HIGH SENSITIVITY

COLOR VIDEO CAMERA

DIGITAL COLOR VIDEO CAMERA CVB6C2

P/N : 3910-0700341 (Ver.1.0)(NB)

Design and specifications are subject to change without notice.

OWNER'S MANUAL

- 1/3" High Sensitivity CCD
- Ultra High Resolution
- Selectable, Day & Night
- OSD (On Screen Display)

CCD DIGITAL COLOR

CONTENTS

Thank you for purchasing this COLOR VIDEO CAMERA.
Before using this camera, please read this owner's manual carefully to obtain the best result and keep the manual for future reference.

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1. SAFETY INSTRUCTIONS

Read Instructions
Read all the safety and operating instructions before using the product.

Retain Instructions
Save this instructions for later use.

Cleaning
Unplug the appliance from wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

Water and Moisture
Do not use this product near water or moisture. (For example: near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near swimming pool, etc.)

Installation
Do not place this product on an unstable cart, stand, or table. The product may fall causing serious injury to a child or adult, and damage to the product.
Use only with a cart or stand recommended by the manufacturer or sold with the product. Mounting should follow the manufacturer's instructions, and should use a mounting accessory recommended by manufacturer.

Power source
This product should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.

USER INFORMATION

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

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 servicing instructions in the literature accompanying the appliance.

THE SCREW CONNECTS WITH EARTHING. WARNING: KEE ON THE BOTTOM OF THE SYSTEM "WARNING TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THE UNIT TO RAIN OR MOISTURE."

USER INFORMATION

INFORMATION
This equipment has been tested and found to comply with limits for a Class B 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 their own expense.

WARNING
The manufacturer could void the user's authority to operate the equipment.

CAUTION
To prevent electric shock and risk of fire hazards:
•Do not use power sources except for that specified.
•Do not overload wall outlets and extension cords.

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

2. PRECAUTIONS

- **Do not install the camera in extreme temperature conditions.**
  On use the camera under conditions where temperatures are within -10°C to 50°C.
- **Do not aim the camera at bright objects.**
- **Do not install or use the camera in an environment where the humidity is high.**
  If water or moisture enters the camera, it may cause fire or electric shock.
- **Do not install the camera under unstable lighting conditions.**
  Severe lighting changes or flicker can cause the camera to work improperly.
- **Do not point the camera lens toward the sun or all bright.**
  It can cause malfunctions to occur.
- **Do not disassemble the camera.**
  To prevent electric shock, do not remove screws.
- **Do not drop the camera or subject it to physical shocks.**
  Handle the camera with care.
- **Never keep the camera here to strong light directly.**
  It may harm the CCD sensor.
- **Do not expose the camera to rain or salt liquid as it.**
  If it gets wet, wipe it with dry cloth immediately.
- **Do not place the camera near the electronic components.**
  Camera may cause malfunction in nearby electronic components.

NOTE **When this camera is installed near wireless communication devices that emits strong electromagnetic field, irregularity such as noise on the monitor may appear.**

3. COMPOSITION

1. Color Video Camera
2. Auto Iris Lens Plug
3. Control Plug
4. Lens Mount Cap
5. Owner's Manual

4. FEATURES

1. 1/3" High Sensitivity CCD
- 1/3" Interline Transfer CCD
- 510(H)*492(V) (PIXEL)

2. Min Illumination(1/3.2, 30IRE, AGC Max)
- 0.05Lux (COLOR)
- 0.0001Lux (LOW, 30IRE)

3. High performance demuxs for functions
- Ultra High Resolution (600TVL)
- SSLC (Super Back Light Compensation)
- Digital Noise Reduction
- Privacy zone selectable
- Mirror (H/V/HORIZONTAL)
- MIRROR (H/V/BOTH/NL)
- Flickerless CVCR

4. Selectable, day & night
- CCD (Colors anytime or black-and-white) and

5. RS-485 Communication Control Support
- Remote CDC(Video control) via an RS-485 interface is supported.

5. NAME AND FUNCTIONS

- **CS-Mount Holding Screw** : Used to secure the Mount of the camera. There are two back-focus lock screws. These are factory-set and should not be adjusted. Back-focus adjustment should be made using the back-focus adjustment screw.
- **Auto Iris Lens Connector** : Used to connect the lens cable.
- **CS-Mount Lens Adapter** : Used to attach CS-mount lens.
- **Tripod Mounting Hole** : Used to mount the camera on an optional tripod. The camera can be equipped with the screw specified in the chart below.

1/4-20 UNC (Inch)	6 mm

6. CONNECTIONS

LENS
This lens is not supplied with this camera. Purchase a lens suitable for your environment. This camera accepts the auto iris lens and both C-mount and CS-mount lens.

NOTE
- **If the lens is marked with fingerprints or other marks, the image quality will be affected.**
- **It is recommended to use a high quality lens to improve the image quality and resolution.**
- **For using zoom functions it is recommended to use Auto Iris Lens with DC type.**

Attaching the Lens Cap

1. Peel approximately 5mm from the end of the lens cable outer cover.

2. Peel approximately 2mm from the end of the cable inner cover.

3. Remove the cover from the iris lens plug supplied, and solder the lens cable to the plug as shown below.

PIN CONNECTIONS (Viewed from solder side)	
PIN 1	VIDEO
PIN 2	GND
PIN 3	DC DRIVE

4. Remove the cover from the lens cap, and attach the lens to the camera by turning clockwise.

5. Connect the lens plug to the auto iris connector on the side of the camera.

Mounting C-Mount Lens

1. Attach the C-MOUNT lens adapter by turning clockwise.

2. Attach the lens to the camera by turning clockwise.

Mounting CS-Mount Lens

1. Attach the lens to the camera by turning clockwise.

Connecting to Power
Each model has different power specification, please check the name of the model and power specification before connecting to power source. Please refer to the sticker identifying the model, which is attached on the product, for power specification.

24V DC Power Type

The wire is polarized. Be careful of polarity. Use 12V DC power source.

Connecting to Monitor
Connect the composite jack to a composite video in jack.

- As the connecting method varies with the instruction manual, refer to the manual supplied with the instrument.
- Connect the cable after power is turned off.

Set the 75Ω/1KΩ selection switch on circuit board if you have an intermediate device.

Connecting to Power

For 24V Video Output Model
Connect the 24V output jack to the camera's power jack.

For CP Video Output Model
Connect the CP video output jack to the CP jack of the camera's power.

- Connect CP (Unshielded Twisted Pair) wire to the CP output of the camera directly.
- Connect the CP wire to the CP input of the monitor directly. Repeater is not necessary.
- Use CP output only for the camera.
- When connecting CP wire, make sure the polarity of the video signal.
- Use the CP output only for the CP input of the monitor.
- The twisted pair cable cannot be used at the same time as the Composite Video output.

Connecting to Power

Use 24V AC power source or 12V DC power source.

For 24V AC Power Type

- **Wires using 24V AC power, it is possible to supply the power within 10Ω. Use 2-wires by 2 pair of wires.**

NOTE
- **Be sure to connect power after all the installation is done.**
- **Note that AC adapter is not supplied with camera.**
- **Use only 24V AC / 12V DC UL listed class 2 power supply.**
- **Do not use power sources other than that specified.**

For 12V DC Power Type

Control Jack

Control Jack (Rear Side)
Connect the control jack to the camera's rear side to control the controls the functions of the camera at long distance.

PC Interface		Function
Pin	Signal	
1	DCD	Not used
2	RXD	Receive data
3	TXD	Transmit data
4	DTR	Not used
5	GND	Ground
6	DSR	Not used
7	RTS	Not used
8	CTS	Not used
9	RI	Not used

Alarm Connector

Pin	Function
1	6 ~ 25V, 400mA
2	Motion Detection
3	Alarm Out
4	GND

7. COMMUNICATION PROTOCOL

Model ID : 0x Series

FUNCTION	SET-UP (ZOOM TELE)						
	1 BYTE	2 BYTE	3 BYTE	4 BYTE	5 BYTE	6 BYTE	7 BYTE
W & G	0xFF	ID	0x00	0x00	0x00	0x00	CS
FUNCTION	SET-DOWN (ZOOM WIDE)						
	1 BYTE	2 BYTE	3 BYTE	4 BYTE	5 BYTE	6 BYTE	7 BYTE
W & G	0xFF	ID	0x00	0x00	0x00	0x00	CS
FUNCTION	SET-LEFT (ZOOM NEAR)						
	1 BYTE	2 BYTE	3 BYTE	4 BYTE	5 BYTE	6 BYTE	7 BYTE
W & G	0xFF	ID	0x00	0x00	0x00	0x00	CS
FUNCTION	SET-RIGHT (ZOOM FAR)						
	1 BYTE	2 BYTE	3 BYTE	4 BYTE	5 BYTE	6 BYTE	7 BYTE
W & G	0xFF	ID	0x00	0x00	0x00	0x00	CS

FUNCTION	KEY MENU (OSD MENU)						
	1 BYTE	2 BYTE	3 BYTE	4 BYTE	5 BYTE	6 BYTE	7 BYTE
W & G	0xFF	ID	0x00	0x00	0x00	0x00	CS
FUNCTION	KEY DOWN (OSD MENU)						
	1 BYTE	2 BYTE	3 BYTE	4 BYTE	5 BYTE	6 BYTE	7 BYTE
W & G	0xFF	ID	0x00	0x00	0x00	0x00	CS
FUNCTION	KEY MENU (OSD MENU)						
	1 BYTE	2 BYTE	3 BYTE	4 BYTE	5 BYTE	6 BYTE	7 BYTE
W & G	0xFF	ID	0x00	0x00	0x00	0x00	CS

NOTE
- **ID = 00Hex (ID check only mode)**
- **ID = 01Hex ~ FFHex (ID check and check the camera ID). If the ID contained in command packet isn't identical to the current camera ID, the received command will be ignored and deleted.**

8. OPERATING CAMERA

Functional Setup Setting
Functions can be set up using 5 buttons on the camera's rear panel.

- **MENU Buttons** : Used to access menu mode. Also used to exit the menu.
- **UP/DOWN Buttons** : Used to choose the desired menu item. It also moves the cursor up or down in the menu screen.
- **LEFT/RIGHT Buttons** : Used to change the parameter of the selected menu item. It also moves the cursor the left or right in the menu screen.

Main Menu
Press MENU button to access the SETUP menu.
Select each sub-menu by using the ▲ ▼ ◀ ▶ button.
Press the MENU(EXIT) button to select.

LENS SET
Select DC and Press the MENU button to have LENS DC activated .

DC LENS(Adjusts brightness of the image.)
- DC LENS : 1 ~ 255 using the UP or DOWN button. You can adjust between 0 ~ 20 dead using the LEFT or RIGHT button.

FLK (FLICKERLESS)
- FLK : Select ON using the UP or DOWN button. You can select between ON / OFF using the LEFT or RIGHT button.
- ON : Only 50Hz lens allowed to adjust the shutter speed.

SHUTTER (Adjusts the shutter speed of the lens.)
- Select SHUTTER using the UP or DOWN button. You can adjust from 1/60, 1/100, 1/120,1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/10K, 1/15K, 1/30K, 1/50K,1/100K(max) lens using the LEFT or RIGHT button.

WHITE BAL (WHITE BALANCE)
Select WHITE BAL using the UP or DOWN button. You can select from ATW, MANUAL, PUSH using the LEFT or RIGHT button.

1. ATW : Color temperature is automatically adjusted to 2 200K ~ 10 000K.
- Select ATW using the UP or DOWN button and press the MENU button to activate WB MANUAL option.

2. MANUAL : Select MANUAL using the UP or DOWN button and press the MENU button to activate WB MANUAL option.

3. PUSH : If the set color temperature does not meet your environment, press the MENU button to adjust the color temperature to desired setting.

AGC
Select AGC using the UP or DOWN button. You can select between OFF, ON using the LEFT or RIGHT button.

- **ON** : Select ON using the LEFT or RIGHT button and press the MENU button to activate AGC option.

1. LEVEL : You can adjust between 0 ~ 20 using the LEFT or RIGHT button.

- **OFF** : Disable the AGC.

AGC (Automatic Gain Control)
Select AGC using the UP or DOWN button. You can select between AUTO, COLOR, B/W, EXT using the LEFT or RIGHT button.

- **COLOR** : for color mode only (DAY mode)
- **B/W** : for B/W mode only (NIGHT mode)
- Select B/W using the LEFT or RIGHT button and press the MENU button to activate COLOR BURST option.

It is possible to select ON/OFF using the LEFT or RIGHT button.

- **EXT** : To switch between COLOR or BLACK and WHITE depending on external signals.

1. AREA : To specify MOTION DETECTION area
Select AREA using the UP or DOWN button. You can select from area 1~4 position using the LEFT or RIGHT button.

2. DISPLAY : To display MOTION DETECTED area on the video
Select DISPLAY using the UP or DOWN button. You can select between ON/OFF using the LEFT or RIGHT button.
(1) ON : Display the MOTION DETECTED area on the screen
When image is changed on the selected area, MD signal is generated.
(2) OFF : disable

3. SENSITIVITY : To setup the motion sensitivity
Select SENSITIVITY using the UP or DOWN button. You can adjust the motion sensitivity of the selected area using the LEFT or RIGHT button.
(1) 1 : least sensitive (Default)
(2) 24 : least sensitive (lowest)

4) TOP / BOTTOM / LEFT / RIGHT : Users can specify a PRIVACY ZONE area
- Select TOP/BOTTOM/LEFT or RIGHT using the UP or DOWN button. You can adjust the AREA using the LEFT or RIGHT button.

(EXTENDED)
(1) TOP : extend or reduce the upper area of the PRIVACY area (0~43 / 0~140)
(2) BOTTOM : extend or reduce the bottom area of the PRIVACY area (0~43 / 71~75)
(3) LEFT : extend or reduce the left side of the PRIVACY area (0~40 / 0~80)
(4) RIGHT : extend or reduce the right side of the PRIVACY area (79~280 / 255~351)

(1) INITIAL : To reset to factory default only on the PRIVACY mode.
- Select INITIAL using the UP or DOWN button.
- Select YES using the LEFT or RIGHT button.
(2) RETURN : To return to MASK SELMENU.
- Select RETURN using the UP or DOWN button.
- You can return to MASK ADJ MENU by the MENU button.

7. COLOR GAIN
Select COLOR GAIN using the UP or DOWN button and press MENU button to activate COLOR MODE option.

1. B-Y : To adjust density of RED (0~20)
2. R-Y : To adjust density of BLUE (0~20)

8. GAMMA
- Select GAMMA and LCD monitor you can select between 0.35, 0.45, 0.6, 0.75 using the LEFT or RIGHT button.

9. INITIAL : To reset to factory default only on the MASK ADJ mode.
- Select INITIAL using the UP or DOWN button and reset the MASK ADJ mode using the MENU button.

10. RETURN : To return to MAIN MENU.
- Select RETURN using the UP or DOWN button and return to MENU using the MENU button.

1. PRIVACY
- Select PRIVACY using the UP or DOWN button and press the MENU button to active the PRIVACY option.

2) AREA : To specify the PRIVACY area
- Select AREA using the UP or DOWN button. You can select area from 1~4 position using the LEFT or RIGHT button.

(3) DISPLAY : To display the Privacy Zone area
- Select DISPLAY using the UP or DOWN button. You can select between ON/OFF using the LEFT or RIGHT button.
(1) ON : Display the Privacy Zone area
(2) OFF : disable

(3) COLOR : To change color of privacy zone
- Select COLOR using the UP or DOWN button. You can select among WHITE, YELLOW, GREEN, BLUE, RED, BLACK, or GRAY using the LEFT or RIGHT button.

7. CAM ID : CAMERA ID (RS-485 Communication ID)
- Select CAM ID using the UP or DOWN button. You can select between the range 000~255 using the LEFT or RIGHT button.
NOTICE : CAM ID does not reset after user setting.

8. ID DISPLAY (CAMERA ID DISPLAY)
- Select ID DISPLAY using the UP or DOWN button. You can select between ON/OFF using the LEFT or RIGHT button.
(1) ON : To display camera ID on the screen
(2) OFF : disable

9. CAM TITLE
- Select CAM TITLE using the UP or DOWN button.
(1) ON : To display the camera title on the screen
(2) OFF : disable
- Select CAM TITLE and press MENU button to display CAM TITLE.
(1) LETTER : To select character using the UP or DOWN button (0~9, A~Z)
(2) LEFT : To select position using the LEFT or RIGHT button.

4. LANGUAGE
- Select LANGUAGE using the UP or DOWN button. You can change between ENG or CHN using the LEFT or RIGHT button.

5. SYNC
- Select Synchronization Type : INT

6. MIRROR
- Select MIRROR using the UP or DOWN button. You can change from 24Bitpix, 48Bitpix 36Bitpix, 576Bitpix using the LEFT or RIGHT button.

7. VERSION

8. INITIAL : To reset to factory default only on the GENERAL mode.
- Select INITIAL using the UP or DOWN button. You can reset to factory default for GENERAL mode using the MENU button.

9. RETURN : To return to MENU
- Select RETURN using the UP or DOWN button. You can return to the MENU using the MENU button.

INITIAL
To reset to factory default.
Select INITIAL using the UP or DOWN button and reset to factory default using the MENU button.

EXIT
To exit out from the OSD setup menu.
Select EXIT using the UP or DOWN button and close the OSD setup menu by pressing MENU button.

9. SPECIFICATION

12V DC Input Model

MODEL	HIGH RESOLUTION		NORMAL RESOLUTION	
Region System	NTSC	PAL	NTSC	PAL
Image Sensor	1/3" High Sensitivity CCD			
Effective Pixels	768(H)x494(V)	752(H)x582(V)	510(H)x492(V)	500(H)x582(V)
Video Output	Composite: 1.0 p-p, 75Ω			
Sync System	Internal Sync			
S/N Ratio	50dB Min.(SHARPNESS, AGC off)			
Horizontal Resolution	600 TV Lines (Min 500 TV Lines)		420 TV Lines	
Min Illumination (F1.2, 30IRE, Max)	0.05 Lux (color) 0.0001 Lux (B/W, 30IRE)		0.07 Lux (color) 0.0001 Lux (B/W, 30IRE)	
ESC	NTSC : 1/60 ~ 1/100,000 , PAL : 1/50 ~ 1/100,000			
Manual Shutter	1/180(100), 1/120(100), 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/10K, 1/15K, 1/30K, 1/50K, 1/100K			
DNR	OFF, LOW, MIDDLE, HIGH			
White Balance	ATW, MANUAL, PUSH			
AGC	OFF, LOW, MIDDLE, HIGH			
BLC	ON, OFF			

MODEL	HIGH RESOLUTION		NORMAL RESOLUTION	
Region System	NTSC	PAL	NTSC	PAL
Image Sensor	1/3" High Sensitivity CCD			
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Video Output	Composite: 1.0 p-p, 75Ω			
Sync System	Internal Sync			
S/N Ratio	50dB Min.(SHARPNESS, AGC off)			
Horizontal Resolution	600 TV Lines (Min 500 TV Lines)		420 TV Lines	
Min Illumination (F1.2, 30IRE, Max)	0.05 Lux (color) 0.0001 Lux (B/W, 30IRE)		0.07 Lux (color) 0.0001 Lux (B/W, 30IRE)	
ESC	NTSC : 1/60 ~ 1/100,000 , PAL : 1/50 ~ 1/100,000			
Manual Shutter	1/180(100), 1/120(100), 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/8000, 1/10K, 1/15K, 1/30K, 1/50K, 1/100K			
DNR	OFF, LOW, MIDDLE, HIGH			
White Balance	ATW, MANUAL, PUSH			
AGC	OFF, LOW, MIDDLE, HIGH			
BLC	ON, OFF			

Day / Night	AUTO, COLOR, B/W, EXT
Burst	ON, OFF
Motion Detection	ON, OFF (8 Programmable Zone)
Privacy Zone	ON (4 Programmable Zone)
Mirror	ON(H/V/BOTH/NL), OFF
Sharpness	1 ~ 20
Gamma	0.35, 0.45, 0.6, 0.75
Communications	RS-485 (Press & Click)
OSD Language	English / Chinese
Synchronization	INT, LINE LOCK
Supply Voltage	24V AC (±10%), 12V DC (±10%)
Power Consumption	350mA / 3.5W (Max)
Operating Temperature/Humidity	-10°C to +50°C (14°F to 122°F), 85% Max
Storage Temperature/Humidity	-20°C to +60°C (-4°F to 140°F), 85% Max
External Dimensions	65(W) x 55.5(H) x 113.5(D)mm
Weight	Approx. 300g

100V AC ~ 240V AC Input Model

Day / Night	AUTO, COLOR, B/W, EXT
Burst	ON, OFF
Motion Detection	ON, OFF (8 Programmable Zone)
Privacy Zone	ON (4 Programmable Zone)
Mirror	ON(H/V/BOTH/NL), OFF
Sharpness	1 ~ 20
Gamma	0.35, 0.45, 0.6, 0.75
Communications	RS-485 (Press & Click)
OSD Language	English / Chinese
Synchronization	INT, LINE LOCK
Supply Voltage	24V AC (±10%), 12V DC (±10%)
Power Consumption	350mA / 3.5W (Max)
Operating Temperature/Humidity	-10°C to +50°C (14°F to 122°F), 85% Max
Storage Temperature/Humidity	-20°C to +60°C (-4°F to 140°F), 85% Max
External Dimensions	65(W) x 55.5(H) x 113.5(D)mm
Weight	Approx. 300g

10. TROUBLESHOOTING

If you have trouble operating your camera, refer to the following guidelines. If the guidelines do not help you to solve the problem, contact an authorized technician.

Nothing appears on the screen:
✓ Check that the power source has been turned on between the camera and monitor are fixed properly.
✓ Check that the power source connected (VIDEO) cable to the camera (VIDEO input jack).

The image on the screen is dim:
✓ Is lens stained with oil? Clean your lens with soft, clean cloth.
✓ Is the lens focused correctly?
✓ Adjust the back focus adjustment, using light, change the camera position.
✓ Adjust the back focus adjustment.

The image on the screen is dark:
✓ Check the brightness setting on the monitor.
✓ Adjust the auto shutter setting, set the TSU (1/4) properly.

The camera is not working properly, and the surface of the camera is hot.
✓ Check that you have properly connected the camera to an appropriate power source.

The image on the screen flickers.
✓ Check whether the camera is exposed to strong sunlight or fluorescent lighting.

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