

Digital CCD Color Camera

Instruction Manual

TMC-734D

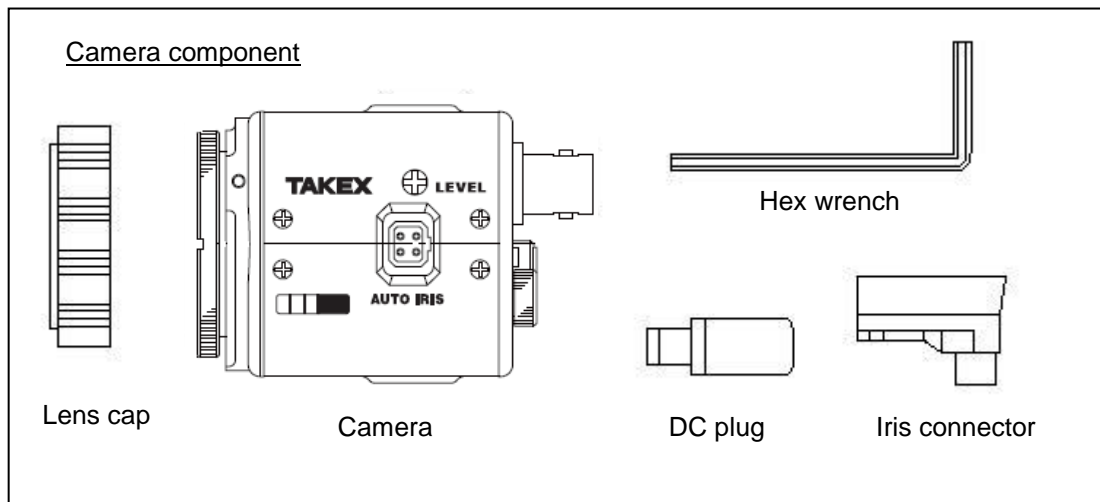
- We greatly appreciate your confidence choosing our TAKEX CCD Video Camera.
- Please read this manual carefully before use and manage the camera properly.
Keep this manual at hand and reread it whenever you are uncertain about the operation.

Precautions for use

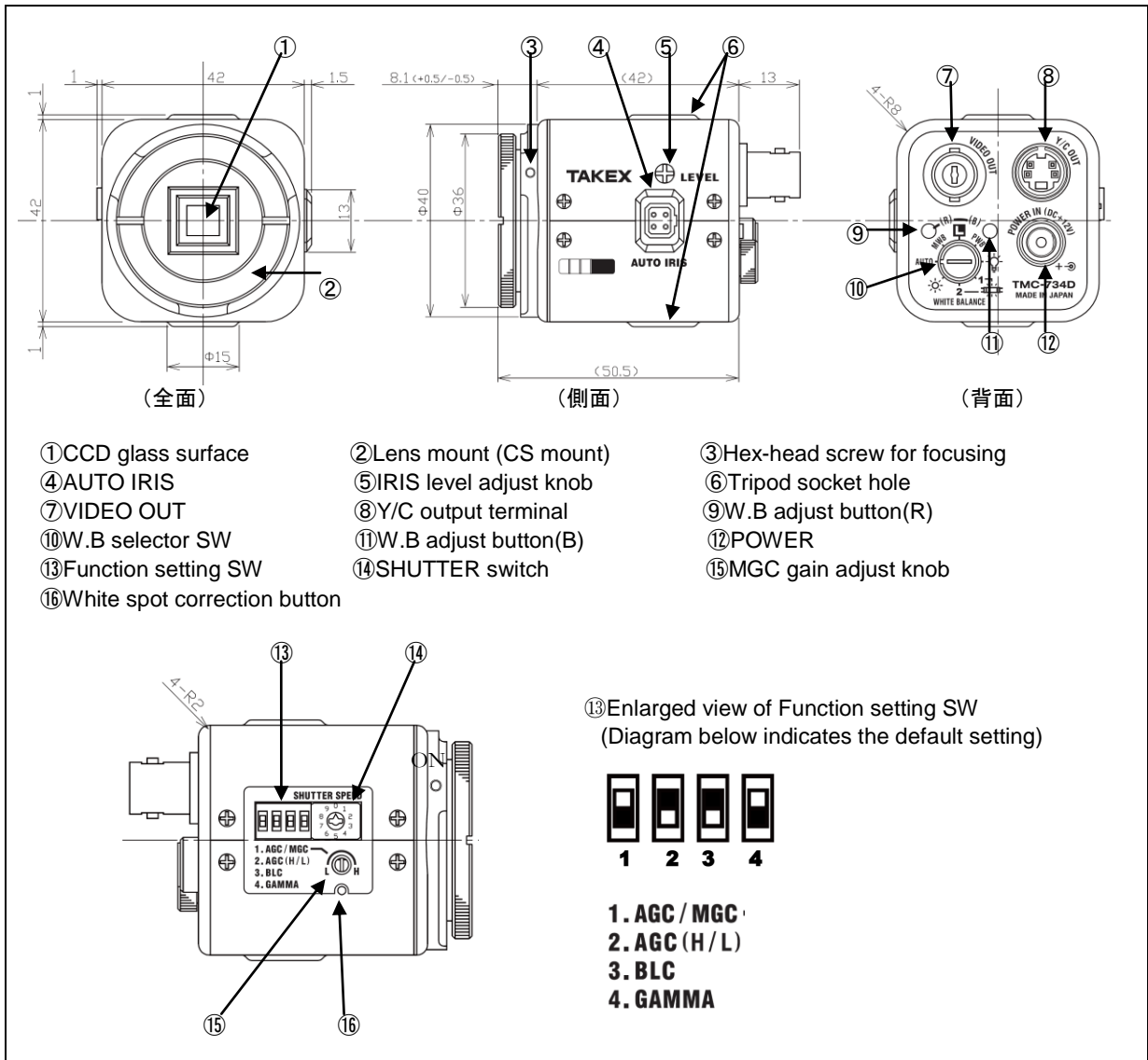
- Use the equipment with a voltage within the range of specifications(12VDC±10%).
- Do not use the equipment in an environment subject to water damage as TMC-734D is a indoor type camera. Always use a protecting case like outdoor camera housing when in outdoor use.
- Do not make an impact on the equipment.
- Do not disassemble this equipment or alter the internal circuits. We assume no responsibility whatsoever for any incidental damages resulting from the user's use of this equipment or performance failure.
- Be careful not to get the light receiving surface be exposed to high intensity light over a long periods of time. If a light receiving surface is exposed to high intensity light over a long time (regardless of the on/off state of the camera), the image pickup device may get discolored or get burnt in.
- When the camera is used under a fluorescent lamp or a mercury lamp, it may cause a perceptible flicker or a periodic chromatic color change. However it is not the camera-related failure.
- Do not use the equipment in an environment subject to intense electromagnetic field.
In such an environment, malfunction of the camera, disturbance of image and noise are caused by the field.
- Do not directly input power to VIDEO OUT terminal, it causes the equipment to malfunction.
- Do not make a wire connection with a wet hand. It creates a shock hazard.
- When an abnormal or failure condition is detected, immediately stop using this equipment, cut off the power supply, remove the external connection cables and contact the dealer for inspection/repair.

Component parts

Please be sure to check the following items before use.








Part names, Functions and Dimensions (Unit : mm) :



- ① CCD glass surface.....Acceptance surface of CCD camera
 - ・Please note that the camera footage get blurred if the dust, moisture or oil drop adheres to the glass surface
 - ・Put the attached lens cap to prevent scratch and pollution whenever the lens is not mounted
- ② Lens mount.....CS mount
 - ・Users can also attach the C mount lens by using the optional C mount adaptor (CR-5) .
- ③ Hex-head screw for focusing.....Fine tuning screw for focusing by changing position of Lens mount
 - ・Three screws on the side surface of Lens mount at angular interval of 120-degree.

- ④ AUTO IRIS ····· Terminal to plug in the connector for AUTO IRIS lens
 - It delivers power and control signal when using AUTO IRIS lens. (Automatic recognition of VIDEO/DC iris lens)
- ⑤ IRIS level adjust knob ····· It sets the aperture when using DC auto iris lens.
- ⑥ Tripod socket hole ····· Mounting hole to fix the camera.
 - Identical with a tripod socket hole for general camera. (A total of two holes on Top/Bottom sides)
- ⑦ VIDEO OUT ····· BNC terminal for Video signal output.
 - Use a 3C2V or 5C2V cable of 75Ω specifications as a connection cable.
- ⑧ Y/C output terminal ····· S video terminal which outputs video signal separating the luminance signal(Y) and chrominance signal(C).
- ⑨ W.B adjust button (R) ····· Push button for MWB mode (Manual mode)
 - Push button to correct white balance adding a reddish hue when selecting MWB mode by W.B selector switch.
- ⑩ W.B selector switch ····· Switch to select the white balance mode.
 - It is set to AUTO by factory default.
 - It can select the white balance operational mode for any purpose
- ⑪ W.B adjust button (B) ····· Push button for MWB mode (Manual mode)
 - Push button to correct white balance adding a bluish hue when selecting MWB mode by W.B selector switch.



Indication	White balance operation mode
AUTO	Auto tracking mode To automatically correct the W/B working with the changing color temperature of luminous surroundings of the object.
M.W.B	Manual mode To manually adjust the W/B in conjunction with the W.B adjust button(R),(B).(⑨⑩)
	Lock in mode To lock in the color temperature set at MWB or PWB in order to prevent operational error.
	Light bulb mode (approx.3200K) To set the W/B with reference to the white color under the luminous surrounding of light bulb.
	Fluorescent light mode 1 (approx.4300K) To set the W/B with reference to the white color under the luminous surrounding of fluorescent light with reddish coloring.
	Fluorescent light mode 2 (approx.5100K) To set the W/B with reference to the white color under the luminous surrounding of fluorescent light with bluish coloring.
	Sunlight mode (approx.6300K) To set the W/B with reference to the white color under the luminous surrounding of sunlight.
P.W.B	Push-lock white balance mode To adjust and set the W/B with the color temperature of luminous surroundings in conjunction with the W/B adjust button(B). While pushing the W/B adjust button(B) :It continues to adjust the W/B. Moment to stop pushing :It locks in the W/B at the moment.

⑫POWER.....Power input terminal

- Terminal to plug in the DC plug.
- It is recommended to use our DC-12NI power supply(Option,12VDC,450mA)

⑬Function setting SW.....Setting switch for AGC, Backlight correction and Gamma correction.

AGC ON / OFF.....AGC/MGC selector switch(Factory default: ON)

- AGC ON when throwing a switch upward.
- CCD output signal is amplified with approx.12dB fixed gain when AGC-OFF(MGC).It can manually be changed by MGC gain adjust knob⑮.

AGC Hi/Lo.....AGC Hi-Lo gain transfer switch (Factory default: Lo)

- Upward: Hi gain, Downward: Lo gain
- CCD output signal is amplified by up to approx.38dB in AGC Hi and 32dB in AGC Lo.

(Diagram below indicates the default setting)



1 2 3 4

- 1. AGC / MGC**
- 2. AGC (H / L)**
- 3. BLC**
- 4. GAMMA**

BLC ON/OFF.....Backlight correction On-Off switch(Factory default: OFF)

γ correction ON/OFF.....Gamma correction On-Off switch(Factory default: ON)

- Upward: Gamma correction ON($\gamma \cong 0.45$), Downward: OFF

⑭ SHUTTER SW ····· Electronic shutter speed selector switch (Factory default: OFF)

Number	Mode	Shutter speed (sec)
0	OFF	1 / 60
1	F.L	1 / 100
2	E.S	1 / 250
3	E.S	1 / 500
4	E.S	1 / 1000
5	E.S	1 / 2000
6	E.S	1 / 4000
7	E.S	1 / 10000
8	EI OFF	1 / 60~1 / 10000
9	EI FL	

F.L(Flickerless) : Function to reduce the flicker in screen caused by a fluorescent lamp or a mercury lamp.

E.I(Electronic iris) : Function to automatically control a shutter speed in response to the amount of light and to electrically adjust the aperture value. It is useful when using a lens of fixed aperture that can not adjust the amount of incident light.

⑮ MGC gain adjust knob ····· Knob to adjust MGC(Manual gain).

⑯ White spot correction button ····· Button to correct the white spots.

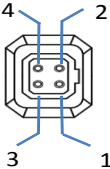
Operation procedure:

- Please be sure to check that all the equipments are turned off prior to connecting with external devices.
- 1) Please take off a lens cap of TMC-734D and mount a lens.(screw-in system)
 - When using C mount lens, use our C mount adaptor (CR-5,option) together.
 - Please check the lens specification again when the lens do not fit in the lens mount well.
 - 2) Connect the iris control cable of the camera to ④AUTO IRIS connector of TMC-734D when using an auto iris lens.

Connection method of AUTO IRIS connector

- TMC-734D automatically recognizes two types of iris lens; Video iris and DC iris.

The pin arrangement of the AUTO IRIS connector and the signals assigned to those pins for each conforming lens are shown in the right table:



Pin No.	Video iris	DC iris
1	Power	Brake-
2	Not used	Brake+
3	Iris signal	Drive+
4	GND	Drive-

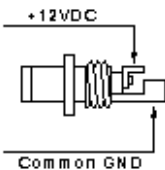
Adjustment of Iris level (only for DC auto iris lens)

Adjust the iris level using ⑤IRIS level adjust knob on the side panel to make the brightness of the object to the right level.
In case of the lens other than DC auto iris lens, the operation of this IRIS level adjust knob is invalid.

- 3) Insert the DC plug into the POWER connector on the rear panel.
 - Be sure to turn the power off before connecting DC plug.
 - It is recommended to use our DC-12NI power supply (12VDC,450mA, option).

Cautionary notes about Power supply
(Please fully observe following precautions when using a power supply other than our DC-12NI power supply.)

- Be sure to use a constant voltage power supply rated at 12VDC \pm 10%, 250mA or larger.
- Use the included DC plug and if it is necessary to make wire connection make it as shown by the right diagram without a single mistake.
- Be sure to avoid contact of DC jack terminals with each other.
- If you do not follow the above precautions, it may cause a break down of the camera or power supply or else it may trigger a fire.



- 4) Connect ⑦VIDEO OUT terminal of TMC-734D to the monitor via 75 ohm cable such as 3C2V or 5C2V. if the monitor has S-terminal, the higher resolution images can be obtained by connecting it to ⑧Y/C output terminal. Concurrent use of ⑦VIDEO OUT and ⑧Y/C output terminal is possible.

Cautionary notes about Monitor

- There are two types of monitors of NTSC standard and of PAL standard as is the case with camera. Use the NTSC standard monitor for this camera.
- Never use a monitor like a coaxial superimposed type monitor that generates a DC voltage on a Video input terminal. It causes the camera to malfunction.
- It is recommended to use a monitor of which the horizontal resolution is 600 TV lines or larger.

- 5) Turn on TMC-734D, monitor and connected device etc..
- Immediately turn off all the equipments and recheck the connection if nothing appears on a monitor screen.
- 6) Adjust the aperture and the focus of the lens while watching the screen image of the monitor..
- Adjust the lens mount position in the following way if it has difficulty in focusing (e.g., by using non-standard lens).

Adjusting method of Lens mount position

- Mount the lens used and loosen all three hex-head screws③.
- Move the lens mount back and forth and focus a camera on the far point with the lens focus of infinite distance.
- Tighten all three hex-head screws at the point where it comes into focus.

- 7) Select the electronic shutter speed to suit the intended use by the⑭shutter switch as needed.

Cautionary notes about Electronic shutter

- Smear may appear when the intense light falls onto the CCD imaging area in E.I(Electronic iris) and high speed shutter mode. (it is not the camera-related failure.)
- The flickering phenomenon may occur at commercial power frequency in the lighting environment such as fluorescent lamp or mercury lamp. If the phenomenon gets to a serious extent, use the camera with ⑭Shutter switch turned OFF.(In this case, it is recommended to concurrently use Auto iris lens.) A high-frequency lighting may also contribute to reduce the phenomenon.
- The flickerless function(F.L) is the effective function to reduce a perceptible flicker. It is effective only at 50Hz commercial frequency area for NTSC standard monitor.

- 8) Select the white balance mode to suit the intended use by the⑩W.B selector switch as needed.

Cautionary notes about White balance mode

- AUTO tracking mode(AUTO) or Push-lock white balance mode(P.W.B) is efficient way to take a white balance under the luminous surroundings where it is difficult to take a white balance in the preset mode (Light bulb mode, Fluorescent light mode1, Fluorescent light mode2).
- It is effective to employ AUTO tracking mode(AUTO) where the lighting environment varies with time (cf.around-the-clock monitoring) However a white balance may not properly be taken under the luminous surroundings where the amount of light is extremely low or the flicker emission is very high.
- Adjustment of white balance in P.W.B mode is more efficient by doing it while capturing the white object and displaying it in full-screen.
- In P.W.B mode, a white balance can be set in most luminous surroundings but it has not the function to auto tracking the variation of luminous surrounding.(It is needed to manipulate a W/B adjust button(B) in each case.)

9) Turn the Backlight correction function ON with ⑬-3 BLC on/off switch as needed.

Cautionary notes about Back light correction function

- Back light correction is the function to reduce so-called “blocked up shadows” which may occur in underexposure condition.
- There are three ways of Backlight correction as follows according to ⑭ Shutter switch setting.

Setting	Way of making Back light correction
E.I	To make a Backlight correction with a combination of Shutter switch adjustment and AGC operation.
F.L	To make a Backlight correction only with AGC operation. (Shutter switch is fixed.)
OFF 1/250 1/500 1/1000 1/2000 1/4000	<ul style="list-style-type: none"> • To make a Backlight correction by varying a control signal level of ④ AUTO IRIS connector. (In backlit state, the backlight correction is made lowering the Iris signal level) Therefore the backlightr correction is made only when the Auto iris lens is used together. • AGC operation may have effect opposite to Backlight correction based on the condition of the object. In this case, turn the AGC ON/OFF switch to OFF.

10) An optimal image may be provided by operation of ⑬ Function setting SW in response to imaging condition.

Cautionary notes about Function setting SW

- It may be more effective to reconfigure the function taking “intended purpose”, “status of use” and “picture quality” etc. into consideration

Setting SW	Setting	Effectual situation
1. AGC ON/OFF (Factory default: ON)	ON	<ul style="list-style-type: none"> • In a case where the auto iris lens is unusable. e.g. Monitoring application • In a case where the minimum subject illuminance is put ahead S/N ratio.
	OFF	<ul style="list-style-type: none"> • In a case where a priority is given to S/N ratio. • In a case where AGC operation becomes something of a problem as in a computer image processing. • In a case where a degree of backlight correction stronger than the case where the Auto iris lens is used together, is required.
2 AGC Hi/Lo (Factory default: Lo)	Hi	• In a case where the minimum subject illuminance is put ahead S/N ratio.
	Lo	• In a case where AGC function is required when the minimum subject illuminance is a matter of no consequence.
3 BLC ON/OFF	Refer to paragraph 9)	
4 γ ON/OFF (Factory default: ON)	ON	• Monitoring application using a normal monitor.
	OFF	• In a case where γ correction function becomes something of a problem as in a computer image capturing.

11) Make the white spot correction with ⑯ white spot correction button as needed.

Correction procedure

1. Completely block the light passing through lens.
2. Set the ⑩ W.B selector switch to MWB or PWB.
3. Set the AGC ON/OFF SW in ⑬ Function setting SW to ON.
4. Press the ⑯ White spot correction button with a thin rod.
5. White spot is automatically detected in five seconds and the information data of white spots are stored in the camera.

Specifications

Model name	TMC-734D (NTSC)	
Image sensor	1/3" interline transfer CCD image sensor	
Total pixels	811 (H) × 508 (V)	
Effective pixels	768 (H) × 494 (V)	
Pixel size	6.35μm (H) × 7.4μm (V)	
Sync system	Internal sync	
Scanning system	2:1 interlace	
Signal out	1Vp-p 75Ω unbalanced Y/C out (Y:VIDEO SYNC, C:Croma Burst)	
Horizontal resolution	540TV lines or more (in the central part of the screen, Y/C)	
Min illuminance	0.02lx. F1.2	
S/N ratio	50dB or more (AGC OFF, γ=1.0)	
AE function	Electronic IRIS (E.I)	1/60~1/10000 sec (OFF, FL)
	Electronic shutter (E.S)	OFF(1/60), 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 sec
	Flickerless mode (F.L)	1/100 sec
W/B Correction function	AUTO	Auto tracking mode to automatically correct the W/B working with the color temperature of luminous surroundings of the object.
	MANUAL	2500K~9500K
	PRESET	•Sunlight mode(6300K) •Fluorescent mode1(5100K) •Fluorescent mode2(4300K) •Light bulb mode(3200K)
	PWB (Push-lock-system)	Push-lock white balance mode to adjust and set the W/B with the color temperature of luminous surroundings in conjunction with the W/B adjust button.
AGC	AGC-ON • Hi: up to 38dB Lo: up to 32dB AGC-OFF(MGC) • Fixed gain (0~32dB)	
Gamma	γ≐0.45 (ON), 1.0 (OFF)	
Auto iris lens	VIDEO iris/ DC iris (Automatic switch)	
White spot correction	Up to 32 spots	
Backlight correction	ON/OFF selectable	
Power supply	DC+12V±10%	
Consumption current	160mA or less	
Storage temperature range	-30~+70°C	
Operation ambient temperature	-10~+50°C	
Outside dimension	44.5(W) × 44(H) × 64(D)	
Weight	Approx.140g	

- Note that the specifications are subject to change without notice for improvement.
- When an abnormal or failure condition is detected or whenever you face a problem, immediately contact the dealer for inspection/repair.
- If you have any further questions about technical issues, please do not hesitate to contact us.

Check items prior to a service call :

Confirm the following when normal image does not appear on the monitor.

- Check if the power plug or video cable is securely connected.
- Check if the specification of the monitor match that of the camera.(NTSC system for both)
- Check if the monitor in use is not a special monitor such as power-over type monitor.
- Check if a constant voltage power supply rated at 12VDC \pm 10%, 250mA or larger is used.
- Check if the aperture of the lens is not excessively stopped down.
- Check if the cable for the lens is securely connected when using auto iris lens.
- Check if the pin-out of the connecting cable is compatible with that of the Auto iris connector of the camera.
- Check if the instrument reading of the ammeter (if usable) is approximately 180mA.
- If there is nothing wrong with above items, there could be a possibility of camera failure or inherent product defects. In such case, immediately stop using this equipment and contact the dealer for inspection/repair.

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