

# WIDE DYNAMIC RANGE COLOR CAMERAS



C-CC351A

C-CC354A

## DESCRIPTION

The wide dynamic range that is engineered into TOA DSP Color Cameras allow these extraordinary cameras to deliver a performance that goes well beyond the parameters of human eyesight. These cameras provide natural images that are very similar to what the human eye sees to make for easy and non-tiring viewing. This quality is maintained under adverse lighting conditions such as backlighting. And enhanced night vision capability is also built in with a high performance electronic sensitivity booster that ensures clear images in color even under unsatisfactory lighting conditions.

## FEATURES

- **Wide dynamic range**  
Provides a new level of performance with natural looking images even in backlight condition.
- **Backlight compensation**  
Allows optimal viewing of dark areas in a backlight condition.
- **Maximum 32X sensitivity booster**  
Enables increasing sensitivity to take color images even in night conditions.
- **480-line high resolution (PAL/NTSC)**
- **Newly developed DSP**
- **Fully automatic operation mode shift**
- **Easy menu-driven setup**

## Camera Mounting Brackets

### C-BC11 Ceiling Camera Mounting Bracket

- Maximum load: 4kg
- Angle adjustment:  
V; +90° to -15°, H; 360°
- Length: 305mm (max. 465mm)

### C-BC21 Ceiling/ Wall Camera Mounting Bracket

- Maximum load: 4kg
- Angle adjustment:  
V; +90° to -15°, H; 360°

### C-BC31 Ceiling Camera Mounting Bracket

- Maximum load: 4kg
- Angle adjustment:  
V; +90° to -15°, H; 360°
- Length: 130mm

### C-BC41 Ceiling Camera Mounting Bracket

- Maximum load: 4kg
- Angle adjustment: V; +90° to -15°, H; 360°
- Length: 617mm (max. 1004mm)

### WH-4 Wall Camera Mounting Bracket

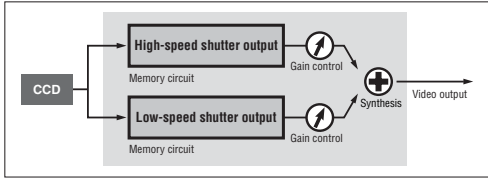
- Maximum load: 10kg
- Angle adjustment: V; 90°, H; 360°



# C-CC351A/C-CC354A

## WIDE DYNAMIC RANGE COLOR CAMERAS

### New DSP



Crucial to achieving the extremely wide dynamic range function is the new TOA proprietary DSP. Using sophisticated digital video processing allows electronically combining two separate images taken with different shutter speeds to result in one perfect image.

### Wide dynamic range

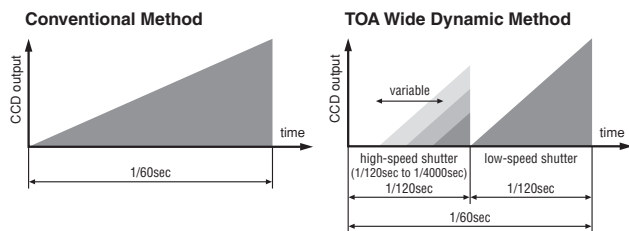
The C-CC351A and C-CC354A camera series achieve a remarkable dynamic range. This reflects a performance level that is 32 times greater than conventional CCD cameras.

The wide dynamic range allows optimizing an image by automatically adjusting both dark and light areas to ensure the targeted area has ideal contrast and visibility.

### TOA Wide Dynamic Range Method

Conventional cameras employ a single speed of 1/60sec. when taking images. TOA's Wide Dynamic Range Method makes use of two shutter speeds, one set at 1/120sec. and

one that is variable from 1/120sec. to 1/4000sec. to take two images which are electronically combined to produce a single, high-quality image.



High-speed shutter loses details of indoor.



Low-speed shutter creates whiteout of outdoor.



Electronically combining the images taken using both low-speed and high-speed shutter gives single clear image.

### Three modes cover dynamic range requirements.

**Normal** is the default setting where the dynamic range is adjusted automatically as needed as when the camera detects a backlighting condition.

**Manual** splits the screen into 12 segments and allows the user to adjust the dynamic range for the most desired segments.



**Off** is for when wide dynamic range adjustment is not desired or when using the backlight compensation.

# C-CC351A/C-CC354A

## WIDE DYNAMIC RANGE COLOR CAMERAS

### Backlight compensation

TOA's CCD cameras have been designed to overcome the problems that conventional CCD cameras experience. Most of these problems originate from trying to accurately focus when the area of coverage includes areas with varying brightness. Cameras in some cases are affected by the bright areas they are monitoring with the result that there are some hard to see dark areas. When backlight compensation mode is selected, the camera divides an image into 12 segmented areas (4/4), comparing the brightness in each area to automatically adjust the required amount of backlight compensation for the desired segments. A greater degree of control is allowed by setting backlight compensation for 3/4 which provides finer backlight control over the area most important. 2/4 offers the finest degree of control by applying 12-segment backlight compensation to just the lower half of the screen.



12 segmented areas (4/4)    12 segmented areas (3/4)    12 segmented areas (2/4)

When the backlight compensation function is on, the camera can compensate for the different contrast levels in the segmented areas. The user selects the image area that is most important for viewing by segments. The backlight function then works by adjusting light conditions concentrating on the selected image area. The selected area will be shown in the best possible condition, for more effective monitoring.

Backlight compensation is automatically switched off when the wide dynamic range function is used.

### High resolution images

TOA cameras provide a high horizontal resolution level of 480 lines for excellent image quality.

### Maximum 32 times sensitivity boost

Magnification sensitivity can now be increased as needed all the way up to x32 in steps of x2, x4, x6, x8, x10, x16, x24 and x32 to compensate for lighting conditions that may be unsatisfactory. Sensitivity is boosted automatically to the point where good images can be taken. A camera normally requiring a minimum illumination of 1 lx can now operate well at an illumination level as low as 0.03 lx. This amount of sensitivity boost will now allow night video surveillance in color.

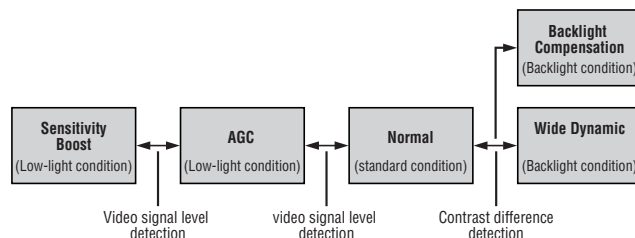
\* boosting sensitivity may increase the afterimage phenomenon as shutter speed is reduced.



Image without the sensitivity boost

### Fully automatic operation mode shift

TOA wide dynamic range cameras allow shifting between modes automatically, smoothly transitioning from mode to mode.



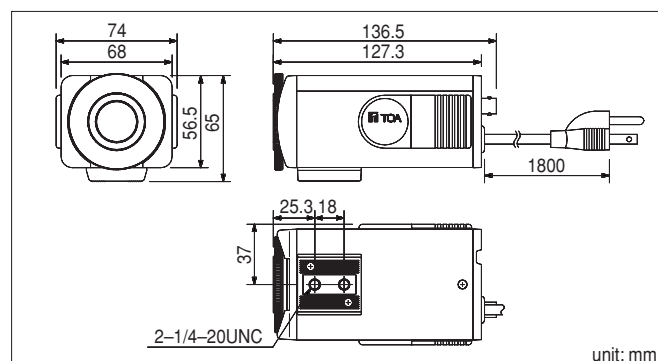
# C-CC351A

## WIDE DYNAMIC RANGE COLOR CAMERAS



- **Wide dynamic range**  
Provides a new level of performance with natural looking images even in backlight conditions.
- **Backlight compensation**  
Allows optimal viewing of desired areas in a backlight conditions.
- **Maximum 32X sensitivity booster**  
Enables increasing sensitivity to take good images even in night conditions.
- **Newly developed DSP**
- **Fully automatic mode shift**
- **Easy menu-driven setup**
- **AC MAINS operation**

### APPEARANCE AND DIMENSIONAL DIAGRAM



### SPECIFICATIONS (PAL)

Power Source	230V AC 50/60Hz
Power Consumption	5W
Image Device	1/3 type IT-CCD
Number of Effective Pixels	752 (H) × 582 (V) (440,000 pixels)
Scanning System	2:1 interlace
Scanning Frequency	Horizontal: 15.625kHz, Vertical: 50.00Hz
Video Output	VBS 1.0V (p-p) 75Ω, BNC
Synchronizing System	Internal/Line lock (phase adjustable)
Resolution	Horizontal: 480 lines, Vertical: 410 lines
S/N Ratio	48dB (AGC OFF)
Minimum Required Illumination	1 lx (F1.2, 50 IRE), 0.5 lx (F0.8, 50 IRE) (sensitivity up: OFF) 0.032 lx (F1.2, 50 IRE), 0.016 lx (F0.8, 50 IRE) (sensitivity up: 32 times)
Automatic Electric Shutter Range	1:600
Dynamic Range	46dB (wide dynamic ON)*
Shutter Speed	1/50, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
Backlight Compensation	OFF/backlight compensation/wide dynamic
AGC	Auto/Fixed (0 – 18dB)/OFF
Sensitivity Up	OFF, 2, 4, 6, 8, 10, 16, 24, 32 times
White Balance Mode	ATW/AWB/Manual
Chroma Level	Normal/Manual (Min – Max)
Enhancer Level	Normal/Manual (soft – sharp)
Character Display	Up to 8 characters (alphanumeric)
Lens Mount	CS mount
Auto-Iris Lens Output	VIDEO input type/DC input type (4-pin connector, switchable)
Operating Temperature	–10°C to +50°C
Finish	Case: surface treated steel plate, sand gray
Dimensions	74 (W) × 65 (H) × 136.5 (D)mm
Weight	645g

\* Meets JEITA specifications.

### SPECIFICATIONS (NTSC)

Power Source	120V AC, 50/60Hz
Power Consumption	5W
Image Device	1/3 type IT-CCD
Number of Effective Pixels	768 (H) × 494 (V) (380,000 pixels)
Scanning System	2:1 interlace
Scanning Frequency	Horizontal: 15.734kHz, Vertical: 59.94Hz
Video Output	VBS 1.0V (p-p) 75Ω, BNC
Synchronizing System	Internal/Line lock (phase adjustable)
Resolution	Horizontal: 480 lines, Vertical: 350 lines
S/N Ratio	48dB (AGC OFF)
Minimum Required Illumination	1 lx (F1.2, 50 IRE), 0.5 lx (F0.8, 50 IRE) (sensitivity up: OFF) 0.032 lx (F1.2, 50 IRE), 0.016 lx (F0.8, 50 IRE) (sensitivity up: 32 times)
Automatic Electric Shutter Range	1:500
Dynamic Range	46dB (wide dynamic ON)*
Shutter Speed	1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
Backlight Compensation	OFF/backlight compensation/wide dynamic
AGC	Auto/Fixed (0 – 18dB)/OFF
Sensitivity Up	OFF, 2, 4, 6, 8, 10, 16, 24, 32 times
White Balance Mode	ATW/AWB/Manual
Chroma Level	Normal/Manual (Min – Max)
Enhancer Level	Normal/Manual (soft – sharp)
Character Display	Up to 8 characters (alphanumeric)
Lens Mount	CS mount
Auto-Iris Lens Output	VIDEO input type/DC input type (4-pin connector, switchable)
Operating Temperature	–10°C to +50°C
Finish	Case: surface treated steel plate, sand gray
Dimensions	74 (W) × 65 (H) × 136.5 (D)mm
Weight	675g

\* Meets JEITA specifications.

# C-CC354A

## WIDE DYNAMIC RANGE COLOR CAMERAS



- **Wide dynamic range**

Provides a new level of performance with natural looking images even in backlight conditions.

- **Backlight compensation**

Allows optimal viewing of desired areas in a backlight conditions.

- **Maximum 32X sensitivity booster**

Enables increasing sensitivity to take good images even in night conditions.

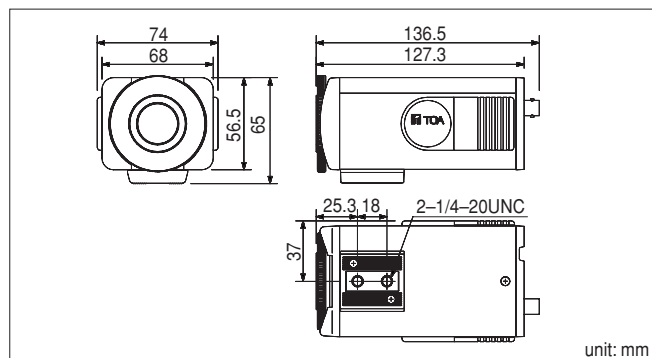
- **Newly developed DSP**

- **Fully automatic mode shift**

- **Easy menu-driven setup**

- **24V AC or 12V DC operation**

### APPEARANCE AND DIMENSIONAL DIAGRAM



### SPECIFICATIONS (PAL)

Power Source	24V AC 50/60Hz or 12V DC
Power Consumption	5W
Image Device	1/3 type IT-CCD
Number of Effective Pixels	752 (H) × 582 (V) (440,000 pixels)
Scanning System	2:1 interlace
Scanning Frequency	Horizontal: 15.625kHz, Vertical: 50.00Hz
Video Output	VBS 1.0V (p-p) 75Ω, BNC
Synchronizing System	Internal/Line lock (phase adjustable)
Resolution	Horizontal: 480 lines, Vertical: 410 lines
S/N Ratio	48dB (AGC OFF)
Minimum Required Illumination	1 lx (F1.2, 50 IRE), 0.5 lx (F0.8, 50 IRE) (sensitivity up: OFF) 0.032 lx (F1.2, 50 IRE), 0.016 lx (F0.8, 50 IRE) (sensitivity up: 32 times)
Automatic Electric Shutter Range	1:600
Dynamic Range	46dB (wide dynamic ON)*
Shutter Speed	PAL: 1/50, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
Backlight Compensation	OFF/backlight compensation/wide dynamic
AGC	Auto/Fixed (0 – 18dB)/OFF
Sensitivity Up	OFF, 2, 4, 6, 8, 10, 16, 24, 32 times
White Balance Mode	ATW/AWB/Manual
Chroma Level	Normal/Manual (Min – Max)
Enhancer Level	Normal/Manual (soft – sharp)
Character Display	Up to 8 characters (alphanumeric)
Lens Mount	C5 mount
Auto-Iris Lens Output	VIDEO input type/DC input type (4-pin connector, switchable)
Operating Temperature	–10°C to +50°C
Finish	Case: surface treated steel plate, sand gray
Dimensions	74 (W) × 65 (H) × 136.5 (D)mm
Weight	440g

\* Meets JEITA specifications.

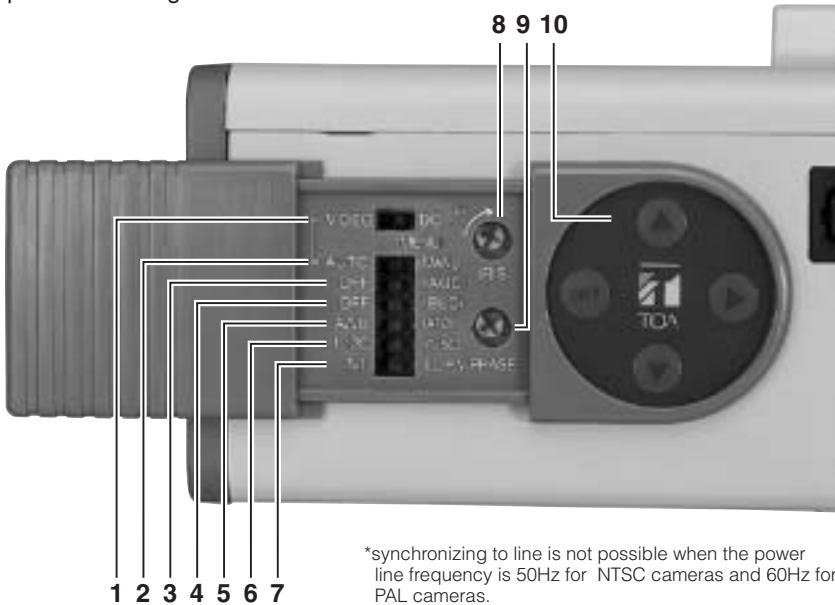
### SPECIFICATIONS (NTSC)

Power Source	24V AC 50/60Hz or 12V DC
Power Consumption	5W
Image Device	1/3 type IT-CCD
Number of Effective Pixels	768 (H) × 494 (V) (380,000 pixels)
Scanning System	2:1 interlace
Scanning Frequency	Horizontal: 15.734kHz, Vertical: 59.94Hz
Video Output	VBS 1.0V (p-p) 75Ω, BNC
Synchronizing System	Internal/Line lock (phase adjustable)
Resolution	Horizontal: 480 lines, Vertical: 350 lines
S/N Ratio	48dB (AGC OFF)
Minimum Required Illumination	1 lx (F1.2, 50 IRE), 0.5 lx (F0.8, 50 IRE) (sensitivity up: OFF) 0.032 lx (F1.2, 50 IRE), 0.016 lx (F0.8, 50 IRE) (sensitivity up: 32 times)
Automatic Electric Shutter Range	1:500
Dynamic Range	46dB (wide dynamic ON)*
Shutter Speed	NTSC: 1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
Backlight Compensation	OFF/backlight compensation/wide dynamic
AGC	Auto/Fixed (0 – 18dB)/OFF
Sensitivity Up	OFF, 2, 4, 6, 8, 10, 16, 24, 32 times
White Balance Mode	ATW/AWB/Manual
Chroma Level	Normal/Manual (Min – Max)
Enhancer Level	Normal/Manual (soft – sharp)
Character Display	Up to 8 characters (alphanumeric)
Lens Mount	C5 mount
Auto-Iris Lens Output	VIDEO input type/DC input type (4-pin connector, switchable)
Operating Temperature	–10°C to +50°C
Finish	Case: surface treated steel plate, sand gray
Dimensions	74 (W) × 65 (H) × 136.5 (D)mm
Weight	440g

\* Meets JEITA specifications.

## Mode Selection Switch

For manual setup, TOA Wide Dynamic Range Color Cameras are equipped with mode selection switches for manual setup. Various setup and adjustments may be performed using an on-screen menu.

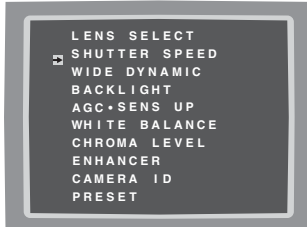


\*synchronizing to line is not possible when the power line frequency is 50Hz for NTSC cameras and 60Hz for PAL cameras.

1. **Lens VIDEO/DC switch**  
for selecting auto-iris lens types.
2. **Lens AUTO/MANUAL switch**  
to select between the auto-iris, fixed iris, or manual iris lens.
3. **AGC switch**  
for selecting auto gain control mode and sensitivity boost mode.
4. **Backlight compensation switch**  
for activating/deactivating the backlight compensation mode together with wide dynamic range mode.
5. **ATW switch**  
for operating the auto tracking white balance function as light sources require.
6. **Flickering reduction switch**  
adjusts shutter speed to eliminate fluorescent lighting-induced flickering.
7. **Synchronization switch\***  
allows synchronizing to line\* or internal synch.
8. **Iris control**  
Adjust the lens Iris
9. **Vertical phase control**
10. **Menu setup keys**  
for menu selection.

## Setup Screen

Conveniently allows setting up a camera and making adjustments and parameter changes through a menu-driven setup procedure.



### Menu

#### 1. LENS SELECT

- for adjusting iris level to match lens type selected.

#### 2. SHUTTER SPEED

- adjusts shutter speed to optimize image quality depending on lighting conditions and image flicker.

#### 3. WIDE DYNAMIC

- optimizes image quality by automatically adjusting both dark and light areas to ensure the targeted area has ideal contrast and visibility in backlit conditions.

#### 4. BACKLIGHT

- prevents an object from becoming too dark to be viewed due to backlight.

#### 5. AGC-SENS UP

- allows setting AGC to automatic, constant on or off. Allows adjusting sensitivity boost from 2x to 32x or switching it off.

#### 6. WHITE BALANCE

- provides selecting from 3 modes:

**ATW:** changes white balance to match color temperature of the target area.

**AWB:** conforms to initial white balance setting.

**Manual:** allows adjusting white balance manually for specialized lighting sources.

#### 7. CHROMA LEVEL

- for adjusting chroma level to suit user preference.

#### 8. ENHANCER

- for adjusting image contours to suit user preferences.

#### 9. CAMERA ID

- for assigning up to 8 alphanumeric characters and symbols to identify a specific camera. Also allows where to display camera title onscreen.

#### 10. PRESET

- Allows resetting all functions and controls to default settings.