusted in a range of 0 to 20.

- **DSS**
This is for Digital Slow Shutter. You can select off, x2, x3 or x4 mode. Larger number causes in brighter image, but slower the moving object.
- **FREQ**
Select 60Hz or 50Hz.
- **RETURN**
Press ENTER key (E) to exit and return to previous menu.

(4) AWB :



Select Auto or Manual / white balance.

● **MODE**

You can select AUTO, PRESET, or MANUAL.

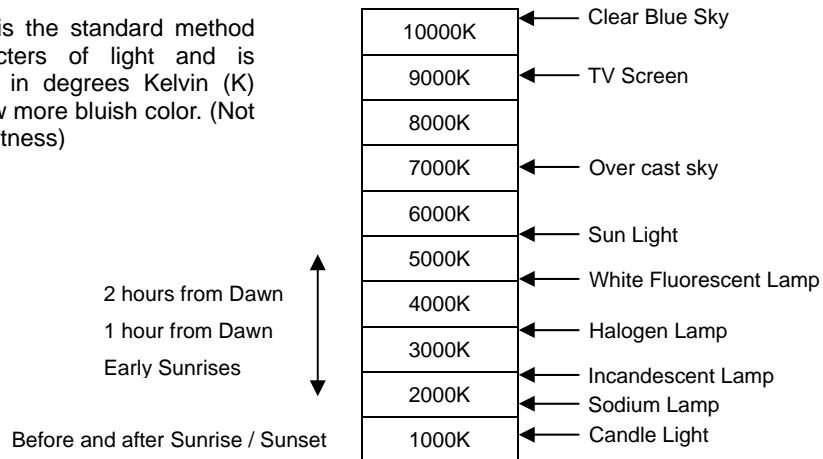
AUTO- White Balance is automatically adjusted.

PRESET- Activate a data stored in manual mode..

MANUAL- You can select a three color temperatures, Low (3700°K), Middle (5100°K) or High (9500°K). Also R Gain and B Gain can be adjusted in a range of 0 to 10.

● **COLOR TEMPERATURES IN DEGREES KELVIN**

Color Temperature is the standard method to describe characters of light and is normally expressed in degrees Kelvin (K) Large numbers show more bluish color. (Not directly related Brightness)



(5) PICT ADJUST :



You can adjust the Brightness, the Contrast, the Color Gain, Shading, Mirror, Flip, Still, Shading or Digital Zoom.

- **BRIGHTNESS**
Brightness can be adjusted in arrange of 0 to 20. Pressing (R) button will make brighter.
- **COLOR GAIN**
Color Gain can be adjusted in a arrange of 0 to 20. Pressing (R) button will add more color.
- **ACE**
This is ON/OFF selection of Annotated Critical Evidence (ACE).
- **SHARPNESS**
Sharpness can be adjusted in a range of 0 to 20. Pressing (R) button will make sharper image.
- **MIRROR**
This function is to reverse the left and right on the screen. This feature can be used for the rear-view vehicle application, etc.

- **FLIP**
This function is to reverse the top and the bottom on the screen. This feature can be used for the microscope application etc..
- **STILL**
This is to output a still image when turned ON.
- **SHADING**
This is to set ON when activates shading correction.
- **D ZOOM**
Pressing (R) button / increase zoom ratio (Maximum number 112 will be 8 times zoom).
- **HL MASK**
This is for the high light masking.
- **RETURN**
Press (E) button to go back previous menu.

(6) WDR / BLC / DNR :

◀ 6 WDR / BLC / DNR ▶

MODE	OFF
WDR_WGT	4
BLC OSD	OFF
BLC POS-X	6
BLC POS-Y	6
BLC SIZ-X	6
BLC SIZ-Y	6
DNR	LOW
RETURN	

Wide Dynamic (WDR) or Backlight Compensation (BLC) & Digital Noise Reduction (DNR) level can be selected.

- **MODE**
This is to modify intensity of WDR and SDI out FFS goes down to 15 from 30.

*Note: This function does not work for CVBS output. Also does not operate on SHUTTER MANUAL MODE.
- **WDR_WGT**
This is to increase the level of WDR from range of 0 to 4.
- **BLC OSD**
This is to activate the BLC position and BLC size.
- **BLC POS-X**
This is to position the BLC area horizontally. The setting of range is from 0 to 20.

- **BLC POS-Y**
This is to position the BLC area vertically. The setting of range is from 0 to 20.
- **BLC SIZ-X**
This is to increase the size of BLC area horizontally. The setting of range is from 0 to 20.
- **BLC SIZ-Y**
This is to increase the size of BLC area vertically. The setting of range is from 0 to 20.
- **DNR (Digital Noise Reduction)**
This can be selected In either LOW, MIDDLE or HIGH to reduce noise digitally.
- **RETURN**
Press (E) button to go back previous menu.

(7) DAY & NIGHT :

◀ 7 DAY & NIGHT ▶

MODE	AUTO
RETURN	

AUTO / COLOR / B&W / OFF can be selected.

- **MODE**
When MODE is AUTO, the following menu is displayed.

AUTO

AGC THRS	■■■■■■■■■■■■■■■■■■ 10
MARGIN	■■■■■■■■■■■■■■■■ 5
DELAY	5
RETURN	

AGC THRS: This is for AGC threshold. Set up DAY & NIGHT boundary line of current AGC setting level.

MARGIN: Set up range of Night threshold and Day threshold standard of AGC THRS boundary line.

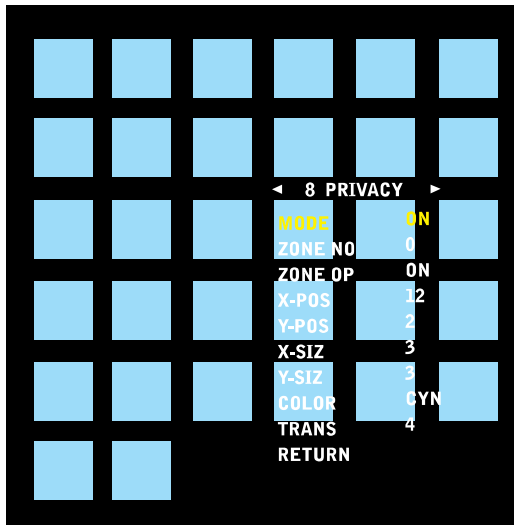
- DELAY:** Speed of a change-over is selected. Low. Middle or High.
- RETURN:** Press (E) button to go back previous menu.

(8) PRIVACY :

◀ 8 PRIVACY ▶	
MODE	ON
ZONE NO	0
ZONE OP	ON
X-POS	12
Y-POS	2
X-SIZ	3
Y-SIZ	3
COLOR	CYN
TRANS	4
RETURN	

This is to set the area to be masked (not to view on the screen). Up to 4 zones can be assigned

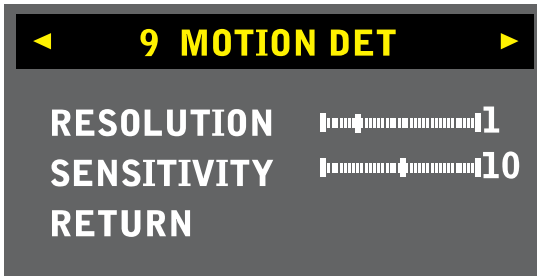
- **MODE**
When turn ON, the following can be displayed on the screen.



- **ZONE NO**
You can select zone number 0 to 31. Left top is zone number 0, left right is zone number 5.
- **ZONE OP: ON**
This is to keep or erase the zone number specified under ZONE NO.
For example, if you need to erase zone number 2, set ZONE NO as "2" then set ZONE OP as "ON".
- **X-POS**
This is to move the zone specifies under the ZONE NO horizontally (in a range from 0 to 60).
- **Y-POS**
This is to move the zone specifies under the ZONE NO vertically (in a range from 0 to 40).
- **X-SIZ**
This is to change a size of the ZONE specified in the ZONE NO horizontally (in a range from 0 to 40).
- **Y-SIZ**
This is to change a size of the ZONE specified in the ZONE NO vertically (in a range from 0 to 40).

- **COLOR**
This is to select the color of the ZONE to be marked;
 - CYN → Cyan
 - GRN → Green
 - MAG → Magenta
 - RED → Red
 - BLU → Blue
 - BLK → Black
 - WHT → White
 - YEL → Yellow
- **TRANS**
This is to select a transparency of the ZONE in a range of 0, 1, 2, 3, and 4.
- **RETURN**
Press (E) button to go back to previous menu.

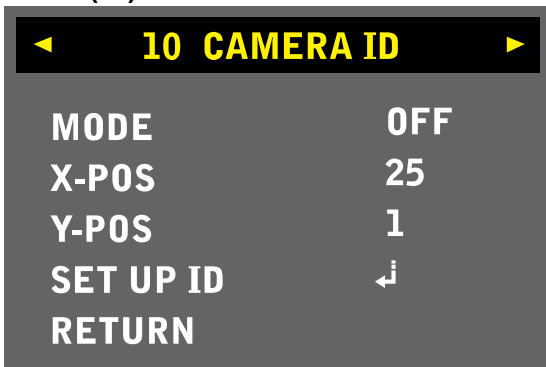
(9) MOTION DET :



This is to set the area to be detected for the motion. Up to 4 zones can be assigned with any size over the screen.

- **RESOLUTION**
This is for the level of resolution to detect a motion. Level should be set 0 to 4 higher value to detect the details.
- **SENSITIVITY**
This is for the level of sensitivity to detect a motion. Level should be set 0 to 20. Higher value to detect smaller moving.
- **RETURN**
Press (E) button to go back previous menu..

(10) CAMERA ID :



This is to add the camera ID on the screen.

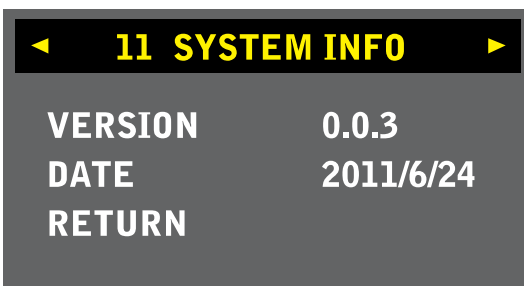
- **MODE**
Turn ON to add the camera ID.
- **X-POS**
This is to move the zone specifies under the ZONE NO vertically (in a range from 0 to 40).
- **Y-POS**
This is to move the zone specifies under the ZONE NO vertically (in a range from 0 to 40).

- **SET UP ID**
You can set your each camera ID by entering name.



- **RETURN**
Press (E) button to go back to previous menu.

(11) SYSTEM INFO :



- **VERSION**
0.0.3.
- **DATE**
2011 / 6 / 24
- **RETURN**
Press (E) button to go back previous menu.

- (12) RESET :**
This activates all settings go back to factory original value.

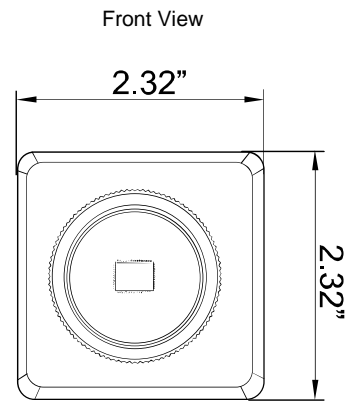
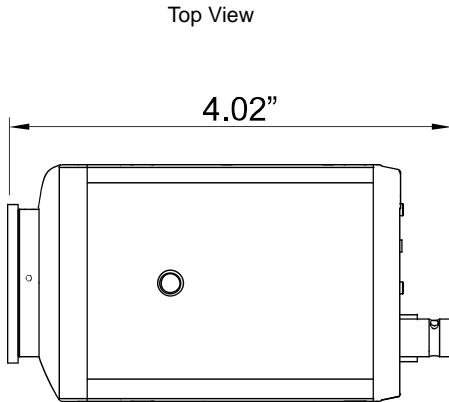
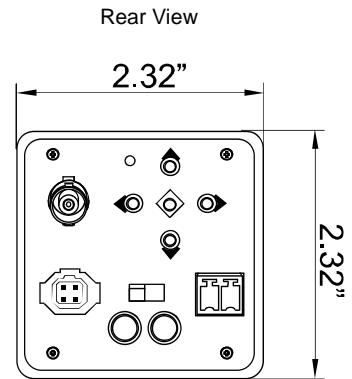
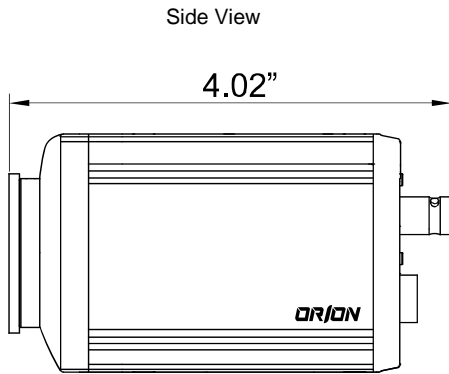
7. SPECIFICATIONS

CHDC-21BSDC	
Image Sensor	1/3" CMOS
Effective Pixel	1944(H) x 1092(V), 2.1M Pixel
Sync System	Internal
Video Output	HD-SDI (SMPTE 274M) / 75 ohm BNC x 1
	1920 x 1080 30p / 25p, 1280 x 720 60p / 50p
	NTSC / PAL 1Vp-p / 75 ohm Mini-Plug x 1
	4:3 or 16:9 Selectable
	Color Bar Signal
Minimum Illumination	0.1 Lux (F1.2, 50 IRE, AGC Max)
Auto White Balance	Auto / Manual
Backlight Compensation	Built-In
Noise Reduction	Built-In
Electric Shutter	Auto / Manual (Manual: 1/30, 1/60, 1/120, 1/250, 1/700, 1/1000, 1/1600, 1/2500, 1/5000, 1/7000, 1/10000, 1/30000 sec)
Auto IRIS Function	DC or Video Selectable
Day & Night	Built-In
Mirror Image	DC or (Horizontal and Vertical)
Privacy Mask Function	Built-In
Motion Detection	Built-In
Camera ID	Built-In
Lens Mount	CS Mount (C Mount Ring is provided as standard)
Power Requirement	DC 12V (Voltage Tolerance: 10V ~ 16V) 190Ma ~ 10%
Power Consumption	Max 2.3W
Operating Temperature	32° ~ 122° F (0° ~ 50° C)
Operating Humidity	20 ~ 80%
Camera Mount	1/4" ~ 20UNC x 2 (Top and Bottom)
Dimensions (W x H x D)	2.32" x 2.32" x 4.02"
Weight	0.55 lbs

* Design and specifications are subject to change without notice

8. OUTLINE DIMENSION

Unit: Inch



9. WARRANTY & AFTER-SALE SERVICE

Warranty accompanies this product. Read and fill out the warranty card that you have received at your dealer. Keep this card in a safe place.

- Please consult ORION Images Corporation or your dealer for full warranty information. Your dealer will repair or replace free of charge within the warranty period according to the warranty coverage.
- For repairs after the expiration of the warranty period, consult your dealer or sales representative. It will first be judged whether the fault is repairable or not. Charged servicing will then be made upon request of the user.
- Before you ask for servicing, please ensure you read the instruction Manual. If the unit still fails, take note of the model number, date of purchase, problem, etc. In detail, and inform your dealer or sales representative.
- If you have questions about the after-sale service, contact your dealer or sales representative.

* We suggest you ask for preventive inspection as soon as possible.

Contact ORION Images :

In the event of missing and/or damage equipment, or technical questions, the following information can help in the completion of the installation.

Address: 7300 Bolsa Avenue, Westminster, CA 92683

Tel: 714-766-6300 / Fax: 714-766-6310

Email: sales@orionimages.com

Website: <http://www.orionimages.com>