Speed Dome/Keyboard Controller

Before you begin

● Please unpack all boxes carefully and identify that all the parts are present.

● Make sure you use only the recommended power supplies. Damage caused to the camera or controller by incorrect voltage or wiring is not covered by the warranty.

● Cutting the camera cable will void the warranty.

RoHS Compliant CE UL

EVC22ZSD/EVC2KB
Speed Dome/Keyboard Controller

Index

Cautions

1. Please read this manual carefully before beginning the installation work.

2. This dome camera operates using a 24V AC power supply, the voltage input rating marks can be found at the bottom of the dome.

3. This dome camera is manufactured using precision optics and electrical components; high pressure, heavy vibration or other improper handling during transportation and installation may cause damage to the equipment.

4. Do not disassemble the internal components of the dome camera.

5. Each electrical safety standard must be complied with during the operation of this equipment. Use only the recommended power supply for this product. Keep an adequate distance between the RS-485, video signal transmission cable and any high voltage equipment or cables. We recommend that you take measures to prevent any damage to this unit in the event of a lightning strike or power surge.

6. The dome camera stated in this manual is for indoor use only, if you want to site the camera in a position where it may be exposed to the elements, please use an external dome camera.

7. Do not use the equipment beyond the stated temperature, humidity and voltage ratings.

8. The camera must be positioned so that it will not point directly into the sun (sunrise and sunset) or any bright light, as this may cause damage to the camera. Also, avoid viewing areas where half the area is in bright sunlight and the other half is dark, such as in the shadow of a building. All types of cameras have difficulty in 'seeing' with such a large lux level variation.

9. Do not clean the equipment with an abrasive cleaning agent, use a dry cloth to remove any dirt from the surfaces of the camera.

10. Make sure the final fixing position of the camera can support enough load to carry the combined weight of the bracket and camera.

11. Use a professional lens cloth for cleaning the lens.
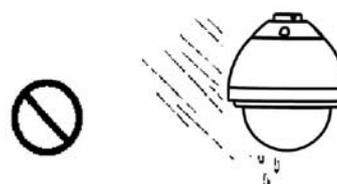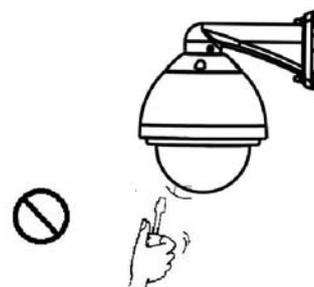
Camera-Overview

The EVC22ZSD Colour Speed Dome Camera is designed for use in high risk applications and can be panned, tilted and zoomed in seconds to the view you require. Features pan tilt speeds of up to 100° per second, a 22x Optical Zoom Lens, and operation down to 0.5 lux. It offers 480 TVL images from its Sony 1/4" Super HAD CCD sensor and can be controlled by Pelco D or P compatible DVRs and Camera Controllers. The camera is designed for wall mounting externally as supplied.

Camera-Features

1. Integrated multi-protocol decoder
a. Built-in decoder consists of multi-protocol and can integrate up to 9 communications protocols. The communication baud rate is adjustable. Using the simple dip switch located inside the camera body, the product can be made compatible with most domestic and foreign systems.

b.RS485 serial control, address of Speed Dome device is from 0-255.

2. Integrate full-view rotary PAN/TILT:
a. Horizontal 0-360º unlimited continuous rotation and rotation rate that can be adjusted from 0.1-100°/s continuously. Vertical rotation range is 0-90º and rotation rate can achieve 90°/s.

b. Built in image stabilizer for low speed operation.

c. Auto flip function eliminates blind spots when following a person or object.

3. Intelligent power-off memory operation
a. Provides 128 preset points (including pan-tilt positions and lens focus preset points) and information power-off memory.

b. The Speed Dome can scan between two points horizontally and the scanning speed can be changed and selected.

c. Provides setting of scanning track and selects cruise track function. The Self-test facility will allow you to store and edit information for power-off memory. (Depending on user's keyboard controller or DVR function)

4. New-added functions
A. Long-focus speed-limited function: Speed dome can auto adjusts its manual control speed according the current focus length of video camera. When the user zooms in to make the image larger, its manual control speed becomes slower, which ensures that video camera can scan the object quickly and correctly.

B. Flexible and convenient to use: The Speed Dome uses multiple communication protocols including Pelco P and Pelco D, and baud rate is selectable from 2400bps to 19200bps.

C. Line-scanning position freely selectable: This device can scan between any two selected points within less than 180°, and the scanning speed is adjustable continuously.

D. Six programmable Guard Tour presets: Each Guard Tour has 16 preset points and the dwell time and call speed for each preset position can be set.

E. Intelligent power loss memory retains current setting and state: If the camera is line scanning or in Guard Tour mode when there is a power loss, the current settings and work states were be saved. When the camera is powered on there will be no need to reset any of your presets.

F. Home position: The home function is available when it is set to ON, namely, this means that the speed dome camera will return the home position (Preset Number 1) if there is no activity in a period of time, additionally the user can adjust the Dwell time. The dome camera will not return the home position if it is in scan mode. If no home function is needed when the dome camera is stopped, set the option to OFF.

G. Intelligent manually pan continuous scanning: When the user uses a joystick for pan scan monitoring, in certain settings, the dome can continue with the pan scan automatically.

H. Tilting and Zooming while scanning: Tilting and zooming while line scanning or manually pan continuous scanning.

Camera-Contents
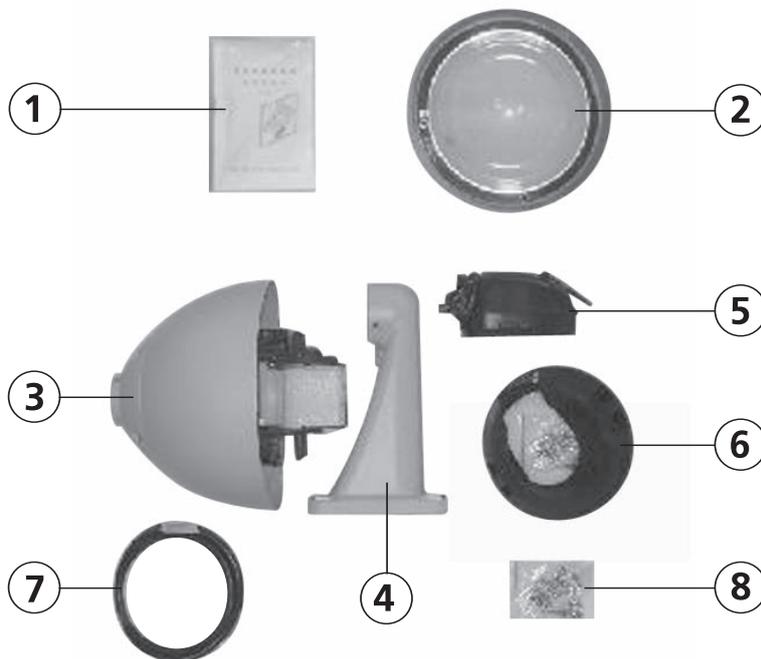
Code	Description
1	Manual
2	Acrylic Dome Cover
3	Dome Housing
4	Wall mount bracket
5	12V DC Power Supply
6	Black inner cover
7	BNC cable
8	Screws pack

Dome Shield Cover Installation

Step1- Align the dome core black cover open cut out with the camera lens, then align the four holes on the shield cover with the fours screw holes of the dome camera.

Step2- Tighten up the 4x half thread screws.

Step 3- Align the dome cover to the dome lock position, rotate clockwise to tighten.
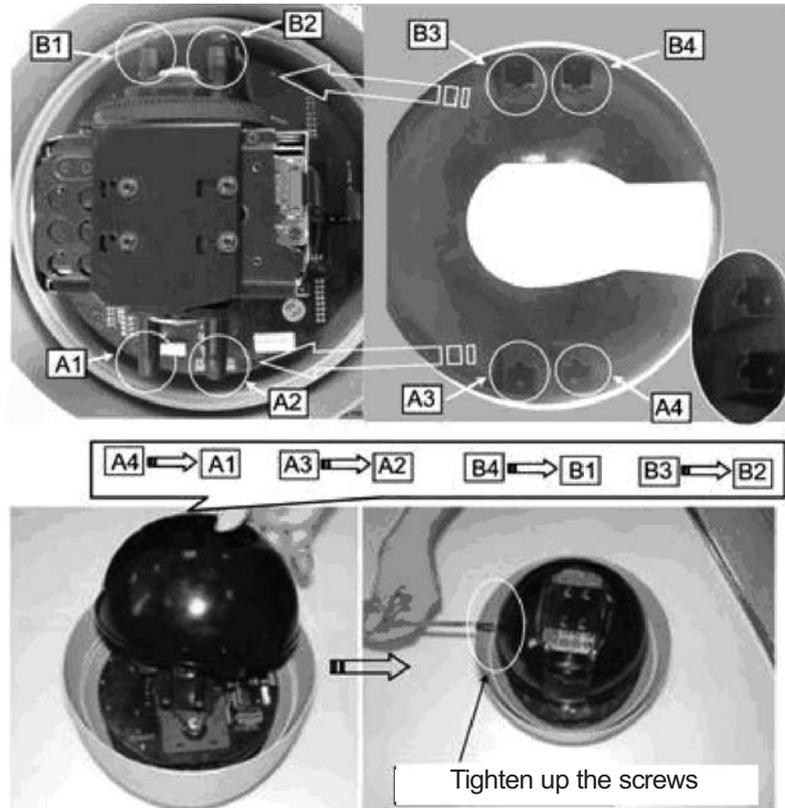

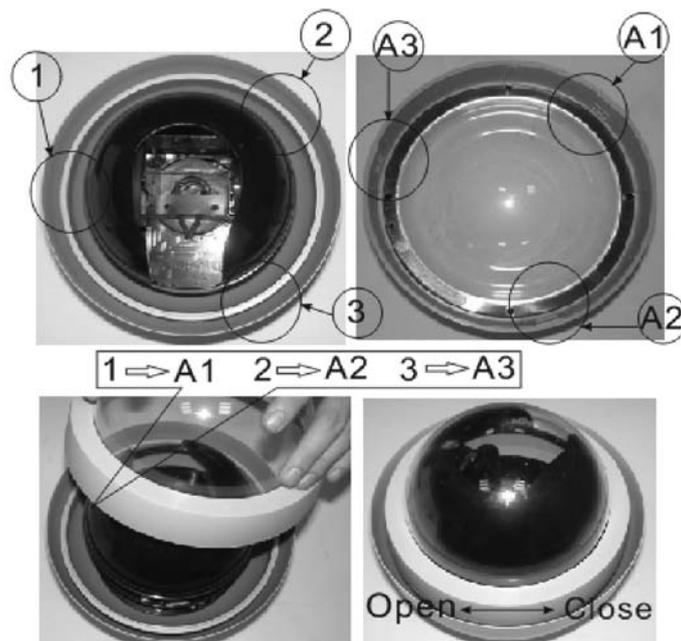Tighten up the screws

Fig 1.1

Fig 1.2

6

Dome Camera Bracket Installation

Step1- Use the diagram shown below to measure out the distances between the four holes required, then drill 4 holes in the chosen mounting location.
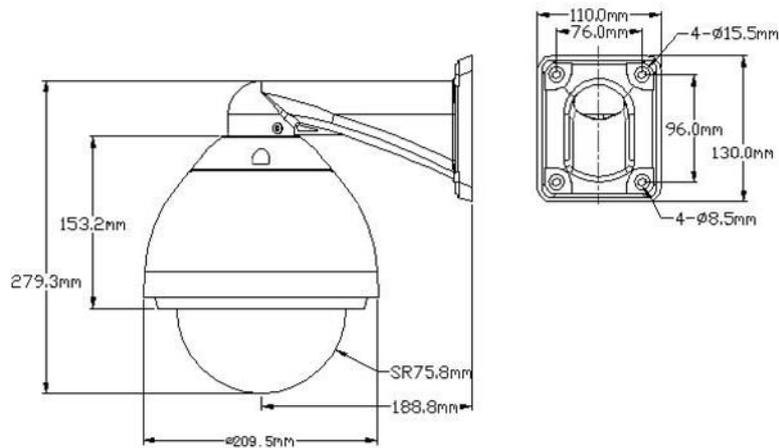

Fig 1.3

Step 2- Feed the dome connection cable into the bracket hollow pipe. Caution! Before attaching to the wall, check that there is nothing left inside the bracket aperture. As shown in Fig 1.4.

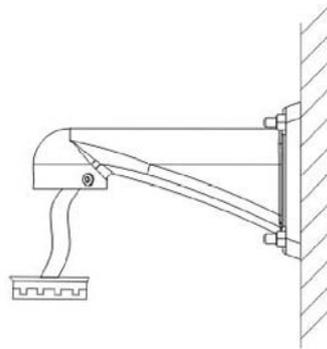Fig 1.4   Fig 1.5

Step 3- Fix the bracket and connection cable to the wall using the fixing screws supplied. As shown in Fig 1.5.

Step 4- Connect the dome connection cable to connector located in the aperture at the top of the dome housing, as shown in Fig 1.6.
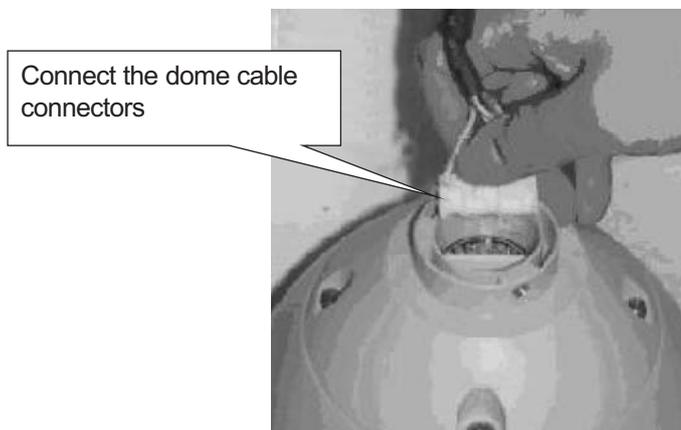
Connect the dome cable connectors

Fig 1.6

Step 5- Fix the dome to the wall bracket, by tightening the screws, as shown in Fig 1.7.

Cautions- Remember to use the washers supplied, with the screws during this step.
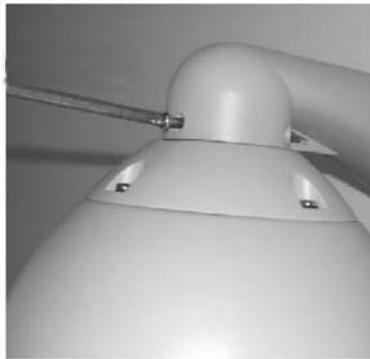

Fig 1.7

Installation Tip
Before fixing the speed dome permanently in position make sure that the baud rate, protocol and camera ID are all set. Connect to a controller and test that the main camera functions are working correctly. See Camera Testing on Page 11

Camera- Wiring Diagrams

Single Speed Dome

This section explains how to wire a single speed dome camera, making it simple to install, test and demonstrate the camera. When using this product for the first time, please read carefully and follow this electric wiring drawing as incorrect wiring may lead to permanent damage of the speed dome device or damage to other equipment.

Make the electrical connections to power the camera and the RS485 connections if you are using this camera with the EVS2KB controller (see Page 15 onwards for details).

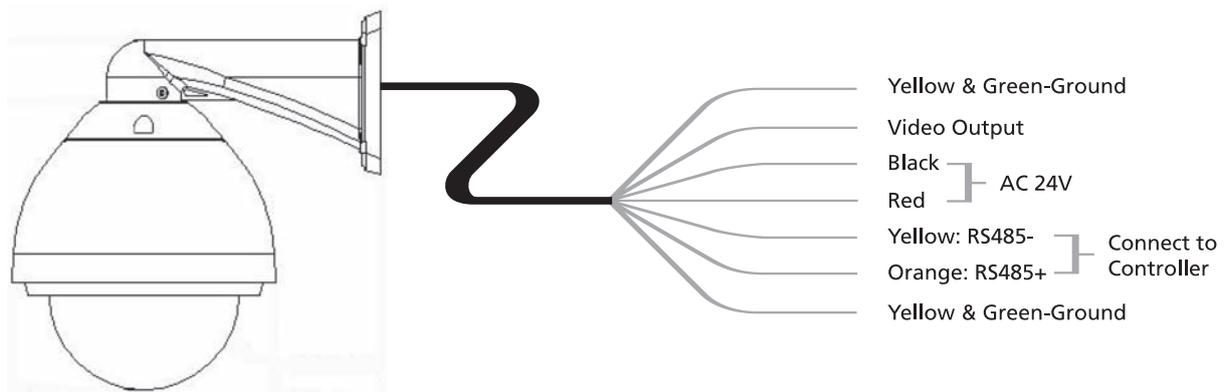

Yellow & Green-Ground
Video Output
Black ⎤
         ⊢ AC 24V
Red   ⎦
Yellow: RS485- ⎤ Connect to
Orange: RS485+ ⎦ Controller
Yellow & Green-Ground

Fig 1.8

Note: Complete all the wiring connections before you power up the speed dome camera.

Multiple Speed Domes

When connecting multiple speed domes, the user can expand the system with additional devices such as a capture device, video matrix, DVR or an alarm box.
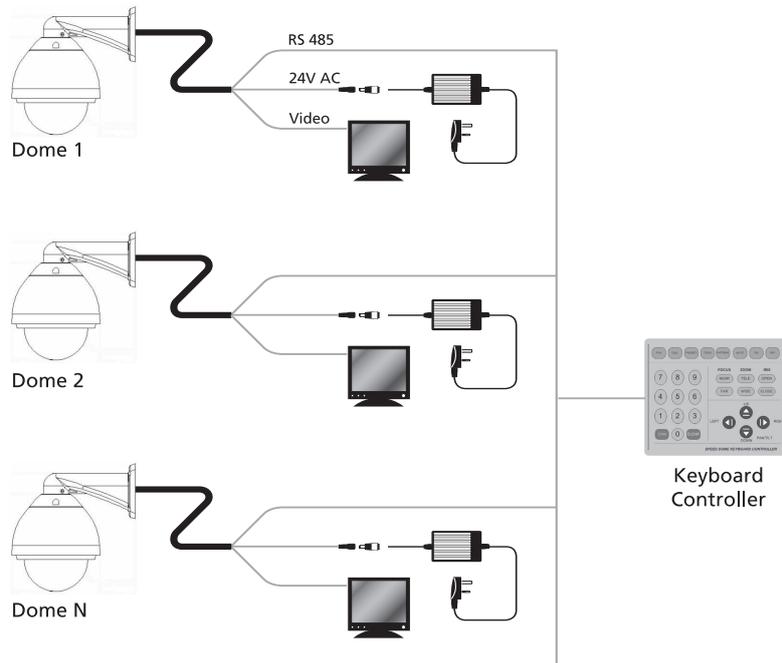

Fig 1.9

AC24V: The camera's power supply, will convert 110V/60HZ or 220V/50HZ input to a AC 24V output.

RS-485 Bus: The RS485 signal output from the controller connects to the RS485 wires from each of the cameras, allowing one controller to control many speed domes.

Video: The video signal from each speed dome can directly output to video equipment such as monitor or video matrix. !!Take care to match up the impedance!!

Camera- Communication Settings

Before installation and use, set the communication protocol and transmission speed (baud rate), as shown below.

1. Setting protocol and baud rate of the camera
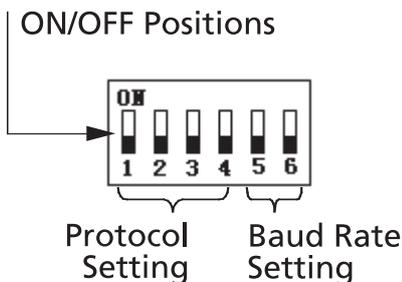
When setting the communication protocol of the camera, the first 4 characters on the dip switch are used to set default serial transmission rate of the protocol. If the default baud rate of the protocol does not match with baud rate of host, reset the default baud rate of the protocol consistent with default baud rate of host (See table on page 10). The table lists protocols that are suitable for this camera. Normal operations of these protocols are compatible with domestic and foreign main systems.

Attention: The protocol and baud rate of the camera should comply with those of controller, which needs to be restarted after making changes to the settings. (Page 15)

ON/OFF Status — Protocol	1st digit	2nd digit	3rd digit	4th digit	5th digit	6th digit
PELCO D	ON	ON	OFF	OFF	**	**
PELCO P	OFF	OFF	ON	OFF	**	**
AUTO	OFF	OFF	OFF	OFF	**	**
IQS	ON	ON	ON	ON	**	**

This dip switch in this example is set to PELCO D protocol and baud rate of 2400

ON/OFF Status — Protocol	5th digit	6th digit
2400	OFF	OFF
4800	OFF	ON
9600	ON	OFF
19200	ON	ON

2. Setting the address of the camera

ON/OFF Positions

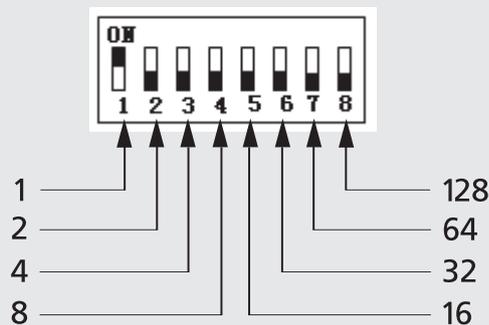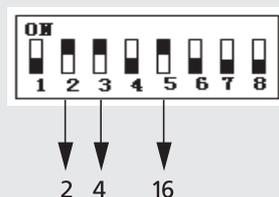**Setting address for dome device (this figure shows the address of camera No 1).**

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Setting Method

The sum of switch numbers when in the ON position is the address of dome device, see diagrams below.

1	128
2	64
4	32
8	16

Calculation example of the camera address:

2 4 16

(**2 + 4 + 16 = 22**) The camera address is **22.** The camera address range is 0-255.

Preset Functions

Some special protocols, such as "PELCO-D", "PELCO-P", have special functions that have no corresponding operation command specified. To allow the user to access the special functions of the camera easily, some of the normal commands have been altered. In general use,use the "Call preset point" and "Set preset point" commands to enable these functions. See list of commands below:

a. Match-up control method table (Function table) is shown on the previous page:
Set No. Preset Point: Enter the preset position number required, press "SHOT" button, then press "ON" button. (No.+ SHOT + ON)

Call No. preset point: Enter the number of desired preset position, press "SHOT" button, then press "ACK" button. (No.+ SHOT + ACK)

Delete No. preset point: Enter the number of desired preset position, press "SHOT" button, then press "OFF" button. (No.+ SHOT + OFF)

b. Description of the preset point:
Position pre-set: 1-50, 64-77,102-165 (total 128)

Function short-cut preset: 51-63, 95-101
Note: Dome operation may be different due to controller's different specifications.

No.	Control Function	Definition of Keyboard Operation	
		CALL + No + Enter (No. + SHOT + ACK)	PRESET + No + Enter (No. + SHOT + ON)
51	Pan Tilt Compression Control	Save line scanning speed	Enable system default Guard Tour
52		Enable Line Scanning	Set starting point of scanning
53		System hold	Set end point of scanning
54	Video Camera Power control	Power ON	Power OFF
55	Backlight Compensation*	ON	OFF
56	Zero Illumination	ON	OFF
57	Screen Display*	ON	OFF
58	Digital Zoom*	ON	OFF
59	Focus	Auto	Manual
60	Iris	Auto	Manual
61	White Balance Mode*	Auto	Manual
62		Indoor	Outdoor
63		ATW	One Push WB
100	Home Position	ON	OFF
95	Dwell time setting for the Home position function	1 minute	
96		2 minute	
97		4 minute	
98		8 minute	
99		10 minute	
101	Intelligent manual horizontal continuous scanning	ON	

Description of special controls listed above:
1. Functions with an asterisk '*' are kept in the dome's memory when it powers off (refer to Functions of Video Camera)

2. Use "Screen Power On/Off" to access the camera menus, then "TELE", "WIDE", "NEAR" and "FAR" keys for menu item selection.

3. Some video cameras do not provide "Zero Illumination" function or the "Zero Illumination" function may be auto switched and therefore not controlled by command. In this case setting this function will have no effect.

4. Description of the "Guard Tour" function:

4.1 When you enter "PRESET+51+Enter", this will enable the Guard Tour function. The device will auto scan point by point from 'Preset 1' position to 'Preset 16' position. If certain positions have not been preset or been cleared after preset, Guard Tour will not scan them.

4.2 Dwelling time of the preset position is 2 seconds.

4.3 For information on the other Guard Tour functions please refer to the keyboard controller section at the back of this manual. If using a different controller refer to it's own manual.

5. Description of "Line-Scanning" function:

5.1 Dome device will auto line-scan between two specified points.

5.2 Users can set the start point by "PRESET+52+Enter" and end point by "PRESET+53+Enter".

5.3 Line scanning speed set: The user can manually set a line scan speed of 3 seconds or more, then save the line scan speed by pressing "CALL+51+Enter" . To enable the line scan speed press "CALL+52+Enter".

5.4 Dwell time of line-scanning between "start point" and "end point" is 2 seconds.

6. Intelligent manual pan continuous scan:
When the using the keyboard controller for pan scan monitoring, keep manual for 3 seconds, then press "CALL+101+Enter", the dome will function using with the scan speed and monitor position automatically .

Camera- Testing

Before fixing the speed dome permanently in position make sure that the baud rate, protocol and camera ID are all set. We recommend that you connect the camera to a controller and test that the main camera functions are working correctly.

The directional controls (up, down, left and right) of the dome device can be controlled by using the keyboard controller, as indicated above.

Zooming of the camera can be controlled by the Zoom function. Use the TELE (Zoom in) and WIDE (Zoom out) keys on the keyboard controller.

1. If these functions are working correctly, please do not change the wiring or any of the settings. Further changes may cause a fault, unnecessary damage or loss of settings.

2. If the camera does not function correctly, please check the wiring (see Page 8) and communication settings (see Page 9 & 10) carefully. Make any necessary changes and repeat the testing procedure. If you fail to find the source of the problem, please refer to the Troubleshooting guide on the next page.

Troubleshooting

Problem	Possible Reason	Solution
After powering on the camera there is movement and no image	Power supply module is damaged or not enough power	Replace Power Supply
	Power cable is not connected or is loose	Check power cable
	Failure of camera connecting lead	Replace
There is no image from the camera and there is audible noise from the motor	Camera mechanism failure	Contact your distributor
	The camera is positioned on an angle (not level)	Correct the camera position
	Not enough power	Make sure that you are using the recommended power supply
Camera displays no image	Video connection is wrongly connected	Check connection
	Video connection is loose	Check connection
	Camera is damaged	Contact your distributor
Cannot control the camera functions	RS485 connections to the controller are wrong	Check connection
	Position of the camera doesn't match the presets	Reselect preset values
	Protocols of the camera and controller do not match	Adjust the protocols accordingly and power on afterwards
Camera image is not stable	The video connection has poor contact	Check to see if the connection is loose
	Not enough power	Make sure that you are using the recommended power supply
Camera controls do not work	Self test completed but camera wasn't re-powered afterwards	Re-power the camera
	RS485 connections are loose	Check connection
	Keyboard controller has a problem	Re-power the keyboard Controller
	Too much load or the communication distance is too far	1.Confirm terminal resistance 2. Add a signal amplifier
Camera's iris cannot be controlled	Iris is in manual state	Use the control command to reset so that the iris can be controlled

Camera-Specifications

Model:	**EVC22ZSD**
Image Sensor:	Sony 1/4" HQ1 Super HAD CCD
TV System:	PAL
DSP:	Xvision IXC1
Resolution:	480TVL
Minimum Illumination:	0.5 Lux
Audio	No
Operating voltage:	24V AC 2000mA
Suggested Power Supply	Supplied
Mounting:	Wall
Lens Type:	3.9 to 85.8mm Varifocal Auto Iris
Lens Viewing Angle	2° to 60°
IR Nightvision:	No
Weatherproofing	Optional
Weight:	3.5Kg
Dimensions:	209.5(Ø) x 279.5mm(H) (without bracket)

Functions:

Manual Horizontal speed	0-100°/s
Manual Vertical speed	0-90°/s
Preset speed	120°/s
Guard Tours	6
Preset Positions	128

Controller- Cautions

1. Please read this manual carefully before beginning the installation work.

2. This controller is for indoor use only, do not use this products in damp or humid conditions, as this may cause a short circuit or electric shock

3. The controller contains precision electronic components; high pressure, heavy vibration or incorrect handling during transportation and installation may cause damage to the equipment.

4. The controller uses PelcoD/P protocols; select the correct protocol and baud rate before operation.

Controller- Overview

The keyboard controller is used for controlling Speed Domes and the DVRs etc. Using the RS-485 connection between the keyboard and the camera, one keyboard can control as many as 32 speed dome and DVRs. The maximum communication distance between the keyboard and the receiver is 1.2 km. This keyboard is very simple to operate and can be used to change the Speed Dome's settings as well as controlling functions, such as pan, tilt, zoom etc.

Controller-Features

● Set the address range of the dome camera and the decoder 0-255.

● Set the communication rate and protocol

● Control all the functions of the dome camera, e.g. Backlight Compensation On/Off of the camera

● Control variable Speed Dome camera with a smooth speed-transition

● Control the motorised pan and tilt functions for horizontal auto scanning and adjustable speed/direction

● Set or call the set points and guard tours of the speed dome camera. In total 255 preset points and 6 guard tour programs can be set. Each guard tour can have up to 16 preset positions and the dwell time and call speed for each position can also be set.

● Manually or automatically control the speed dome camera, and change the settings of the camera by using the keyboard to controller to access the settings.

● Manually control the focus, zoom and iris of the camera.

● Total intelligent setup

● Easy to operate, all settings can be accessed via the keyboard controller menu without restarting.

Controller-Contents

Code	Description
1	Keyboard Controller x1
2	RJ45 Cable x1
3	RJ45 Convertor Box x1
4	Operation Manual x1

Controller-Keyboard Panel
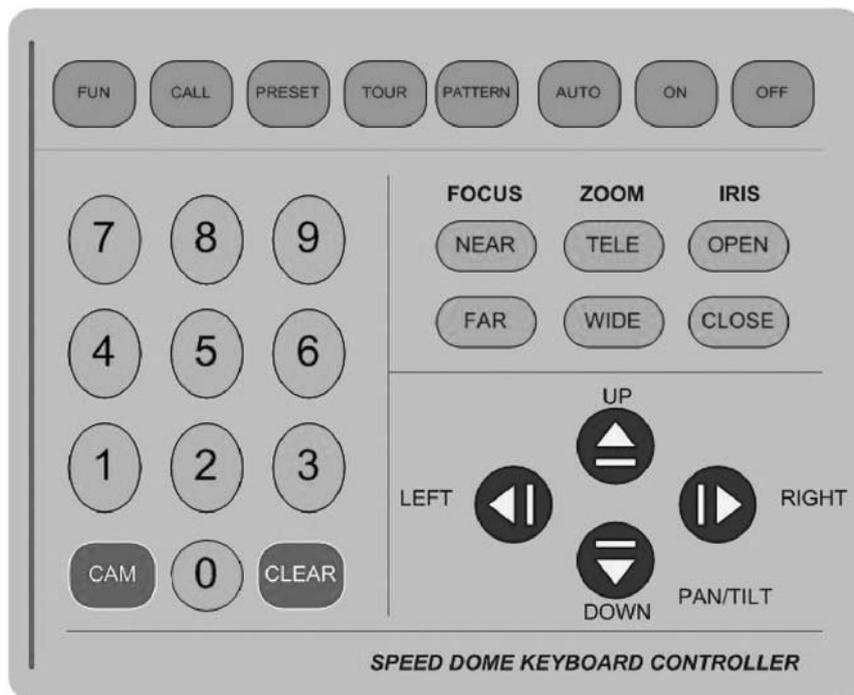
Controller-Keyboard Operation

1.1. When the power is on, the keyboard will enter the standby mode when the screen displays A*** (*** indicates the dome number at the moment of the last power failure or the default dome number). In this mode, the users can alter the following settings:

1.1 a. Set the baud rate: In standby mode, press and hold the CLEAR key for 2 seconds and then release it to enter the baud rate setup interface while the screen displays "B *". Figure 1 represents 2400bps, 2 represents 4800bps and 3 represents 9600bps.When the setup is complete, press the ON key to save and return to the standby screen (as shown below).

1.1 b. Set the communication protocol: press and hold the CLEAR key for 2 seconds and release, press the DOWN key to enter the communication protocol setup interface, where the screen will display "A **"(* is 1 or 2, 1 for Pelco 'D' protocol and 2 for Pelco 'P' protocol); when the setup is complete, press the ON key to save and return to the standby screen (as shown below).
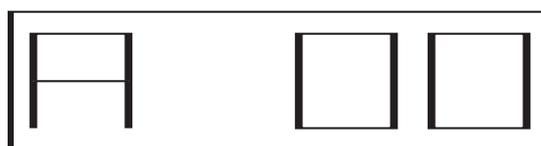
1.2 Set the dome address:
In standby mode, press numeric key to enter corresponding setup interface (as shown below), press the CAM key to save the current address of the dome or the CLEAR key to return to standby mode.
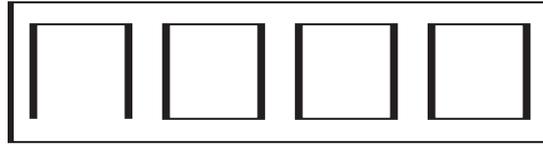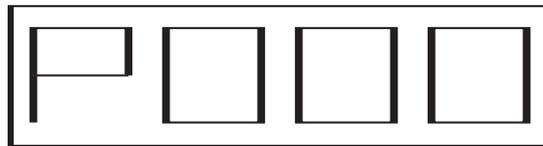
1.3 Set manual horizontal and vertical moving speed.
In standby mode, press numeric key and UP, DOWN, LEFT and RIGHT keys, the number displayed would be saved as the speed level of dome camera (as shown below).
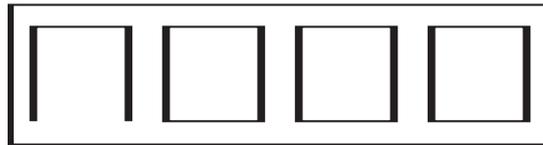
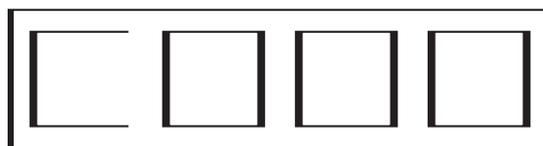**1.4 Set the preset point (PRESET+NO.+ON)**
In standby mode, press the PRESET key to enter the preset point setup interface.
(As shown below)

Enter the preset-point number to be set, press the ON key to save, or the CLEAR key to return to the standby screen.

**1.5 Call the preset point (CALL+NO.+ON)**
In the standby mode, press CALL key to enter the preset-point call interface (as shown below).

Enter the preset point number to be called. Press the ON key (or CLEAR key) to return to the standby screen.
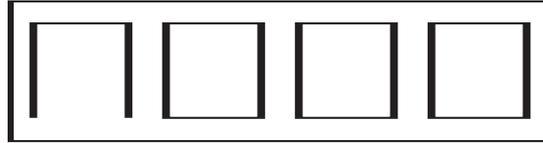
1.6 Delete the preset point(NO.+PRESET+OFF)
Enter the preset point number that you want to be deleted and press the PRESET key; after entering the screen, as shown below, press the OFF key to delete this preset point, or the CLEAR key to return to the standby screen.
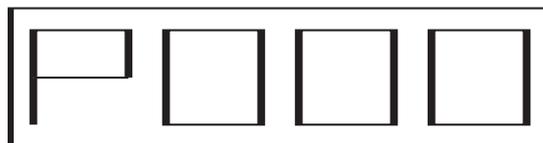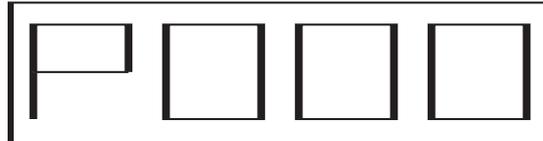
1.7 Set the Guard Tour (NO.+TOUR+ON)

In the standby mode, press numeric key to enter the guard tour number to be edited (as shown below);

When the input is completed, press DOWN key to enter the speed setting of this tour with 9 levels of speed selectable (as shown below).

Press the TOUR and ON keys in order, and press the DOWN key to enter the parameter setting of the first tour point, or the UP key to enter the parameter setting of the 16th tour point. After pressing the DOWN key, the users could set the preset-point number to be toured (as shown below).

When the setup is completed, press DOWN key to enter the retention time setting of this tour point (as show below), or UP key to set the previous parameter.

Press the DOWN key to enter the parameter setting of the next tour point and the UP key to set the previous one. When all settings are completed, press ON key to save and send and return to the standby page.

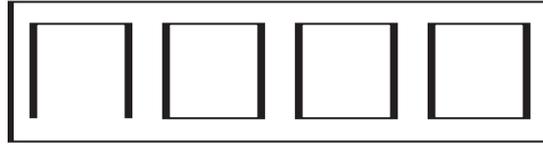### 1.8 Call the tour track(TOUR+NO.+ON)

In the standby mode, press TOUR key (the page as shown below),

Enter the number of tour track to be run, then press ON key to execute this operation and return to the standby mode, or CLEAR key directly return to the standby mode.

1.9 Stop tour track operation:
Press any of the LEFT, RIGHT, UP and DOWN keys to stop the guard tour operation.

1.10 Delete the tour track (NO.+ TOUR+OFF+NO.+OFF):
In the standby mode, enter any number from 1 to 6, then press the TOUR and OFF key to enter the following interfaces displayed (as shown below).

Enter the tour track number (01/02/03/04/05/06) that needs to be deleted (e.g. 01 for the first tour track), then press the OFF key to execute this operation and return to the standby mode, or press the CLEAR key to cancel the operation and return to the standby mode.

Controller-Wiring Diagram
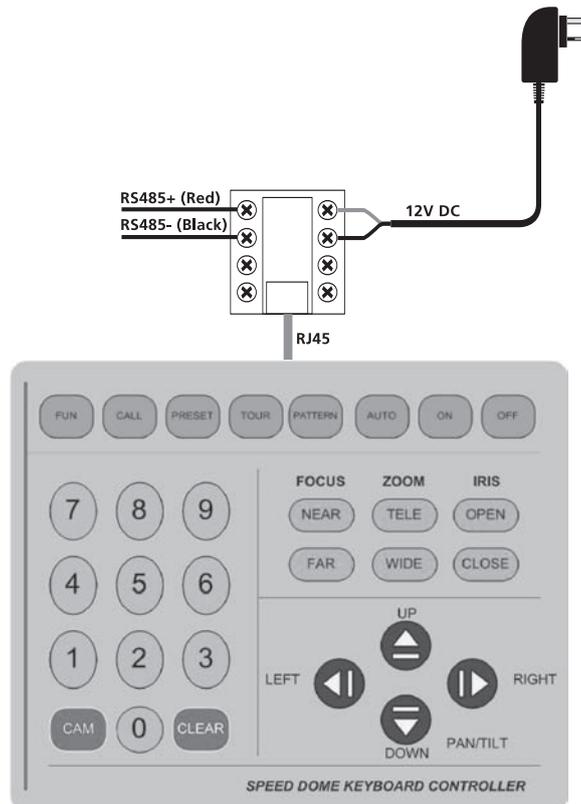
Controller- Specifications

Model:	**EVS2KB**
Communication Type:	Point to multi point semi duplex
Communication Interface:	RS485
Baud Rate:	2400Bps, 4800Bps and 9600Bps
Communication Distance:	1200m (maximum)
Max. No. of domes:	32
Power Supply:	12V DC 900mA (9V DC 1000mA)
Dimensions (WxHxD):	142 x 140 x 68mm
Weight:	0.8Kg

TECHNICAL SUPPORT:
For Technical Support please contact your local distributor.

LIMITED WARRANTY:
This product is supplied with a limited 1 Year warranty. The Warranty excludes products that have been misused, (including accidental damage) and damage caused by normal wear and tear. In the unlikely event that you encounter a problem with this product, it should be returned to the place of purchase.