

the excelPTZ range

Installation and Operation Manual

Speed Dome Camera Controller

MODEL PTZ700



Version 1.0

For updates to these instructions visit www.excelPTZ.com

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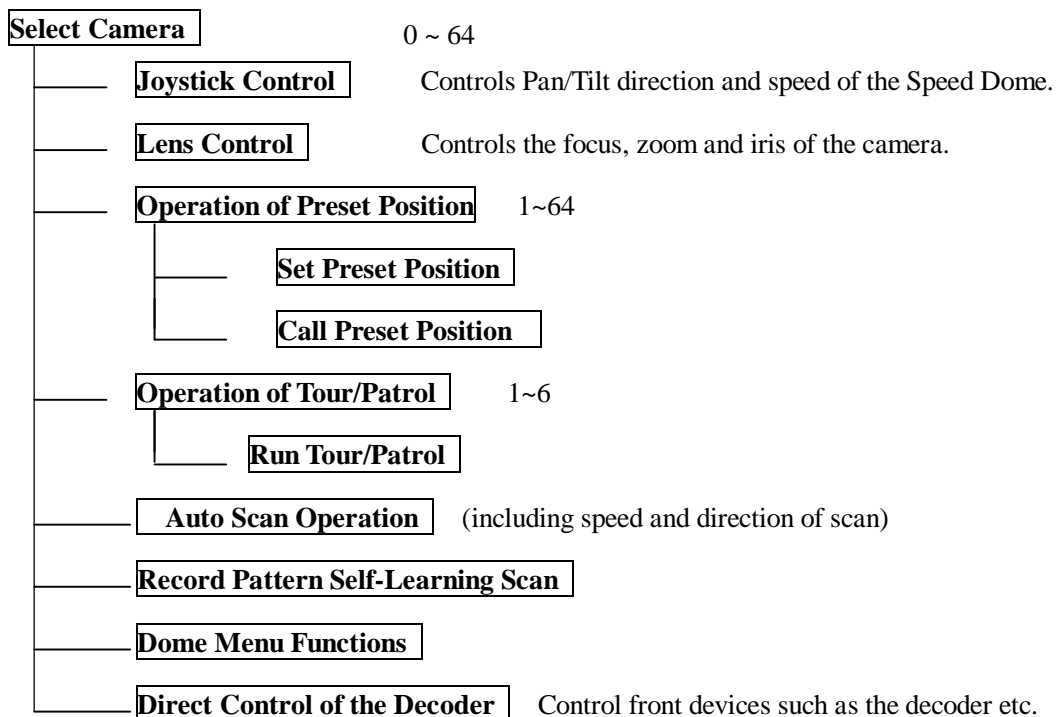
1. Summary

The PTZ700 keyboard controller is used with terminal receivers such as the excelPTZ range of intelligent Speed Domes. The RS485 interface between the keyboard and the receiver, allows one keyboard to control as many as 32 intelligent speed domes with a maximum communication distance of up to 1.2 km. The keyboard is very easy to operate and control the Speed Dome Camera including functions to control pan, tilt, lens 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 64 preset points.
- ◆ Controls the dome camera manually or automatically and allows the changing of camera settings.
- ◆ Manually controls the focus, zoom and iris of the camera.

2. Keyboard Functions



3. 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:

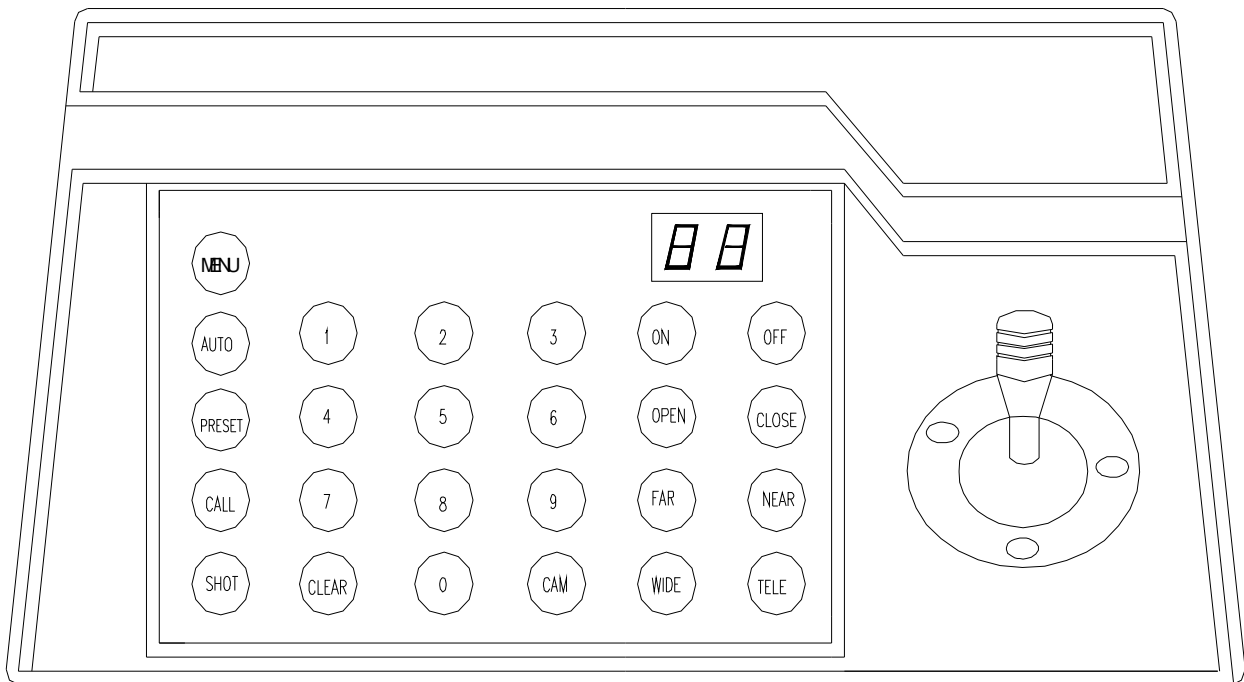
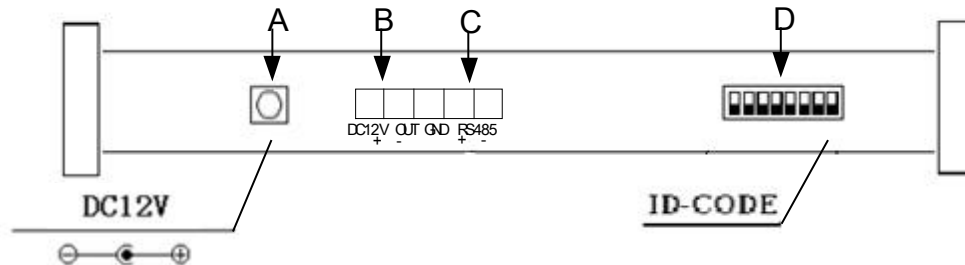


Figure 1

- **CAM** Select address of the intelligent Speed Dome .
- **MENU** Auxiliary control buttons.
- **AUTO** To control auto-horizontal rotation for pan/tilt.
- **CLEAR** To clear inputted data
- **0-9** Number key
- **WIDE** To switch to a wide angle view.
- **TELE** To switch to a telescopic range.
- **FAR** To focus long distance manually.
- **NEAR** To focus close up manually.
- **OPEN** To open iris.
- **CLOSE** To close iris.
- **ON** To switch on a function.
- **OFF** To switch off a function.
- **CALL** To call a preset position.
- **PRESET** To set a preset position.
- **SHOT** To call a tour/patrol.

4. Rear keyboard connections and dip switches

Rear Panel (Figure 2)



- A. Power input connector: input DC12V power.
- B. DC12V Output.
- C. Communication connector RS485:
- D. ID-Code switch: Used to set the protocol in use and the baud rate of communications.

5. Setting the Dip Switches

An excelPTZ 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 numeric button/s for the <address number> followed by the “CAM” button.

Protocol

This is the language that the dome uses when you are sending messages from the keypad. The protocol set in the dome must agree with the protocol set in the keyboard. The protocol used by the keyboard is also set by dip switches.

Baud Rate

This is the speed of the messages sent to the dome. The baud rate set in the keyboard must agree with the baud rate set in the dome. The baud rate used by the keyboard is also set by dip switches.

The following shows the default dip switch settings for use with the excelPTZ range of domes. The excelPTZ range all use PELCO-D at 2400 Baud Rate.



Figure 3

- a) The protocol and baud rate of communication of the keyboard are set by the ID-Code in Figure 4. DIP1-DIP4 are used to select the communication protocol as per following table:

ID-CODE Type of Protocol	Setting of Protocol Type				Setting of default Baud Rate	
	DIP1	DIP2	DIP3	DIP4	DIP5	DIP6
A01	OFF	OFF	OFF	OFF	ON	OFF
NEON	ON	OFF	OFF	OFF	OFF	ON
B01	ON	OFF	OFF	OFF	OFF	ON
SAMSUNG	ON	OFF	OFF	OFF	OFF	ON
Santachi	OFF	ON	OFF	OFF	OFF	ON
PELCO-D	ON	ON	OFF	OFF	OFF	OFF
PELCO-P/4800Bps	OFF	OFF	ON	OFF	ON	OFF
PELCO-P/9600Bps					OFF	ON
HUNDA600	ON	ON	ON	OFF	OFF	ON

Figure 4

- b) DIP5 and DIP6 are used to select the baud rate, shown in following table. Note that DIP7 and DIP8 are not used.

Figure 5

Status of ID-Code Baud Rate	DIP1	DIP2	DIP3	DIP4	DIP5	DIP6	DIP7	DIP8
2400bps					OFF	OFF		
4800bps					ON	OFF		
9600bps					OFF	ON		
19200bps					ON	ON		

c) Some examples of dip switch settings:

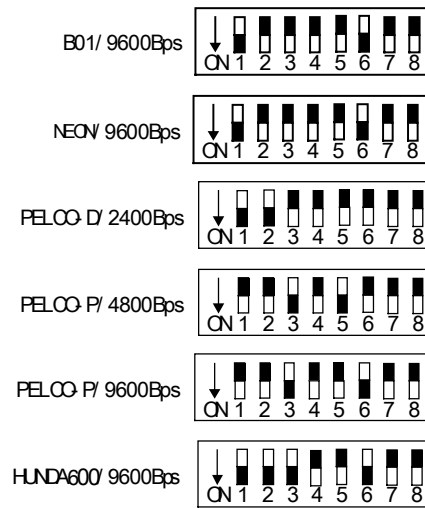


Figure 6

d) **Setting Dip Switches for use with the excelPTZ range of dome cameras**

The following dip switch settings must be used with the excelPTZ range of dome cameras:

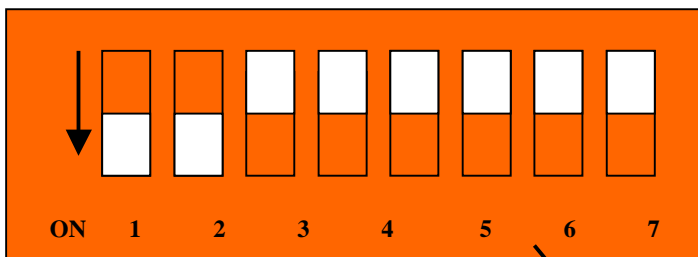


Figure 7


 = SWITCH



Figure 8

6. Installation and Connection

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 PTZ700 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 PTZ700 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 realize 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 excelPTZ range series adopts the following RS485 convention:

ORANGE = RS485 + or A
YELLOW = RS485 – or B

Figure 9

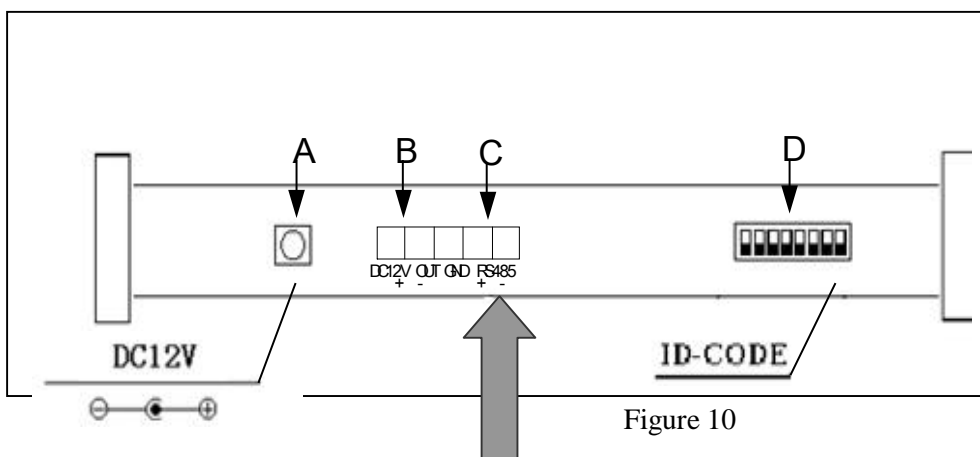
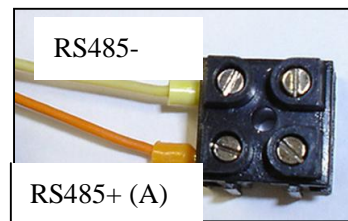


Figure 10

- A. Power input connector: input DC12V power.
- B. DC12V Output.
- C. RS485 connections
- D. ID-Code dipswitch

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

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. Why not use for example the orange pair so that the colours tie together a little? 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 PTZ700 Keypad

The PTZ700 requires a 12v DC regulated power supply and draws in the region of 500mA. It is suggested that to ensure longest life from the power supply that a minimum specification of a 12v DC 750mA 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 (see diagram above marked A).

Connecting the Keypad to Multiple Domes

The diagram below shows how to connect multiple domes to the PTZ700 keyboard controller (figure 11). Connections at the camera end are shown in figure 12.

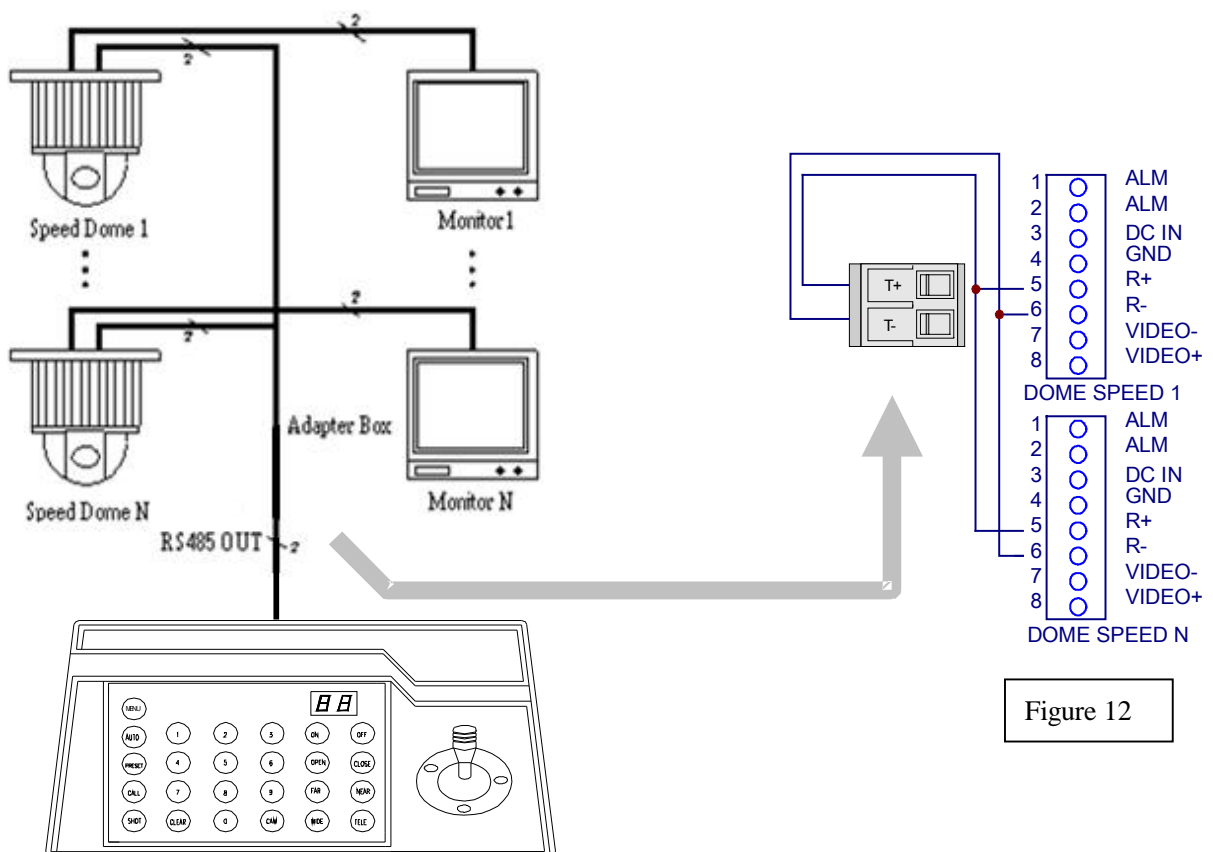


Figure 11

Figure 12

Note: As the protocol and baud rate of the dome camera are set by dip switches in this keypad, multiple domes must use the same protocol and baud rate.

7. 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.

Enter the numeric dome address using the numeric keypad. The keypad allows addresses from 0 to 64 to be accessed. Follow this by pressing the CAM key.

Example: Press the number '1' key followed by the 'CAM' key. This will allow you to control camera 1.
 Press the number '3' key followed by the 'CAM' key. 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 keypad merely instructs the dome to carry out those functions. Think of the keypad 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 keypad 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 64 different presets. 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 patrol, 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 patrol 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 : **xx PRESET** (where **xx** is the preset number you wish to store). For example **01 PRESET** would send preset 1 and the camera would always go to this location when 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 **xx CALL** (where **xx** is the preset you wish the camera to go to). In this example if you press **01 CALL** 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 **01 CALL**.

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

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

Deleting a preset

You may wish to delete a preset.

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

For example to delete preset 1; press **01 CLEAR**. 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

Setting the presets using the keypad

STEP 1- Using the keypad joystick, move to where you wish to start the tour and then press **01 PRESET**

STEP 2- Now move to the next location and press **02 PRESET**

STEP 3- Now move to the third location and press **03 PRESET**

STEP 4- Finally move to where you wish to end the tour and press **04 PRESET**

Setting up a Tour/Patrol

Refer to your instructions on the dome. This will detail how the tour is set up and initiated via the dome menu.

In order to access the dome menu press **64 CALL**. You can select items in the menu by using the joystick UP/DOWN movement and changing and selecting items using the joystick LEFT/RIGHT movement.

Running a Tour/Patrol

Refer to your dome instructions. This will detail how to initiate the Tour/Patrol via the dome menu. In order to access the dome menu press **64 CALL**. You can select items in the menu by using the joystick UP/DOWN movement and changing and selecting items using the joystick LEFT/RIGHT movement. Alternatively you may be able to initiate the Tour/Patrol directly from the keypad by pressing the sequence number of the Tour/Patrol already stored in the dome followed by the SHOT button. Example **01 SHOT** where 01 is the stored tour/patrol selected.

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 via the dome menu. In order to access the dome menu press **64 CALL**. You can select items in the menu by using the joystick UP/DOWN movement and changing and selecting items using the joystick LEFT/RIGHT movement.

Alternatively you may be able to set up an Auto Pan/Scan directly from the keypad. First move dome to start position and then press the **AUTO ON** buttons. Next move dome to the end position of the Auto Pan/Scan. Now press the **AUTO OFF** buttons.

Running an Auto Pan/Scan

Refer to your dome instructions. This will detail how to initiate the Auto Pan/Scan via the dome menu. In order to access the dome menu press **64 CALL**. You can select items in the menu by using the joystick UP/DOWN movement and changing and selecting items using the joystick LEFT/RIGHT movement. Alternatively you may be able to initiate the Auto Pan/Scan directly from the keypad by pressing the AUTO and SHOT buttons. Example **AUTO SHOT**.

Setting up a Record Pattern/Self Learning Scan

Refer to your instructions on the dome. This will detail how the Record Pattern is set up and initiated via the dome menu. In order to access the dome menu press **64 CALL**. You can select items in the menu by using the joystick UP/DOWN movement and changing and selecting items using the joystick LEFT/RIGHT movement.

Alternatively you may be able to set up a Record Pattern directly from the keypad. First move dome to start position. Now via the keypad press **MENU 17 ON** and start the recording by moving the joystick. To end the recording press **MENU 17 OFF**.

Running a Recorded Pattern/Self Learning Scan

Refer to your dome instructions. This will detail how to initiate the Record Pattern via the dome menu. In order to access the dome menu press **64 CALL**. You can select items in the menu by using the joystick UP/DOWN movement and changing and selecting items using the joystick LEFT/RIGHT movement. Alternatively you may be able to run the recorded pattern directly from the keypad by pressing the **MENU 18 ON** buttons. To stop the running of a Record Pattern just move the joystick.

The following table details the tasks and keyboard functions of the PTZ700. 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.

8. PTZ700 Keyboard Function Chart

Task	Keyboard Operation	Comments
Select Camera Address	[n]+[CAM] [n] = No. of camera address 0 ~ 64	Selects the address of the camera to be controlled.
Set a Preset	[n]+[PRESET] [n] = No. of preset position 1 ~ 64	Stores a preset position.
Call a Preset	[n]+[CALL] [n] = No. of preset position 1 ~ 64	Moves camera to preset position.
Cancel a Preset	[n]+[CLEAR] [n] = No. of preset position 1 ~ 64	Deletes a stored preset position.
Select a Tour/Patrol	[n]+[SHOT] [n] = No. of tour/patrol 1 ~ 6	Initiates a stored tour/patrol. To stop the tour/patrol just move the joystick.
Start an Auto Pan	Move dome to start position then press [AUTO]+[ON] Move dome to end position then press [AUTO]+[OFF] Run Auto Pan by pressing [AUTO]+[SHOT]	Sets Auto Pan using PELCO-D and PELCO-P protocols. For NEON or SAMSUNG protocol use the following: [AUTO]+[P1]+[ON]+[P2]+[OFF] To stop the Auto Pan just move the joystick.
Control camera Zoom	[WIDE] / [TELE]	
Control camera Focus	[FAR] / [NEAR]	
Control camera Iris	[OPEN] / [CLOSE]	
Controlling camera menu (ONLY WHEN DOME HAS NO MENU)	[MENU]+[3]+[ON] Select item in menu by using the [WIDE] / [TELE] buttons to scroll up/down & changing selected item using the [FAR] / [NEAR] buttons.	Use when dome has no menu but camera has a menu. To switch off menu use the following: [MENU]+[3]+[OFF]
Controlling camera menu (ACCESS VIA DOME MENU)	[64]+[CALL] Select item in menu by using the joystick UP / DOWN movement & changing/selecting item using the joystick LEFT / RIGHT movement.	You can speed up the operation of the joystick by holding it in one direction for one second.

Special Notes:

- 7.1 Once settings have been made using the keyboard they are retained in the dome's non-volatile memory even after loss of power.
- 7.2 The above settings are general settings and will only communicate with domes that have the relevant in-built software functionality.
- 7.3 Use the joystick to control the Pan/Tilt direction and speed of the Dome camera. The speed of the Pan/Tilt is decided by the angle of the joystick, which can be adjusted to give an even speed. The camera can be automatically focused during the course of the scan to maintain a sharp image.
- 7.4 Control functions will vary according to dome and camera type, and the protocol used. If problems arise try [MENU]+[n]+[ON] or [MENU]+[n]+[OFF] (where [n] = numeric key) to set a

function on or off.

9. Auxiliary Control of the camera

This keyboard can set certain functions in the dome camera. The functions will vary according to the type of camera fitted. These instructions should be used in conjunction with the camera instructions supplied.

No.	Control Option	Setting of Keyboard Operation	
		[MENU]+[n]+[ON]	[MENU]+[n]+[OFF]
0	Camera power supply/reset control	Power ON/OFF	Recover initial camera values
1	Back Light Compensation	ON	OFF
2	Zero Illumination (refer camera functions)	ON	OFF
3	Menu/Display (refer camera functions)	ON	OFF
4	Digital Zoom	ON	OFF
5	Reserved		
6	Focus	Automatic	Manual
7	Iris	Automatic	Manual
8	White Balance Mode (WB)	Automatic	Manual
9		Indoor Mode	Outdoor Mode
10		ATW Mode	One Push WB
11	Black & White Colour Switching	Colour	Black & White
12	Set Auto Pan speed (Use in conjunction with Keyboard Operation Instructions)	<180°, low speed	>180°, low speed
13		<180°, medium speed	>180°, medium speed
14		<180° , high speed	>180° , high speed
15	Reserved		
16	Reserved		
17	Record Pattern Self Learning Scan	Start Record	End Record
18	Initiate Record Pattern	Run	Move joystick to Stop

10. Technical Specifications

Communication between dome camera & PTZ700	Port to multi-port and half duplex function
Communication connector	RS485
Communication Baud Rate	2400bps, 4800bps, 9600bps and 19200bps
Maximum communication distance	1200 metres maximum
Power Supply	12v DC 500mA
Size	188mm x 97mm x 70mm
Weight	0.5Kg
Number of domes controlled by keyboard	32