

the excelPTZ range

Installation and Operation Manual

Speed Dome Camera Controller

MODEL PTZ730



Version 1.0

For updates to these instructions visit www.excelPTZ.com

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1. Summary

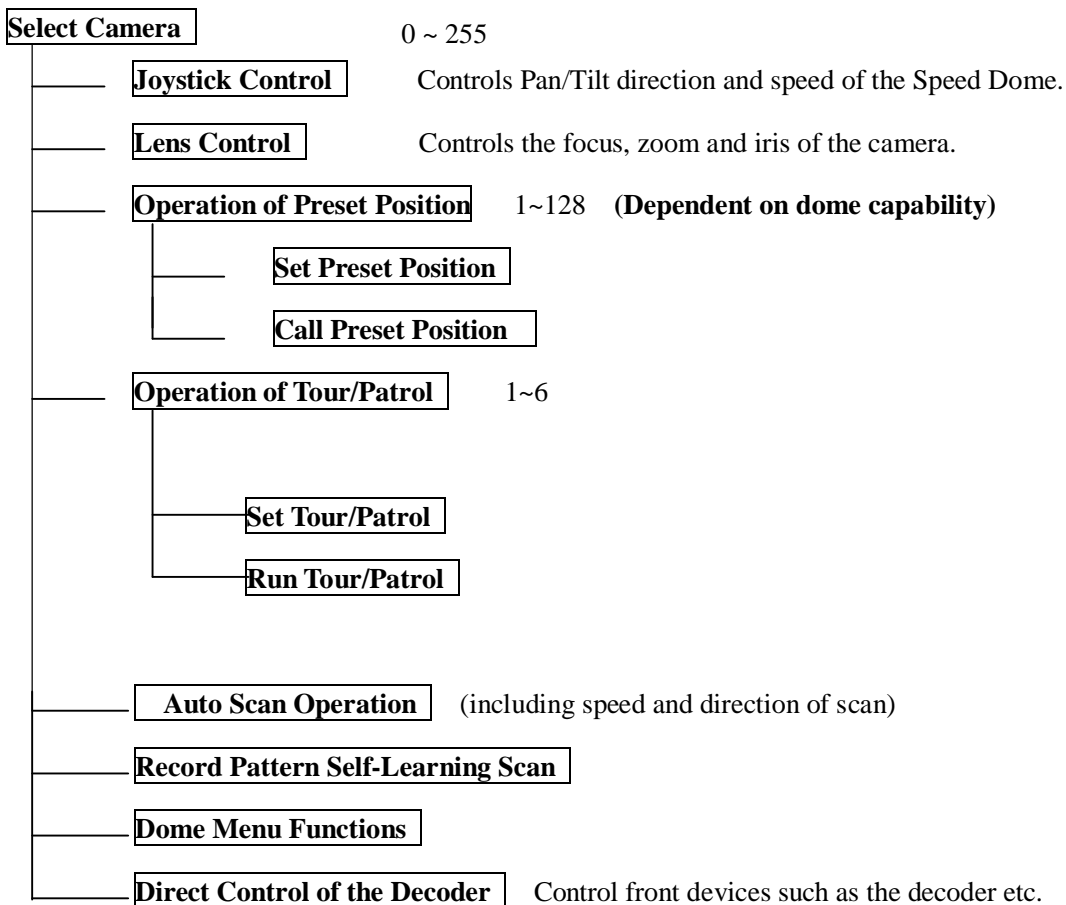
The PTZ730 keyboard controller is used with terminal receivers such as the excelPTZ range of intelligent Speed Domes. The RS485 interface between the keyboard and the receiver, allows one keyboard to control as many as 32 intelligent speed domes with a maximum communication distance of up to 1.2 km. The keyboard is very easy to operate and control the Speed Dome Camera including functions to control pan, tilt, lens etc.

Main Functions

- u Sets the address range of the dome camera and the decoder.
- u Controls all functions of the dome camera such as powering on and off.
- u Operates the pan/tilt of the Speed Dome Camera moving at different speeds.
- u Allows the setting and calling of up to 128 preset points and six tours each containing 16 presets.
- u Controls the dome camera manually or automatically and allows the changing of camera settings*.
- u Manually controls the focus, zoom and iris of the camera.

*NOTE: This keypad has additional controls for attaching a multiplexer but this is not a stock item and therefore are not operational.

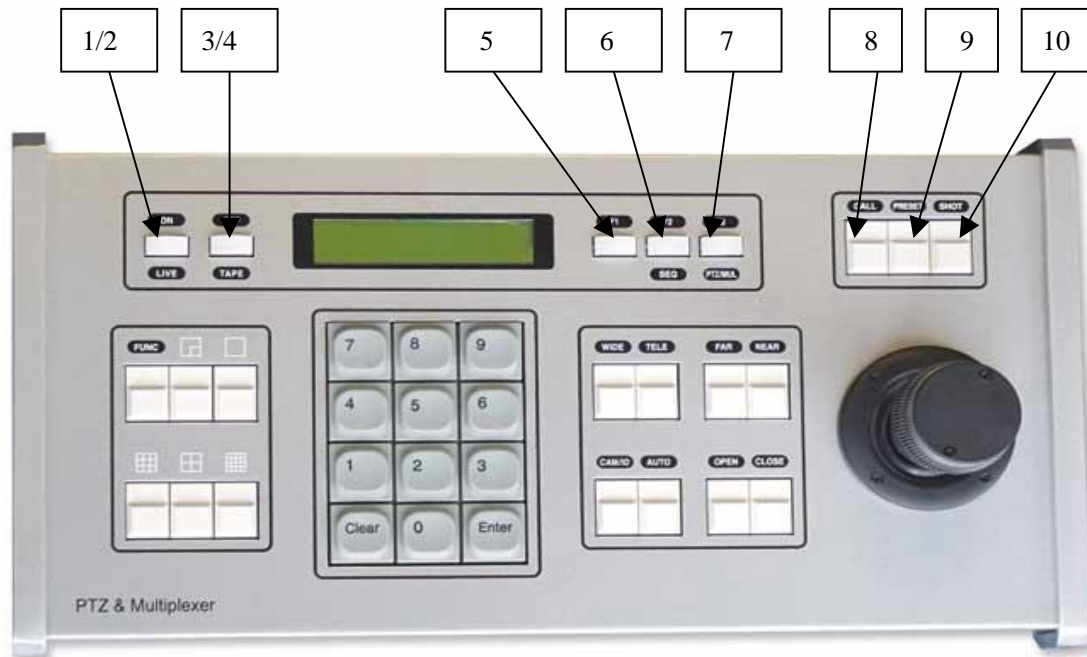
2. Keyboard Functions



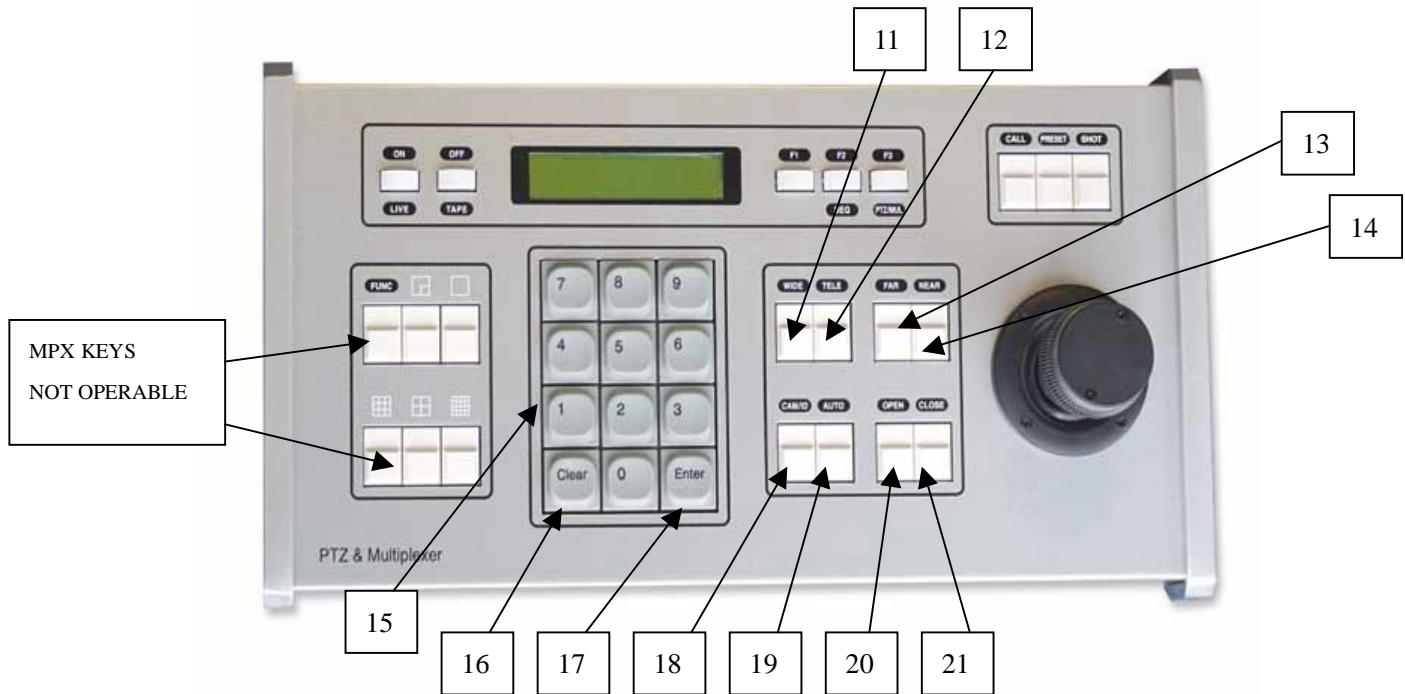
3. The keyboard Panel

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:



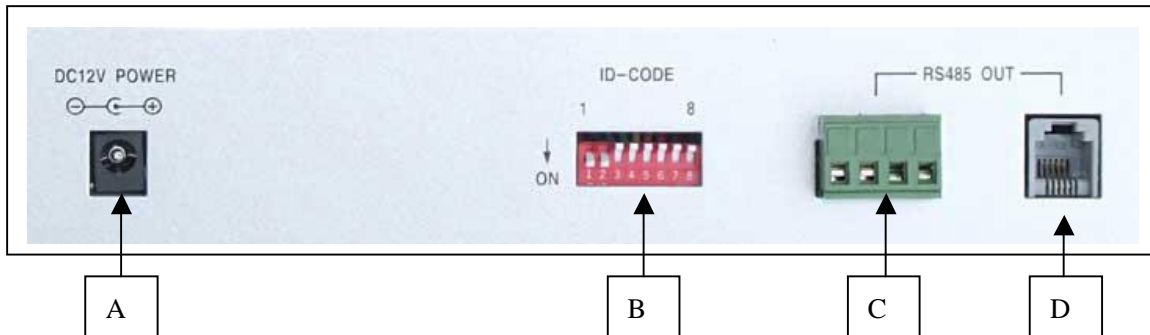
- | | | |
|-----|--------------|--|
| 1. | ON / | SWITCH FUNCTIONS ON |
| 2. | LIVE | N/A |
| 3. | OFF / | SWITCH FUNCTIONS OFF |
| 4. | TAPE | N/A |
| 5. | F1 | AUXILLIARY CONTROL BUTTONS |
| 6. | F2 | SETUP MODE: MOTION DETECTION
CAMERA MODE: AUXILLIARY BUTTONS
MPX MODE: N/A |
| 7. | F3 | SWITCH CAMERA OR MPX MODE |
| 8. | CALL | CALL THE PRESET POSITION |
| 9. | PRESET | SET THE PRESET POSITION |
| 10. | SHOT | TO SET UP OR CALL TOUR SEQUENCE |



- | | |
|-------------------------|-----------------------------------|
| 11. WIDE | INCREASE WIDE ANGLE VIEW |
| 12. TELE | TELESCOPIC RANGE |
| 13. FAR | LONG RANGE FOCUS |
| 14. NEAR | CLOSE UP FOCUS |
| 15. NUMERIC KEYPAD | 0 ~ 9 NUMERIC SELECTION |
| 16. CLEAR | .. CLEAR INPUT DATA |
| 17. ENTER | INITIATE INPUT |
| 18. CAM/ID | CAMERA MODE: SELECT CAM ADDRESS |
| 19. AUTO | AUTO HORIZONTAL ROTATION FOR P& T |
| 20. OPEN | OPEN IRIS |
| 21. CLOSE | CLOSE IRIS |

4. Rear keyboard connections and dip switches

Rear Panel (Figure 2)



- A. Power input connector: input DC12V power.
- B. ID-CODE Dipswitch – Set Protocol & Baud Rate of PTZ/s
- C. Communication connector RS485:
- D. RJ45 connector.: RED = RS485 +
BLACK = RS485 –
GREEN = GROUND
YELLOW = RS232 OUT

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 “CAM” button followed by the numeric button for the address followed by Enter.

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 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
SAMSUNG	ON	OFF	OFF	OFF	OFF	ON
NEON	ON	OFF	OFF	OFF	OFF	ON
PELCO-D	ON	ON	OFF	OFF	OFF	OFF
PELCO-P/4800	OFF	OFF	ON	OFF	ON	OFF
PELCO-P/9600	OFF	OFF	ON	OFF	OFF	ON
PANASONIC	ON	OFF	ON	OFF	OFF	ON
HUNDA600	ON	ON	ON	OFF	OFF	ON
LILIN	OFF	OFF	OFF	ON	OFF	ON
<i>VICON*</i>	<i>ON</i>	<i>OFF</i>	<i>OFF</i>	<i>ON</i>	<i>ON</i>	<i>OFF</i>
<i>MOLYNX*</i>	<i>OFF</i>	<i>ON</i>	<i>OFF</i>	<i>ON</i>	<i>OFF</i>	<i>ON</i>
KALATEL	ON	ON	OFF	ON	ON	OFF
<i>VCL*</i>	<i>OFF</i>	<i>OFF</i>	<i>ON</i>	<i>ON</i>	<i>OFF</i>	<i>ON</i>
ALEC	OFF	ON	ON	ON	OFF	ON
ULTRAK	ON	ON	ON	ON	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.
- c) *Note that the Protocols above in italics are still under development by the manufacturer.

Figure 5

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

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:

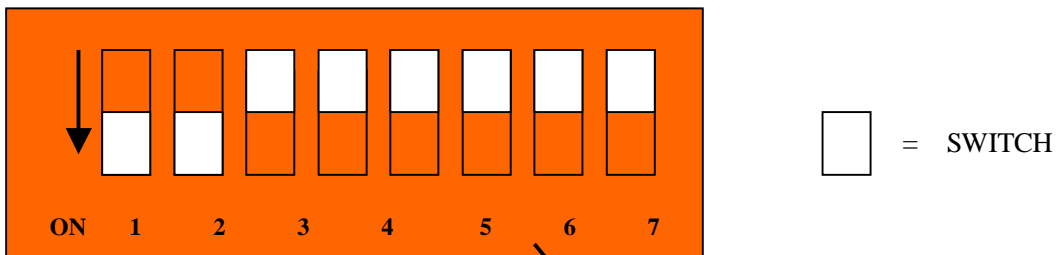


Figure 7



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 PTZ730 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 PTZ730 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 excelPTZ range series adopts the following RS485 convention:

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

Figure 9

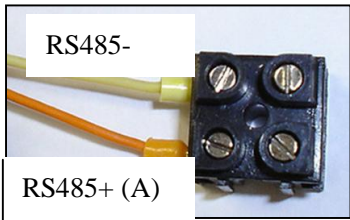
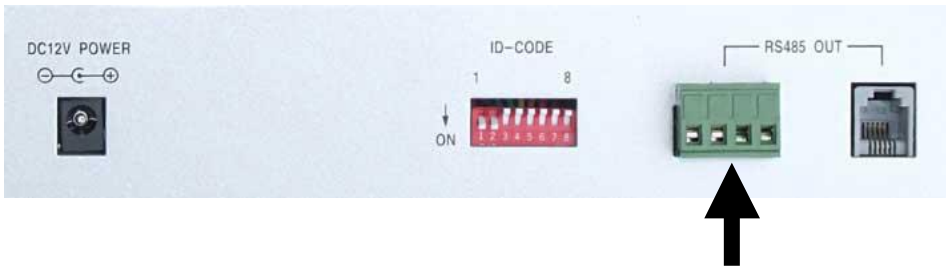


Figure 10



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.

If you are using the RJ45 connection lead the following connections apply:

- RED: RS485 +
- BLACK: RS485 –
- GREEN: GROUND

YELLOW: RS232 OUT

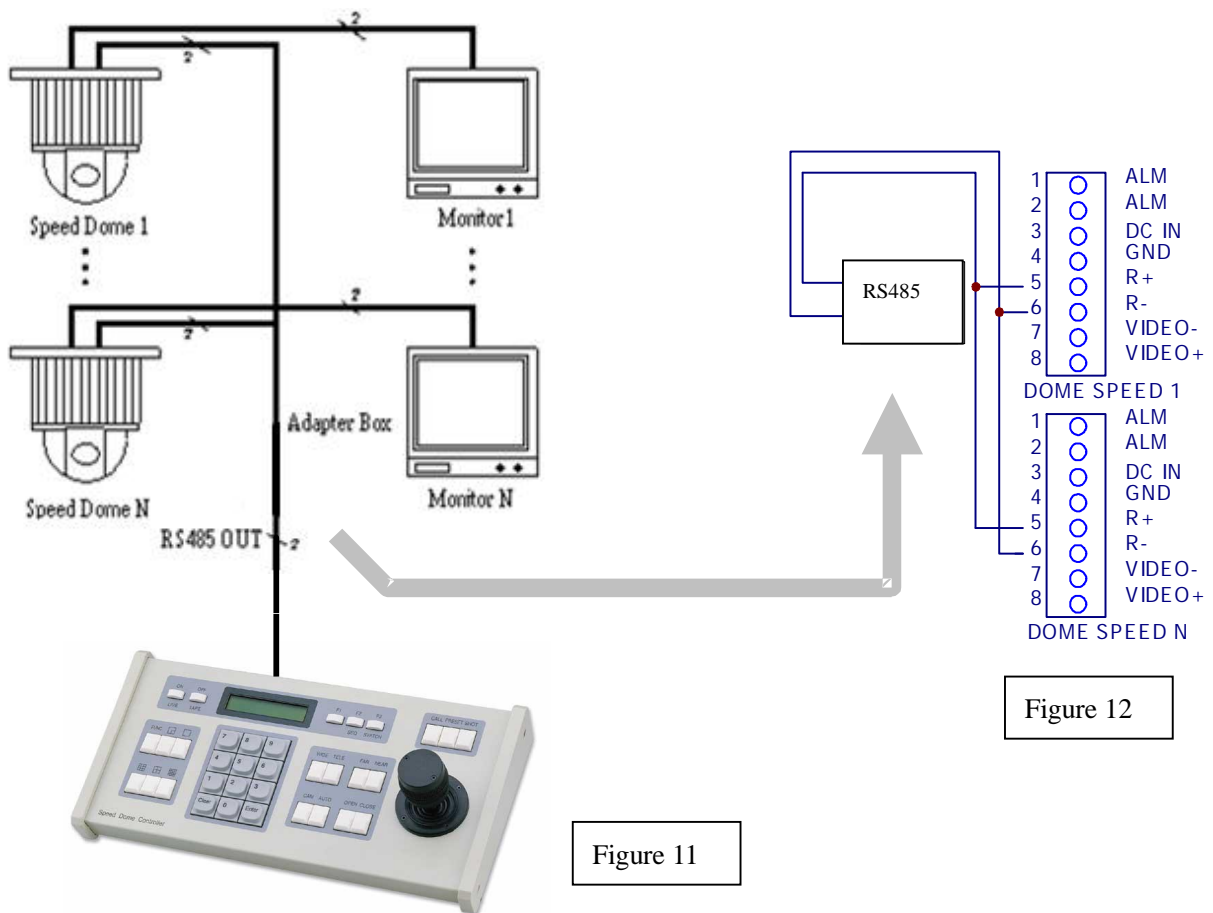
It is advisable to use CAT5 cable to connect the RS485 data cable from the dome to the keypad. You could use any pair out of the CAT5 cable but they must be two cores from the same pair. Why not use for example the orange pair so that the colours tie together a little? If you use cores from two different 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 PTZ730 Keypad

The PTZ730 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).

Connecting the Keypad to Multiple Domes

The diagram below shows how to connect multiple domes to the PTZ730 keyboard controller (figure 11). Connections at the camera end are shown in 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.

Press the CAM key followed by the dome address using the numeric keypad. The keypad allows addresses from 0 to 255 to be accessed. Follow this by pressing the Enter key.

Example: Press **CAM** key followed by **'1'** and **Enter**. This will allow you to control camera 1.

Press **CAM** key followed by **'3'** and **Enter**. 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. The PTZ730 controller can be operated in two modes. Speed Dome and Multiplexer. The F3 function button switches between these modes. However the Multiplexer mode is not supported, as you will need additional control equipment. The LCD screen will provide guidance on the mode you are in.

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 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 : **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

Setting the presets using the keypad

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

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 **F1 + 3 + ON** . You can select items in the menu by using the WIDE/TELE buttons for UP/DOWN movement and changing and selecting items using the FAR/NEAR buttons.

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 **F1 + 3 + ON**. You can select items in the menu by using the WIDE/TELE buttons for UP/DOWN movement and changing and selecting items using the FAR/NEAR buttons.

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 **SHOT+ 01 +Enter** 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 **F1 + 3 + ON**. You can select items in the menu by using the WIDE/TELE buttons for UP/DOWN movement and changing and selecting items using the FAR/NEAR buttons.

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 **F1 + 3 + ON**. You can select items in the menu by using the WIDE/TELE buttons for UP/DOWN movement and changing and selecting items using the FAR/NEAR buttons. Alternatively you may be able to initiate the Auto Pan/Scan directly from the keypad by pressing the **AUTO** and **Enter** buttons. Example **AUTO + Enter**.

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

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 **F1 + 3 + ON**. You can select items in the menu by using the WIDE/TELE buttons for UP/DOWN movement and changing and selecting items using the FAR/NEAR buttons.

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

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 **F1 + 3 + ON**. You can select items in the menu by using the WIDE/TELE buttons for UP/DOWN movement and changing and selecting items using the FAR/NEAR buttons. To stop the running of a Record Pattern just move the joystick.

Editing a Patrol/Tour direct from the keypad (PTZ400 series)

Instead of using the menu to edit the preset positions, speed and dwell time of each preset in a tour, you can edit these using the keypad direct. Enter **SHOT + n + ON** <where n = Patrol/Tour/Track number from 1 to 6 >

The display will now show **TRACK = n Sum = x**

<where n = Patrol/Tour/Track number from 1 to 6 > <where x = number of presets in this Patrol/Tour/Track>

Press the TELE button to edit down page or the WIDE button to edit up page. Each Patrol/Tour/Track can involve up to 16 preset positions, the running speed and the dwell time of each preset.

Display No.: **01 Point: 001** → The 1st preset position in this Patrol/Tour/Track is 001

Display No.: **01 Speed: 001** → The speed of the 1st preset position in this Patrol/Tour/Track is the 1st class

Display No.: **01 Time: 004** → The dwell time of the 1st preset position in this Patrol/Tour/Track is 4 secs

<where SPEED range = 1 to 8 from fast to slow – any speed outside the range is called 1st class>

<where dwell TIME is 1 to 255 seconds>

Special Note: When the preset point is specified as 0, all presets before this, in this Patrol/Tour/Track will be valid but all presets after this will be automatically set the speed and dwell time to 0. After editing press OFF to store or move the joystick to exit without saving.

The following table details the tasks and keyboard functions of the PTZ730. 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

This keypad can be operated in speed dome and multiplexer mode. When first connected to power, the keypad defaults to Speed Dome mode. Pressing **F3** button switches modes. The LCD display will show either

Mulx Addr:001 to use an address box, **CONTROLLING MULX** to control multiplexer by an RS232 output or **Dome Mode**. **USE ONLY IN DOME MODE.**

SPECIAL NOTE: WHERE + IS USED BELOW, PRESS BUTTONS ONE AFTER THE OTHER.

Task	Keyboard Operation	Comments
Select Camera Address	[CAM]+[n]+[Enter] [n] = No. of camera address 0 ~ 255	Selects the address of the camera to be controlled.
Set a Preset	[PRESET]+[n]+[Enter] [n] = No. of preset position 1 ~ 128	Stores a preset position.
Call a Preset	[CALL]+[n]+[Enter] [n] = No. of preset position 1 ~ 128	Moves camera to preset position.
Cancel a Preset	[PRESET]+[n]+[OFF] [n] = No. of preset position 1 ~ 128	Deletes a stored preset position.
Select a Tour/Patrol	[SHOT]+[n]+[Enter] [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]+[Enter]	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]	
Edit a Tour/Patrol/Track from the keyboard	[SHOT]+[n]+[ON] where [n] = Tour No. Displays TRACK=[n] SUM=xx where n = total of tour where xx = total of presets Use TELE/WIDE buttons to edit Press OFF to store or move joystick to exit without saving.	Option to edit an existing Patrol/Tour/Track, by changing the order of a preset, changing the speed of movement and/or changing the dwell time. Note that Tour/Patrol/Track are all different names for the same operation.
Controlling camera menu	[F1]+[3]+[ON] This displays camera menu	If menu is not displayed immediately enter again.

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.

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. 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. Control functions will vary according to dome and camera type, and the protocol used. If problems arise try [F1]+[x]+[ON] or [F1]+[x]+[OFF] (where [x] = (value key) to set a function on or off.)

SPECIAL NOTE: WHERE + IS USED BELOW, PRESS BUTTONS ONE AFTER THE OTHER.

X	Control Option	Setting of Keyboard Operation	
		F1+X+[ON]	F1+X+[OFF]
0	Camera power supply/reset control	Power ON/OFF	Camera reset
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	Backlight of keyboard screen	ON	OFF
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.	<180°, low speed	>180°, low speed
13		<180°, medium speed	>180°, medium speed
14		<180°, high speed	>180°, high speed

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	1315mm x 165mm x 57mm
Weight	2Kg
Number of domes controlled by keyboard	32