

# *Compact 3-D PTZ*

## *Keyboard*

### **Installation and Operation Manual**

Model PTZ710



Version 2.0

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WEE/CG0783SS

This symbol on the products and/or accompanying documents means that used electronic equipment must not be mixed with general household waste. For treatment, recovery and recycling please return this unit to your trade supplier or local designated collection point as defined by your local council.

## 1. Summary

The PTZ710 is a 3-axis intelligent keyboard controller and can be used with most PTZ cameras utilising the protocols and baud rates provided. The unit however has been supplied specifically to support the Mini High Speed dome range. The RS485 interface between the keyboard and the receiver, allows one keyboard to control as many as 256 intelligent speed domes with a maximum communication distance of up to 2.4 km. The keyboard is very easy to operate and control the Speed Dome Camera including functions to control pan, tilt, zoom, etc.

### Main Functions

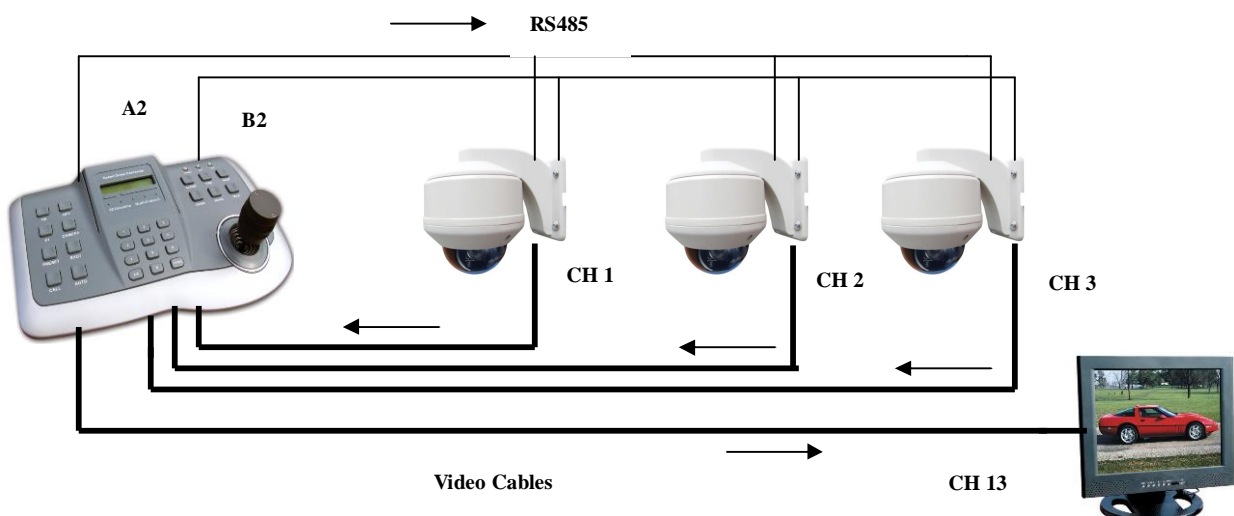
- ◆ Sets the address range of the dome camera and the decoder.
- ◆ Controls all functions of the dome camera such as powering on and off.
- ◆ Operates the pan/tilt of the Speed Dome Camera moving at different speeds.
- ◆ Allows the setting and calling of up to 255 preset points and eight tours each containing 16 presets.
- ◆ Controls the dome camera manually or automatically and allows the changing of camera settings.
- ◆ Manually controls the focus, zoom and iris of the camera.
- ◆ When camera selected for telemetry, video can switch to relevant camera. See Special Feature below.

### Specifications

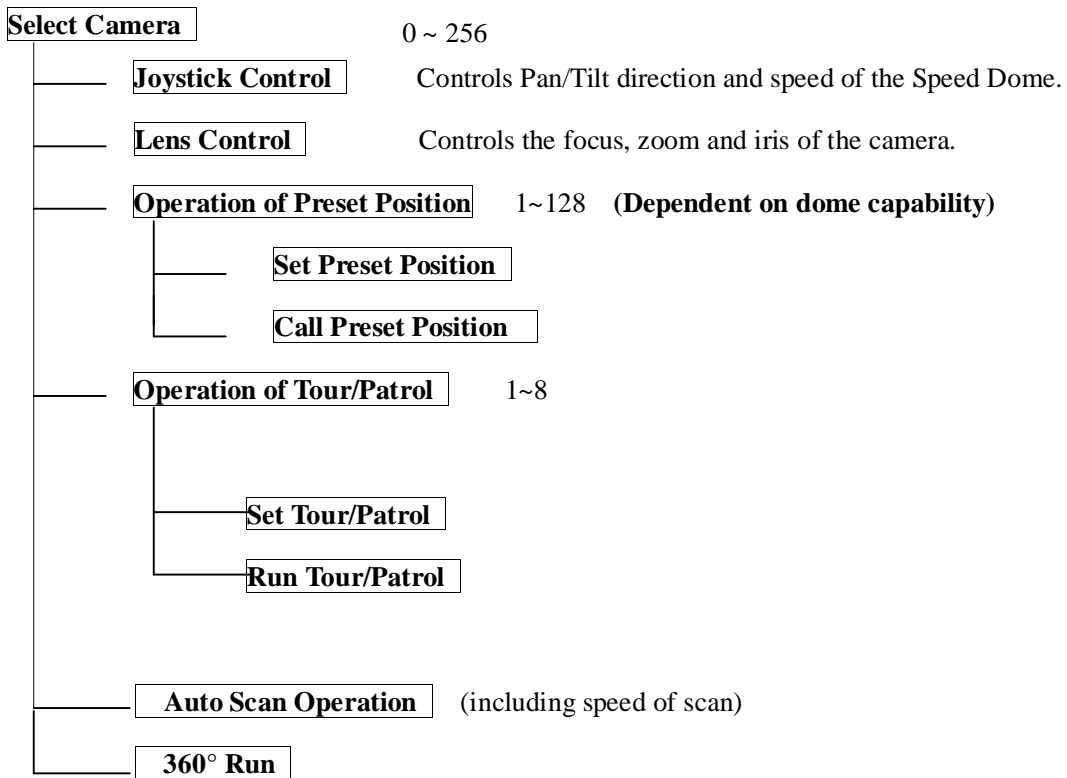
- ◆ Display LCD window for functions
- ◆ Integrated 16 protocols and baud rate settings 2400bps ~ 19200 bps
- ◆ RS485 input and output (allows connection from second keypad or DVR)
- ◆ 3 axis joystick movement
- ◆ Communication distance: at best 1800 metres when using 24AWG CAT5 cable twisted pair @ 2400 bps baud rate
- ◆ Power Supply 12V DC / 1.0Amps
- ◆ Measurements: 300mm x 190mm x 105mm
- ◆ Controls a maximum of 256 domes

### Special Feature

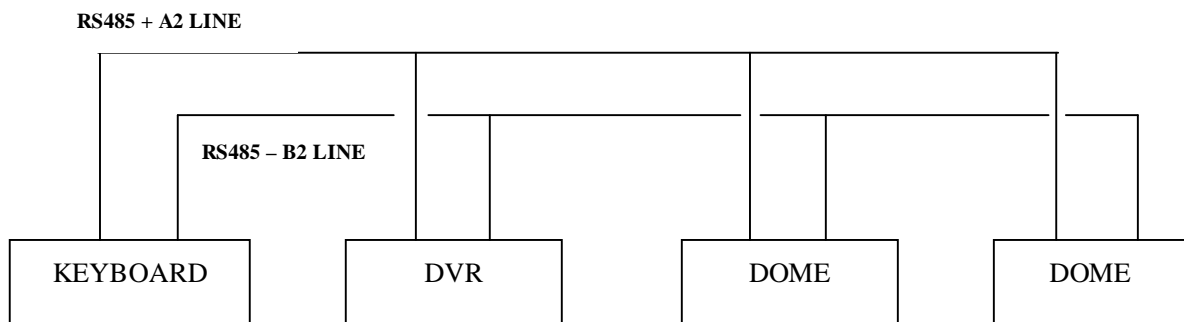
This PTZ keyboard controller is now fitted with a twelve way video input lead and one output, allowing the selected PTZ camera channel to be displayed on the output monitor. An additional cycle command allows an automatic sequencing of up to 12 PTZ cameras to be displayed with the ability to alter the dwell time.



## 2. Keyboard Functions



## 3. External Connections



DO NOT CROSS CONNECT KEYBOARD TO EQUIPMENT

## 4. The keyboard Panel

### Description of Buttons (Figure 1)

The keyboard has a speed joystick, press buttons and an illuminated display on the front panel. The display is used to show the address of the speed dome as well as the number inputted. The joystick controls the upward, downward, and sideways movement of the speed dome. The description of buttons is as follows:



1. **ON / OSD ON\*** ...SWITCH FUNCTIONS ON
2. **OFF / OSD OFF \*** SWITCH FUNCTIONS OFF
3. **F1 / CYCLE \***.....FUNCTION KEY / CYCLE COMMAND
4. **CAMERA / EXIT\*** CAMERA NUMBER / EXIT COMMAND
5. **PRESET / PAGE UP\*** SET A PRESET / PREVIOUS PAGE
6. **SHOT / PAGE DOWN\*** CALL TOUR NUMBER / NEXT PAGE
7. **CALL** ..... CALL PRESET POSITION
8. **AUTO** ..... AUTO RUN CAMERA
9. **NUMERICS** ..... 0 ~ 9 KEYBOARD NUMBERS
10. **A/B\*\*** .....SWITCH TO IMAGE PROCESSING MODE

**\*\*NOTE: The A/B switch controls additional commands\*. Refer to sections 7g/h/i**

- 11. **ENTER** ..... ENTER BUTTON
- 12. **CLOSE** ..... CLOSE IRIS
- 13. **FAR** ..... FOCUS FAR
- 14. **WIDE** ..... ZOOM OUT
- 15. **TELE** .....ZOOM IN
- 16. **NEAR** .....FOCUS NEAR
- 17. **OPEN** .....INCREASE IRIS

5. Rear keyboard connections



Note that there are two RS485 connections IN and two connections OUT.

**Connect the PTZ cables to the OUT connections A2+ and B2-**

The RS485 IN connections are for connecting a DVR to share control. Use the green connector block supplied. If you use cores from two different pairs in the CAT5 cable you will not get the benefit of the shielding effect of the cable twists and the dome will function erratically. You must always use a core from a PAIR, not two cores from two different pairs.

**Video Input/Output Cable**

This cable allows you to connect directly to the PTZ video connections to allow you view and control the PTZ selected. The cable is numbered channels 1 – 12 for video in and channel 13 for video out. You have in addition a sequencing option.



This keypad needs a 12vDC 1Amp power supply.

## 6. Setting the Address, Protocol and Baud Rate of the Dome

The PTZ250 dome has three functions set by dip switches: a unique address, the protocol and the baud rate. The keyboard must call the correct dome address and will only be able to communicate if the protocol and baud rate are correctly set. The protocol is the language used by the dome and the baud rate is the speed of the messages sent to the dome.

### Camera Address

Each dome has a unique “address” so that if you are using more than one on a site, the keyboard “talks” to the right dome when you want it to PTZ. If you only have the one dome on the site then the default “address” of “1” is okay and you have no reason to change the dome from this. With multiple dome sites you need to set up each dome address separately. The address is called from the keyboard by pressing the CALL button and then the numeric address set in the dome followed by the Enter button.

### Protocol

This is the language that the dome uses when you are sending messages from the keyboard. The protocol set in the dome must agree with the protocol set in the keyboard.

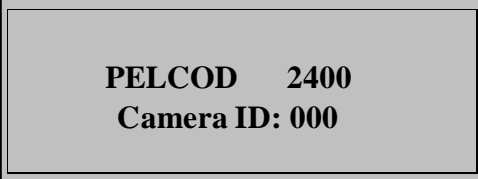
### Baud Rate

This is the speed of the messages sent to the dome. The baud rate set in the keyboard menu must agree with the baud rate set in the dome.

### Removing keyboard from box

When you first take the keyboard out of the box you will need to set it up for the domes that you are using. The PTZ250 usually has the default settings of : **PELCO-D 2400-BAUD rate Address 1**

1. Connect the RS485 using a single matched pair of CAT5 cable from the A2+ and B2- connections on the keyboard to the PTZ camera.
2. Connect a 12vDC 1 Amp power supply to the keyboard.
3. Power up the PTZ dome camera.
4. The following example is displayed on the keyboard LCD

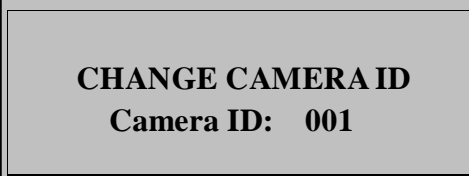


**PELCO D 2400**  
**Camera ID: 000**

5. Setup the correct Camera ID as set in the PTZ.

[CAMERA] n [ENTER] where n = camera address (ID = 0 ~ 255)

The following example will be displayed on the keyboard LCD



**CHANGE CAMERA ID**  
**Camera ID: 001**

6. Now set the protocol and board rate in the keyboard. Note that all PTZ domes controlled by this keyboard must have identical protocol and baud rate settings.
7. The setting of the protocol and baud rate can be done in two ways.
  - a) Enter the function menu by pressing [F1] [ON] and the following will be displayed:



Now press [WIDE] or [TELE] to select menu and press [ENTER]

The following is a list of the protocols and baud rates that can be selected:

<b>PROTOCOL</b>	<b>BAUD RATE</b>	<b>PROTOCOL</b>	<b>BAUD RATE</b>
PELCO-D	2400	KALATEL	4800
PELCO-P	9600	VCLDOME	9600
PELCO-P	4800	REDAPPLE	9600
VIDO-B01	9600	HTSCAM	9600
LILIN	9600	SAMSUNG	9600
ALEC	4800	SANTACH450	9600
HD600	9600	SANTACH650	9600
TOTA	4800	VICON	4800

- b) Alternatively enter the following to select a protocol change:  
 [F1] + 61 + [ON] and use {WIDE} or [TELE] to select followed by [ENTER]
 

or to select a baud rate  
 [F1] + 62 + [ON] and use {WIDE} or [TELE] to select followed by [ENTER]



## 7. Keyboard Specification

Use the [WIDE] or [TELE] to control ZOOM function

Use the [FAR] or [NEAR] to control FOCUS function

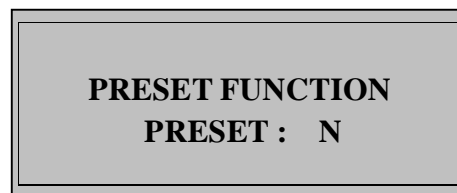
Use the [OPEN] or [CLOSE] to control IRIS function

Setup Menu: [CALL] + [95] + [ENTER]

Exit Menu: CALL + [95] + [ENTER]

### a. SAVE PRESET POSITION

Press [PRESET] + [N] + [ENTER] where N = position - range 1 ~ 255



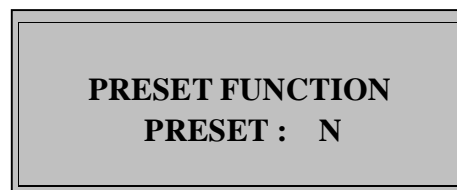
### b. CALL PRESET POSITION

Press [CALL] + [N] + [ENTER] where N = preset position - range 1 ~ 255



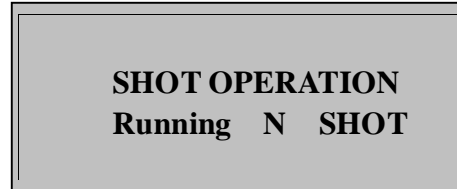
### c. CLEAR PRESET POSITION

Press [PRESET] + [N] + [OFF] where N = preset position - range 1 ~ 255



**d. RUN SHOT (TOUR)**

Press [SHOT] + [N] + [ENTER]. N = Shot number - range 1 ~ 8



To stop SHOT (Tour) touch the joystick or press [SHOT] + [OFF]

**NOTE:**

- If N = 000 unit sets up groups 1,2,3,4 and runs 16 presets
- If N = 001 unit sets up group 1 only and runs 1 ~ 4 presets
- If N = 012 unit sets up groups 1,2 and runs 1 ~ 8 presets
- If N = 234 unit sets up groups 2,3,4 and runs 5 ~ 16 presets

First group comprises presets 1,2,3,4

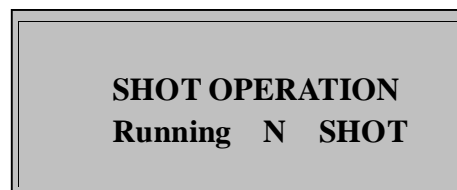
Second group comprises presets 5,6,7,8

Third group comprises presets 9,10,11,12

Fourth group comprises presets 13,14,15,16

**e. RUN 360° SCAN**

Press [AUTO] + [ON] [ENTER]



To stop run touch the joystick or press [AUTO] + [OFF] + [ENTER]

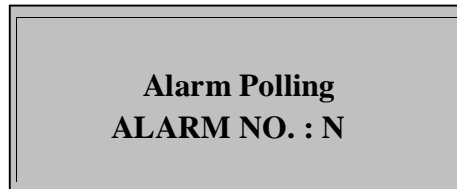
**f. SETUP ALARM (When using PTZ250)**

Press [AUTO] + [ON] + [N] + [ENTER]    N = PIN input – range = 0 ~ 254

Press [AUTO]    and the following will be displayed:



Press [ON] + [N]    and the following will be displayed:



Press [ENTER] and the PIN position is established.

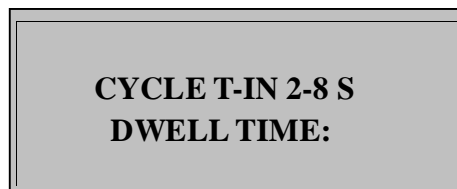
To clear alarm press [AUTO] + [OFF]

NOTE:    The alarm function only operates when the PTZ250 is not in a tour.  
Also the PTZ250 will not return from the alarm position.

**g. Sequencing PTZ cameras automatically**

Refer to diagram showing Special Feature on page 3.

Press the [A/B] button to display “ \* “ followed by pressing [CYCLE] button.



Enter the dwell time 2 – 8 seconds

**CYCLE T-IN 2-8 S  
DWELL TIME: 005**

In the example above we are setting dwell time at 5 seconds. The press [ENTER]

**CYCLE V-IN 1-11  
CYCLE ST: 001**

Cycle video IN for  
channels 1 thru 11.  
Cannot start at CH.12

Now enter the Start channel number. In the above we are selecting channel 1. Then press [ENTER]

**CYCLE V-IN 2-12  
CYCLE EN: 012**

Enter last camera  
channel. Cannot end at  
CH. 1

Now enter the End channel number. In the above we are selecting channel 12. Then press [ENTER]

**CYCLE FUNCTION  
OK:**

**If the channels entered are in ascending order the Cycle Function will display Cycle Function OK.**

#### **h. Page Up and Page Down**

Press [PAGE UP] and the video will page up. The monitor will show the next channel's video. The keyboard will sequence in ascending channel order.

Press [PAGE DOWN] and the video will page down. The monitor will show the previous channel's video. The keyboard will sequence in descending channel order.

#### **i. Camera Function**

Under the normal function i.e [A/B] with no \* press [CAMERA]+[N]+[ENTER] between 1-12 to display That camera's video on the monitor.

## 8. Auxiliary Keyboard Functions

NUMBER	CONTROL FUNCTION	KEYBOARD OPERATION	
		FUNC + N + ON	FUNC + N + OFF
0	Camera Power Supply/Reset	Turn ON	Turn OFF
1	Backlight Compensation	ON	OFF
2	Zero Lux (see camera specs)	ON	OFF
3	Menu Screen (see camera specs)	ON	OFF
4	Digital Zoom Magnification	ON	OFF
5	Camera Reset	Default Camera	
6	Focus	AUTO	MANUAL
7	Iris	AUTO	MANUAL
8	White Balance	AUTO	MANUAL
9		INDOOR	OUTDOOR
10		ATW	One Push WB
11	Colour / Black & White	Colour	B/W
12	Speed and direction of Autoscan	<180° low speed	>180° low speed
13		<180° medium speed	>180° medium speed
14		<180° high speed	>180° high speed
15	Keyboard backlight	ON	OFF
61	Change protocol	Enable the function	Disable the function
62	Change baud rate	Enable the function	Disable the function

Please note some of the above functions may not operate as expected. The functions are dependent on the protocol used and the PTZ functions available.

## 9. Control of the Dome / Pan / Tilt

Move the joystick until the camera reaches the desired position. The speed of movement can be controlled by tilting the joystick down to increase speed.

## 10. Troubleshooting

Problem	Possible Cause	Possible Solution
No video	No power supply	<ol style="list-style-type: none"><li>1. Check power connection</li><li>2. Check 12vDC power supply</li><li>3. Check video connection</li></ol>
No telemetry control	<ol style="list-style-type: none"><li>1. Incorrect protocol</li><li>2. Incorrect baud rate</li><li>3. Incorrect address</li></ol>	Protocol and baud rate must be matched in keyboard and dome. Correct address must be called.

## 11. Specifications

Screen Display	16 x 2 characters	
Control	High speed Keypad with standard PTZ decoder	
Protocols	PELCO-D, PELCO-P, ALEC, SAMSUNG, VIDO-B01, NEON, HTSCAM, HD600, TOTA, KALATEL, VCLDOME, REDAPPLE, SANTACHI450, SANTACHI650, VICON	
Baud Rates	1200bps, 2400bps, 4800bps, 9600bps, 19200bps	
Communication Distance	Maximum: 2400m	
Operating Temperature	-10°C ~ 50°C	
Power	12vDC / 1A	
Maximum Transmitting Distance	Baud Rate	Distance
	1200bps	2400 metres
	2400bps	1800 metres
	4800bps	1200 metres
	9600bps	800 metres
	19200bps	200 metres

## 12. Installation and Connection Help

Please read the keyboard and speed dome manuals carefully before connecting wires. Any incorrect connections can cause permanent damage to the equipment. When connecting wires, always switch off the power supply first. The PTZ710 keyboard must not be exposed to damp or wet conditions that may short circuit the unit or cause electric shock.. Always check that the keyboard is correctly connected to a regulated 12v power supply and that the polarity is correct.

### RS485 connection - Connecting the Keypad to the Dome.



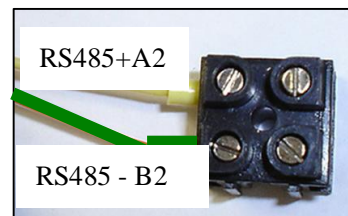
The dome is controlled by an RS485 data signal that is produced by the PTZ710 keypad or a compatible DVR. This data signal tells the dome to pan, tilt, zoom etc.

RS485 has two cores, A and B or sometimes known as RS485 + (A) and RS485 – (B) if you get these two the wrong way around then you will not be able to control the dome. Sometimes installers get the connections right on one dome but not on the other and find only one dome works. They then swap the wires around at the keyboard only to find out one dome has now burst in to life and the other one now failed!! But they don't put 2 + 2 together and realise their mistake that they have wired one dome different to the other. Take great care getting these the right way around and make sure you wire each dome IDENTICALLY so that if you have to swap the A & B lines over at the keyboard you know all domes are wired the same!!

The PTZ710 adopts the following RS485 convention:

YELLOW = RS485 + or A2

GREEN = RS485 – or B2



Connect the RS485 data cable to the connections on the rear of the keyboard (see diagram above). Note that the yellow connection is the RS485 + A2 Line connection and the green is the RS485 – B2 Line connection.

Note that there are two sets of RS485 connections. The pair on the left are **input** RS485 connections. These can be used to connect a DVR. Use the +A2 and -B2 connections for connecting to the DVR.

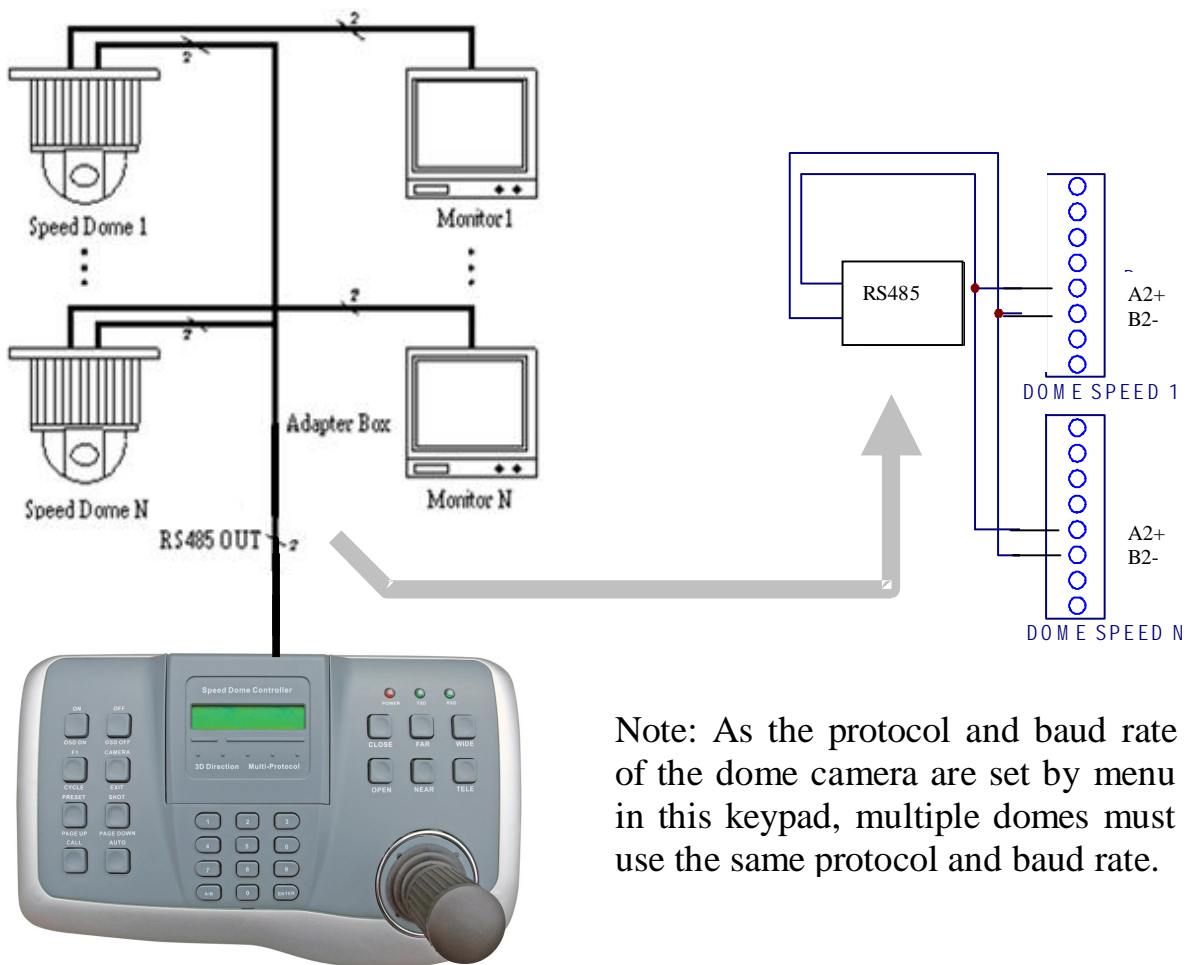
It is advisable to use CAT5 cable to connect the RS485 data cable from the dome to the keypad. You could use any pair out of the CAT5 cable but they must be two cores from the same pair. If you use cores from two different pairs in the CAT5 cable you will not get the benefit of the shielding effect of the cable twists and the dome will function erratically. You must always use a core from a PAIR, not two cores from two different pairs!! When installing cables they should be far away from high voltage lines or other possible sources of electrical interference.

### Powering the PTZ710 Keypad

The PTZ710 requires a 12v DC regulated power supply and draws in the region of 1Amps. It is suggested that to ensure longest life from the power supply that a minimum specification of a 12v DC 1.4A power supply is fitted. The power supply fitting required is a 2.1mm mini power jack plug that fits into the 2.1mm mini power jack socket on the rear of the keypad.

### Connecting the Keypad to Multiple Domes

The diagram below shows how to connect multiple domes to the PTZ715 keyboard controller. Connections at the camera end are shown below.





## 13. Keyboard Operation

### Camera Address.

In order to control the dome you will need to uniquely address it. The dome will usually have dip switches to set the address. When the address is set you will need to use this address to access the specific dome.

Press the dome address followed by the CAM key.

Example: Press **CAMERA** followed **01 ENTER** button. This will allow you to control camera 1.

Press **CAMERA** followed **03 ENTER** button. This will allow you to control camera 3.

### Introduction to Dome's functionality

The dome stores preset positions, preset tours and other functionality associated with the dome equipment. The keyboard merely instructs the dome to carry out those functions. Think of the keyboard as a switch that activates a particular function in the dome that you require. Not all domes have the same functionality so if your dome does not have presets built into it you obviously cannot use presets, regardless of the keyboard you use.

### PRESETS and other functions.

What is a preset? A preset is a particular area or object that the dome camera was looking at and has been stored into its memory so when the preset is "called-up" from the keypad, the dome will select the area again without the operator using the joystick to do this. Even the zoom at the time can be stored with the preset. This means that you could for example store a PRESET of a car-park entrance. When the operator calls up this preset from the keypad, the camera automatically zooms in on this area. This keypad can select up to 128 different presets. Of course this is dependent on the total number that can be programmed into the dome. Once programmed they will stay in the dome's non-volatile memory so they will be retained even after a power cut. By storing more than one preset you can add even more functionality to the dome. By having two presets, you can then get the dome to "SCAN" between the two locations. You can even vary the speed of this scan. Having 3 or more presets you can get the dome to go on a TOUR (PATROL) of the presets. When you run the tour, the dome goes to one preset, then waits a short period then on to the next preset and so on. The dome continues to cycle around this tour until you cancel it.

**Please note that the ability to use presets, auto scans, tours, record patterns, the length of time the camera stays at one location and the speed of travel between each preset, are dependent on the functionality available in the dome. Always refer to the relevant dome instruction manual.**

#### *PRESETS -How to set up a preset*

Aim the dome where you want it to look, zoom in or out to get the correct scene and let the camera auto focus. Now press the following keys on the keypad : **PRESET xx ENTER** (where **xx** is the preset number you wish to store). For example **PRESET 01 ENTER** would set preset 1 and the camera would always go to this location when preset 01 is "CALLED".

To test if the preset is stored correctly in the dome, use the joystick to move the camera to point in a new

location. Now press **CALL xx ENTER** (where **xx** is the preset you wish the camera to go to). In this example if you press **CALL 01 ENTER** the dome should go straight to the PRESET 01 location.

TIP -You may wish to write down a list of presets that you have stored next to the keypad for the operator.

### ***CALLING a preset***

This may be as follows;

PRESET 01 = MAIN GATE (a long zoom shot)

PRESET 02 = ENTRANCE DOOR

PRESET 03 = FIRE ESCAPE

PRESET 04 = EMERGENCY EXIT

PRESET 05 = CAR PARK (zoomed-out wide angle)

PRESET 06 = CAR PARK (zoomed-in narrow angle)

When the operator wishes to quickly zoom in on the MAIN GATE all he has to do is press

**CALL 01 ENTER**

To go to the EMERGENCY EXIT he would press **CALL 04 ENTER** and so on.

To call up any previously stored preset camera location, simply press **CALL xx ENTER** where **xx** is the preset number.

### ***Deleting a preset***

You may wish to delete a preset.

To do this press **PRESET xx OFF** (xx = preset number).

For example to delete preset 1, press **PRESET + 01 + OFF**. Obviously if you wish to overwrite a preset with a new location, simply aim the camera at the new location and store the same preset again.

### ***Patrols (Tours) – How to set them up and use them***

A patrol (tour) is simply a collection of at least three preset camera locations that are run in sequence with the dome stopping at each location for a brief period of time and then moving on to the next preset.

For example, you could use a patrol so that an outside dome camera points at a gate, then at a side doorway, then zooms out to get an overall shot of a car park and finally zooming in on a delivery bay, before repeating the whole cycle again. Patrols can be useful for both outside and internal PTZ's. For a shop they could be used to cover key areas like clothes rails, tills and changing rooms in a sequence.

To set up a patrol you need to set up the individual stop points where the camera will pause. These are called *presets*.

### ***An example four preset mini-tour***

- STEP 1- Using the keypad joystick, move to the first position and then press **PRESET 01 ENTER**  
STEP 2- Now move to the next location and press **PRESET 02 ENTER**  
STEP 3- Now move to the third location and press **PRESET 03 ENTER**  
STEP 4- Finally move to where you wish to end the tour and press **PRESET 04 ENTER**

### ***Setting up a Tour/Patrol/Track***

Refer to your instructions on the dome. This will detail how the tour is set up and initiated. You can select items in the menu by using the joystick left and right movement and changing and selecting items using the up and down joystick movement. If using the PTZ250 you can access the menu using **CALL 95 ENTER** and by selecting the PTZ BALL menu you can set the tour (track group) number, tour (track) speed and tour (track stop) dwell time.

### ***Running a Tour/Patrol/Track***

Refer to your dome instructions. This will detail how to initiate the Tour. If using the PTZ250 you can initiate the Tour directly from the keypad by pressing **CALL 53 ENTER** (runs tour 1) or **SHOT N ENTER** where N = tour number.

### ***Setting up an Auto Pan/Scan***

Refer to your instructions on the dome. This will detail how the Auto Pan/Scan is set up and initiated. You can select items in the menu by using the joystick left and right movement and changing and selecting items using the up and down joystick movement. If using the PTZ250 you can access the menu using **CALL 95 ENTER** and by selecting the PTZ BALL menu you can set the Autoscan (Line speed) speed and Autoscan (Line stop) pause time.

### ***Running an Auto Pan/Scan***

Refer to your dome instructions. This will detail how to initiate the Auto Pan/Scan. You can select items in the menu by using the joystick left and right movement and changing and selecting items using the up and down joystick movement. If using the PTZ250 you can initiate the Autoscan by pressing **CALL 51 ENTER**.

### ***Setting up a 360 degree scan and initiating (PTZ250)***

Refer to your dome instructions. This will detail how the 360 degree scan is set up and initiated. If using the PTZ250 you can access the menu using **CALL 95 ENTER** and by selecting the PTZ BALL menu you can set the 360 degree speed and initiate the 360 degree run by switching the option to on.

### ***Running a 360 degree scan via the keypad (PTZ250)***

Refer to your dome instructions. You can set this option by the keypad by pressing **AUTO ON ENTER** or by pressing **AUTO OFF ENTER** to disable function.

### ***Setting up a Record Pattern/Self Learning Scan (PTZ400/600 series)***

Refer to your instructions on the dome. This will detail how the Record Pattern is set up and initiated via the dome menu. You can select items in the menu by using the joystick left and right movement and changing and selecting items using the up and down joystick movement. Alternatively you can use the keyboard program menu.

### ***Running a Recorded Pattern/Self Learning Scan (PTZ400/600 series)***

Refer to your dome instructions. This will detail how to initiate the Record Pattern via the dome menu. You can select items in the menu by using the joystick left and right movement and changing and selecting items using the up and down joystick movement. Alternatively you can use the keyboard program menu. To stop the running of a Record Pattern just move the joystick.

Remember that the keyboard does not store presets or commands. This is done by the dome's non-volatile memory, which retains settings even through loss of power. Note however that this keyboard has been designed to control a wide variety of PTZ domes and that some functions may not be operable according to the functions provided by the dome.