



## Video Surveillance Products

# Architectural and Engineering Specifications

# 1 Introduction

Welcome to the **TOA Video Surveillance Products** Architectural and Engineering Specification Guide!

A global security solutions leader for over 20 years, TOA has developed cutting edge technologies: IP network-ready cameras, DVRs and intercom systems – plus breakthrough Wide Dynamic Range cameras for clear, crisp images in adverse lighting conditions. Our line of products also includes: combination (PTZ) dome and compact cameras, digital video recorders, network video solutions, multiplexers, monitors and much more.

This document is a compilation of all current TOA engineering specifications and is designed to help you easily specify the correct TOA product for your projects. If you need more information, please visit TOA on the web at <http://www.toaelectronics.com> where you'll find specification sheets, manuals, CAD files, software and more!

If you'd like a demonstration or a sample for evaluation, please contact a TOA Sales Representative at <http://www.toaelectronics.com/rep.asp>.

Please let us know if you have any comments on improving this guide or any suggestions for existing or new products.

TOA Electronics, Inc.  
1-800-733-7088

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### 3 Combination Dome Cameras

#### C-CC514 — Indoor Combination Dome (Standard)

##### MANUFACTURER

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

##### WARRANTY

(3) Three year warranty parts and labor, with the following exceptions:

(1) One year warranty for the following parts:

- Electrical slip ring contacts
- Pan/Tilt and Lens motors
- Lens assembly
- Cooling fan

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

##### TECHNICAL SUPPORT

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

##### GENERAL REQUIREMENTS

The product specified shall be a motorized speed dome camera system designed for indoor surveillance applications. The camera system consists of a high resolution CCD camera using ¼-inch type CCD imager with a motorized 22X zoom, auto-iris, auto-focus lens; electronic 12X digital zoom; a high speed, continuous 360 degree/second, pan/tilt mechanism; programmable privacy masking; internal CPU circuitry with external programming via RS-485 from camera remote control unit or RS-232 from PC with TOA camera setup software; compatible with Pelco-D, Bosch & Panasonic protocols.

Alarm inputs: (3) Three channels shall be provided to trigger preset selected targets.

Titling options: To facilitate camera use, various titles can be input and displayed on the monitor. In addition to camera and position titles, other titles for display include: trace title (displayed while the trace function is on), tour title (displayed when tour function is activated) and alarm title (displayed when an alarm input is received).

Preset operation start with Timer program function: The camera shall conveniently be set to begin operation at a preset time with a built-in timer. The timer can be set for a specific date, day of the week or daily. Up to 16 different timer programs can be set.

Fully automatic operation mode shift includes sensitivity boost, AGC, normal condition and backlight compensation to smoothly transition as lighting conditions change.

Restricted camera movement function: The camera's rotation range in both horizontal and vertical directions can be restricted to exclude areas from surveillance.

Route tracing function: The camera can be programmed to automatically monitor preset points for up to 60 seconds. (2) Two different routes can be programmed.

Programmable Tours function: Through combinations of the 255 preset positions and trace function, a camera can be programmed to automatically and continuously repeat a travel pattern

as a tour. Up to (16) sixteen tour patterns can be programmed. Any tour program is able to have a different travel pattern that can be activated by an alarm input or timer.

Programmable Alarm function: Desired camera operations such as position replay, touring, tracing and control of the auxiliary terminal can be programmed to activate when the camera receives an alarm input. The camera is equipped with (3) three alarm inputs and each alarm input and (1) one auxiliary alarm output can be set to respond with different preprogrammed operation.

Other functions shall include 225 preset positions, automatic positional correction (automatic positional deviation) and refresh function (slip-ring cleaning).

The camera shall have flexible installation options utilizing the wide range of mounting brackets available.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type CCD

Horizontal Resolution: 480 TVL (at center) NTSC

Signal to Noise Ratio: 50dB

Minimum Illumination:

High-sensitivity function OFF: 1 lx (50 IRE), 0.3 lx (20 IRE)

High-sensitivity function ON: 0.03 lx (50 IRE), 0.01 lx (20 IRE)

Backlight compensation: Pattern 1/Pattern 2/Pattern 3/OFF

High-Sensitivity Function: Slow shutter mode (32 times max.)

White Balance: ATW/AWB

Flicker Reduction: Automatic correction

Electronic Zooming: 12x zooming

Auto-Focus: One Push/Stop AF/Continuous

### **LENS**

Zooming 22x

Effective Focal Length: f=4.0-88mm (22x)

Effective Angle of View:

Horizontal: 47.3° (W) – 2.2° (T)

Vertical: 36.5° (W) – 1.7° (T)

Maximum Aperture: F 1.6 (W) – F 3.7 (T)

Zoom Speed: WIDE end to TELE end

Approx. 1.3sec (preset operation)

Approx 2.4sec (manual operation)

### **PAN/TILT HEAD**

Rotating Range:

Panning: Endless 360°

Tilting: +5° to -90°

Rotating Speed:

Panning/Tilting:

360°/sec max. (preset operation)

360°/sec max. (manual operation)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz (2 conductor cable without termination)

Power Consumption:

9W (normal operation)

19W (max)

Control: RS-485

Video output: VBS 1.0V(p-p), 75Ω, BNC-R jack

### **MECHANICAL SPECIFICATIONS**

**Dimensions:**

Camera section external diameter: Ø 168mm x 234mm (Height) (Ø 6.6" x 9.2"(Height))  
Weight: 1.7kg (3.75 lbs)  
Rotating range: Panning: Endless 360° rotation  
Tilting range: +5°to -185°  
Rotating speed: Panning/Tilting: 360°/sec max. (preset operation), 360°/sec max. (manual operation)  
Finish:  
Base: PC/ABS resin, cool gray  
Camera: PC/ABS resin, black

**ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -10° C to +50° C (-14° F to +122° F)  
Operating humidity: Under 90% RH (no dew condensation produced)

**CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.  
Safety: UL Listed

The combination dome camera shall be TOA model C-CC514.  
The anchor bracket shall be TOA model C-BC511A.  
The wall mounting bracket shall be TOA model C-BC511W.  
The ceiling suspension mounting bracket shall be TOA model C-BC511P.  
The ceiling mount cover shall be TOA model C-BC511C.  
The ceiling mount cover (smoked) cover shall be TOA model C-BC511C-S.  
The flush ceiling mounting bracket shall be TOA model C-BC511U.  
The flush ceiling mounting bracket (smoked) shall be TOA model C-BC511U-S.  
The pendant-mount coupling adapter shall be TOA model PAB05F.  
The pendant-mount adapter shall be TOA model Q-C-BC511E.

**C-CC564 — Indoor Combination Dome (Advanced)**

**MANUFACTURER**

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

**WARRANTY**

- (3) Three year warranty parts and labor, with the following exceptions:
- (1) One year warranty for the following parts:
  - Electrical slip ring contacts
  - Pan/Tilt and Lens motors
  - Lens assembly
  - Cooling fan

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

**TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

**GENERAL REQUIREMENTS**

The product specified shall be a motorized speed dome camera system designed for indoor surveillance applications. The camera system consists of a high resolution CCD camera using ¼-inch type CCD imager with a motorized 23X zoom, auto-iris, auto-focus lens; electronic 12X

digital zoom; a high speed, continuous 360 degree/second, pan/tilt mechanism; programmable privacy masking; internal CPU circuitry with external programming via RS-485 from camera remote control unit or RS-232 from PC with TOA camera setup software; compatible with Pelco-D, Bosch & Panasonic protocols.

Alarm inputs: (8) Eight channels shall be provided to trigger preset selected targets.

Titling options: To facilitate camera use, various titles can be input and displayed on the monitor. In addition to camera and position titles, other titles for display include: trace title (displayed while the trace function is on), tour title (displayed when tour function is activated) and alarm title (displayed when an alarm input is received).

Preset operation start with Timer program function: The camera shall conveniently be set to begin operation at a preset time with a built-in timer. The timer can be set for a specific date, day of the week or daily. Up to 16 different timer programs can be set.

Motion detection function initiates operation: When a moving object enters a camera's field of view, the camera shall initiate a preprogrammed operation or a series of operations. The camera's view can be monitored on-screen with a window that is divided into 64 segments and from these, (8) eight areas can be selected as motion detection zones.

Privacy masking function: Depending on system use requirements, there may be several areas that the system administrator decides do not require surveillance. Users are allowed to select in advance the locations they wish to be excluded from surveillance in the camera's field of view. Onscreen selected areas can be masked with a rectangle and a maximum of (8) eight areas (a single screen can have 2 masked areas) can be masked for privacy.

Restricted camera movement function: The camera's rotation range in both horizontal and vertical directions can be restricted to exclude areas from surveillance.

Wide Dynamic Range function: Digital signal processing (DSP) electronically combines two separate images taken with different shutter speeds to result in a single higher quality image preventing the subject from becoming too dark or the surrounding background from becoming too bright.

Day/Night function: Automatic or manual operation to obtain clear images when the illumination of the monitoring area becomes too low for usable color images.

Fully automatic operation mode shift includes color to B/W, Wide Dynamic Range, sensitivity boost, AGC, normal condition and backlight compensation to smoothly transition as lighting conditions change.

Slow Shutter function: In night or dark lighting conditions, the camera's electronic shutter speed is automatically reduced so that more light can enter. This function effectively increases the camera's sensitivity so that dark areas can be made up to 32 times brighter.

Route tracing function: The camera can be programmed to automatically monitor preset points for up to 60 seconds. (2) Two different routes can be programmed.

Programmable Tours function: Through combinations of the 255 preset positions and trace function, a camera can be programmed to automatically and continuously repeat a travel pattern as a tour. Up to (16) sixteen tour patterns can be programmed. Any tour program is able to have a different travel pattern that can be activated by an alarm input or timer.

Programmable Alarm function: Desired camera operations such as position replay, touring, tracing and control of the auxiliary terminal can be programmed to activate when the camera receives an alarm input. The camera is equipped with (8) eight alarm inputs and each alarm input and (1) one auxiliary alarm output can be set to respond with different preprogrammed operation.

Other functions shall include 225 preset positions, automatic positional correction (automatic positional deviation), refresh function (slip-ring cleaning) and freeze preset.

The camera shall have flexible installation options utilizing the wide range of mounting brackets available.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type CCD

Horizontal Resolution: 480 TVL (at center) NTSC

Signal to Noise Ratio: 50dB

Minimum Illumination (color operation):

High-sensitivity function OFF: 3 lx (50 IRE), 1 lx (20 IRE)

High-sensitivity function ON: 0.03 lx (50 IRE), 0.01 lx (20 IRE)

Backlight compensation: Wide Dynamic Range/Pattern 1/Pattern 2/Pattern 3/OFF

Dynamic Range: 46dB (backlight compensation: Wide Dynamic Range operation)

High-Sensitivity Function: B/W mode and slow shutter mode (32 times max.)

White Balance: ATW/AWB

Flicker Reduction: Automatic correction

Electronic Zooming: 12x zooming

Auto-Focus: One Push/Stop AF/Continuous

### **LENS**

Zooming 23x

Effective Focal Length: f=3.6-82.8mm (23x)

Effective Angle of View:

Horizontal: 54° (W) – 2.5° (T)

Vertical: 41.6° (W) – 1.9° (T)

Maximum Aperture: F 1.6 (W) – F 3.7 (T)

Zoom Speed: WIDE end to TELE end

Approx. 1.5sec (preset operation)

Approx 2.9sec (manual operation)

### **PAN/TILT HEAD**

Rotating Range:

Panning: Endless 360°

Tilting: +5° to -185°

Rotating Speed:

Panning/Tilting:

360°/sec max. (preset operation)

360°/sec max. (manual operation)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz (2 conductor cable without termination)

Power Consumption:

10W (normal operation)

19W (max)

Control: RS-485

Video output: VBS 1.0V(p-p), 75Ω, BNC-R jack

### **MECHANICAL SPECIFICATIONS**

Dimensions:

Camera section external diameter: Ø 168mm x 234mm (Height) (Ø 6.6" x 9.2"(Height))

Weight: 1.7kg (3.75 lbs)

Rotating range: Panning: Endless 360° rotation

Tilting range: +5°to -185°

Rotating speed: Panning/Tilting: 360°/sec max. (preset operation), 360°/sec max. (manual operation)

Finish:

Base: PC/ABS resin, cool gray

Camera: PC/ABS resin, black

### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -10° C to +50° C (-14° F to +122° F)

Operating humidity: Under 90% RH (no dew condensation produced)

### **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.

Safety: UL Listed

The combination dome camera shall be TOA model C-CC564.

The anchor bracket shall be TOA model C-BC511A.

The wall mounting bracket shall be TOA model C-BC511W.

The ceiling suspension mounting bracket shall be TOA model C-BC511P.

The ceiling mount cover shall be TOA model C-BC511C.

The ceiling mount cover (smoked) cover shall be TOA model C-BC511C-S.

The flush ceiling mounting bracket shall be TOA model C-BC511U.

The flush ceiling mounting bracket (smoked) shall be TOA model C-BC511U-S.

The pendant-mount coupling adapter shall be TOA model PAB05F.

The pendant-mount adapter shall be TOA model Q-C-BC511E.

## **C-CC574 — Indoor Combination Dome (Advanced w/ 35x Zoom and Image Stabilization)**

### **MANUFACTURER**

TOA Electronics, Inc.

601 Gateway Blvd., Suite 300

South San Francisco, CA 94080

Tel#: (800) 733-7088

Fax#: (800) 733-9766

### **Warranty**

(3) Three year warranty parts and labor, with the following exceptions:

(1) One year warranty for the following parts:

Electrical slip ring contacts

Pan/Tilt and Lens motors

Lens assembly

Cooling fan

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

### **Technical Support**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

### **GENERAL REQUIREMENTS**

The product specified shall be a motorized speed dome camera system designed for indoor surveillance applications. The camera system consists of a high resolution CCD camera using ¼-inch type CCD imager with a motorized 35X zoom, auto-iris, auto-focus lens; electronic 12X digital zoom; a high speed, continuous 360 degree/second, pan/tilt mechanism; programmable privacy masking; internal CPU circuitry with external programming via RS-485 from camera remote control unit or RS-232 from PC with TOA camera setup software; compatible with Pelco-D, Bosch & Panasonic protocols.

Electronic Image Stabilizer shall be provided that minimizes movement-induced blurring to maintain stable images.

Alarm inputs: (8) Eight channels shall be provided to trigger preset selected targets.

Titling options: To facilitate camera use, various titles can be input and displayed on the monitor. In addition to camera and position titles, other titles for display include: trace title (displayed while the trace function is on), tour title (displayed when tour function is activated) and alarm title (displayed when an alarm input is received).

Preset operation start with Timer program function: The camera shall conveniently be set to begin operation at a preset time with a built-in timer. The timer can be set for a specific date, day of the week or daily. Up to 16 different timer programs can be set.

Motion detection function initiates operation: When a moving object enters a camera's field of view, the camera shall initiate a preprogrammed operation or a series of operations. The camera's view can be monitored on-screen with a window that is divided into 64 segments and from these, (8) eight areas can be selected as motion detection zones.

Privacy masking function: Depending on system use requirements, there may be several areas that the system administrator decides do not require surveillance. Users are allowed to select in advance the locations they wish to be excluded from surveillance in the camera's field of view. Onscreen selected areas can be masked with a rectangle and a maximum of (8) eight areas (a single screen can have 2 masked areas) can be masked for privacy.

Restricted camera movement function: The camera's rotation range in both horizontal and vertical directions can be restricted to exclude areas from surveillance.

Wide Dynamic Range function: Allows backlight compensation that prevents the subject from becoming too dark or the surrounding background from becoming too bright.

Day/Night function: In night or dark lighting conditions, the camera's electronic shutter speed is automatically reduced so that more light can enter. This function effectively increases the camera's sensitivity so that dark areas can be made up to 32 times brighter.

Route tracing function: The camera can be programmed to automatically monitor preset points for up to 60 seconds. (2) two different routes can be programmed.

Programmable Tours function: Through combinations of the 255 preset positions and trace function, a camera can be programmed to automatically and continuously repeat a travel pattern as a tour. Up to (16) sixteen tour patterns can be programmed. Any tour program is able to have a different travel pattern that can be activated by an alarm input or timer.

Programmable Alarm function: Desired camera operations such as position replay, touring, tracing and control of the auxiliary terminal can be programmed to activate when the camera receives an alarm input. The camera is equipped with (8) eight alarm inputs and each alarm input and (1) one auxiliary alarm output can be set to respond with different preprogrammed operation.

The camera shall have flexible installation options utilizing the wide range of mounting brackets available.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type CCD

Horizontal Resolution: 540 TVL (at center) NTSC

Signal to Noise Ratio: 50dB

Minimum Illumination:

High-sensitivity function OFF: 1 lx (50 IRE), 0.3 lx (20 IRE)

High-sensitivity function ON: 0.005 lx (50 IRE), 0.0015 lx (20 IRE)

Backlight compensation: Wide Dynamic Range/Pattern 1/Pattern 2/Pattern 3/OFF

Dynamic Range: 52dB (backlight compensation: Wide Dynamic Range operation)

High-Sensitivity Function: B/W mode and slow shutter mode (32 times max.)

White Balance: ATW/AWB

Flicker Reduction: Automatic correction  
Electronic Zooming: 12x zooming  
Auto-Focus: One Push/Stop AF/Continuous

#### **LENS**

Zooming 35x  
Effective Focal Length: f=3.4-119mm (23x)  
Effective Angle of View:  
Horizontal: 55.8° (W) – 1.7° (T)  
Vertical: 43.3° (W) – 1.3° (T)  
Maximum Aperture: F 1.4 (W) – F 4.2 (T)  
Zoom Speed: WIDE end to TELE end  
Approx. 2.0sec (preset operation)  
Approx 3.2sec (manual operation)

#### **PAN/TILT HEAD**

Rotating Range:  
Panning: Endless 360°  
Tilting: +5° to -185°  
Rotating Speed:  
Panning/Tilting:  
360°/sec max. (preset operation)  
360°/sec max. (manual operation)

#### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz (2 conductor cable without termination)  
Power Consumption:  
9W (normal operation)  
19W (max)  
Control: RS-485  
Video output: VBS 1.0V(p-p), 75Ω, BNC-R jack

#### **MECHANICAL SPECIFICATIONS**

Dimensions:  
Camera section external diameter: Ø 6.61" x 9.21"(Height) [Ø 168mm x 234mm (Height)]  
Weight: 3.75 lbs [1.7kg]  
Rotating range: Panning: Endless 360° rotation  
Tilting range: +5°to -185°  
Rotating speed: Panning/Tilting: 360°/sec max. (preset operation), 360°/sec max. (manual operation)  
Finish:  
Base: PC/ABS resin, cool gray  
Camera: PC/ABS resin, black

#### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C]  
Operating humidity: Under 90% RH (no dew condensation produced)

#### **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.  
Safety: UL Listed

The combination dome camera shall be TOA model C-CC574.  
The anchor bracket shall be TOA model C-BC511A.  
The wall mounting bracket shall be TOA model C-BC511W.  
The ceiling suspension mounting bracket shall be TOA model C-BC511P.  
The ceiling mount cover shall be TOA model C-BC511C.  
The ceiling mount cover (smoked) cover shall be TOA model C-BC511C-S.  
The flush ceiling mounting bracket shall be TOA model C-BC511U.

The flush ceiling mounting bracket (smoked) shall be TOA model C-BC511U-S.  
The pendant-mount coupling adapter shall be TOA model PAB05F.  
The pendant-mount adapter shall be TOA model Q-C-BC511E.

## **C-CC714 — Outdoor Combination Dome (Standard)**

### **MANUFACTURER**

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

### **WARRANTY**

(3) Three year warranty parts and labor, with the following exceptions:

(1) One year warranty for the following parts:

- Electrical slip ring contacts
- Pan/Tilt and Lens motors
- Lens assembly
- Cooling fan

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

### **TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

### **GENERAL REQUIREMENTS**

The product specified shall be a motorized speed dome camera system designed for outdoor surveillance applications. The camera system consists of a high resolution CCD camera using ¼-inch type CCD imager with a motorized 22X zoom, auto-iris, auto-focus lens; electronic 12X digital zoom; a high speed, continuous 360 degree/second, pan/tilt mechanism; programmable privacy masking; internal CPU circuitry with external programming via RS-485 from camera remote control unit or RS-232 from PC with TOA camera setup software; compatible with Pelco-D, Bosch & Panasonic protocols.

Alarm inputs: (3) Three channels shall be provided to trigger preset selected targets.

Titling options: To facilitate camera use, various titles can be input and displayed on the monitor. In addition to camera and position titles, other titles for display include: trace title (displayed while the trace function is on), tour title (displayed when tour function is activated) and alarm title (displayed when an alarm input is received).

Preset operation start with Timer program function: The camera shall conveniently be set to begin operation at a preset time with a built-in timer. The timer can be set for a specific date, day of the week or daily. Up to 16 different timer programs can be set.

Restricted camera movement function: The camera's rotation range in both horizontal and vertical directions can be restricted to exclude areas from surveillance.

Fully automatic operation mode shift includes sensitivity boost, AGC, normal condition and backlight compensation to smoothly transition as lighting conditions change.

Heater/Fan function: Heater/Fan is automatically turned on when ambient temperatures go below 0°C (-32°F) allowing operation in severe temperatures down to -40°C (-40°F) and will automatically switch off when the temperatures rise.

Route tracing function: The camera can be programmed to automatically monitor preset points for up to 60 seconds. (2) Two different routes can be programmed.

Programmable Tours function: Through combinations of the 255 preset positions and trace function, a camera can be programmed to automatically and continuously repeat a travel pattern as a tour. Up to (16) sixteen tour patterns can be programmed. Any tour program is able to have a different travel pattern that can be activated by an alarm input or timer.

Programmable Alarm function: Desired camera operations such as position replay, touring, tracing and control of the auxiliary terminal can be programmed to activate when the camera receives an alarm input. The camera is equipped with (3) three alarm inputs and each alarm input and (1) one auxiliary alarm output can be set to respond with different preprogrammed operation.

Outdoor Installation ready: The camera shall use a waterproof and dustproof design that fully conforms to IP66 standards.

Other functions shall include 225 preset positions, automatic positional correction (automatic positional deviation) and refresh function (slip-ring cleaning).

The camera shall have flexible installation options utilizing the wide range of mounting brackets available.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type CCD

Horizontal Resolution: 480 TVL (at center) NTSC

Signal to Noise Ratio: 50dB

Minimum Illumination:

High-sensitivity function OFF: 1 lx (50 IRE), 0.3 lx (20 IRE)

High-sensitivity function ON: 0.03 lx (50 IRE), 0.01 lx (20 IRE)

Backlight compensation: Pattern 1/Pattern 2/Pattern 3/OFF

High-Sensitivity Function: Slow shutter mode (32 times max.)

White Balance: ATW/AWB

Flicker Reduction: Automatic correction

Electronic Zooming: 12x zooming

Auto-Focus: One Push/Stop AF/Continuous

### **LENS**

Zooming 22x

Effective Focal Length: f=4.0-88mm (22x)

Effective Angle of View:

Horizontal: 47.3° (W) – 2.2° (T)

Vertical: 36.5° (W) – 1.7° (T)

Maximum Aperture: F 1.6 (W) – F 3.8 (T)

Zoom Speed: WIDE end to TELE end

Approx. 1.3sec (preset operation)

Approx 2.4sec (manual operation)

### **PAN/TILT HEAD**

Rotating Range:

Panning: Endless 360°

Tilting: +5° to -90°

Rotating Speed:

Panning/Tilting:

360°/sec max. (preset operation)

360°/sec max. (manual operation)

## **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz (2 conductor cable without termination)

Power Consumption:

10W (normal operation)

80W (max. – with Defroster/Heater operation)

Control: RS-485

Video output: VBS 1.0V(p-p), 75Ω, BNC-R jack

## **MECHANICAL SPECIFICATIONS**

Dimensions:

Camera section external diameter: Ø 230mm x 330.5mm (Height) (Ø 9.1" x 13"(Height))

Dome external diameter: Ø 150mm (Ø 5.9")

Weight: 3.9kg (8.6 lbs)

Rotating range: Panning: Endless 360° rotation

Tilting range: +5°to -90°

Rotating speed: Panning/Tilting: 360°/sec max. (preset operation), 360°/sec max. (manual operation)

Finish:

Case, top cover and decorative frame: PC resin, light gray

Sunshade: Aluminum, light gray, paint

Dome Cover: PC resin (transparent)

## **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -40° C to +50° C (-40° F to +122° F)

Operating humidity: Under 90% RH (no dew condensation produced)

## **CERTIFICATIONS AND RATINGS**

Dust/Water protection: IP66

This device complies with part 15 of FCC rules.

Safety: UL Listed

The combination dome camera shall be TOA model C-CC714.

The suspension bracket shall be TOA model C-BC711P.

The wall mounting bracket shall be TOA model C-BC711W.

The pole mounting bracket shall be TOA model C-BC711PM.

The smoked dome cover shall be TOA model C-A711DM.

The pole mounting band/straps shall be TOA model YS-60B.

The parapet-mount bracket shall be TOA model PWM30G/GPC.

The pendant-mount coupling adapter shall be TOA model PAB05F.

The corner-mount bracket shall be TOA model Q-C-BC711C.

## **C-CC764 — Outdoor Combination Dome (Advanced)**

### **MANUFACTURER**

TOA Electronics, Inc.

601 Gateway Blvd., Suite 300

South San Francisco, CA 94080

Tel#: (800) 733-7088

Fax#: (800) 733-9766

### **WARRANTY**

(3) Three year warranty parts and labor, with the following exceptions:

(1) One year warranty for the following parts:

Electrical slip ring contacts

Pan/Tilt and Lens motors

Lens assembly

Cooling fan

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

### **TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

### **GENERAL REQUIREMENTS**

The product specified shall be a motorized speed dome camera system designed for outdoor surveillance applications. The camera system consists of a high resolution CCD camera using ¼-inch type CCD imager with a motorized 23X zoom, auto-iris, auto-focus lens; electronic 12X digital zoom; a high speed, continuous 360 degree/second, pan/tilt mechanism; programmable privacy masking; internal CPU circuitry with external programming via RS-485 from camera remote control unit or RS-232 from PC with TOA camera setup software; compatible with Pelco-D, Bosch & Panasonic protocols.

Alarm inputs: (3) Three channels shall be provided to trigger preset selected targets.

Titling options: To facilitate camera use, various titles can be input and displayed on the monitor. In addition to camera and position titles, other titles for display include: trace title (displayed while the trace function is on), tour title (displayed when tour function is activated) and alarm title (displayed when an alarm input is received).

Preset operation start with Timer program function: The camera shall conveniently be set to begin operation at a preset time with a built-in timer. The timer can be set for a specific date, day of the week or daily. Up to 16 different timer programs can be set.

Motion detection function initiates operation: When a moving object enters a camera's field of view, the camera shall initiate a preprogrammed operation or a series of operations. The camera's view can be monitored on-screen with a window that is divided into 64 segments and from these, (8) eight areas can be selected as motion detection zones.

Privacy masking function: Depending on system use requirements, there may be several areas that the system administrator decides do not require surveillance. Users are allowed to select in advance the locations they wish to be excluded from surveillance in the camera's field of view. Onscreen selected areas can be masked with a rectangle and a maximum of (8) eight areas (a single screen can have 2 masked areas) can be masked for privacy.

Restricted camera movement function: The camera's rotation range in both horizontal and vertical directions can be restricted to exclude areas from surveillance.

Wide Dynamic Range function: Digital signal processing (DSP) electronically combines two separate images taken with different shutter speeds to result in a single higher quality image preventing the subject from becoming too dark or the surrounding background from becoming too bright.

Day/Night function: Automatic or manual operation can be used to obtain clear images when the illumination level of the monitoring area becomes too low for usable color images.

Fully automatic operation mode shift includes color to B/W, Wide Dynamic Range, sensitivity boost, AGC, normal condition and backlight compensation to smoothly transition as lighting conditions change.

Slow Shutter function: In night or dark lighting conditions, the camera's electronic shutter speed is automatically reduced so that more light can enter. This function effectively increases the camera's sensitivity so that dark areas can be made up to 32 times brighter.

Heater/Fan function: Heater/Fan is automatically turned on when ambient temperatures go below 0°C (-32°F) allowing operation in severe temperatures down to -40°C (-40°F) and will automatically switch off when the temperatures rise.

Route tracing function: The camera can be programmed to automatically monitor preset points for up to 60 seconds. (2) Two different routes can be programmed.

Programmable Tours function: Through combinations of the 255 preset positions and trace function, a camera can be programmed to automatically and continuously repeat a travel pattern as a tour. Up to (16) sixteen tour patterns can be programmed. Any tour program is able to have a different travel pattern that can be activated by an alarm input or timer.

Programmable Alarm function: Desired camera operations such as position replay, touring, tracing and control of the auxiliary terminal can be programmed to activate when the camera receives an alarm input. The camera is equipped with (3) three alarm inputs and each alarm input and (1) one auxiliary alarm output can be set to respond with different preprogrammed operation.

Outdoor Installation ready: The camera shall use a waterproof and dustproof design that fully conforms to IP66 standards.

Other functions shall include 225 preset positions, automatic positional correction (automatic positional deviation), refresh function (slip-ring cleaning) and freeze preset.

The camera shall have flexible installation options utilizing the wide range of mounting brackets available.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type CCD

Horizontal Resolution: 480 TVL (at center) NTSC

Signal to Noise Ratio: 50dB

Minimum Illumination (color operation):

High-sensitivity function OFF: 3 lx (50 IRE), 1 lx (20 IRE)

High-sensitivity function ON: 0.03 lx (50 IRE), 0.01 lx (20 IRE)

Backlight compensation: Wide Dynamic Range/Pattern 1/Pattern 2/Pattern 3/OFF

Dynamic Range: 46dB (backlight compensation: Wide Dynamic Range operation)

High-Sensitivity Function: B/W mode and slow shutter mode (32 times max.)

White Balance: ATW/AWB

Flicker Reduction: Automatic correction

Electronic Zooming: 12x zooming

Auto-Focus: One Push/Stop AF/Continuous

### **LENS**

Zooming 23x

Effective Focal Length: f=3.6-82.8mm (23x)

Effective Angle of View:

Horizontal: 54° (W) – 2.5° (T)

Vertical: 41.6° (W) – 1.9° (T)

Maximum Aperture: F 1.6 (W) – F 3.7 (T)

Zoom Speed: WIDE end to TELE end

Approx. 1.5sec (preset operation)

Approx 2.9sec (manual operation)

### **PAN/TILT HEAD**

Rotating Range:

Panning: Endless 360°

Tilting: +5° to -185°

Rotating Speed:

Panning/Tilting:

360°/sec max. (preset operation)  
360°/sec max. (manual operation)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz (2 conductor cable without termination)

Power Consumption:

10W (normal operation)

80W (max. – with Defroster/Heater operation)

Control: RS-485

Video output: VBS 1.0V(p-p), 75Ω, BNC-R jack

### **MECHANICAL SPECIFICATIONS**

Dimensions:

Camera section external diameter: Ø 230mm x 330.5mm (Height) (Ø 9.1" x 13"(Height))

Dome external diameter: Ø 150mm (Ø 5.9")

Weight: 3.9kg (8.6 lbs)

Rotating range: Panning: Endless 360° rotation

Tilting range: +5°to -185°

Rotating speed: Panning/Tilting: 360°/sec max. (preset operation), 360°/sec max. (manual operation)

Finish:

Case, top cover and decorative frame: PC resin, light gray

Sunshade: Aluminum, light gray, paint

Dome Cover: PC resin (transparent)

### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -40° C to +50° C (-40° F to +122° F)

Operating humidity: Under 90% RH (no dew condensation produced)

### **CERTIFICATIONS AND RATINGS**

Dust/Water protection: IP66

This device complies with part 15 of FCC rules.

Safety: UL Listed

The combination dome camera shall be TOA model C-CC764.

The suspension bracket shall be TOA model C-BC711P.

The wall mounting bracket shall be TOA model C-BC711W.

The pole mounting bracket shall be TOA model C-BC711PM.

The smoked dome cover shall be TOA model C-A711DM.

The pole mounting band/straps shall be TOA model YS-60B.

The parapet-mount bracket shall be TOA model PWM30G/GPC.

The pendant-mount coupling adapter shall be TOA model PAB05F.

The corner-mount bracket shall be TOA model Q-C-BC711C.

## **C-CC774 — Outdoor Combination Dome (Advanced w/ 35x Zoom and Image Stabilization)**

### **MANUFACTURER**

TOA Electronics, Inc.

601 Gateway Blvd., Suite 300

South San Francisco, CA 94080

Tel#: (800) 733-7088

Fax#: (800) 733-9766

### **Warranty**

(3) Three year warranty parts and labor, with the following exceptions:

(1) One year warranty for the following parts:

Electrical slip ring contacts

Pan/Tilt and Lens motors

Lens assembly

Cooling fan

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

### Technical Support

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

### GENERAL REQUIREMENTS

The product specified shall be a motorized speed dome camera system designed for outdoor surveillance applications. The camera system consists of a high resolution CCD camera using ¼-inch type CCD imager with a motorized 35X zoom, auto-iris, auto-focus lens; electronic 12X digital zoom; a high speed, continuous 360 degree/second, pan/tilt mechanism; programmable privacy masking; internal CPU circuitry with external programming via RS-485 from camera remote control unit or RS-232 from PC with TOA camera setup software; compatible with Pelco-D, Bosch & Panasonic protocols.

Electronic Image Stabilizer shall be provided that minimizes movement-induced blurring to maintain stable images.

Alarm inputs: (3) Three channels shall be provided to trigger preset selected targets.

Titling options: To facilitate camera use, various titles can be input and displayed on the monitor. In addition to camera and position titles, other titles for display include: trace title (displayed while the trace function is on), tour title (displayed when tour function is activated) and alarm title (displayed when an alarm input is received).

Preset operation start with Timer program function: The camera shall conveniently be set to begin operation at a preset time with a built-in timer. The timer can be set for a specific date, day of the week or daily. Up to 16 different timer programs can be set.

Motion detection function initiates operation: When a moving object enters a camera's field of view, the camera shall initiate a preprogrammed operation or a series of operations. The camera's view can be monitored on-screen with a window that is divided into 64 segments and from these, (8) eight areas can be selected as motion detection zones.

Privacy masking function: Depending on system use requirements, there may be several areas that the system administrator decides do not require surveillance. Users are allowed to select in advance the locations they wish to be excluded from surveillance in the camera's field of view. Onscreen selected areas can be masked with a rectangle and a maximum of (8) eight areas (a single screen can have 4 masked areas) can be masked for privacy.

Restricted camera movement function: The camera's rotation range in both horizontal and vertical directions can be restricted to exclude areas from surveillance.

Wide Dynamic Range function: Allows backlight compensation that prevents the subject from becoming too dark or the surrounding background from becoming too bright.

Day/Night function: In night or dark lighting conditions, the camera's electronic shutter speed is automatically reduced so that more light can enter. This function effectively increases the camera's sensitivity so that dark areas can be made up to 32 times brighter.

Heater/Fan function: Heater/Fan is automatically turned on when ambient temperatures go below -32°F [0°C] allowing operation in severe temperatures down to -40°C (-40°F) and will automatically switch off when the temperatures rise.

Route tracing function: The camera can be programmed to automatically monitor preset points for up to 60 seconds. (2) Two different routes can be programmed.

Programmable Tours function: Through combinations of the 255 preset positions and trace function, a camera can be programmed to automatically and continuously repeat a travel pattern as a tour. Up to (16) sixteen tour patterns can be programmed. Any tour program is able to have a different travel pattern that can be activated by an alarm input or timer.

Programmable Alarm function: Desired camera operations such as position replay, touring, tracing and control of the auxiliary terminal can be programmed to activate when the camera receives an alarm input. The camera is equipped with (3) three alarm inputs and each alarm input and (1) one auxiliary alarm output can be set to respond with different preprogrammed operation.

Outdoor Installation ready: The camera shall use a waterproof and dustproof design that fully conforms to IP66 standards.

The camera shall have flexible installation options utilizing the wide range of mounting brackets available.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type CCD

Horizontal Resolution: 540 TVL (at center) NTSC

Signal to Noise Ratio: 50dB

Minimum Illumination:

High-sensitivity function OFF: 1 lx (50 IRE), 0.3 lx (20 IRE)

High-sensitivity function ON: 0.005 lx (50 IRE), 0.0015 lx (20 IRE)

Backlight compensation: Wide Dynamic Range/Pattern 1/Pattern 2/Pattern 3/OFF

Dynamic Range: 52dB (backlight compensation: Wide Dynamic Range operation)

High-Sensitivity Function: B/W mode and slow shutter mode (32 times max.)

White Balance: ATW/AWB

Flicker Reduction: Automatic correction

Electronic Zooming: 12x zooming

Auto-Focus: One Push/Stop AF/Continuous

### **LENS**

Zooming 35x

Effective Focal Length: f=3.4-119.0mm (35x)

Effective Angle of View:

Horizontal: 55.8° (W) – 1.7° (T)

Vertical: 43.3° (W) – 1.3° (T)

Maximum Aperture: F 1.4 (W) – F 4.2 (T)

Zoom Speed: WIDE end to TELE end

Approx. 2.0sec (preset operation)

Approx 3.2sec (manual operation)

### **PAN/TILT HEAD**

Rotating Range:

Panning: Endless 360°

Tilting: +5° to -185°

Rotating Speed:

Panning/Tilting:

360°/sec max. (preset operation)

360°/sec max. (manual operation)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz (2 conductor cable without termination)

Power Consumption:

10W (normal operation)  
80W (max. – with Defroster/Heater operation)  
Control: RS-485  
Video output: VBS 1.0V(p-p), 75Ω, BNC-R jack

### **MECHANICAL SPECIFICATIONS**

Dimensions:

Camera section external diameter: Ø 9.05" x 13.39"(Height) [Ø 230mm x 340mm (Height)]

Dome external diameter: Ø 5.91" [Ø 150mm]

Weight: 9.70 lbs [4.4kg]

Rotating range: Panning: Endless 360° rotation

Tilting range: +5°to -185°

Rotating speed: Panning/Tilting: 360°/sec max. (preset operation), 360°/sec max. (manual operation)

Finish:

Case, top cover and decorative frame: PC resin, light gray

Sunshade: Aluminum, light gray, paint

Dome Cover: PC resin (transparent)

### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -40° F to +122° F [-40° C to +50° C]

Operating humidity: Under 90% RH (no dew condensation produced)

### **CERTIFICATIONS AND RATINGS**

Dust/Water protection: IP66

This device complies with part 15 of FCC rules.

Safety: UL Listed

The combination dome camera shall be TOA model C-CC774.

The suspension bracket shall be TOA model C-BC711P.

The wall mounting bracket shall be TOA model C-BC711W.

The pole mounting bracket shall be TOA model C-BC711PM.

The smoked dome cover shall be TOA model C-A711DM.

The pole mounting band/straps shall be TOA model YS-60B.

The parapet-mount bracket shall be TOA model PWM30G/GPC.

The pendant-mount coupling adapter shall be TOA model PAB05F.

The corner-mount bracket shall be TOA model Q-C-BC711C.

## 4 Fixed Dome Cameras

### C-CV24-2 — Indoor Color Dome Camera

#### MANUFACTURER

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

#### WARRANTY

(3) Three year warranty parts and labor.

Failures in camera CCD picture element(s) resulting from “image burn in” are not covered under warranty.

#### TECHNICAL SUPPORT

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

#### GENERAL REQUIREMENTS

The product specified shall be a surface mounted indoor color dome camera system designed for indoor surveillance applications. The camera system shall consist of a high resolution CCD camera using 1/4-inch type CCD imager with a 2X manual varifocal lens with auto iris.

Backlight compensation can be switched ON or OFF as required.

3-Axis camera pointing allows adjustment of the horizontal, vertical and picture tilting rotation.

Focus adjustment switch is provided to allow the installer to easily perform focus adjustment without using an ND (Neutral Density) filter.

Monitor output provides a convenient monitor connection for installer to align the camera.

Easy adjustment of dome inner cover.

#### PRODUCT SPECIFICATIONS

##### CAMERA

Image device: 1/4” type IT-CCD  
Resolution: Horizontal: 480 lines (at center), Vertical: 350 lines (at center)  
Number of effective pixels: 768 (H) x 494 (V) (380,000 pixels)  
Scanning system: 2:1 interlace  
Scanning frequency: Horizontal: 15.734 kHz, Vertical: 59.94 Hz  
Signal to noise ratio: 48dB  
Minimum Required Illumination: 3 lx (50 IRE)  
Shutter speed: 1/60, 1/100  
Backlight compensation: ON/OFF  
White Balance: ATW

##### LENS

Focal length: f=2.0mm-4.0mm  
Maximum aperture ratio: 1:1.4-1.8  
Iris: Automatic iris  
Angle of view: 105.1°-53.2° (H), 77.4°-39.8° (V)

## **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz or 12V DC

Power Consumption: 2W

Video output: VBS 1.0V (p-p), 75Ω, M3 screw terminal

Installer monitor output: VBS 1.0V (p-p), 75 Ω, RCA-F

## **MECHANICAL SPECIFICATIONS**

Dimensions: Ø4.65" (W) x 3.8" (H) [Ø118mm (W) x 97mm (H)]

Weight: 0.82 lb. [370 g]

Case finish: ABS resin, light gray, Dome cover: Acrylic resin

Mounting: Surface mounting, Mounting holes fit a US standard 1-Gang electrical box or optional flush ceiling mount bracket.

## **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C]

Operating humidity: Under 90% RH (no dew condensation produced)

## **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.

Safety: UL Listed

The indoor color dome camera shall be TOA model C-CV24-2.

The flush ceiling mount bracket shall be TOA model C-BC20U.

## **C-CV202-3 - Indoor Color Dome Camera**

### **MANUFACTURER**

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

### **WARRANTY**

(3) Three year warranty parts and labor, with the following exceptions:

(1) One year warranty for the following parts:

- Electrical slip ring contacts
- Pan/Tilt and Lens motors
- Lens assembly
- Cooling fan

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

### **TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

### **GENERAL REQUIREMENTS**

The product specified shall be a surface mounted color dome camera system designed for indoor surveillance applications. The camera system shall consist of a high resolution CCD camera using 1/4-inch type CCD imager with a 2X manual varifocal lens with auto iris.

Backlight compensation can be switched ON or OFF as required.

3-Axis camera pointing allows adjustment of the horizontal, vertical and picture tilting rotation.

Focus adjustment switch is provided to allow the installer to easily perform focus adjustment without using an ND (Neutral Density) filter.

Monitor output provides a convenient monitor connection for installer to align the camera.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type IT-CCD

Resolution: Horizontal: 480 lines (at center), Vertical: 350 lines (at center)

Number of effective pixels: 768 (H) x 494 (V) (380,000 pixels)

Scanning system: 2:1 interlace

Scanning frequency: Horizontal: 15.734 kHz, Vertical: 59.94 Hz

Signal to noise ratio: 50dB

Minimum Required Illumination: 8 lx (50 IRE), 2 lx (20 IRE)

Shutter speed: 1/60, 1/100

Backlight compensation: ON/OFF

White Balance Mode: ATW/AWB

### **LENS**

Focal length: f=2.8mm-5.8mm

Maximum aperture ratio: 1:1.4-1.8

Iris: Automatic iris

Angle of view: 76.7°-38.3° (H), 56.8°-28.7° (V)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 12V DC +/-10%

Power Consumption: 1.5W

Video output: VBS 1.0V (p-p), 75Ω, BNC-R jack

Installer monitor output: VBS 1.0V (p-p), 75 Ω, RCA-F

### **MECHANICAL SPECIFICATIONS**

Dimensions: Ø4.2" (W) x 3.1" (H) [Ø107mm (W) x 78.7mm (H)]

Weight: 0.37 lb. [170 g]

Case finish: ABS resin, cool gray, Dome cover: Acrylic resin, smoked

Mounting: Surface mounting

### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C]

Operating humidity: Under 90% RH (no dew condensation produced)

### **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.

Safety: UL Listed

The indoor color dome camera shall be TOA model C-CV202-3.

## **C-CV202-F3 - Indoor Color Dome Camera**

### **MANUFACTURER**

TOA Electronics, Inc.

601 Gateway Blvd., Suite 300

South San Francisco, CA 94080

Tel#: (800) 733-7088

Fax#: (800) 733-9766

## **WARRANTY**

(3) Three year warranty parts and labor, with the following exceptions:

(1) One year warranty for the following parts:

- Electrical slip ring contacts
- Pan/Tilt and Lens motors
- Lens assembly
- Cooling fan

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

## **TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

## **GENERAL REQUIREMENTS**

The product specified shall be a surface mounted color dome camera system designed for indoor surveillance applications. The camera system shall consist of a high resolution CCD camera using 1/4-inch type CCD imager with automatic electronic shutter iris.

Backlight compensation can be switched ON or OFF as required.

2-Axis camera pointing allows adjustment of the horizontal and vertical.

Monitor output provides a convenient monitor connection for installer to align the camera.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type IT-CCD

Resolution: Horizontal: 480 lines (at center), Vertical: 350 lines (at center)

Number of effective pixels: 768 (H) x 494 (V) (380,000 pixels)

Scanning system: 2:1 interlace

Scanning frequency: Horizontal: 15.734 kHz, Vertical: 59.94 Hz

Signal to noise ratio: 50dB

Minimum Required Illumination: 15 lx (50 IRE), 4 lx (20 IRE)

Automatic Electronic Shutter range: 1:2000 (F2.0-89)

Backlight compensation: ON/OFF

White Balance Mode: ATW/AWB

### **LENS**

Focal length: f=3.0mm

Maximum aperture ratio: 1:2.0

Iris: Automatic Electronic Shutter Iris

Angle of view: 73.9° (H), 54° (V)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 12V DC +/-10%

Power Consumption: 1.2W

Video output: VBS 1.0V (p-p), 75Ω, BNC-R jack

Installer monitor output: VBS 1.0V (p-p), 75 Ω, RCA-F

### **MECHANICAL SPECIFICATIONS**

Dimensions: Ø4.2" (W) x 3.1" (H) [Ø107mm (W) x 78.7mm (H)]

Weight: 0.33 lb. [150 g]

Case finish: ABS resin, cool gray, Dome cover: Acrylic resin, smoked

Mounting: Surface mounting

## **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C]  
Operating humidity: Under 90% RH (no dew condensation produced)

## **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.  
Safety: UL Listed

The indoor color dome camera shall be TOA model C-CV202-F3.

## **C-CV854D-3 – Indoor/Outdoor Vandal Resistant Day/Night Color Dome Camera**

## **MANUFACTURER**

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

## **WARRANTY**

(3) Three year warranty parts and labor, with the following exceptions:

(1) One year warranty for the following parts:

- Electrical slip ring contacts
- Pan/Tilt and Lens motors
- Lens assembly
- Cooling fan

Failures in camera CCD picture element(s) resulting from “image burn in” are not covered under warranty.

## **TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

## **GENERAL REQUIREMENTS**

The product specified shall be a surface mounted, vandal proof, IP-66 rated, color dome camera system designed for indoor/outdoor surveillance applications. The camera system shall consist of a high resolution CCD camera using 1/3-inch type CCD imager with a 3X manual varifocal lens with auto iris.

Tamper-proof, sturdy design that provides impact-resistance against 50-joule energy.

Selectable Color mode and automatic Day/Night mode for color daylight and monochrome nighttime operation.

Electronic sensitivity boost of up to 4X.

Backlight compensation can be switched ON or OFF as required.

3-Axis camera pointing allows adjustment of the horizontal, vertical and picture tilting rotation.

Focus adjustment switch is provided to allow the installer to easily perform focus adjustment without using an ND (Neutral Density) filter.

Monitor output provides a convenient monitor connection for installer to align the camera.

Installation within the camera of an optionally available C-A854H heater unit which extends the operating temperature range to -22°F (-30°C).

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/3" type IT-CCD

Resolution: Horizontal: 500 lines (at center), Vertical: 350 lines (at center)

Number of effective pixels: 768 (H) x 494 (V) (380,000 pixels)

Scanning system: 2:1 interlace

Scanning frequency: Horizontal: 15.734 kHz, Vertical: 59.94 Hz

Signal to noise ratio: 50dB

Minimum Required Illumination: 0.5 lx (50 IRE, color operation), 0.05 lx (50 IRE, black-and-white operation, incandescent lamp)

Shutter speed: OFF/ON selectable to reduce image flicker

Backlight compensation: ON/OFF

White Balance Mode: ATW/AWB (switch selector)

### **LENS**

Focal length: f=3.0mm-9.0mm

Maximum aperture ratio: 1:1.4-2.4

Iris: Automatic iris

Angle of view: 90.3°-31.9° (H), 66.4°-23.9° (V), 115.4°-39.9° (Diagonal)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz or 12V DC

Optional heater unit: 24V AC, 50/60Hz

Power Consumption: 4W (300mA) (without optional heater C-A854H)

Video output: VBS 1.0V (p-p), 75Ω, BNC-R jack

Installer monitor output: VBS 1.0V (p-p), 75 Ω, RCA-F

### **MECHANICAL SPECIFICATIONS**

Dimensions: Ø 6.07" x 3.94" (H) [Ø154.2mm x 100mm (H)]

Weight: 2.43 lb. [1.1 kg]

Case, Bezel: Die-Cast aluminum, light gray, paint

Dome cover: Polycarbonate resin (transparent)

Mounting: Surface mounting, Mounting holes fit a US standard 1-Gang electrical box

Conduit: Side with plug and Bottom threaded for ¾" conduit

### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C], when the optional heater unit is

attached: -22° F to +122° F [-30° C to +50° C]

Operating humidity: Under 90% RH (no dew condensation produced)

### **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.

This Class B digital apparatus complies with Canadian ICES-003.

Safety: UL Listed

Dust/Water Protection: IP66

The indoor/outdoor vandal resistant color dome camera shall be TOA model C-CV854D-3.

The optional heater unit shall be TOA model C-A854H.

## 5 Box Cameras

### C-CC364 — Indoor Wide Dynamic Range Color Camera

#### MANUFACTURER

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

#### WARRANTY

(3) Three year warranty parts and labor.

Failures in camera CCD picture element(s) resulting from “image burn in” are not covered under warranty.

#### TECHNICAL SUPPORT

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

#### GENERAL REQUIREMENTS

The product specified shall be a DSP (Digital Signal Processing) with WDR (Wide Dynamic Range) camera system designed for high performance indoor surveillance applications. The camera system shall consist of a high resolution CCD camera using 1/3-inch type CCD imager with a CS type lens mount capable of supporting an auto-iris lens; electronic 2X digital zoom; programmable privacy masking; internal CPU circuitry with external programming via optional camera remote control unit.

Wide Dynamic Range function: Digital signal processing (DSP) electronically combines two separate images taken with different shutter speeds to result in a single higher quality image preventing the subject from becoming too dark or the surrounding background from becoming too bright.

Color image sensitivity can be increased as needed up to x64 in steps of x2, x4, x6, x8, x10, x16, x24, x32 and x64 to compensate for unsatisfactory low lighting conditions that may be encountered.

Day/Night function: Automatic or manual operation to obtain clear images when the illumination of the monitoring area becomes too low for usable color images.

Privacy masking provides the capability to set up to (4) four locations within the camera view. The gray masking rectangle(s) can be adjusted for position and size.

Alarm Input allows connection of an external sensor which can be set to trigger an alarm signal which is sent via the coaxial cable connected to the camera remote control unit which provides an alarm output.

Motion detection can be programmed to activate within each of 48 picture segment areas. When motion is detected an alarm signal is generated and sent via the coaxial cable to the camera remote control unit which provides an alarm output connection.

Fully automatic operation mode shift includes color to B/W, Wide Dynamic Range, sensitivity boost, AGC, normal condition and backlight compensation to smoothly transition as lighting conditions change.

Easy menu-driven user setup adjustments are viewable and can be navigated from within the picture image.

2X electric zoom allow the operator to select the portion of the viewed image to expand.

Screen reverse function allows the user to adjust the horizontal and vertical image orientation as needed to support different camera mounting positions.

Focus adjustment switch is provided to allow the installer to easily perform focus adjustment without using an ND (Neutral Density) filter.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/3" type IT-CCD

Resolution: Horizontal: 500 lines (at center), Vertical: 350 lines (at center)

Number of effective pixels: 768 (H) x 494 (V) (380,000 pixels)

Scanning system: 2:1 interlace

Scanning frequency: Horizontal: 15.734 kHz, Vertical: 59.94 Hz

Signal to noise ratio: 50dB (AGC OFF)

Minimum Required Illumination:

0.5 lx (50 IRE), 0.1 lx (20 IRE) (F1.0) (sensitivity up: OFF) (color operation)

0.01 lx (F1.0) (sensitivity up: ON) (Black-and-White operation, incandescent lamp)

Automatic electric shutter range: 1:2000 (F1.4-63)

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: Wide Dynamic/ON/OFF

AGC: Auto/Fixed/OFF

Sensitivity up: OFF, 2, 4, 6, 8, 10, 16, 24, 32, 64 times

White Balance: ATW/AWB/Manual

Character display: Up to 16 characters (alphanumeric and symbols)

Electronic Zooming: 2x zooming

### **LENS**

Lens mount: CS mount type

Auto iris lens output: DC input type/Video input type (4-pin connector)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz or 12V DC

Power Consumption: 4W

Video output: VBS 1.0V (p-p), 75Ω, BNC

### **MECHANICAL SPECIFICATIONS**

Dimensions: 2.74" (W) x 2.56" (H) x 5.4" (D) [69.5(W) x 65.1 (H) x 137.1 (D) mm]

Weight: 1 lb. [450 g]

Case finish: Surface-treated steel plate, sand gray

### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C]

Operating humidity: Under 90% RH (no dew condensation produced)

### **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.

Safety: UL Listed

The indoor wide dynamic range camera shall be TOA model C-CC364.

The remote control unit shall be TOA model C-RU10.

The ceiling camera mounting bracket shall be TOA model C-BC11.

The ceiling/wall camera mounting bracket shall be TOA model C-BC21.

The ceiling camera mounting bracket shall be TOA model C-BC31.  
The ceiling camera mounting bracket shall be TOA model C-BC41.  
The wall camera mounting bracket shall be TOA model WH-4.  
The outdoor housing with heater/blower shall be TOA model ACH13HBWM.

## **C-CV102-CS - Indoor Color Camera**

### **MANUFACTURER**

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

### **WARRANTY**

(3) Three year warranty parts and labor, with the following exceptions:

(1) One year warranty for the following parts:

- Electrical slip ring contacts
- Pan/Tilt and Lens motors
- Lens assembly
- Cooling fan

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

### **TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

### **GENERAL REQUIREMENTS**

The product specified shall be a surface mounted, box type, color camera system designed for indoor surveillance applications. The camera system shall consist of a high resolution CCD camera using 1/4-inch type CCD imager with a CS type lens mount with auto iris capability.

Backlight compensation can be switched ON or OFF as required.

Focus adjustment switch is provided to allow the installer to easily perform focus adjustment without using an ND (Neutral Density) filter.

### **PRODUCT SPECIFICATIONS**

#### **CAMERA**

Image device: 1/4" type IT-CCD  
Resolution: Horizontal: 480 lines (at center), Vertical: 350 lines (at center)  
Number of effective pixels: 768 (H) x 494 (V) (380,000 pixels)  
Scanning system: 2:1 interlace  
Scanning frequency: Horizontal: 15.734 kHz, Vertical: 59.94 Hz  
Signal to noise ratio: 50dB  
Minimum Required Illumination: 3 lx (F1.4, 50 IRE), 1 lx (F1.4, 20 IRE)  
Shutter speed: 1/60, 1/100  
Backlight compensation: ON/OFF  
White Balance Mode: ATW/AWB

#### **LENS**

Lens mount: CS type mount  
Auto-Iris Lens output: DC input type (4-pin connector)

## **ELECTRICAL SPECIFICATIONS**

Power Source: 12V DC +/-10%

Power Consumption: 1.5W

Video output: VBS 1.0V (p-p), 75Ω, BNC connector

## **MECHANICAL SPECIFICATIONS**

Dimensions: 2.6" (W) x 2.48" (H) x 3.1" (D) [66.2mm (W) x 63mm (H) x 78.5mm (D)]

Weight: 0.55 lb. [250 g]

Case finish: Surface treated steel plate, cool gray, paint

Front cover: ABS resin, cool gray, paint

## **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C]

Operating humidity: Under 90% RH (no dew condensation produced)

## **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.

Safety: UL Listed

The indoor color camera shall be TOA model C-CV102-CS.

The ceiling mount extendable (12"-18") bracket shall be TOA model C-BC11.

The ceiling mount extendable (2.0'-3.3') bracket shall be TOA model C-BC41.

The wall/ceiling mount, L-type, bracket shall be TOA model C-BC21.

The wall/ceiling mount bracket shall be TOA model C-BC31.

## **C-CV14-CS — Indoor Color Camera**

### **MANUFACTURER**

TOA Electronics, Inc.

601 Gateway Blvd., Suite 300

South San Francisco, CA 94080

Tel#: (800) 733-7088

Fax#: (800) 733-9766

### **WARRANTY**

(3) Three year warranty parts and labor.

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

### **TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

### **GENERAL REQUIREMENTS**

The product specified shall be a surface mounted, box type, color camera system designed for indoor surveillance applications. The camera system shall consist of a high resolution CCD camera using 1/4-inch type CCD imager with a CS type lens mount with auto iris capability.

Backlight compensation can be switched ON or OFF as required.

Focus adjustment switch is provided to allow the installer to easily perform focus adjustment without using an ND (Neutral Density) filter.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type IT-CCD  
Resolution: Horizontal: 480 lines (at center), Vertical: 350 lines (at center)  
Number of effective pixels: 768 (H) x 494 (V) (380,000 pixels)  
Scanning system: 2:1 interlace  
Scanning frequency: Horizontal: 15.734 kHz, Vertical: 59.94 Hz  
Signal to noise ratio: 48dB  
Minimum Required Illumination: 3 lx (50 IRE)  
Shutter speed: 1/60, 1/100  
Backlight compensation: ON/OFF  
White Balance: ATW

### **LENS**

Lens mount: CS type mount  
Auto-Iris Lens output: DC input type (4-pin connector)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz or 12V DC  
Power Consumption: 2W  
Video output: VBS 1.0V (p-p), 75Ω, BNC connector

### **MECHANICAL SPECIFICATIONS**

Dimensions: 2.5" (W) x 2.47" (H) x 4" (D) [63.4mm (W) x 62.7mm (H) x 102.5mm (D)]  
Weight: 0.66 lb. [300 g]  
Case finish: Surface treated steel plate, light gray, paint  
Front cover: Zinc, light gray, paint

### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C]  
Operating humidity: Under 90% RH (no dew condensation produced)

### **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.  
Safety: UL Listed

The indoor color camera shall be TOA model C-CV14-2.  
The ceiling mount extendable (12"-18") bracket shall be TOA model C-BC11.  
The ceiling mount extendable (2.0'-3.3') bracket shall be TOA model C-BC41.  
The wall/ceiling mount, L-type, bracket shall be TOA model C-BC21.  
The wall/ceiling mount bracket shall be TOA model C-BC31.

## **C-CV14-2 — Indoor Color Camera**

### **MANUFACTURER**

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

### **WARRANTY**

(3) Three year warranty parts and labor.

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

## **TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

## **GENERAL REQUIREMENTS**

The product specified shall be a surface mounted, box type, color camera system designed for indoor surveillance applications. The camera system shall consist of a high resolution CCD camera using 1/4-inch type CCD imager with a 2X manual varifocal lens with auto iris.

Backlight compensation can be switched ON or OFF as required.

Focus adjustment switch is provided to allow the installer to easily perform focus adjustment without using an ND (Neutral Density) filter.

## **PRODUCT SPECIFICATIONS**

### **CAMERA**

Image device: 1/4" type IT-CCD  
Resolution: Horizontal: 480 lines (at center), Vertical: 350 lines (at center)  
Number of effective pixels: 768 (H) x 494 (V) (380,000 pixels)  
Scanning system: 2:1 interlace  
Scanning frequency: Horizontal: 15.734 kHz, Vertical: 59.94 Hz  
Signal to noise ratio: 48dB  
Minimum Required Illumination: 3 lx (50 IRE)  
Shutter speed: 1/60, 1/100  
Backlight compensation: ON/OFF  
White Balance: ATW

### **LENS**

Focal length: f=2.0mm-4.0mm  
Maximum aperture ratio: 1:1.4-1.8  
Iris: Automatic iris  
Angle of view: 105.1°-53.2° (H), 77.4°-39.8° (V)

### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz or 12V DC  
Power Consumption: 2W  
Video output: VBS 1.0V (p-p), 75Ω, BNC connector

### **MECHANICAL SPECIFICATIONS**

Dimensions: 2.48" (W) x 2.46" (H) x 5.29" (D) [63mm (W) x 62.5mm (H) x 134.3mm (D)]  
Weight: 0.66 lb. [300 g]  
Case finish: Surface treated steel plate, light gray, paint  
Lens cover: ABS resin, light gray

### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C]  
Operating humidity: Under 90% RH (no dew condensation produced)

### **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.  
Safety: UL Listed

The indoor color camera shall be TOA model C-CV14-2.  
The ceiling mount extendable (12"-18") bracket shall be TOA model C-BC11.  
The ceiling mount extendable (2.0'-3.3') bracket shall be TOA model C-BC41.  
The wall/ceiling mount, L-type, bracket shall be TOA model C-BC21.

The wall/ceiling mount bracket shall be TOA model C-BC31.

## **C-CV44-3 — Outdoor Color Camera**

### **MANUFACTURER**

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

### **WARRANTY**

(3) Three year warranty parts and labor.

Failures in camera CCD picture element(s) resulting from "image burn in" are not covered under warranty.

### **TECHNICAL SUPPORT**

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

### **GENERAL REQUIREMENTS**

The product specified shall be a surface mounted color camera system designed for outdoor surveillance applications. The camera system shall consist of a high resolution CCD camera using 1/4-inch type CCD imager with a 2X manual varifocal lens with auto iris.

The enclosure is specifically designed to withstand outdoor use with a water-resistant and dust resistant construction (IP-66).

Backlight compensation can be switched ON or OFF as required.

3-Axis camera pointing allows adjustment of the horizontal, vertical and picture tilting rotation.

Focus adjustment switch is provided to allow the installer to easily perform focus adjustment without using an ND (Neutral Density) filter.

Monitor output provides a convenient monitor connection for installer to align the camera.

### **PRODUCT SPECIFICATIONS**

#### **CAMERA**

Image device: 1/4" type IT-CCD  
Resolution: Horizontal: 480 lines (at center), Vertical: 350 lines (at center)  
Number of effective pixels: 768 (H) x 494 (V) (380,000 pixels)  
Scanning system: 2:1 interlace  
Scanning frequency: Horizontal: 15.734 kHz, Vertical: 59.94 Hz  
Signal to noise ratio: 48dB  
Minimum Required Illumination: 3 lx (50 IRE)  
Shutter speed: 1/60, 1/100  
Backlight compensation: ON/OFF  
White Balance: ATW

#### **LENS**

Focal length: f=3.0mm-6.0mm  
Maximum aperture ratio: 1:1.2-1.5  
Iris: Automatic iris

Angle of view: 71.9°-36° (H), 52°-26.8° (V)

#### **ELECTRICAL SPECIFICATIONS**

Power Source: 24V AC 50/60 Hz or 12V DC

Power Consumption: 2W

Video output: VBS 1.0V (p-p), 75Ω, water resistant connector

Installer monitor output: VBS 1.0V (p-p), 75 Ω, RCA-F

#### **MECHANICAL SPECIFICATIONS**

Dimensions: Ø3.62" (W) x 9.8" (L) [Ø92mm (W) x 249mm (L)] (excluding mounting bracket)

Weight: 2.43 lb. [1.1 kg]

Front cover, rear cover, sunshade: Aluminum, light gray, paint

Mounting bracket: Stainless steel, light gray, paint

#### **ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: -14° F to +122° F [-10° C to +50° C]

Operating humidity: Under 90% RH (no dew condensation produced)

Water resistance: Equivalent to IP-66

#### **CERTIFICATIONS AND RATINGS**

This device complies with part 15 of FCC rules.

Safety: UL Listed

The indoor color dome camera shall be TOA model C-CV44-3.

## 6 Digital Video Recorders

### C-DR091 / C-DR161 – CCTV Digital Video Recorders

#### MANUFACTURER

TOA Electronics, Inc.  
601 Gateway Blvd., Suite 300  
South San Francisco, CA 94080  
Tel#: (800) 733-7088  
Fax#: (800) 733-9766

#### WARRANTY

- (3) Three year warranty parts and labor, with the following exceptions:  
(1) One year warranty for the following parts:  
    1 year (HDD, DVD burner & Fan)

#### TECHNICAL SUPPORT

TOA Electronics, Inc. product technical support shall be available from 8:00AM till 4:30PM (Pacific Standard Time) Monday thru Friday, not including holidays, by calling (800) 733-7088 Ext. 402.

#### GENERAL REQUIREMENTS

The product specified shall be a digital video recorder (DVR) utilizing hard disc drive (HDD) for the storage of the recorded images and sound. The product shall incorporate the functions of a digital video recorder, a multi-channel video switcher and a video multiplexer into one single unit. The DVR shall permit the simultaneous playback and recording of audio and video images. The product shall provide the capacity to expand the HDD storage capacity utilizing the external connection of optional HDD expansion units.

The product shall permit remote camera and DVR control via the (optional) remote controller unit or via a network connected PC using the Internet Explorer browser application to view live or previously recorded information. The product shall be compatible with the following protocols: TOA-A, TOA-B, Bosch (TC8560/TC700 series) and Pelco-D.

The product shall provide high quality image of 720 x 240 pixels with high frame rate of 120 IPS (images per second). The product shall provide each camera in a system, individual settings for recording rate and image quality.

The product shall provide a wide selection of recording modes: Pre-alarm recording, Post-alarm recording, Timer recording, Motion detection recording and Mirroring<sup>1</sup>.

Note<sup>1</sup>: Mirroring is available on DVRs that utilize (2) two HDD. Applicable models shall include: C-DR091-3, C-DR091-6, C-DR091D3, C-DR091D6, C-DR161-3, C-DR161-6, C-DR161D3 and C-DR161D6.

The product shall be available in 9-Channel or 16-Channel versions with HDD storage capacities of 80GB, 160GB, 320GB and 600GB.

The product shall provide archival storage using USB terminal (all models) and DVD<sup>2</sup> burner.

Note<sup>2</sup>: The product shall be available with built-in DVD burner in the following model numbers: C-DR091D08, C-DR091D1, C-DR091D3, C-DR091D6, C-DR161D08, C-DR161D1, C-DR161D3 and C-DR161D6.

The product shall provide multiple search modes to access recorded images. The following methods are offered: Time/Day search and Event search. Event search shall include: Emergency recording, Timer recording and Motion detection recording.

The product shall provide security protection utilizing (4) four levels of user access-ability which are secured by password and/or USB memory key.

The product shall provide an image tampering detection application which is automatically recorded during archiving to either the USB memory or DVD.

The product shall provide accurate time synchronizing of the DVR(s) and TOA combination dome camera(s) using the DVRs built-in NTP server-based time correction utilizing a network connection.

The product shall provide system expandability which permits up to (8) eight DVRs to be cascade connected for recording and control of up to 128 camera channels.

The product shall provide Grouping capabilities for multiple cascaded DVRs with associated cameras to be controlled by up to (4) four remote control stations using the optional C-RM1000 Remote Control Unit(s) and C-RF1000 Interface Unit.

## PRODUCT SPECIFICATIONS

### **C-DR091D08, C-DR091D1, C-DR091D3, C-DR091D6**

Power Source: 110 – 120V AC, 50/60Hz

Power Consumption: C-DR091D08 490mA, C-DR091D1 500mA, C-DR091D3 570mA, C-DR091D6 590mA

Image Compression System: Motion JPEG

Color System: NTSC

Recording Medium: C-DR091D08 E-IDE hard disk 80GB (80 × 1), C-DR091D1 E-IDE hard disk 160GB (160 × 1), C-DR091D3 E-IDE hard disk 320GB (160 × 2), C-DR091D6 E-IDE hard disk 600GB (300 × 2)

Video Input: 9 channels, VBS 1.0V (p-p), 75Ω, BNC

Video Output: 9 channels, VBS 1.0V (p-p), 75Ω, BNC, loop through

Monitor Output: 2 channels, VBS 1.0V (p-p), 75Ω, BNC

1 channel is dedicated to real-time image (Full-screen and 4-segment split screen displays only. Nothing is displayed other than camera names and camera numbers.)

Link Input: 1 channel, VBS 1.0V (p-p), 75Ω, BNC

Connect the monitor output of digital video recorder (CDR091/161 series) to this terminal. Multiple digital video recorders can be operated and monitored with a single monitor by using the C-RM1000 Remote Controller (option).

Audio Recording System: 8 bits, Linear PCM at sampling frequency of 16kHz

Audio Input: 1 channel, -10dB\*, 10kΩ, unbalanced, RCA pin jack

Audio Output: 1 channel, -10dB\*, 600Ω, unbalanced, RCA pin jack

Screen Display: 1-, 4-, 9- segment screen sequence, electronic 2x zoom

Frequency Response: 300 – 6,000 Hz

Picture Quality: Changeable in 5 steps (File size: 16k – 64 kB)

64kB (Quality 1), 40kB (Quality 2), 32kB (Quality 3), 24kB (Quality 4), 16kB (Quality 5)

Pixels: 720 × 240 pixels

Recording Rate: Max. 120 IPS (each camera can be individually set for the following rate)

120, 60, 30, 15, 8, 4, 2, 1, 1/2, 1/3, 1/5, 1/10, 1/20, 1/30, 1/60 IPS

Pre-Recording: Max. 5 min. (0 – 300 sec.)

Post-Alarm Recording: Max. 999 sec. (0 – 999 sec.)

Date and Time: Year/Month/Day/Hour/Minute/Second; 24-Hour format display, monthly deviation of within ±30 s (77°F, 25°C), can be operate until the leap year 2099

Motion Detect: 5 Sensitivity levels, can be turned on/off for individual areas

Search Function: Date/Time search, Event search (Priority recording, Alarm-input recording, Normal recording, Motion detect recording)

Alarm Input: 9 channels (EDGE, LEVEL), no-voltage make contact input, open voltage: 2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance:

under 100Ω, screwless connector

Control Output: 4 channels (can be set for Priority recording, Alarm-input recording, Motion detect recording, Video Loss, HD Full, Fan Failure, and HD Error) open collector output, withstand voltage: 30V DC, circuit current: 20mA, screwless connector

Priority Recording Input: 1 channel, no-voltage make contact input, open voltage: 2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance: under 100Ω, screwless connector

Time Synchronization Output: 1 channel, no-voltage make contact input, open voltage: 2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance: under 100Ω, screwless connector

Time Synchronization Input: 1 channel, open collector output, withstand voltage: 30V DC, control current: 20mA, screwless connector

Camera Control: 1 channel, RS-485, screwless connector

Remote Control: 2 channels, RS-485, screwless connector or RJ11

Disk Array: 2 channels, e-SATA (and dedicated control signal), e-SATA connector and modular Connector.

Communication Function: RS-232C: D-sub connector (9P, male), 10 BASE-T/100 BASE-TX Ethernet: RJ45

Other Function: Timer recording, mail transmission capability, USB terminals (ARCHIVE, KEY LOCK), Language choice (English/French/Japanese)

Applicable DVD Medium: DVD-R

Altitude: Under 9,843' (3000m) (relative to sea level)

Operating Temperature: 41°F to 104°F, +5°C to +40°C

Operating Humidity: Under 80% RH (no dew condensation)

Finish: Panel: Surface-treated steel plate, black, paint, 30% gloss  
Case: Pre-coated steel plate, black

Dimensions: 16.54" (W) x 3.7" (H) x 13.1" (D), 420mm (W) x 93.9mm (H) x 332.8mm (D)

Weight: C-DR091D08 15 lbs (6.8kg), C-DR091D1 15 lbs (6.8kg), C-DR091D3 16.76 lbs (7.6kg), C-DR091D6 16.76 lbs (7.6kg)

Accessory: Power cord (2 m) x 1

Option: Rack mount brackets (MB-23B) 2RU

\*0dB = 1V

### **C-DR091-08, C-DR091-1, C-DR091-3, C-DR091-6**

Power Source: 110 – 120V AC, 50/60Hz

Power Consumption: C-DR091-08 400mA, C-DR091-1410mA, C-DR091-3480mA, C-DR091-6 530mA

Image Compression System: Motion JPEG

Color System: NTSC

Recording Medium: C-DR091-08 E-IDE hard disk 80GB (80 x 1), C-DR091-1 E-IDE hard disk 160GB (160 x 1), C-DR091-3 E-IDE hard disk 320GB (160 x 2), C-DR091-6 E-IDE hard disk 600GB (300 x 2)

Video Input: 9 channels, VBS 1.0V (p-p), 75Ω, BNC

Video Output: 9 channels, VBS 1.0V (p-p), 75Ω, BNC, loop through

Monitor Output: 2 channels, VBS 1.0V (p-p), 75Ω, BNC  
1 channel is dedicated to real-time image (Full-screen and 4-segment split screen displays only. Nothing is displayed other than camera names and camera numbers.)

Link Input: 1 channel, VBS 1.0V (p-p), 75Ω, BNC  
Connect the monitor output of digital video recorder (CDR091/161 series) to this terminal. Multiple digital video recorders can be operated and monitored with a single monitor by using the C-RM1000 Remote Controller (option).

Audio Recording System: 8 bits, Linear PCM at sampling frequency of 16kHz

Audio Input: 1 channel, -10dB\*, 10kΩ, unbalanced, RCA pin jack

Audio Output: 1 channel, -10dB\*, 600Ω, unbalanced, RCA pin jack

Screen Display: 1-, 4-, 9- segment screen sequence, electronic 2x zoom

Frequency Response: 300 – 6,000 Hz

Picture Quality: Changeable in 5 steps (File size: 16 – 64 kB)  
64kB (Quality 1), 40kB (Quality 2), 32kB (Quality 3), 24kB (Quality 4), 16kB (Quality 5)  
Pixels: 720 x 240 pixels

Recording Rate: Max. 120 IPS (each camera can be individually set for the following rate)  
120, 60, 30, 15, 8, 4, 2, 1, 1/2, 1/3, 1/5, 1/10, 1/20, 1/30, 1/60 IPS

Pre-Recording: Max. 5 min. (0 – 300 sec.)  
 Post-Alarm Recording: Max. 999 sec. (0 – 999 sec.)  
 Date and Time: Year/Month/Day/Hour/Minute/Second; 24-Hour format display, monthly deviation of within  $\pm 30$  s (77°F, 25°C), can be operate until the leap year 2099  
 Motion Detect: 5 Sensitivity levels, can be turned on/off for individual areas  
 Search Function: Date/Time search, Event search (Priority recording, Alarm-input recording, Normal recording, Motion detect recording)  
 Alarm Input: 9 channels (EDGE, LEVEL), no-voltage make contact input, open voltage: 2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance: under 100 $\Omega$ , screwless connector  
 Control Output: 4 channels (can be set for Priority recording, Alarm-input recording, Motion detect recording, Video Loss, HD Full, Fan Failure, and HD Error) open collector output, withstand voltage: 30V DC, circuit current: 20mA, screwless connector  
 Priority Recording: Input 1 channel, no-voltage make contact input, open voltage: 2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance: under 100 $\Omega$ , screwless connector  
 Time Synchronization Output: 1 channel, no-voltage make contact input, open voltage: 2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance: under 100 $\Omega$ , screwless connector  
 Time Synchronization Input: 1 channel, open collector output, withstand voltage: 30V DC, control current: 20mA, screwless connector  
 Camera Control: 1 channel, RS-485, screwless connector  
 Remote Control: 2 channels, RS-485, screwless connector or RJ11  
 Disk Array: 2 channels, e-SATA (and dedicated control signal), e-SATA connector and modular Connector  
 Communication Function: RS-232C: D-sub connector (9P, male), 10 BASE-T/100 BASE-TX Ethernet: RJ45  
 Other Function: Timer recording, mail transmission capability, USB terminals (ARCHIVE, KEY LOCK), Language choice (English/French/Japanese)  
 Altitude: Under 9,843' (3000m) (relative to sea level).  
 Operating Temperature: 41°F to 104°F, +5°C to +40°C  
 Operating Humidity: Under 80% RH (no dew condensation)  
 Finish: Panel: Surface-treated steel plate, black, paint, 30% gloss  
       Case: Pre-coated steel plate, black  
 Dimensions: 16.54" (W) x 3.7" (H) x 13.1" (D), 420mm (W) x 93.9mm (H) x 332.8mm (D)  
 Weight: C-DR091-08 12.56 lbs (5.7kg), C-DR091-1 12.56 lbs (5.7kg), C-DR091-3 14.3 lbs (6.5kg),  
       C-DR091-6 14.3 lbs (6.5kg)  
 Accessory: Power cord (2 m) x 1  
 Option: Rack mount brackets (MB-23B) 2RU  
 \*0dB = 1V

### **C-DR161D08, C-DR161D1, C-DR161D3, C-DR161D6**

Power Source: 110 – 120V AC, 50/60Hz  
 Power Consumption: C-DR161D08 530mA, C-DR161D1 530mA, C-DR161D3 610mA, C-DR161D6 630mA  
 Image Compression System: Motion JPEG  
 Color System: NTSC  
 Recording Medium: C-DR161D08 E-IDE hard disk 80GB (80 x 1), C-DR161D1 E-IDE hard disk 160GB (160 x 1), C-DR161D3 E-IDE hard disk 320GB (160 x 2), C-DR161D6 E-IDE hard disk 600GB (300 x 2)  
 Video Input: 16 channels, VBS 1.0V (p-p), 75 $\Omega$ , BNC  
 Video Output: 16 channels, VBS 1.0V (p-p), 75 $\Omega$ , BNC, loop through  
 Monitor Output: 2 channels, VBS 1.0V (p-p), 75 $\Omega$ , BNC  
       1 channel is dedicated to real-time image (Full-screen and 4-segment split screen displays only. Nothing is displayed other than camera names and camera numbers.)  
 Link Input: 1 channel, VBS 1.0V (p-p), 75 $\Omega$ , BNC  
       Connect the monitor output of digital video recorder (CDR091/161 series) to this terminal. Multiple digital video recorders can be operated and monitored with a single monitor by using the C-RM1000 Remote Controller (option).  
 Audio Recording System: 8 bits, Linear PCM at sampling frequency of 16kHz

Audio Input: 1 channel, -10dB\*, 10k $\Omega$ , unbalanced, RCA pin jack  
 Audio Output: 1 channel, -10dB\*, 600 $\Omega$ , unbalanced, RCA pin jack  
 Screen Display: 1-, 4-, 9-, 16- segment screen sequence, electronic 2x zoom  
 Frequency Response: 300 – 6,000 Hz  
 Picture Quality: Changeable in 5 steps (File size: 16 – 64 kB)  
     64kB (Quality 1), 40kB (Quality 2), 32kB (Quality 3), 24kB (Quality 4), 16kB (Quality 5)  
     Pixels: 720 x 240 pixels  
 Recording Rate: Max. 120 IPS (each camera can be individually set for the following rate)  
     120, 60, 30, 15, 8, 4, 2, 1, 1/2, 1/3, 1/5, 1/10, 1/20, 1/30, 1/60 IPS  
 Pre-Recording: Max. 5 min. (0 – 300 sec.)  
 Post-Alarm Recording: Max. 999 sec. (0 – 999 sec.)  
 Date and Time: Year/Month/Day/Hour/Minute/Second; 24-Hour format display, monthly deviation  
     of within  $\pm 30$  s (25°C), can be operate until the leap year 2099  
 Motion Detect: 5 Sensitivity levels, can be turned on/off for individual areas  
 Search Function: Date/Time search, Event search (Priority recording, Alarm-input recording,  
     Normal recording, Motion detect recording)  
 Alarm Input: 16 channels (EDGE, LEVEL), no-voltage make contact input, open voltage: 2V DC,  
     short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance:  
     under 100 $\Omega$ , screwless connector  
 Control Output: 4 channels (can be set for Priority recording, Alarm-input recording, Motion detect  
     recording, Video Loss, HD Full, Fan Failure, and HD Error) open collector output,  
     withstand voltage: 30V DC, circuit current: 20mA, screwless connector  
 Priority Recording: Input 1 channel, no-voltage make contact input, open voltage: 2V DC,  
     short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance:  
     under 100 $\Omega$ , screwless connector  
 Time Synchronization Output: 1 channel, no-voltage make contact input, open voltage:  
     2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop  
     resistance: under 100 $\Omega$ , screwless connector  
 Time Synchronization Input: 1 channel, open collector output, withstand voltage: 30V DC,  
     control current: 20mA, screwless connector  
 Camera Control: 1 channel, RS-485, screwless connector  
 Remote Control: 2 channels, RS-485, screwless connector or RJ11  
 Disk Array: 2 channels, e-SATA (and dedicated control signal), e-SATA connector and modular  
     connector  
 Communication Function: RS-232C: D-sub connector (9P, male), 10 BASE-T/100 BASE-TX  
     Ethernet: RJ45  
 Other Function: Timer recording, mail transmission capability, USB terminals (ARCHIVE, KEY  
     LOCK), Language choice (English/French/Japanese)  
 Applicable DVD Medium: DVD-R  
 Altitude: Under 9,843' (3000m) (relative to sea level)  
 Operating Temperature: 41°F to 104°F, +5°C to +40°C  
 Operating Humidity: Under 80% RH (no dew condensation)  
 Finish: Panel: Surface-treated steel plate, black, paint, 30% gloss  
     Case: Pre-coated steel plate, black  
 Dimensions: 16.54" (W) x 3.7" (H) x 13.1" (D), 420mm (W) x 93.9mm (H) x 332.8mm (D)  
 Weight: C-DR161D08 15.2 lbs (6.9kg), C-DR161D1 15.2 lbs (6.9kg), C-DR161D3 17 lbs (7.7kg),  
     C-DR161D6 17 lbs (7.7kg)  
 Accessory: Power cord (2 m) x 1  
 Option: Rack mount brackets (MB-23B) 2RU  
 \*0dB = 1V

### **C-DR161-08, C-DR161-1, C-DR161-3, C-DR161-6**

Power Source: 110 – 120V AC, 50/60Hz  
 Power Consumption: C-DR161-08 430mA, C-DR161-1 440mA, C-DR161-3 540mA,  
     C-DR161-6 560mA  
 Image Compression System: Motion JPEG  
 Color System: NTSC  
 Recording Medium: C-DR161-08 E-IDE hard disk 80GB (80 x 1), C-DR161-1 E-IDE hard disk  
     160GB (160 x 1), C-DR161-3 E-IDE hard disk 320GB (160 x 2), C-DR161-6 E-IDE hard  
     disk 600GB (300 x 2)  
 Video Input: 16 channels, VBS 1.0V (p-p), 75 $\Omega$ , BNC

Video Output: 16 channels, VBS 1.0V (p-p), 75Ω, BNC, loop through  
 Monitor Output: 2 channels, VBS 1.0V (p-p), 75Ω, BNC  
     1 channel is dedicated to real-time image (Full-screen and 4-segment split screen displays only. Nothing is displayed other than camera names and camera numbers.)  
 Link Input: 1 channel, VBS 1.0V (p-p), 75Ω, BNC  
     Connect the monitor output of digital video recorder (CDR091/161 series) to this terminal. Multiple digital video recorders can be operated and monitored with a single monitor by using the C-RM1000 Remote Controller (option).  
 Audio Recording System: 8 bits, Linear PCM at sampling frequency of 16kHz  
 Audio Input: 1 channel, -10dB\*, 10kΩ, unbalanced, RCA pin jack  
 Audio Output: 1 channel, -10dB\*, 600Ω, unbalanced, RCA pin jack  
 Screen Display: 1-, 4-, 9-, 16- segment screen sequence, electronic 2x zoom  
 Frequency Response: 300 – 6,000 Hz  
 Picture Quality: Changeable in 5 steps (File size: 16 – 64 kB)  
     64kB (Quality 1), 40kB (Quality 2), 32kB (Quality 3), 24kB (Quality 4), 16kB (Quality 5)  
     Pixels 720 x 240 pixels  
 Recording Rate: Max. 120 IPS (each camera can be individually set for the following rate)  
     120, 60, 30, 15, 8, 4, 2, 1, 1/2, 1/3, 1/5, 1/10, 1/20, 1/30, 1/60 IPS  
 Pre-Recording: Max. 5 min. (0 – 300 sec.)  
 Post-Alarm Recording: Max. 999 sec. (0 – 999 sec.)  
 Date and Time: Year/Month/Day/Hour/Minute/Second; 24-Hour format display, monthly deviation of within ±30 s (25°C), can be operate until the leap year 2099  
 Motion Detect: 5 Sensitivity levels, can be turned on/off for individual areas  
 Search Function: Date/Time search, Event search (Priority recording, Alarm-input recording, Normal recording, Motion detect recording)  
 Alarm Input: 16 channels (EDGE, LEVEL), no-voltage make contact input, open voltage: 2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance: under 100Ω, screwless connector  
 Control Output: 4 channels (can be set for Priority recording, Alarm-input recording, Motion detect recording, Video Loss, HD Full, Fan Failure, and HD Error) open collector output, withstand voltage: 30V DC, circuit current: 20mA, screwless connector  
 Priority Recording Input: 1 channel, no-voltage make contact input, open voltage: 2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance: under 100Ω, screwless connector  
 Time Synchronization Output: 1 channel, no-voltage make contact input, open voltage: 2V DC, short-circuit current: 1.5mA, minimum short circuit time: over 100ms, loop resistance: under 100Ω, screwless connector  
 Time Synchronization Input: 1 channel, open collector output, withstand voltage: 30V DC, control current: 20mA, screwless connector  
 Camera Control: 1 channel, RS-485, screwless connector  
 Remote Control: 2 channels, RS-485, screwless connector or RJ11  
 Disk Array: 2 channels, e-SATA (and dedicated control signal), e-SATA connector and modular connector  
 Communication Function: RS-232C: D-sub connector (9P, male), 10 BASE-T/100 BASE-TX  
     Ethernet: RJ45  
 Other Function: Timer recording, mail transmission capability, USB terminals (ARCHIVE, KEY LOCK), Language choice (English/French/Japanese)  
 Altitude: Under 9,843' (3000m) (relative to sea level).  
 Operating Temperature: 41°F to 104°F, +5°C to +40°C  
 Operating Humidity: Under 80% RH (no dew condensation)  
 Finish: Panel: Surface-treated steel plate, black, paint, 30% gloss  
     Case: Pre-coated steel plate, black  
 Dimensions: 16.54" (W) x 3.7" (H) x 13.1" (D), 420mm (W) x 93.9mm (H) x 332.8mm (D)  
 Weight: C-DR161-08 12.8 lbs (5.8kg), C-DR161-1 12.8 lbs (5.8kg), C-DR161-3 14.55 lbs (6.6kg), C-DR161-6 14.55 lbs (6.6kg)  
 Accessory: Power cord (2 m) x 1  
 Option: Rack mount brackets (MB-23B) 2RU  
 \*0dB = 1V

## CERTIFICATIONS AND RATINGS

This device complies with part 15 of FCC rules.

This Class A digital apparatus complies with Canadian ICES-003.  
Safety: UL Listed

**OPTIONAL EQUIPMENT**

The Remote Control unit shall be TOA model C-RM1000

The Remote Control Interface unit shall be TOA model C-RF1000

The 1.2TB Hard Disk Expansion Unit shall be TOA model C-DA1000-1

The 2.4TB Hard Disk Expansion Unit shall be TOA model C-DA1000-2.