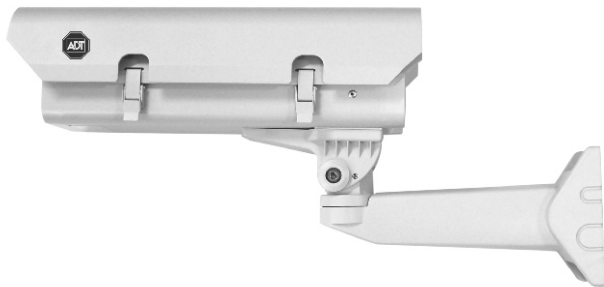


WDR Super High Resolution Day & Night Color Camera

1/3" DOUBLE SCAN CCD
HIGH RESOLUTION

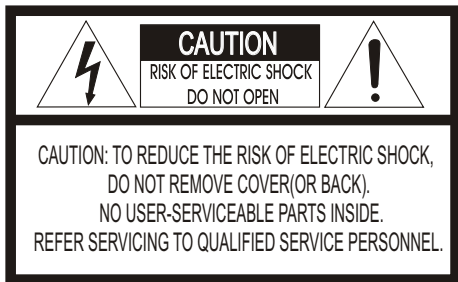


Please read this manual thoroughly before use, and keep it handy for future reference.

WARNINGS:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECTS THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

CAUTION:



EXPLANATION OF GRAPHICAL SYMBOLS



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



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 product.

PRECAUTIONS

Safety -----

Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by the qualified personnel before operating it any further.

Unplug the unit from the wall outlet if it is not going to be used for several days or more. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation holes.

Height and vertical linearity controls located at the rear panel are for special adjustments by qualified personnel only.

Installation -----

Do not install the unit in an extremely hot or humid place or in a place subject to excessive dust, mechanical vibration.

The unit is not designed to be waterproof. Exposure to rain or water may damage the unit.

Cleaning -----

Clean the unit with a slightly damp soft cloth. Use a mild household detergent. Never use strong solvents such as thinner or benzine as they might damage the finish of the unit.

Retain the original carton and packing materials for safe transport of this unit in the future.

FCC COMPLIANCE STATEMENT

FCC INFORMATION : 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 WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

CAUTION : CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

THIS CLASS A DIGITAL APPARATUS COMPLIES WITH CANADIAN ICES-003.

CET APPAREIL NUMÉRIQUE DE LA CLASSE A EST CONFORME À LA NORME NMB-003 DU CANADA.

CE COMPLIANCE STATEMENT

WARNING

THIS IS A CLASS A PRODUCT. IN A DOMESTIC ENVIRONMENT THIS PRODUCT MAY CAUSE RADIO INTERFERENCE IN WHICH CASE THE USER MAY BE REQUIRED TO TAKE ADEQUATE MEASURES.

IMPORTANT SAFEGUARDS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that product heat..
9. Do not defeat the safety purpose of the polarized or grounding-type Plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where thy exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. CAUTION - THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED SERVICE PERSONNEL ONLY. TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO.
15. Use Certified/Listed Class 2 power source only.

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INTRODUCTION

The camera provides high-quality images using SONY Wide Dynamic 1/3" CCD and digital signal processing LSIs.

Features:

- 1/3" Super HAD Double Scan CCD for an image of high sensitivity
- Wide Dynamic Range(WDR)
- Excellent picture quality
- 540 lines(Color), 700 lines(B/W) of resolution
- 0.5 Lux(Color), 0.04 Lux(B/W), 0.001Lux(Low-shutter)@ F1.2 Sensitivity
- Auto electronic shutter [1/60(1/50) ~ 1/100,000] and manual electronic shutter modes
- OSD (On Screen Display)
- Auto and manual white balance modes
- Selectable BLC Zone
- Day&Night (Auto/Manual, FILTER DLY)
- Privacy Zone 16point, Motion Detection 4 Point
- SHARPNESS, D-ZOOM, NEGA/POSI, MIRROR, V FLIP, ROTATION, FREEZE
- AGC (Auto Gain Control)
- RS485 CONTROL
- Internal/AC line lock
- Built-in 5-60mm or 2.8-12mm Vari-focal DC iris Lens.
- Operates in 12VDC or 24VAC
- Use Certified / Listed Class 2 power source only.



IMPORTANT : The user of this camera is responsible for checking and complying with local, state, and federal laws and statutes concerning the recording and monitoring of audio signals.

CONTENTS OF PACKAGE

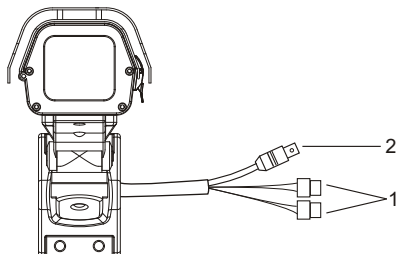
Installation of the camera must be performed by qualified service personnel in accordance with all local and national electrical and mechanical codes.

Carefully remove the color camera and its accessories from the carton and verify that they were not damaged in shipment.

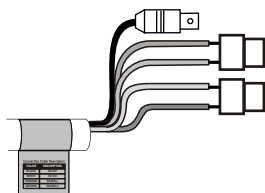
The contents of the package includes:

1. CAMERA HOUSING KIT
2. This manual
3. L-wrench (5mm) ----- 1ea
(2.5mm) ----- 1ea
4. ANCHOR (5mm) ----- 4ea

CAMERA CONNECTIONS



1. Color Lead Wire & Color Display Label



Connection Cable Description

| COLOR | DESCRIPTION |
|-------|-------------|
| BLACK | AC24V |
| RED | AC24V |
| BLUE | RS485(-) |
| BROWN | RS485(+) |

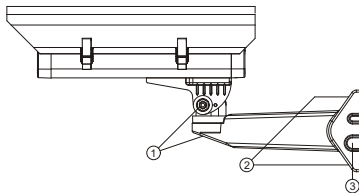


REMINDER:
Never aim the camera directly into the sun.

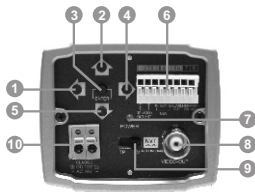
2. Video : BNC connector used to connect the camera to a monitor, switcher, etc.

WALL BRACKET MOUNTING

1. Use fasteners of appropriate size and type to attach the bracket to the wall surface. Position the housing so that it allow for viewing of the selected area.
2. Adjust the movable arm of the wall bracket to attain the desired position. Once it is in place, tighten the bolt located at the pivot point of the movable arm.
3. If you want to pull out the relevant cable, remove the knockout on the wall bracket mounting.



CAMERA OVERVIEW

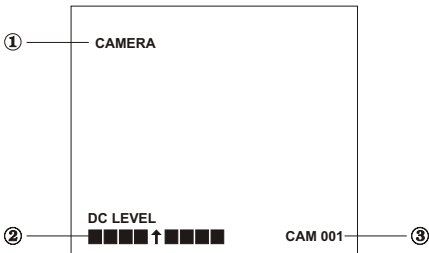


REAR VIEW

- ① Left Button
- ② Up Button
- ③ Enter Button
- ④ Right Button
- ⑤ Down Button
- ⑥ Day / Night External I/O
ALARM OUT
RS - 485
Power Indicator
- ⑦ Terminal Block
- ⑧ Video Out Connector (BNC)
- ⑨ UTP or BNC Transformation Switch (option)
- ⑩ AC/DC Compatible Input Terminal

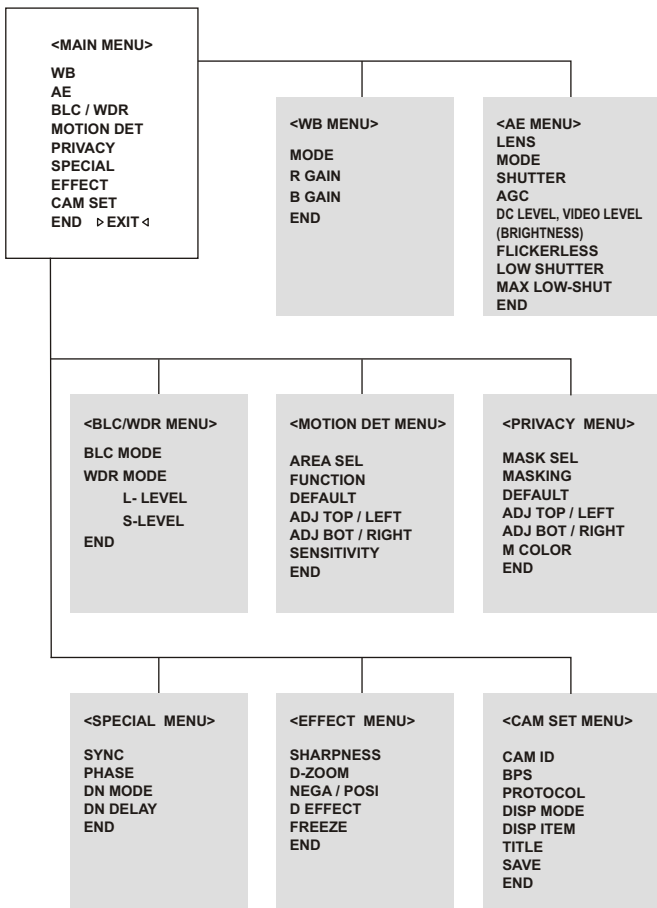
CAMERA ADJUSTMENT

OSD MAIN SCREEN



- ① Camera title.
- ② Status of the dc level.
- ③ Camera ID.

STRUCTURE OF THE SETUP MENU



<WB>

Press the MENU button to access the "WB" mode.

1) MODE

- AWB Set the color temperature 2500°K to 9500°K
- WAWB Wide range auto white balance mode.
- INDOOR Set the color temperature to 3200°K
- OUTDOOR Set the color temperature to 6300°K
- MANUAL Manual mode. User can change R and B Gain manually.

2) R GAIN

Adjust R-GAIN value.(0~255)
Can be adjusted while in manual mode.

3) B GAIN

Adjust B-GAIN value.(0~255)
Can be adjusted while in manual mode.

<AE>

Press the MENU button to access the "AE" mode.

1) LENS

DC, Video, Manual Lens selected.

2) MODE

- AUTO Auto Exposure mode.
- SHUTTER Manual Shutter mode.

3) SHUTTER

Select the shutter mode.(1/60(50) ~ 1/100,000 sec)
Can be changed while in shutter mode.

4) AGC

Auto gain control ON/OFF

5) DC LEVEL / BRIGHTNESS

- DC LEVEL Adjust DC level (0 ~ 255)
Can be adjusted while in dc lens mode.
- VIDEO LEVEL Adjust VIDEO level (0 ~ 255)
Can be adjusted while in video lens mode.
- BRIGHTNESS Adjust BRIGHTNESS level (0 ~ 255)
Can be adjusted while in manual lens mode.

6) FLICKERLESS

Removes screen flickering caused by discordance of frequency and lighting.

7) LOW SHUTTER

Use under very low light condition for full color surveillance.

8) MAX LOW-SHUT

Select maximum Low-Shutter value. (x2 ~ x256)

<BLC/WDR>

Press the MENU button to access the "BLC/WDR" mode.

1) BLC MODE

Sharpens subjects with backlight.
(OFF / CENTER / TOP / BOTTOM / RIGHT / LEFT)

2) WDR MODE

Wide dynamic range ON/OFF

L- LEVEL

Can be adjust long-time WDR level (0~200)

S- LEVEL

Can be adjust short-time WDR level (0~200)

<MOTION DET>

Press the MENU button to access the "MOTION DET" mode.

- 1) **AREA SEL** Select MD area number.
- 2) **FUNCTION** Select MD ON/OFF
- 3) **DEFAULT** Set MD area as default.
- 4) **ADJ TOP/LEFT** Adjust the location of the MD area with boundary TOP and LEFT.(MD 1~4)
- 5) **ADJ BOT/RIGHT** Adjust the location of the MD area with boundary BOTTOM and RIGHT.(MD 1~4)
- 6) **SENSITIVITY** Adjust sensitivity of MD area.(1~255)

<PRIVACY>

Press the MENU button to access the "PRIVACY" mode.

- 1) **MASK SEL** Select MASK area number.
- 2) **MASKING** Select MASK ON/OFF
- 3) **DEFAULT** Set MASK area as default.
- 4) **ADJ TOP/LEFT** Adjust the location of the MASK area with boundary TOP and LEFT.(MASK 1~16)
- 5) **ADJ BOT/RIGHT** Adjust the location of the MASK area with boundary BOTTOM and RIGHT. (MASK 1~16)
- 6) **M COLOR** Select MASK color. (WHITE/GRAY/BLACK)

<SPECIAL>

Press the MENU button to access the "SPECIAL" mode.

- 1) **SYNC** Select Internal or Line Lock mode.
 - INT This mode is necessary for using the internal synchronization.
 - L/L This mode is necessary for the operation of multi camera because it synchronizes the camera phase by using the external signal (AC Signal).
- 2) **PHASE** Sync phase is adjustable in line lock mode.
- 3) **DN MODE**
 - AUTO Filter operates automatically according to brightness.
 - COLOR The camera outputs the video image only in color.
 - BW The camera outputs the video image only in black and white.
 - EXT This menu automatically converts the COLOR Mode into the BW Mode or vice versa depending on illumination with an external sensor.
- 4) **DN DELAY** Adjust the working time of the filter when D&N operated.
(05sec / 10sec / 20sec)

<EFFECT>

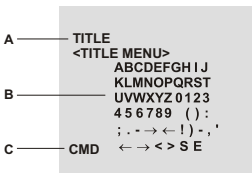
Press the MENU button to access the "EFFECT" mode.

- 1) **SHARPNESS** Can be adjusted SHARPNESS of outlines.(0~15)
- 2) **D-ZOOM** Digital Zoom ON / OFF
- 3) **NEGA / POSI** Select the negative or positive mode.
- 4) **D EFFECT** Reverse the screen in 3 modes selection.
(OFF / MIRROR / V FLIP / ROTATION)
- 5) **FREEZE** Select the real or still mode.

<CAM SET>

Press the MENU button to access the "CAM SET" mode.

- 1) **CAM ID** Select the camera ID. (001 ~ 255)
- 2) **BPS** Select serial communication speed.(2400 / 4800 / 9600 / 19200)
- 3) **PROTOCOL** Select operating protocol.
COMMAND : Camera controlled by RS-232C command.
FASTRAX : Fastrax protocol.
PELCO-D : Pelco-D protocol.
PELCO-P : Pelco-P protocol.
On screen display is ON/OFF
- 4) **DISP MODE**
- 5) **DISP ITEM**
 - DISP0 Display title and camera ID.
 - DISP1 Display title, camera ID and DC Level
- 6) **TITLE**



A. TITLE

B. Character Table

C. Command Line

← : Move to left

→ : Move to right

< : Erase a left character

> : Erase a right character

S : Save title

E : End

- 7) **SAVE** Save preset parameters of CAM SET MENU.

<END>

Press the MENU button to access the "END" mode.

- 1) **DEFAULT & EXIT** Set parameters as factory setting and terminate the MAIN MENU.
- 2) **SAVE & EXIT** Save the changed preset parameter and terminate the MAIN MENU.
- 3) **EXIT** Terminate the MAIN MENU without saving parameters.

CONTROL AND CONNECTIONS/DAY&NIGHT I/O / ALARM OUT TERMINALS

| | | | | | | | |
|-----------------|---|---------|-----|-----|-------|-------------|-------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| TP VIDEO OUTPUT | | D&N I/O | | COM | ALARM | RS-485 | |
| ⊖ | ⊕ | IN | OUT | GND | OUT | RS 485+(RX) | RS 485-(TX) |

1) CAMERA CONTROL

Remote Control through keyboard controller or DVR.

- 7 PIN : RS 485+
- 8 PIN : RS 485-

2) DAY&NIGHT I/O Terminals

To select Day/Night mode using external equipment, connect control lines to the appropriate terminals.

• DAY&NIGHT OUTPUT (4pin)

It is the function that can turn on external IR LED Lamp by detecting the sensitivity on the AGC level when the D&N mode is set "AUTO" on the OSD menu of the camera.

| | | | |
|---|------------------|---|------------------------------|
| 4 | DAY&NIGHT OUTPUT | → | • 5V/10mA : IR LED ON(NIGHT) |
| 5 | COM | → | • 0V : IR LED OFF(DAY) |

• DAY&NIGHT EXTERNAL INPUT (3pin)

It is the function that can be switched to DAY Mode or NIGHT Mode by receiving the D&N on/off signal from external light sensor or IR LED LAMP. When D&N Mode is set "External" on the OSD menu of the camera.

| | | | | |
|---|-----------------|---|---|-----------------------|
| 5 | COM | ← | ← | Open contact : DAY |
| 3 | DAY&NIGHT INPUT | ← | ← | Close contact : NIGHT |

3) ALARM OUT (6pin)

Motion detection signals are output through this port. (On High (5V))

4) POWER INPUT TERMINAL



CLASS 2
+ DC 12V -
- AC 24V -

- This terminal accepts a DC12V or AC24V power source from a DC12V or AC24V ac +/-10% 60/50Hz +/- 1Hz.
- Use Certified/Listed Class 2 power supply only.

5) VIDEO OUT CONNECTOR

BNC : This BNC connector provides a 1.0Vp-p/75 ohms composite video Signal.

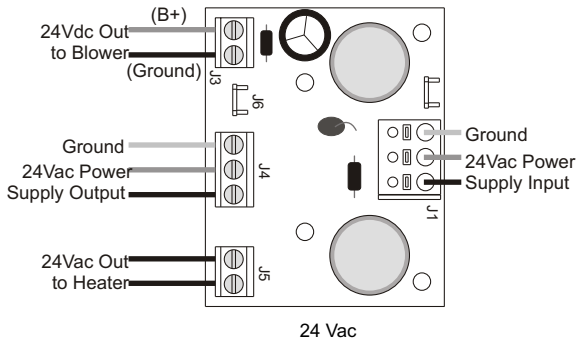
UTP : Unshielded Twisted Pair video Transmission for effective installation.(option)

1PIN : TP VIDEO OUTPUT ⊖

2PIN : TP VIDEO OUTPUT ⊕

WIRING DIAGRAM

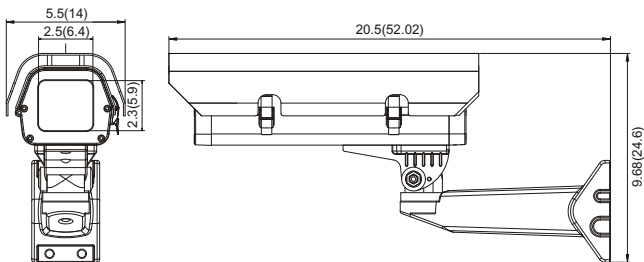
* HEATER AND BLOWER



HOUSING KIT SPECIFICATIONS

| | |
|------------------------------|--|
| Camera Housing Window Size | 2.5" W x 2.3" H (6.4cm x 5.9cm) |
| Camera Housing Construction | Die-cast, extruded, and sheet aluminum |
| Camera Housing Finish | Light-gray polyester powder coat |
| Wall Bracket Pan Adjustment | 360° |
| Wall Bracket Tilt Adjustment | 70° |
| Wall Bracket Locking Method | 4 holes for fasteners of a suitable size & type. Mount to a secure solid surface. |
| Total Dimension(WxHxL) | 5.5" W x 9.68" H x 20.5" D (14cm x 24.6cm x 52.02cm) |
| Total Weight | 9.15lb(4.15kg) |

Unit: inch(cm)



CAMERA SPECIFICATIONS

| MODEL | | NTSC | PAL | |
|-------------------|------------------------------------|---|--|------------------|
| POWER | Power source | DC 12V / AC 24V ±10% | | |
| | Power consumption | 7.0 Watts | | |
| GENERAL | Image sensor | 1/3" SONY DS CCD | | |
| | Total number of pixels | 811(H) x 508(V) | 795(H) x 596(V) | |
| | Scanning system | 2:1 interlace | | |
| | Scanning frequency | 15.734KHz(H) x 59.94Hz(V) | 15.625KHz(H) x 50Hz(V) | |
| | Sync. system | Internal / Line lock | | |
| | Electronic shutter | 1/60 ~ 1/100,000 sec. | 1/50 ~ 1/100,000 sec. | |
| | Resolution | 540 TV Lines (COLOR), 700TV Lines (B/W) | | |
| | Min. illumination | 0.5 Lux (COLOR), 0.04 Lux (B/W), 0.001 lux (Low-shutter) | | |
| | Video output | 1.0 Vp-p (75 ohm, composite) | | |
| | S/N Ratio | 50dB (AGC OFF) | | |
| | Camera Control | RS485(FastraxII, Pelco D, Pelco P), Tact switch | | |
| | FUNCTION | White Balance | AWB / Indoor / Outdoor / Manual / WAWB | |
| | | Auto Exposure | Auto / Manual Shutter / Flicker less | |
| | | AGC Control | AUTO | |
| | | Shutter Speed | 1/60 ~ 1/100,000 | 1/50 ~ 1/100,000 |
| | | BLC | Top / Bottom / Center / Right / Left / Off | |
| | | Title | A ~ Z / 0 ~ 9 | |
| Display | | On / Off (DISP0 / DISP1) | | |
| CAM ID | | 001 ~ 255 | | |
| BPS | | 2400 / 4800 / 9600 / 19200 | | |
| Brightness | | 0 ~255 steps | | |
| Sharpness | | 0 ~15 steps | | |
| Low Shutter | | x2 ~ x256 (13steps) | | |
| Effect | | V-Flip, Rotation, Mirror, D&N, D-Zoom, Nega/Posi, B/W, Freeze, Privacy Zone, MD | | |
| WDR | | x128 | | |
| CONNECTOR & ETC. | Power input | 2-Pin Terminal block | | |
| | Video output | BNC , UTP(option) | | |
| | Auto iris output | 4-Pin mini din jack (standard connection) | | |
| | Lens mount | C/CS mount (Selected through back focus) | | |
| | Lens | 5-60mm F1.6 DC iris or 2.8-12mm F1.3 DC iris | | |
| | Mounting hole | 1/4"-20 UNC (top or bottom) | | |
| | Operating temperature | -10°C ~ +50°C | | |
| | Operating humidity | 0 ~ 96% (non-condensing) | | |
| Blower | | Heater | | |
| Power Supply | 24 Vac | Power Supply | 24 Vac | |
| Power Consumption | 3.4W | Power Consumption | 20W | |
| Blower ON | t C > 35C +/-3C T F > 95F +/-5F | Heater ON | t C < 5C +/- 3C T F < 41F +/- 5F | |
| Blower OFF | t C < 20C +/-3C | Heater OFF | t C > 15C +/- 3C | |

**WDR Super High Resolution
Day and Night Color Camera**

PRINTED IN KOREA

50302656A