Mini Hi-Speed Dome

Installation and Operation Manual

PTZ250

HIGH Speed PTZ Dome with 3 Alarm Inputs

Version 5.0

CONTENTS TABLE

Please read this operation manual carefully
before installing and using this unit !!!!

Please read the following;

1. Please read the operation manual carefully before installing and operating the product.

2. The actual dome requires a 12v DC 1.5A power supply. The rated input voltage of the camera is 12V. This gets its power from the dome and does not require a separate PSU. Do not connect 24V AC to this PTZ under any circumstances.

3. During the course of transportation, storage and installation, the product should be handled with care avoiding vibration and any weight pressure, which may cause damage to the sophisticated optical and electronic equipment inside the PTZ.

4. Do not attempt to disassemble the camera. In order to prevent electric shock, do not remove screws or covers. There are no user-serviceable parts inside the camera.

5. Always use and stick to current electrical safety standards to install and use the dome. Use a correctly rated power supply. The RS-485 and video signal cables should be kept away from other high voltage equipment such as mains cables and especially fluorescent lights. Using an anti surge protection device is recommended to prevent damage to the domes from lightning and mains surges. Damage to domes by lightning or mains voltage surges is not covered under the domes warranty.

6. Do not operate in areas exceeding the stipulated limitations concerning temperature, humidity and power supply.

7. Do not aim the camera directly towards the sun or an extreme light source whether it is switched on or not. Do not let the camera focus on bright and stationery objects for a long time. Doing either of these may damage the camera.

8. Do not use strong detergents to clean the main body of the camera as these may damage the dome cover or paintwork. Wipe dirt with dry cloth. If needed a *mild* detergent can be used.

9. Operate the dome camera with great care to avoid shock or vibration. If operated incorrectly, the Dome could be damaged.

10. Ensure the dome is not dropped. Never mount the unit on a ceiling that cannot support its weight.

11. If necessary, use a commercial lens cleaning paper to clear the lens windows. Gently wipe the lens window until clean.

SPECIAL NOTE: WHEN USING THIS PTZ OUTSIDE IT CAN ONLY BE FITTED WITH THE TOP COVER AND WALL BRACKET.

KEY FUNCTIONS

The PTZ250

Description of Functions

This intelligent dome camera is a hi-tech CCTV product, which incorporates a high-clarity colour camera. It has a panoramic variable speed PAN/TILT movement, a multifunctional decoder, a character generator and an on-board processor for logic handling. The dome is easy to connect, install, maintain and operate, and has many features. The dome is compact and has a strong structure with a modern and appealing appearance. The resolution of 500 TVL in colour and 570 TVL in black and white is achieved with the Sony high density CCD.

1. Integrated Multi-Protocol Decoder

a. The integrated multifunctional decoder can communicate with 6 different protocols. The baud rate can be independently set allowing compatibility with numerous systems with selectable baud rates from 2400 bps to 9600 bps. Dip switches control the selection of the protocol and baud rate thus making this dome camera easy to set up and use.
b. This dome uses RS485 serial control and can address from 1 to 255 cameras using binary addresses.
c. Using the DSP chip in the DNR technology, low Iluminance noise has been significantly reduced and the signal to noise ratio as well as the horizontal resolution has been improved to provide a clear and sharp image.

2. Integrated Speed-Variable PAN/TILT

a. The dome can turn 360° horizontally and continuously with an adjustable pan/tilt speed from 1.5° per sec - 240° per sec automatically or 1.5° per sec - 120° per sec manually.
b. The dome can run at low speed, low noise, and does not show any picture shake.
c. The dome has an automatic horizontal/vertical flip facility and provides panoramic monitoring without any blind spots.

3. High Intelligent Settings

a This dome can store up to 160 preset positions in non-volatile memory that are not lost with a power failure. Refer to the section "Presets and other functions."
b The dome can scan horizontally between two points and the scan speed can be modified.
c. The PTZ250 has a 10x optical zoom lens and features auto focus , auto iris and zoom functionality.
d. The infrared cut filter can be disengaged from the image path for increased sensitivity in low light situations. The ICR will automatically engage depending on the ambient light allowing the camera to be effective in the day and night environment.
e. A motion detection facility allows 4 programmable zones to be set and when triggered will transmit an alert signal to the monitor.
f. This unit has three alarm inputs that do not use preset points. Setup is detailed in the section of this manual covering the menu settings.
g. The PTZ has special features such as preset point 000. It is recommended to control the PTZ250 using the PTZ710 keyboard as this can access preset point 000. If you use a DVR they generally have no facility to access this preset.
h. The PTZ250 can be set on a tour and when an alarm is triggered the PTZ can access a selected alarm position. The Restart Time function if set, will allow the DVR to restart a tour following a power cut.

Getting the dome up and running!

You MUST connect up the dome and your control equipment on a workbench or kitchen table before the actual site installation and CHECK YOU KNOW HOW TO INSTALL IT CORRECTLY!!!!!!!!!!!!!!!!!.

By doing this you can set-up any DIP switches, adjust the camera, and learn about how it operates before taking it to site. This will save you hours of time on-site trying to work out why a particular item doesn't function as you expected it to. There is nothing worse than installing something and then having to take it down to see how to get it working!! Do the learning curve in the comfort of your own premises!!!!

Do you KNOW how to install PTZ equipment that is controlled by RS485 data signals?

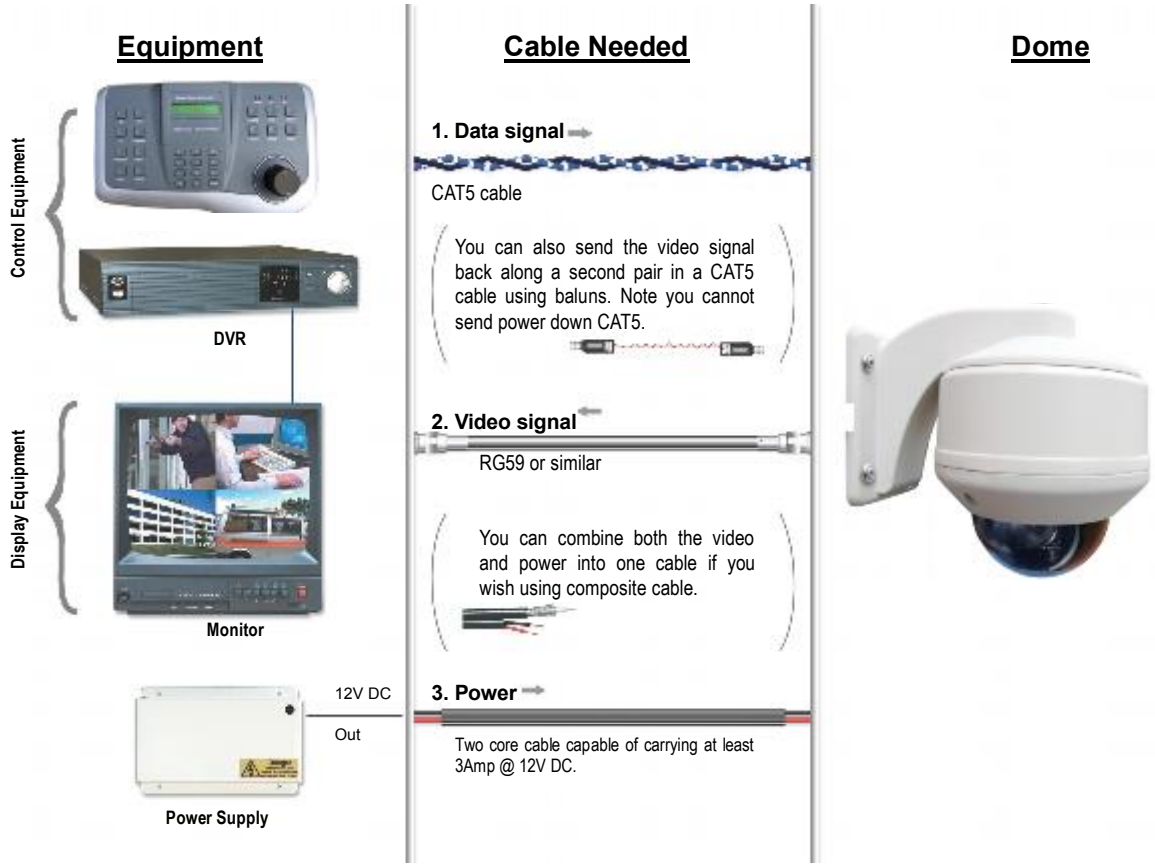
If not please read the following introduction to PTZ >>>….

Overview- introduction to fitting PTZ equipment

Generally speaking, PTZ Domes requires four things;

1- They require a power supply and a cable to supply this power to the dome. Often, external domes are 24V A.C but this pan and tilt dome is 12V.
2- They require a cable to get the video signal back to the monitor or recording device.
3- They require a cable to transmit the "RS485 control signal" from the keypad or DVR to tell the dome to pan, tilt and zoom etc.
4- They require something to control them, either a keypad or a DVR.

The following diagram indicates the basic cable requirements for a PTZ system.

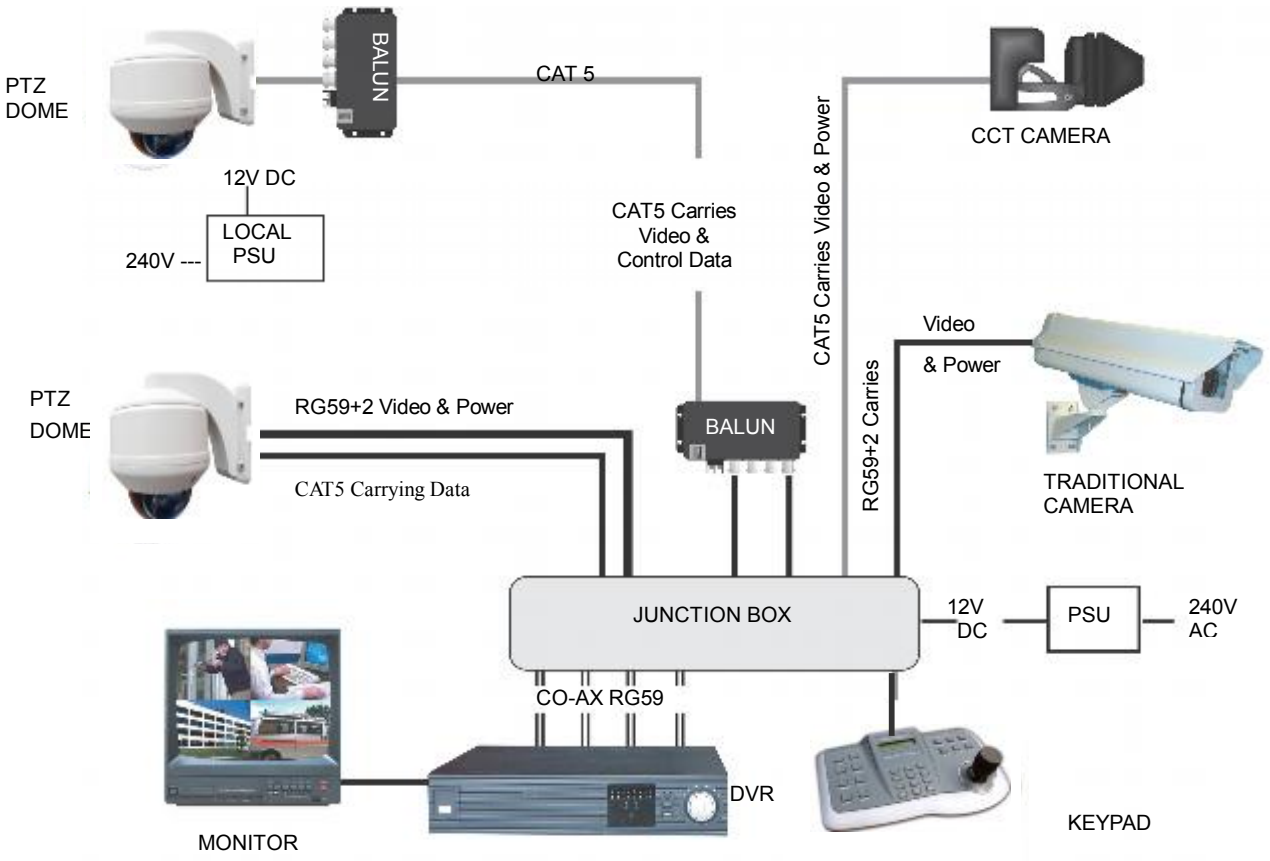


You can get "composite" cables that will carry both the power and the video signals and this has the benefit of combining two of the three cables into one. You may choose to power the dome locally to it, so you may only need to get the video signal back from the dome and the RS485 control signals to it. If this is the case you may choose to use a pair of BALUNS. By using baluns you can send the video signal and control signal down the same CAT5 cable just using different cores for each signal.

The control signal (RS485) is nearly always sent along a "twisted-pair" type cable. The twists in the cable help prevent interference affecting the data signal by "shielding" it. Many installation companies use a CAT5 type or similar cable to run out to the domes to carry the data signal.

If you are considering using baluns please note - DVR's tend to require very good video signals to function correctly and "passive baluns" can loose some signal strength over the 50 metre mark so try to restrict the use of passive baluns to below 50 metre cable runs when using them with DVRs. Above this distance perhaps consider an active balun. Active baluns require power, passive baluns do not.

You can mix and match how you wire up your PTZ installation and the following general diagram gives you a guideline about how to do it. Remember this is a GUIDE and is not an instruction what to fit!



Many installation companies can get the power and video signal correct, but struggle with the control of the dome using the keypad or DVR using the RS485 data.

The key to successfully installing the data cabling to the dome is to get the basics right. Use a quality data cable such as CAT5 (never use just a standard untwisted cable such as alarm cable for the RS485 signal).

Also, you must follow the RS485 wiring convention; the following section explains this;

RS485 Wiring methods & Tips >>>>>

1. Characteristics of RS485

As specified by RS485 standards, RS485 is a half-duplex data transmission type with characteristic impedance of 120Ω . The maximum load capacity is 32 units (domes, keyboards and DVRs).

2. Transmission distances of RS485 Signals using CAT5 or similar cables

Selecting a CAT5 or similar sized twisted pair data transmission cable, the maximum theoretical transmitting distances are as follows:

Baud Rate	**Maximum** Transmitting Distance
2400 Bps (PELCO-D)	1800m
4800 bps	1200m
9600 bps	800m

PLEASE NOTE - Using inferior cables, or installing the dome in an environment with strong electromagnetic interference, or connecting a lot of PTZ domes to the same cable carrying the RS485 signal will reduce the maximum transmitting distance.

3. RS485 Connection methods

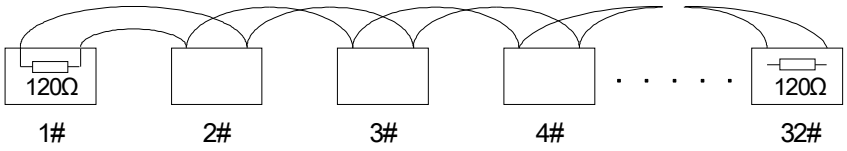
METHOD 1 – *DAISY CHAIN CONNECTION.*

The general RS485 standard recommends a "daisy chain" connection of equipment that is to be controlled. This means that the control cable is looped out of the one dome to the next dome and so on. The last dome in the line is then fitted with what is known as a "termination resistor". This has a value of 120Ω .

The resistor is located on the dipswitch for this PTZ dome and is activated by moving the appropriate dipswitch to on. The keyboard itself generally has a built-in 120Ω resistor. These termination resistors help make the signal more stable and give the system better reliability so the domes function as expected. A common mistake installer's make is not making sure the 120Ω resistor is switched ON in the LAST dome. Also installers often select the resistor to ON in another dome in the chain, these errors will make control of the dome unpredictable.

A simplified Daisy chain is shown below;

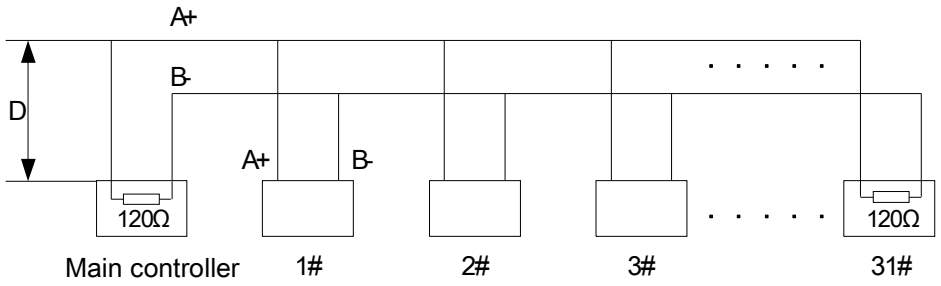
This first diagram shows the cables looping in one dome and out of another;



Standard Daisy-Chain connection for the RS485 PTZ control signal

(just the last dome only has the 120Ω resistor set to on, the first device is the keyboard and has the 120Ω built in as default)

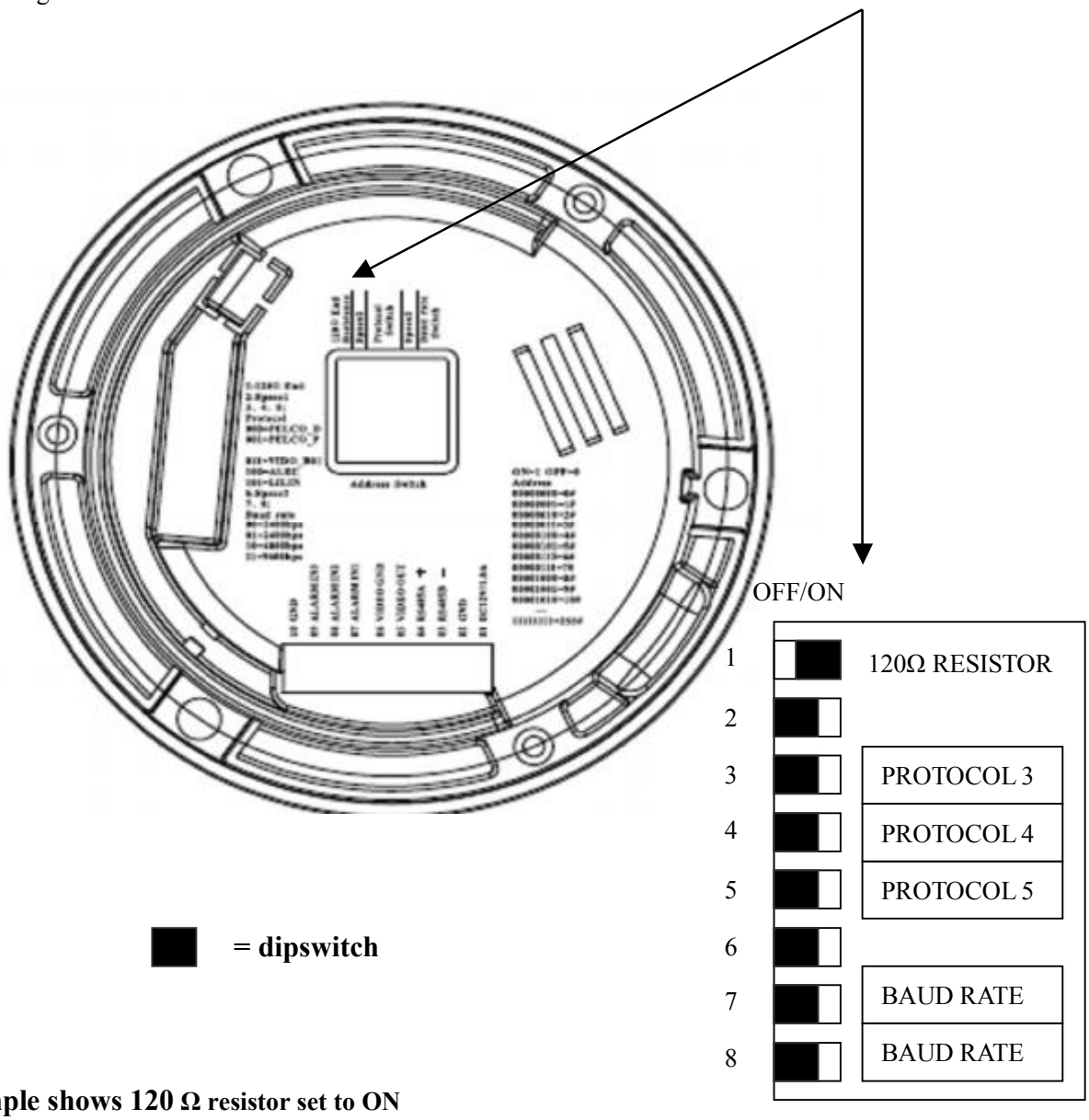
This next diagram is a slight variation on the Daisy Chain arrangement. Again it's one cable going out to all the domes but instead of the cable going into each dome then back out to the next one, a junction box is used to "Spur-Off" to each dome. Whilst this can be done THE SPUR LENGTH (D) must be NO MORE THAN 10 metres!!!!!!!!!!! The overall cable length between the Controller and the last dome is limited to around 300 meters in such an arrangement.



Daisy-Chain connection WITH SHORT SPURS for the RS485 PTZ control signal

(one main radial with very short spurs to each dome off it, keeping the spurs to less than 10 metres)

TIP - The connection of a 120Ω termination resistor: The termination resistor is located as a dipswitch setting and is switched to on to include the termination resistor or off to exclude it.



Example shows 120 Ω resistor set to ON

STAR method of connection.

In some circumstances you may need to adopt a star configuration for practical purposes. For instance, all the domes may be so scattered on a large site that running out separate spurs to each dome in a "STAR" array is the only practical solution.

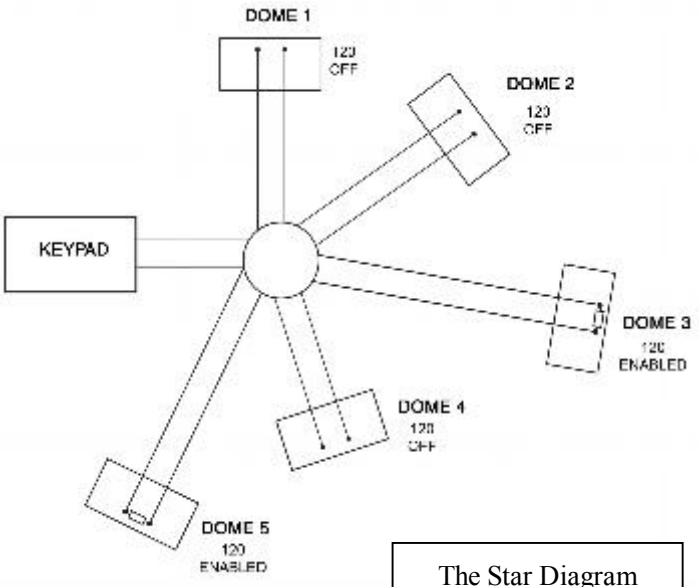
So how do you do this in practice?

The termination resistors must be connected to the two domes that are farthest away from each other, such as domes 3 and 5 in the following "Star diagram". Note that all the other domes do not have the 120ohm resistor connected. The resistors are already fitted to the domes PCB but by default are not in circuit. To put them in circuit you must move the small "jumper" as previously indicated.

As the star configuration is not in conformity with the requirements of RS485 standards, problems such as signal reflections may arise, especially when there are long cable connections. The results are that control signals are decreased and the dome may not respond to, or just responds intermittently to the controller.

If your STAR circuit is not too extensive with each spur in the region of 20-50 metres you can expect quite good reliable performance using this technique. If you experience any problems though, there is a RS485 distribution box available CODE PT750 to help overcome any problems.

The Star circuit for wiring PTZ's.
The two furthest domes need the 120Ω resistors enabling, by moving the dipswitch.
In this example it's domes 3 &5.



The Star Diagram

Overcoming RS485 data loss using an RS485 distributor

In the real world not everything always works exactly as it's expected to!

RS485 data signals that control the domes' movements are tiny signals that can get corrupted for many reasons. Poor cable quality, not using a PAIR of cores from a CAT5 but using one core from TWO separate

pairs, running the CAT5 cable near mains equipment such as florescent lighting all will have a detrimental effect on the signal. These are things that you can correct with good installation practices.
Where you wish to run several separate CAT5 cables out to send the RS485 data signal out to the domes you are in effect correcting the STAR method of RS485 data distribution. As previously mentioned the problem with the Star method is that it is not actually designed for RS485 but generally works okay if you follow the previous notes on getting the 120Ω resistor setting right.

One way that takes the guesswork out of installing the Star method is to utilise an RS485 distributor. This has the advantage that the RS485 signal is correctly distributed to the domes so that they behave as expected. You can create up to 4 spurs to the domes and put up to 4 domes on each spur. Just like the Daisy chain method the end dome on each spur needs to have the 120Ω resistor enabled.

Although the RS485 distributor is a small additional expense, it takes some of the guess work out of the installation design and gives a more flexible approach to cabling which itself can save time and money on the installation. Not forgetting you get more predictable results!

The RS485 distributor (PTZ750) amplifies the RS485 control signal and distributes it evenly to 4 separate spurs, each spur can have up to 4 domes. This means that you could theoretically have up to 4 individual spurs of over 1000mtrs each to control up to 16 PTZ domes in total.

Ideally you would put just one dome on each spur from the PTZ750 but up to 4 domes is generally acceptable. The following diagram shows a typical use of the PTZ750 RS485 distributor.

In the following example and diagram, domes 1,4,5 and 7 are at the end of each spur and therefore require the 120Ω resistor enabling by moving the jumper setting within the domes. Domes 2,3 and 6 are all “midway” in each spur and do not need the 120Ω resistor and can be left as default. The PTZ750 itself has four 120Ω resistors built in as shown and you do not have to do anything with the PTZ750 as the resistors are permanently connected within it.

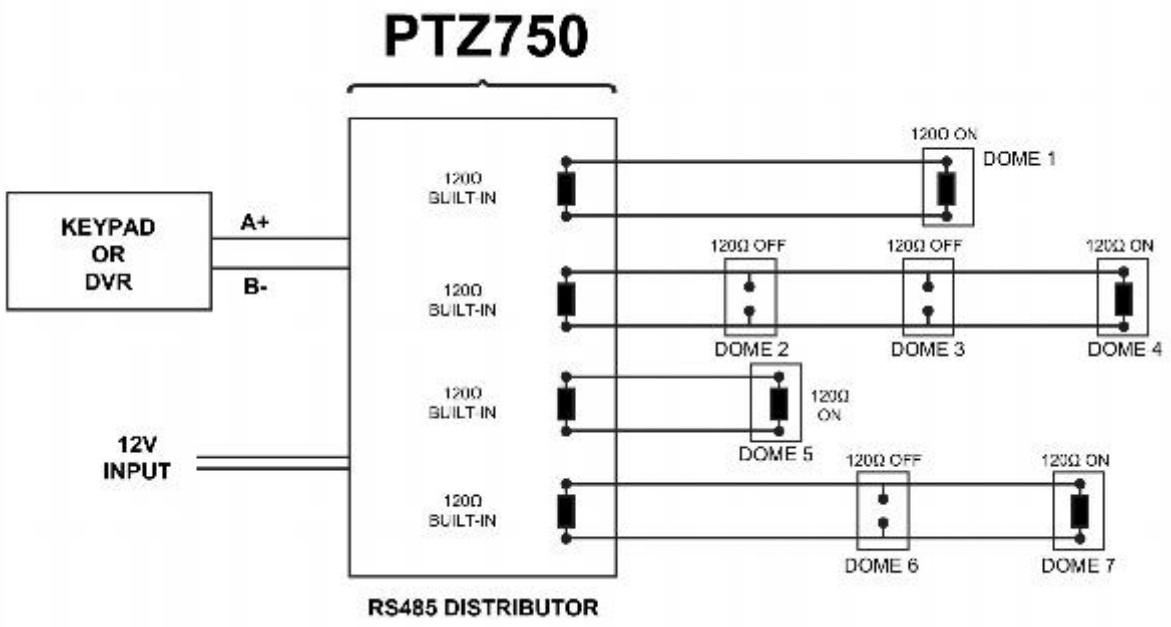


Diagram showing how to use an RS485 distributor to improve PTZ control reliability

Please note if you have the PTZ750 located within 5mtrs of the keypad or DVR you can connect up to 3 of them in parallel.

Setting up the Dome Camera

1. Connection of the System

There are many ways to wire up a PTZ system.

If you have read the introduction at the beginning of these instructions you should have got a good idea what your options are.

Below is a general schematic diagram showing you some of these options.

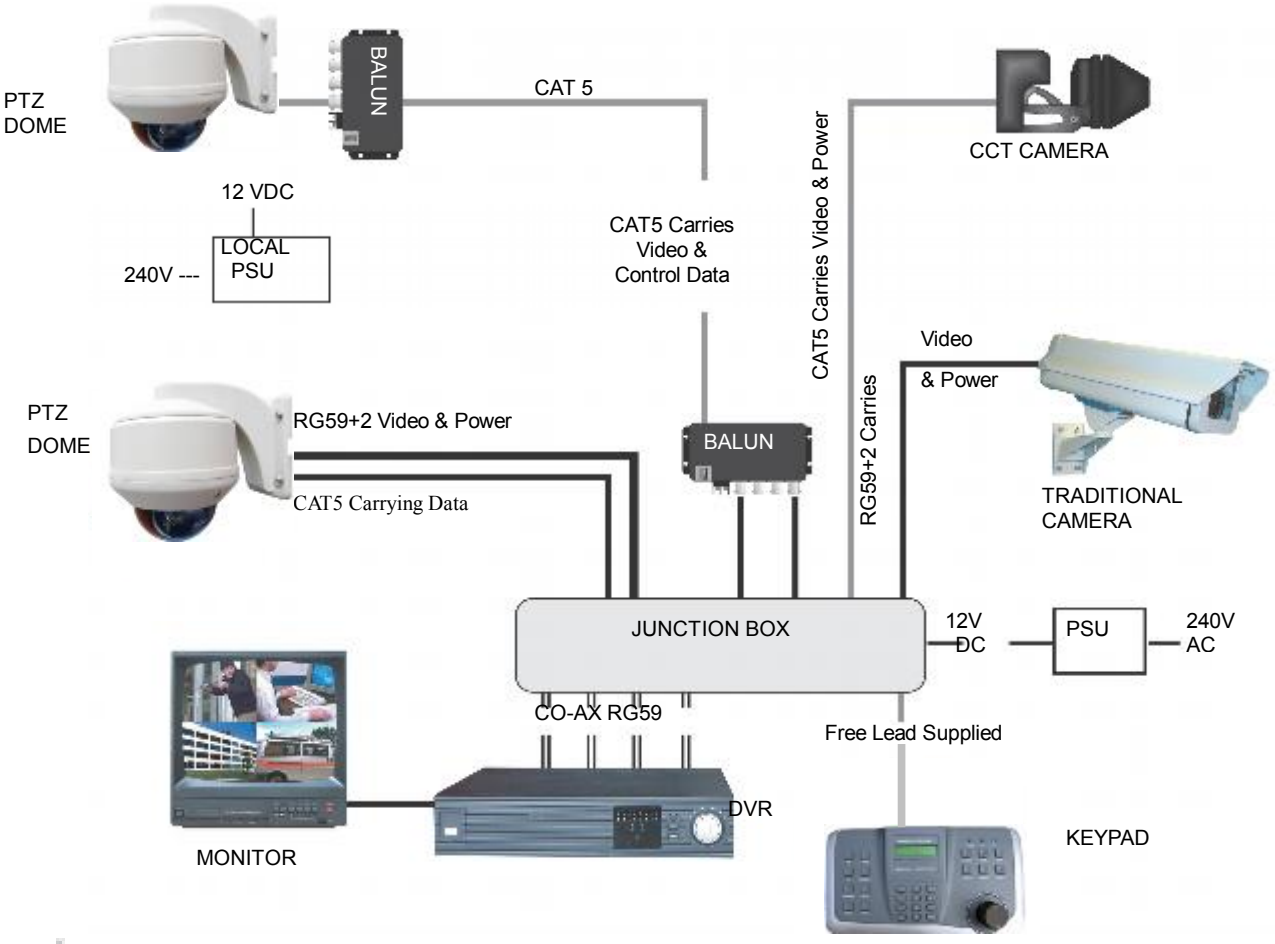


Figure 1.

Powering the domes-

All the domes will need power. For this dome it is a 12V D.C power supply. The power supply must be capable of delivering at least 1.5A per dome. Recommend using a POW900.

You can either power each dome with its own PSU locally to it or have the PSU's remotely situated perhaps near the keyboard or DVR.

A popular way to power the domes is using our COMPOSITE VIDEO cable (or shotgun as its also known) as this cable can carry the power to the dome and the video signal back to the monitor or DVR.

The power connection

The 2.1 Power Jack coming out of the dome is used for the power connection. Connect a suitable 12V DC regulated power supply minimum 1.5A.

The BNC connector is the "VIDEO-OUT" from the camera and goes to the monitor or "VIDEO-IN" of a DVR camera input.

The Brown and Black pair of cores that go in to the white terminal block are the data cables. These are the cores that carry the RS485 control signal to the dome from either the keyboard or the DVR. The next section of the instructions gives more detail on how to connect the RS485 data. Please also read the RS485 WIRING METHODS & TIPS section towards the beginning of these instructions.

Power cable requirement – Assuming a starting voltage of 12V DC is applied at the PSU end you should be able to run 40 metres if using the standard. Composite cable. The distances are relatively short due to the high load of the dome when it starts up. If the voltage of the dome drops below around 10V D.C it will fail to initialise. Obviously you can power the domes locally if you wish.

RS485 connection - *Connecting the Keypad or DVR to the Dome.*

The dome is controlled by an RS485 data signal that is given by either a KEYPAD or a suitable DVR. This data signal tells the dome to pan, tilt, zoom etc. Its important that you read the early section of these instructions to understand the fundamental principle of RS485 cabling techniques so that you get it right.

RS485 has two cores, A and B or sometimes known as RS485 + (A) and RS485 – (B) if you get these two the wrong away 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 IDENTICALY so that if you have to swap the A & B lines over at the keyboard you know all domes are wired the same!!

The PTZ250 adopts the following RS485 convention:

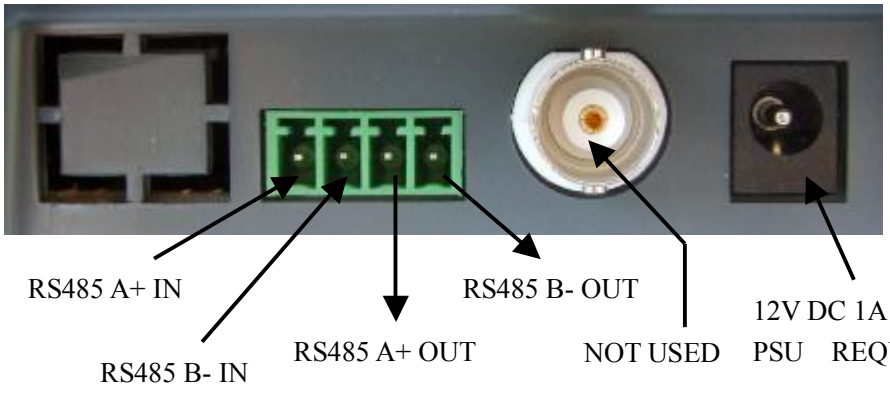
BROWN OR RED	=	RS485	or A+
BLACK	=	RS485	or B–

You should initially be wiring the dome to the keyboard or DVR on your workshop bench or at least your kitchen table to prove you know how to get everything to work. Once you have done this, it is just a job of extending the cables and physically installing the domes on site. You must obviously take note of the RS485 wring techniques mentioned at the beginning of these instructions and get the 120Ω resistors correct in the "End of line" domes. Generally speaking you will always be extending the RS485 signal from either the keypad or the dome using a CAT5 or similar cable.

The PTZ710 keypad can be used with the PTZ250. On the rear of the keypad you will see the RS485 connections. Ensure they are connected correctly i.e the RS485 + A line and the RS485 – B line. Note that the keypad needs to be set to the same protocol as the PTZ dome. Refer to the relevant keypad instruction manual on the keypad settings.

Rear of PTZ710

PTZ710 keypad



Note that there are two RS485 connections IN and two connections OUT. **Connect the OUT connections to the Dome RS485 cables.** 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!!

Connecting the video out of the dome.

The dome has a short BNC lead attached to it, this is the lead that carries the video signal from the built-in camera. You need to extend this lead to the "VIDEO-IN" of the DVR or monitor. Use a good quality RG59 coax cable or similar to do this.

TIP – If you can't get a picture at the remote end you could always take your test monitor to your PTZ dome and check the picture quality on its own short BNC lead.

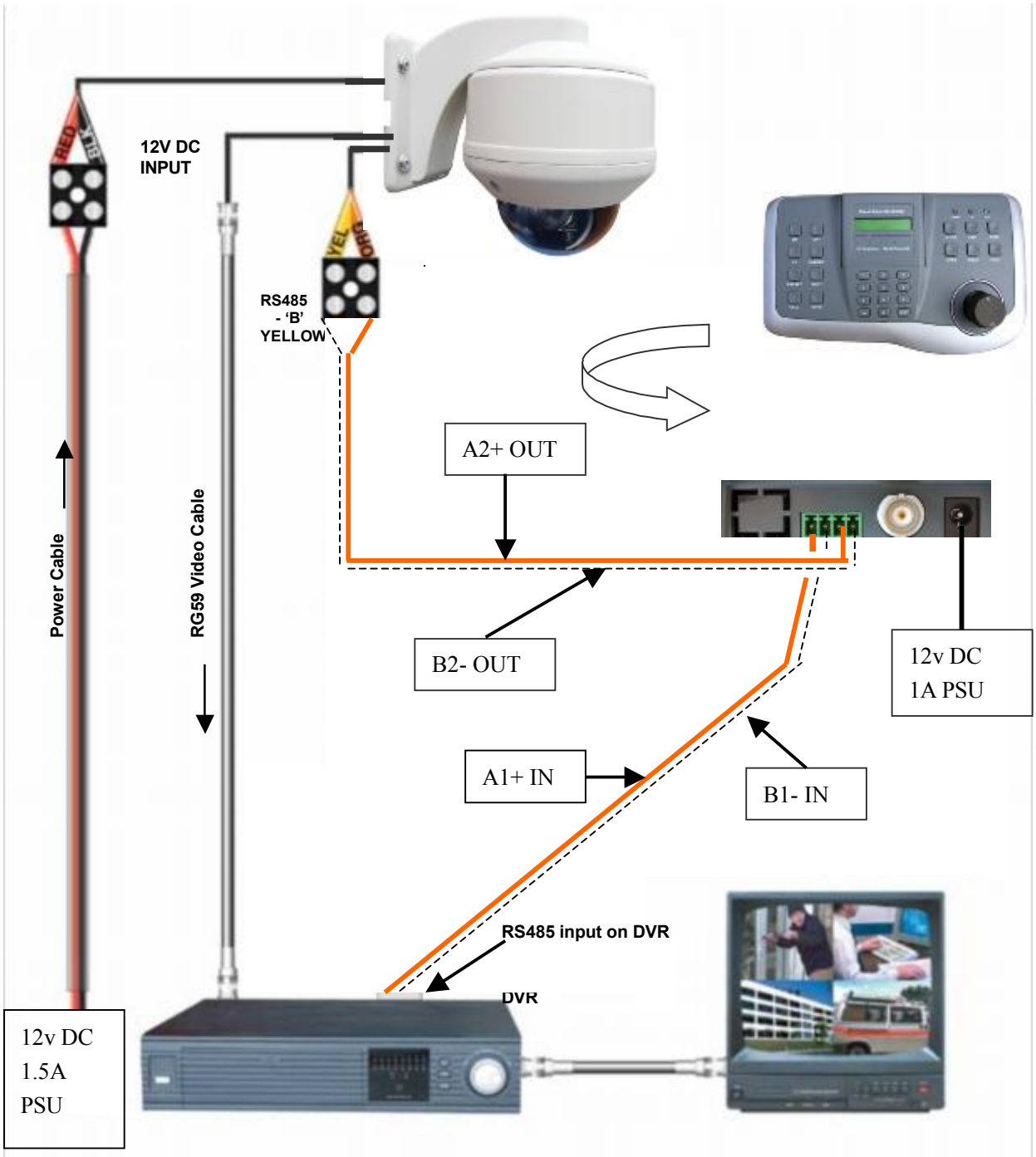
If you're testing the equipment on a workbench you now have a one dome system.

For setting up the keyboard and testing the dome please read sections on default Dome settings and using the keyboard.

You can use a keyboard or a suitable DVR to control the dome. A suitable DVR would be one with PTZ functionality built into it and preferably Pelco-D protocol. In the DVR, with Pelco-D set, you must also make sure you set up the "baud-rate" to 2400.

A typical site installation would look like the following diagram on the next page.

It shows the dome connected to the keypad plus how the dome could also be connected to a DVR instead of the keypad. DVR's that have the capabilities of PTZ control will have a terminal or connection on them somewhere, where the dome's RS485- A and RS485- B line can connect to. Please refer to the individual DVR instructions of how to do this.



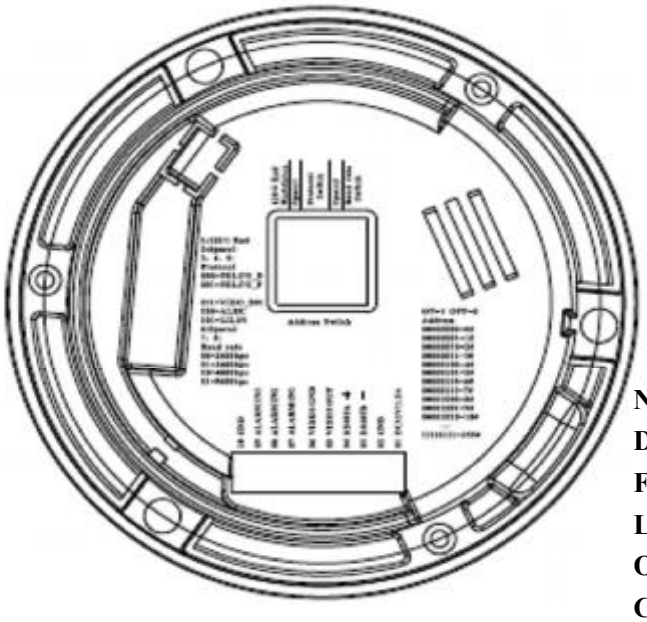
If only using a keypad for control then connect keypad to PTZ using A2+ and B2- OUT.

If you're using more than one dome on a site

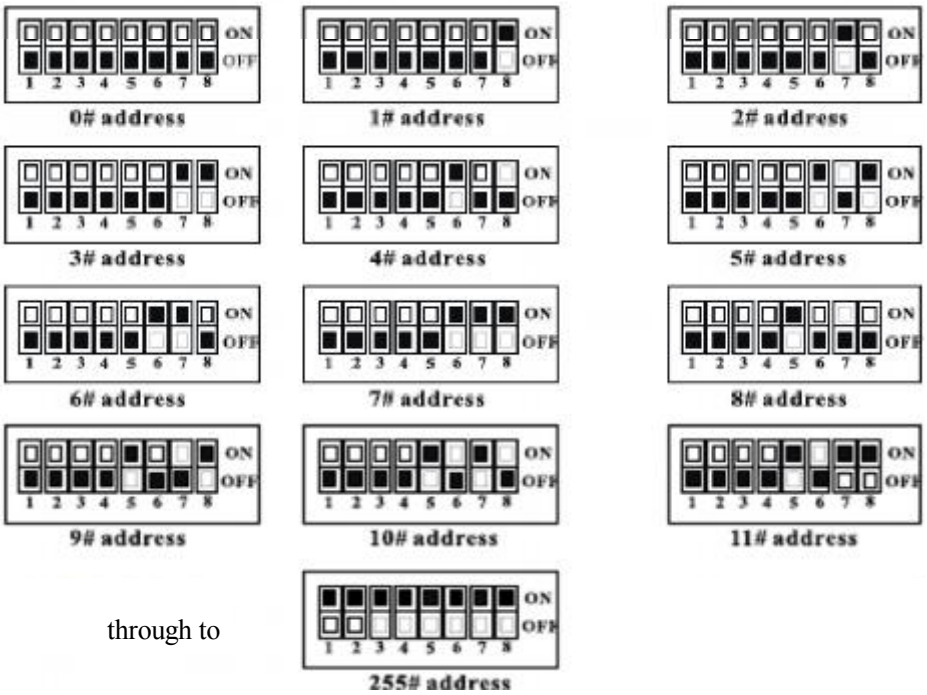
Each dome has a unique "address" so that if you are using more than one on a site the keyboard "talks" to the right dome when you want it to PTZ. If you only have the one dome on the site then set the dipswitch address to "1". With multiple dome sites you need to set up each dome address separately.
The following diagram shows the dipswitch options. For most System Q equipment they should always be set to PELCO-D 2400 baud rate.

Setting up a unique ADDRESS in a dome –

This PTZ uses an address set by dipswitches from 1 – 255.



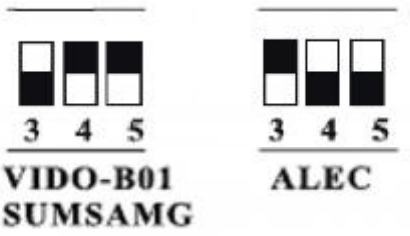
NOTE THAT DIPSWITCHES WORK FROM RIGHT TO LEFT AND ARE OPPOSITE TO CONVENTIONAL PRACTISE.



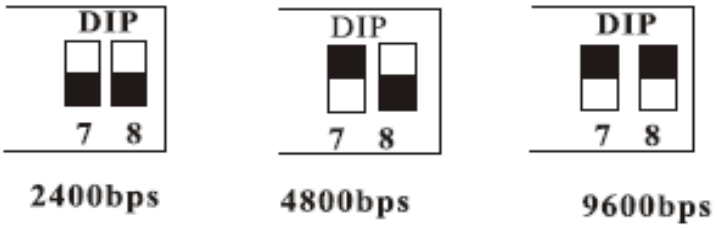
2. **Setup of the Protocol and the Default Baud Rate.**

The protocols and the states of the coding switches of normal baud rates of these protocols are shown as follows:

Protocol setting



Baud I



Controlling this PTZ with a third party keypad using PELCO-D

It is important to note that this PTZ dome can be controlled by a range of third party keypads or by a DVR with PTZ functionality. Invariably the keypad/DVR manufacturer will provide a number of command facilities and these may be entered by different methods. **It is therefore necessary to use the keypad/DVR instruction manual for reference on how to send the commands to the dome. Note that if do not use the PTZ710 keyboard that is made to work with this product, you may find that some facilities will not be operational.**

When entering commands, the keypad device must detect a delimiter to know when to send the command line. Some keypads will use the command as the delimiter for example **01** [**PRESET**] and others may use [**PRESET**] **01** [**ENTER**] with the ENTER button being the delimiter.

Whilst this PTZ dome has the ability to communicate in a number of protocols at various baud rates, it is recommended that the PELCO-D protocol is used at a baud rate of 2400 bps. These standard settings are widely used in CCTV and provide a wide scope of compatibility with third party equipment.

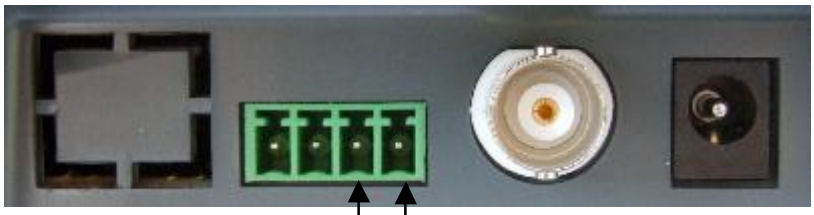
Using the PTZ710 keypad

PTZ710 keypad

NOTE 1: For more detailed instructions in setting up the keypad or using one of our other keypads, please refer to the instruction manual supplied with the product.

NOTE 2: The PTZ710 keypad requires you to press the function key first followed by the value e.g **<CAM> 01 <Enter>** whereas some keypads e.g PTZ700 require the value first, then the function e.g **01 <CAM>**

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**



Rear of PTZ710 keypad A2+ B2-

First read through the keypad instruction manual supplied. Set the protocol and baud rate in the keypad. Note that all PTZ domes controlled by this keypad must have identical protocol and baud rate settings. The manual supplied with the keypad will show you what these settings should be. Next connect the RS485 connections from the dome/s ensuring that the A2+ and B2- lines are connected correctly. Now connect a camera and ensure it is powered up. Finally connect the power supply to the keypad it requires a 12V DC PSU (1A minimum). It is recommended to use a POW802 for this purpose. Now press the keypad ON button.
The keypad will display PELCOD 2400 Camera Id: <**001**> If the camera address is different, then use the correct address. See note 2 above. The LCD display will indicate the camera channel selected. If you have multiple domes you will need to change the address of each dome so they are different but PLEASE LEAVE THE DOMES ON PELCO-D 2400 BAUD RATE.

If you need to change the protocol or baud rate then select F1 button and press Enter. Using the TELE and WIDE buttons select the Protocol or Baud Rate change menu and press Enter. A note on reverse of this unit provides format.

PRESETS and other functions.

The dome has up to 160 presets that once programmed will stay in the domes non-volatile memory so they will be retained even after a power cut.

What is a preset? A preset is a particular area or object that the dome was looking at and has been stored into its memory so when the preset is "called-up" the dome will select the area again without the operator using the joystick to do this. Even the zoom at the time is stored into the preset. This means that you could for example store a PRESET of a car-park entrance. When the operator calls up this preset the camera automatically zooms in on this area. 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. The length of time the camera stays at one location and the speed of travel between each preset point can be set in the menu.

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 would store PRESET 01 and the camera would always go to this location when 01 is "CALLED".**

To test if the preset is stored correctly 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.

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 **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**
To start tour press CALL 53 ENTER or SHOT 1 ENTER

Deleting a preset

You may wish to delete a preset.

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

For example to delete preset 1; press **PRESET 001 OFF** Obviously if you wish to overwrite a preset with a new location, simply aim the camera at the new location and store the preset as normal, this will simply overwrite the old preset.

Note that the PTZ710 keyboard can also delete preset 000 by entering **PRESET 000 OFF**

360 Degree Operation

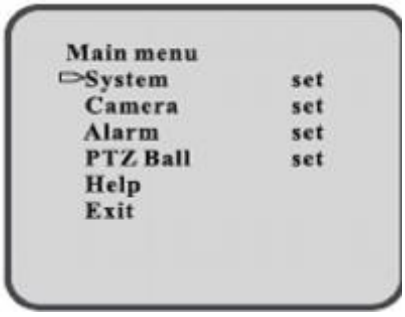
The PTZ250 can be set to run a 360 degree continuous scan. This can be set on the keyboard by entering **AUTO ON ENTER**

To disable the function via the keyboard enter the following **AUTO OFF ENTER**

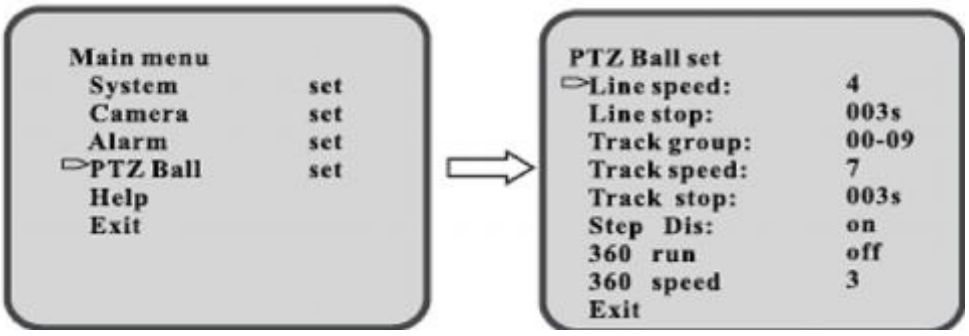
This option can also be set in the PTZ Ball menu and the speed can be adjusted. See menu settings.

Setting the Patrol (Tour)

To setup the patrol/tour you need to enter the Advanced Menu System by selecting **CALL 95 Enter** on the keypad. You will see the **Main Menu** displayed on the screen. The menu will close automatically after 200 seconds of non-operation.



Using the joystick up/down direction movement, select the **PTZ BALL** menu. Use the joystick TELE or WIDE buttons to enter this menu.



LINE SPEED Autoscan line speed.
Range 1 ~ 7 1 = slowest Default = 4
CALL 51 ENTER to activate Autoscan

LINE STOP Autoscan Dwell time – time waiting at start/finish position
Time range 0 ~ 255 seconds Default 3 seconds

TRACK GROUP Tour range of presets 00 ~ 79, Max 70~79, Default 00 ~ 09
Groups are:-
Group 1 = 00 ~ 09, Group 2 = 10 ~ 19, Group 3 = 20 ~ 29,
Group 4 = 30 ~ 39, Group 5 = 40 ~ 49, Group 6 = 50 ~ 59,
Group 7 = 60 ~ 69, Group 8 = 70 ~ 79.
NOTE: Group numbers determine Tour number selection.

TRACK SPEED Tour Speed
Range 1 ~ 7 1 = slowest Default = 7
CALL 53 ENTER to activate Tour

TRACK STOP Tour Dwell time – time waiting at each preset
Time range 0 ~ 255 seconds Default 3 seconds

Restart Time OFF / 10 / 20 / 30 / 40 / 50 / 60 secs Will restart a tour automatically after n secs.

STEP DIS ON / OFF If set to ON the X – Y co-ordinates are displayed

360 RUN OFF / ON If set ON unit will do a constant 360 degree scan

360 SPEED 360 scan speed Range 1 ~ 7 1 = slowest Default = 3

EXIT Return from menu

Calling the Patrol (Tour)

There are two methods of initiating the patrol or tour. If you enter **CALL 53 Enter** via the keypad you can initiate patrol/tour sequence 1 only. This runs a tour of presets in range 0 ~ 9

You may also initiate a patrol or tour via a Group number. See the list below:

0	~	9	Group 1
10	~	19	Group 2
20	~	29	Group 3
30	~	39	Group 4
40	~	49	Group 5
50	~	59	Group 6
60	~	69	Group 7
70	~	79	Group 8

To run a tour of presets in any of the above ranges enter **SHOT <N> ENTER (N = Group No.)**

TIP - To stop the Tour just move the joystick slightly.

Note that there are different methods for setting tours with third party keypads. Please refer to the keypad instructions.

AUTO SCAN- How to set it up

Auto-scan scans between two points. These are not presets as per the track(tour) facility but auto scan selection points. You may program only one auto scan.

STEP 1 – Select the required camera by pressing **CAMERA** button followed by <camera address> and Enter on the keypad.

Position the camera where you wish to start scanning from. To setup the Auto Scan you need to enter **PRESET 51 ENTER** on the keypad.

STEP 2 – Now move the camera where you wish to end the scanning point.
Now select **PRESET 52 ENTER** on the keypad.

Calling the Auto Scan

First you must set the start and end positions of the auto scan as above. This runs the auto scan function between these two points. If you enter **CALL 51 Enter** via the keypad you can initiate the auto scan. Note that the Autoscan will run at the speed set in the PTZ BALL menu.

THE MENU SYSTEM

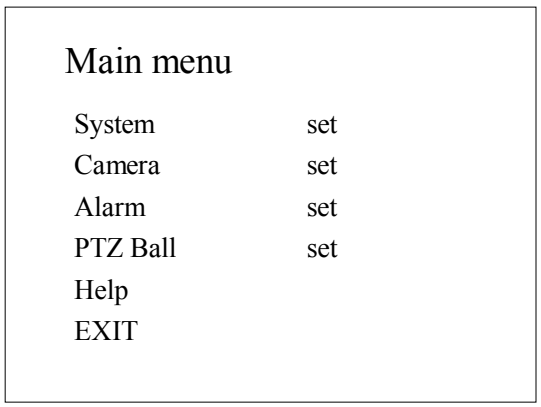
Using the Menu System.

This menu system allows the user to alter the dome menu instruction options and settings using a control keypad. This first page shows the initial main menu page and only describes the general functions. The following pages show the main menu option selected on the left hand side of the page and a breakdown of that menu page on the right hand side of the page.

MAIN MENU

To enter the main menu system press **CALL 95 ENTER** on the Keypad.

Use the Joystick control pan up or pan down to move to menu option. The Tele/Wide buttons are used to enter the menu option. Move joystick UP or DOWN to change the value.
When changing characters move joystick left or right to move cursor one character at a time and altering it.
To leave the main menu press EXIT in Main Menu. The menu will automatically close after 200 seconds of non-operation.



DESCRIPTION OF MENU OPTIONS

SYSTEM SET: To set dome camera title - display title on screen – default PTZ – ID address - Baud Rate - Protocol – Video format (Note: ID, Baud Rate & Protocol display only)

CAMERA SET: To Camera Title – White Balance – BLC – Motion – Focus – Exposure – Special – Reset User Preset – Privacy – Day/Night – Sync – COMM addition – Image addition

ALARM: To set three alarm channels – set to normally closed – normally open – not installed

PTZ BALL: To set Autoscan speed – Autoscan dwell time – Tour group – Tour speed – Tour Dwell time – step display – 360 degree run – 360 degree speed

HELP: Displays help screen

EXIT: To exit menu.

SYSTEM SET

Main menu

→ **System**	**set**
Camera	set
Alarm	set
PTZ Ball	set
Help	
EXIT	

System set

Title	: CAMERA-1
Title Dis	: on
Default	: off
Restart	: off
Address	: 001
Baud Rate	: 2400bps
Protocol	: PELCO-D
Format	: PAL
Exit	

SYSTEM SET OPTIONS

TITLE:
Enter title (Capitals, numerics and punctuation)

TITLE DIS: ON / OFF
Set to on to display title at bottom of screen.

DEFAULT: OFF / ON
Camera factory default.

RESTART: OFF / ON
Restart camera.

ADDRESS: 001
This is the camera ID. This can be in a range from 0 ~ 255. When more than one PTZ is connected on the RS485 bus, the user must ensure that unique addresses are set via the dipswitches. Note that the address is not changed by this menu but by the PTZ dipswitch settings.

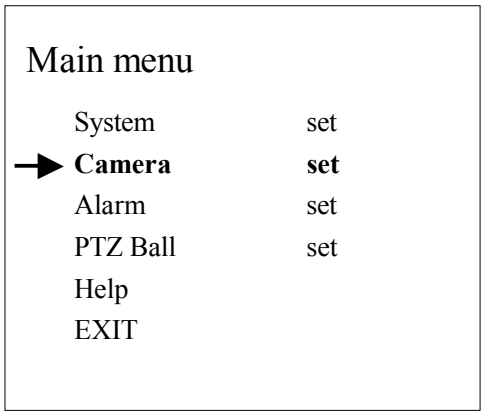
BAUD RATE: 2400bps
This is the baud rate of the PTZ. The following baud rates can be set : 2400, 4800 and 9600bps. Note that the baud rate is not changed by this menu but by the PTZ dipswitches.

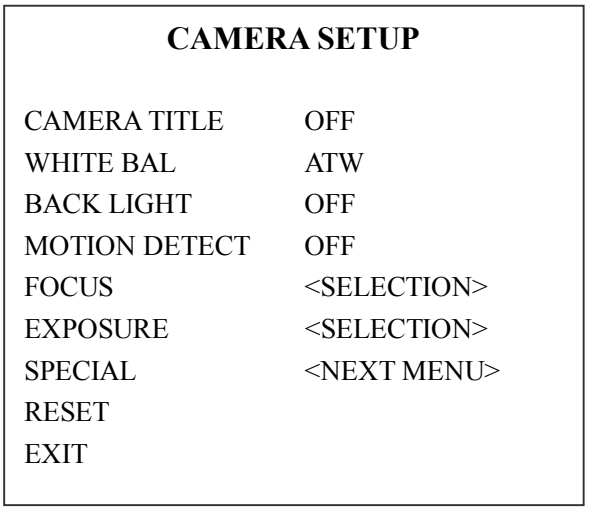
PROTOCOL: PELCO-D
The following protocols can be set: PELCO-D, PELCO-P, SAMSUNG, VIDO-B01, ALEC and LILIN.

FORMAT: PAL
Select from PAL or NTSC. The camera defaults to NTSC.

EXIT

CAMERA SETUP





CAMERA SET OPTIONS

CAMERA TITLE: **OFF / ON**
Set camera title string and OSD display position.

WHITE BAL: **ATW MODE**
There are two modes – OUT DOOR and IN DOOR

OUTDOOR
Colour temp. range 1,800 ~10,500°K

INDOOR
Colour temp. range 3000 ~10,500°K

AWC
AWC: ONE PUSH

MANUAL
Adjustment of RED and BLUE manually.

BACKLIGHT: **OFF / LOW / MIDDLE / HIGH**
Set the level of backlight compensation.

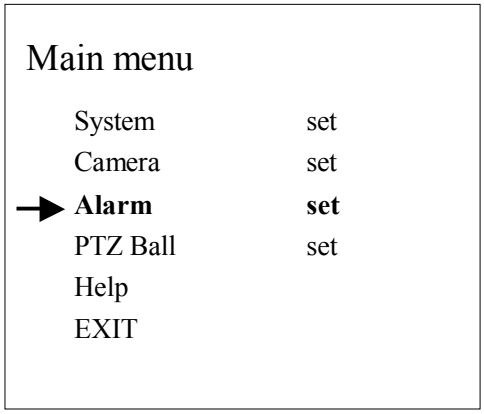
MOTION DETECTION OFF / ON
If set to ON mode can set 4 areas and the words MOTION DETECTION are displayed on screen.

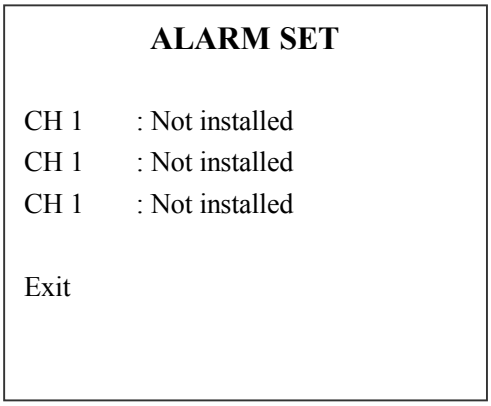
FOCUS

MODE	**AUTO / MANUAL / ONE PUSH**
ZOOM TRK	**ON / OFF**
	Set zoom in tour
ZOOM SPEED	**FAST / SLOW**
	Set zoom speed
D-ZOOM	**OFF / ON**
	Set digital zoom

	DISP ZOOM MAG	**OFF / ON** Display zoom magnification
	ZOOM POS INIT	**OFF / ON** Initialise zoom position
	LENS INIT	Execute lens initialization
EXPOSURE	**BRIGHTNESS**	The brightness level adjustment
	IRIS	**AUTO / MANUAL**
	SHUTTER	**--- / MANUAL / A.FLK /ESC**
	AGC	**OFF / NORMAL / HIGH**
	SSNR	**OFF / LOW / MIDDLE / HIGH**
	SENS-UP	**OFF / AUTO**
SPECIAL	**<ADDITIONAL MENU>**	**COMM ID = 0 or 1**
RESET	Resets settings to manufacturers defaults. Need to re-enter menu.	
EXIT	Saves settings then exits.	
USER PRESET	**OFF / ON**	Optional not used
PRIVACY	**OFF / ON**	If set to ON mode can set 4 areas
DAY/NIGHT	**COLOUR / B.W / AUTO1 / AUTO2** Select AUTO1 or AUTO2 according to light level. DSN filter is automatically switched.	
SYNC	**INT**	Internal
COMM Addition	**CAM ID**	Open Menu
	DIS CAM ID	Display camera ID set by manufacturer
	BAUD RATE	Baud Rate:2400
	UART MODE	E:8-N-1; RET PKT:ENABLE
	RET-PKT	**ENABLE / DISABLE**
IMAGE Addition	**FREEZE**	**OFF / ON**
	H-REV	**OFF / ON**
	V-REV	**OFF / ON**
	SHARPNESS	Adjust
	COLOUR	The colour level is adjustable 0 ~ 100

ALARM SETUP



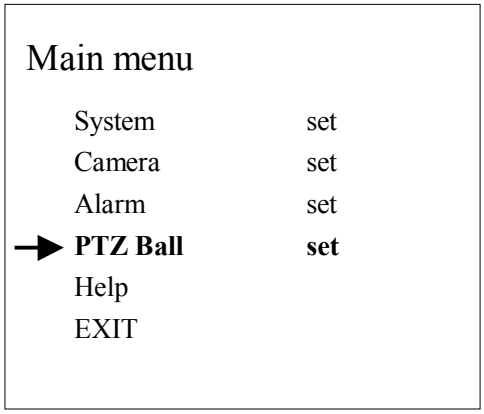


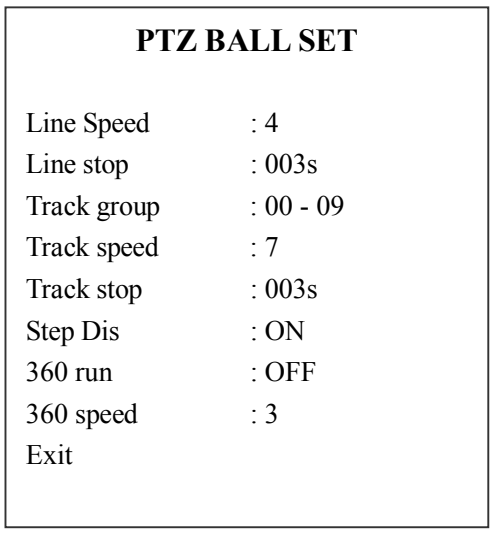
ALARM SET OPTIONS

ALARM N:	**NORMAL CLOSE**	Alarm when interface closed
	NORMAL OPEN	Alarm when interface open
	NOT INSTALLED	Alarm interface not set

Refer to procedure for setting an alarm on Page 37/38

PTZ BALL SETUP





PTZ BALL SET OPTIONS

LINE SPEED Autoscan line speed.
Range 1 ~ 7 1 = slowest Default = 4
CALL 51 ENTER to activate Autoscan

LINE STOP Autoscan Dwell time – time waiting at start/finish position
Time range 0 ~ 255 seconds Default 3 seconds

TRACK GROUP Tour range of presets 00 ~ 79, Max 70~79, Default 00 ~ 09
Groups are:-
Group 1 = 00 ~ 09, Group 2 = 10 ~ 19, Group 3 = 20 ~ 29,
Group 4 = 30 ~ 39, Group 5 = 40 ~ 49, Group 6 = 50 ~ 59,
Group 7 = 60 ~ 69, Group 8 = 70 ~ 79.
NOTE: Group numbers determine Tour number selection.

TRACK SPEED Tour Speed
Range 1 ~ 7 1 = slowest Default = 7
CALL 53 ENTER to activate Tour

TRACK STOP Tour Dwell time – time waiting at each preset
Time range 0 ~ 255 seconds Default 3 seconds

RESTART TIME OFF / 10 / 20 / 30 / 40 / 50 / 60secs. Allows automatic tour restart

STEP DIS ON / OFF If set to ON the X – Y co-ordinates are displayed

360 RUN OFF / ON If set ON unit will do a constant 360 degree scan

360 SPEED 360 scan speed Range 1 ~ 7 1 = slowest Default = 3

EXIT Return from menu

HELP MENU

Main menu

System	set
Camera	set
Alarm	set
PTZ Ball	set
→ **Help**	
EXIT	

KEYBOARD COMMANDS

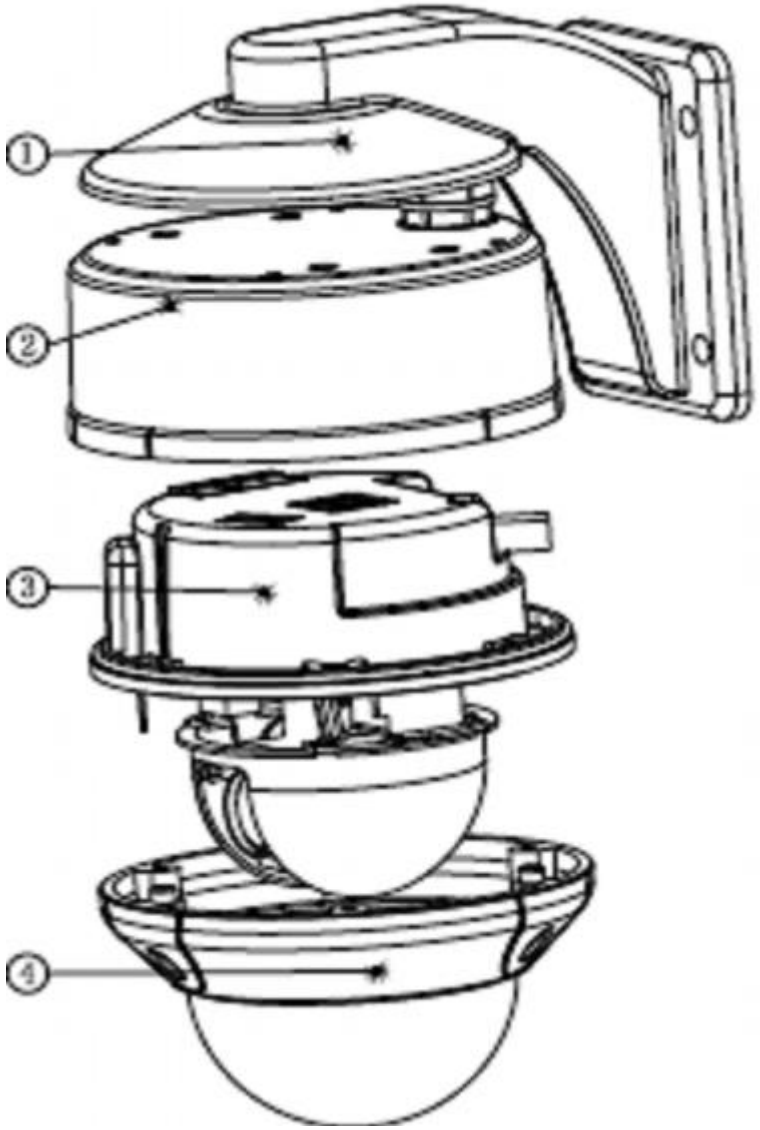
OPEN MENU	CALL 95 ENTER
CLEAR PRESET	PRE n OFF CLOSE
SET PRESET	PRESET n ENTER
CALL PRESET	CALL n ENTER
LINE SCAN (RUN AUTOSCAN)	CALL 51 ENTER
TRACK SCAN (RUN TOUR 1)	CALL 53 ENTER
TRACK n RUN (RUN TOUR No)	SHOT n ENTER
360 RUN	AUTO ON ENTER
HOME GOTO 0	CALL 99 ENTER
EXIT	

KEYBOARD COMMANDS

OPEN MENU	CALL 95 ENTER	Enter PTZ Menu
CLEAR PRESET	PRESET n OFF	Clear preset number
SET PRESET	PRESET n ENTER	Set a preset number
CALL PRESET	CALL n ENTER	Call a preset number
LINE SCAN	CALL 51 ENTER	Run an Autoscan
TRACK SCAN	CALL 53 ENTER	Run Tour number 1
TRACK n RUN	SHOT n ENTER	Run Tour number requested
360 RUN	AUTO ON/OFF ENTER	Run a continuous 360 degree scan
HOME GOTO 0	CALL 99 ENTER	
EXIT	Exit menu	

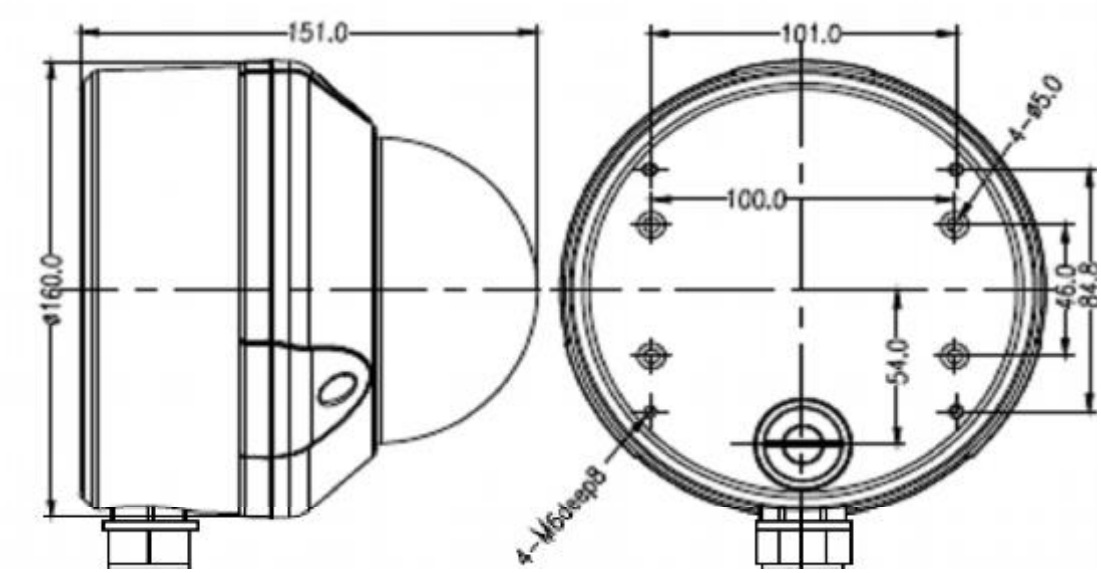
Installation Instructions

Main Components



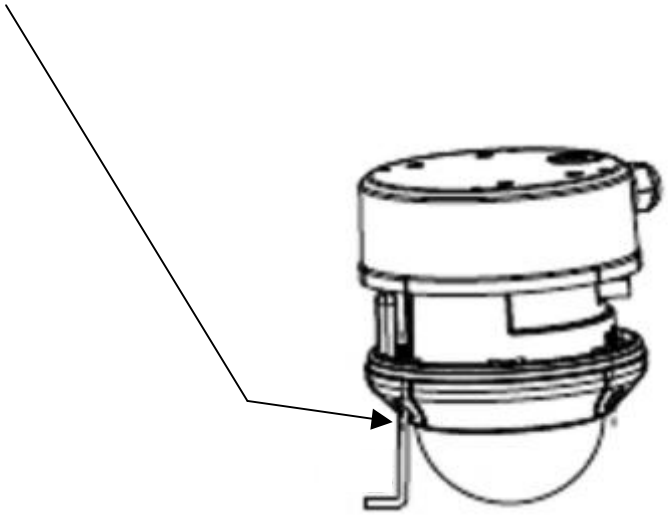
1. **Wall plate support fitting**
2. **Top Cover**
3. **Main PTZ Unit**
4. **Dome Cover**

Dimensions of Product in mm

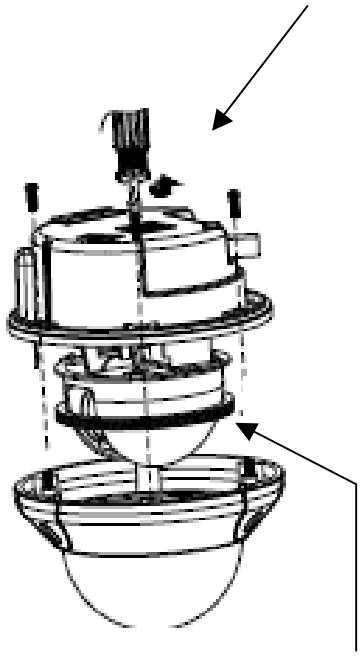


Removing Packing Gasket

a. Loosen the three dome cover screws and withdraw the main PTZ unit.

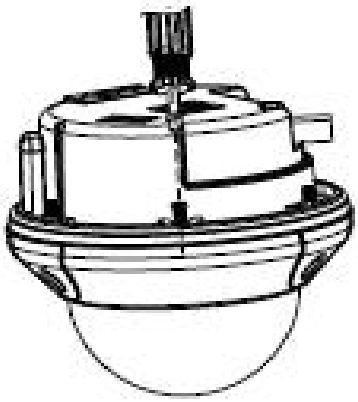


b. Now loosen the three screws in the top of the main PTZ unit.



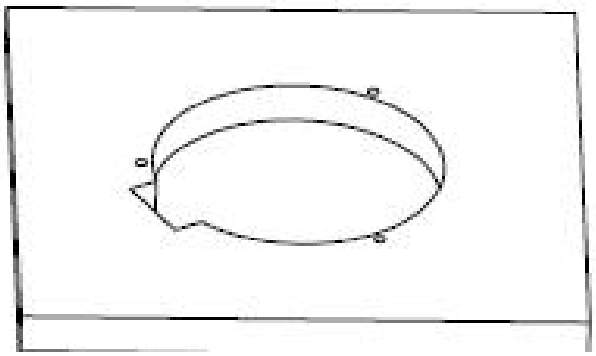
c. This will reveal the packing gasket which must be removed.

d. Now refit the screws to secure the main PTZ unit.

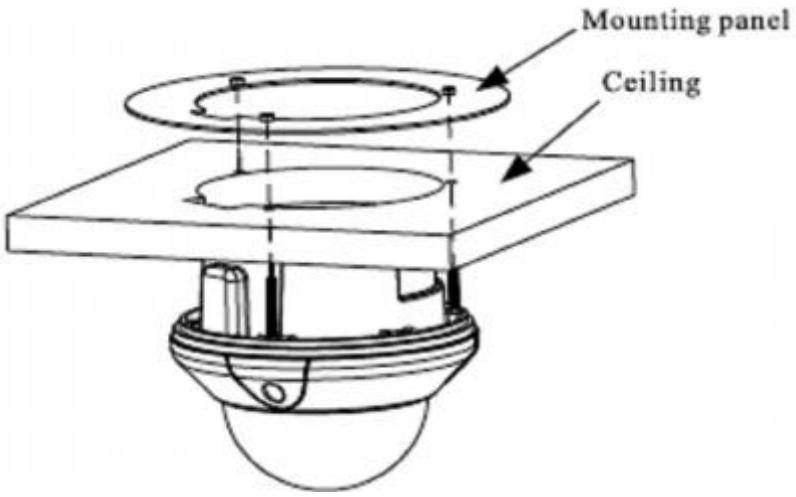


Installation in an indoor ceiling having access to void above ceiling

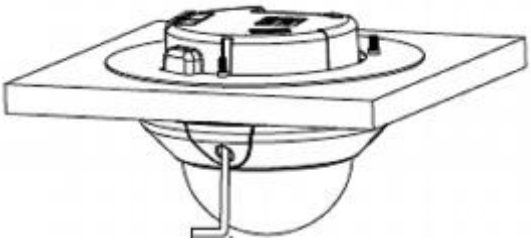
a. Cut a hole in the ceiling using the metal ceiling plate supplied and make three screw holes. Ensure there is sufficient space for the dome to rotate freely.



b. Remove Top Cover from dome and secure through ceiling using longer screws.

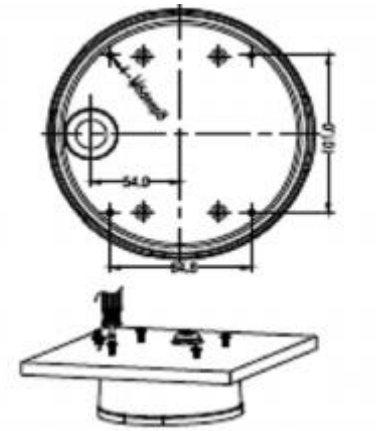


c. Secure on metal ceiling plate.

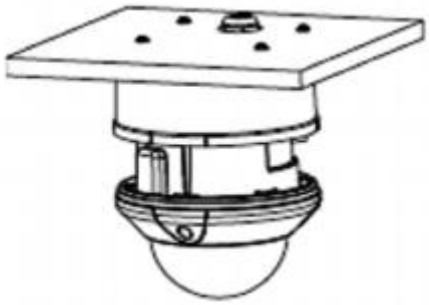


Installation on an indoor ceiling surface mount

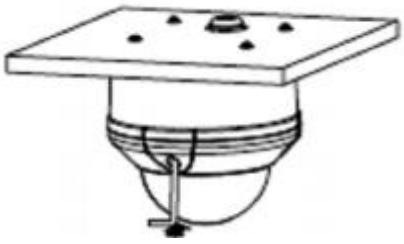
a. This method requires fitting the Top Cover to the ceiling. Use Top Cover as template. Ensure there is sufficient space for the dome to rotate freely.



b. Locate the main PTZ unit.

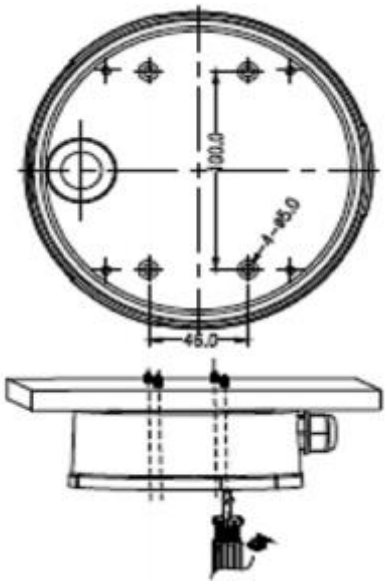


c. Lock the front cover screws.

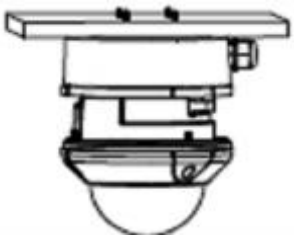


Installation on an indoor ceiling surface mount – Alternative Method

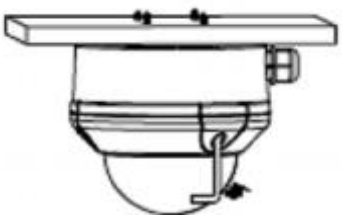
a. An alternative method of fixing the Top Cover to the ceiling can be accomplished by screwing into the ceiling. This however requires a wooden or concrete reinforcement above the ceiling.



b. Install main PTZ unit as per diagram below.

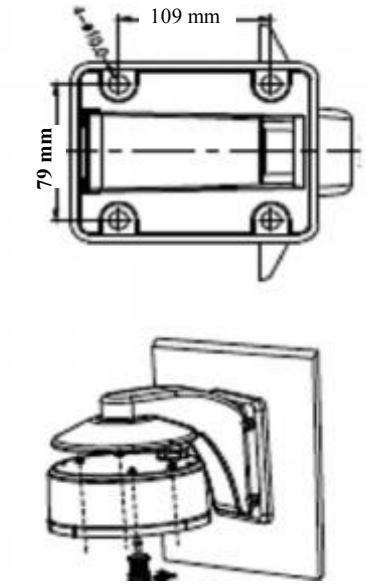


c. Lock the dome cover using the three cover screws.



Installation using Wall Bracket (Always use the wall bracket for outdoor fitting)

a. Fit wall plate as per diagram

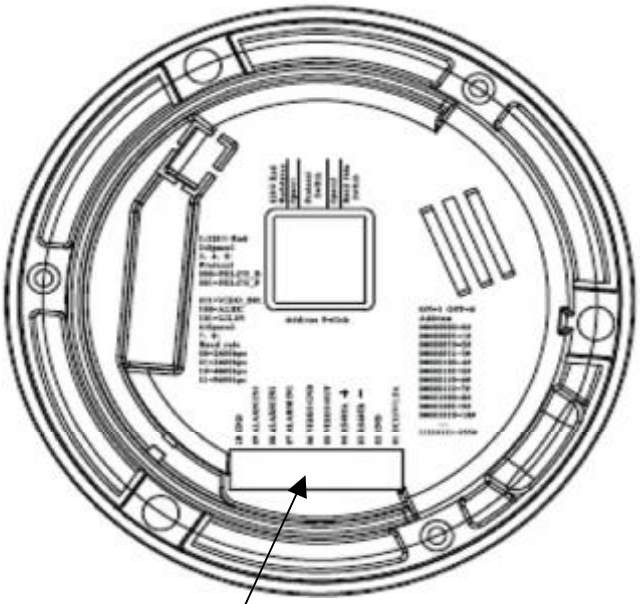


b. Fit the main PTZ unit.

c. Secure the front Dome cover.

3 channel alarm input activation

One of the special features of this dome is that it has three in-built alarm channels. This means that for example you may have a door contact and when the contact is closed, it sends a 0 volt alarm switch to the dome on one of the three alarm channels. The dome will then move to the alarm position. Once an alarm input channel has been activated, the Restart Time option returns to the tour after the set period 10, 20, 30, 40, 50 or 60 seconds.



10	GROUND
9	ALARM IN3
8	ALARM IN2
7	ALARM IN1
6	VIDEO GROUND
5	VIDEO OUT
4	RS485 +
3	RS485 –
2	GROUND
1	12V DC / 1.5A

Connecting the Input Alarm devices

Refer to the above terminal connector. You will need to decide how many alarm channels will be utilised. For each alarm channel you will need a pair of cable connections and it is recommended that a CAT5 twisted pair be utilised. Connect one core to the selected input alarm channel and the other to the (GROUND) connection. The ground is a common connection for all three alarm channels. At the alarm end connect to the alarm device. This must be a 0 volt switch and maybe, for example, a door switch. Check that the alarm device passes a voltage free switch as any other input signal may damage the dome. Each of the three alarm channels call a different dedicated position when the 0v switch is broken to the dome. This allows the dome to move immediately to the selected position in an alarm condition. Note that you do not set presets for this but set alarm positions.

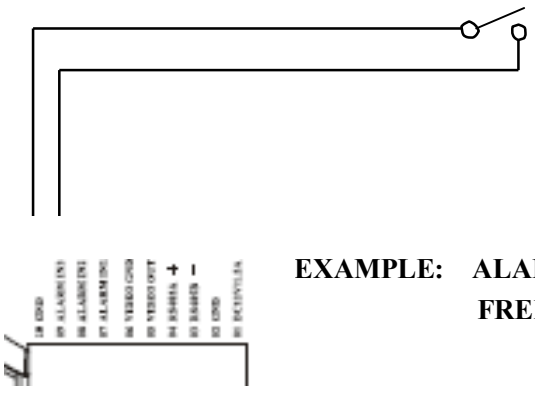
The following procedure must be followed:

1. Move PTZ to first alarm position.
2. Enter menu with CALL 95 ENTER
3. From Main Menu enter Alarm Menu
4. Select either Normal close or Normal open against CH 1.
5. Exit menu
6. Move PTZ to second alarm position
7. From Main Menu enter Alarm Menu
8. Select either Normal close or Normal open against CH 2.
9. Exit menu
10. Move PTZ to third alarm position
11. From Main Menu enter Alarm Menu
12. Select either Normal close or Normal open against CH 3.
13. Exit menu

It is not possible to set more than one alarm position at the same time when the menu is opened.

Example: Connecting Alarm channels to door contacts

Here is an example scenario. A company requires three entrance points to be monitored. The dome runs a tour covering the view of one side of the building. The PTZ is set with three alarm points. Each alarm channel is connected to a door contact. CAT5 twisted pair is connected at the dome end to the ALARM and GROUND connections on the terminal connector. At the door contact end the twisted pair is connected either way round. If a door contact is triggered the dome will move directly to the alarm position set. To set these alarm positions follow the steps 1 ~ 13 above. Then enter the PTZ menu with CALL 95 Enter and go into PTZ BALL. Set Restart Time to 10 ~ 60 seconds. When the alarm is triggered during tour the PTZ will move to the alarm position set and after the Restart Time period set, will return to the tour.



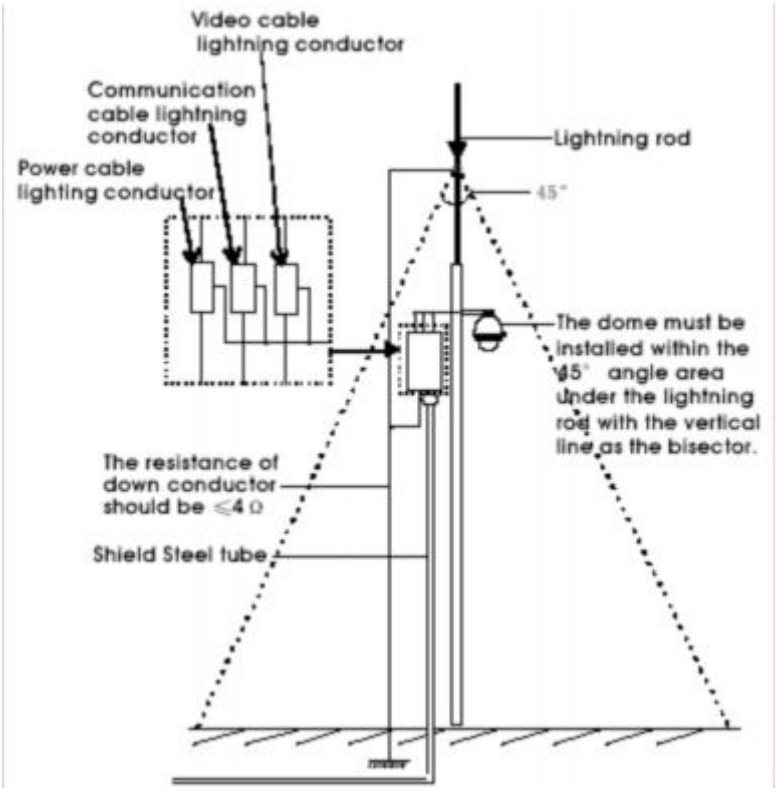
EXAMPLE: ALARM 1 CONNECTED TO VOLTAGE FREE DOOR CONTACT

Technical data for PTZ250

Dome Specifications

Manual Speed (Pan/Tilt)	**Min: 1.5° /s Max: 120° /s**
Auto speed (Pan/Tilt)	**Min: 1.5° /s Max: 240° /s**
Pan Range	**360°**
Tilt Range	**0 ~ 90°**
Preset Location	**160 presets**
Tilt Range	**8 cruises, 7 step speeds**
Line Scan Mode	**1 cruise, 7 step speeds**
360° run mode	**7 step speeds**
OSD system	**Setup parameter, setup Title, XY position, Auto Clear Screen**
Protocol	**PELCO-D*PELCO-P*ALEC*LILIN*VIDO-B01*SAMSUNG**
Baud Rate	**9600BPS 4800BPS 2400BPS**
Communications mode	**Rs485 bus max distance 1800m**
Power Supply	**12vDC / 1.5A**

Lightning Proof and surge signal proof



NOTE: This technology HELPS prevent the dome and camera from being damaged by lightning strikes but under no circumstances does it guarantee protection. Domes or cameras struck by lightning will not be covered by the warranty.

General Technical Specifications PTZ250

Size	¼” Interline Transfer CCD
Effective Pixels	759 (H) x 596 (V) 752 (H) x 582 (V)
Lens	10 x F3.8 ~ 38.0 mm (F1.8)
Optics	1000mm
Minimum Focus Distance	OFF / ON (1x ~ 10x)
Angle Field of View	H: 51.2°(Wide) to 5.58° (Tele) V: 39.3°(Wide) to 4.27°
Scanning System	2:1 Interlace
Sync. system	Internal
Frequency	H: 15.625KHz / V: 50Hz
Resolution	500TVL(Min) Colour 570TVL(Min) B/W
Minimum Illumination	0.7Lux / F1.8 Colour 0.02Lux / F1.8 B/W
S/N Ratio	50dB
Video Output	1.0v p ~ p 75Ω
Focus	Auto / Manual / One Push
Zoom movement speed	1.75sec : wide to tele
Iris Control	Auto / Manual
Lens initialisation	In-built
Camera Title	OFF / ON (Up to 15 characters displayed)
Camera ID	ID 1 ~ 255
Day/Night	AUT01 AUT02 COLOUR B/W
Gain Control	Normal High Off
White Balance	ATW / AWC / MANUAL (1800°K ~ 10 500°K)
Backlight Compensation	Low Middle High Off
Electronic Shutter speed	AUTO (x128 1/50sec ~ 1/120,000sec
O.S.D	In Built
Motion Detection	ON / OFF
SSNR	Low Middle High Off
FLIP	Vertical Horizontal

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.

Troubleshooting

PROBLEM	POSSIBLE REASONS	ACTION
NOT WORKING WHEN SWITCHED ON – NO SELF CHECK	PSU FAULT POWER CONNECTION	CHECK VOLTAGE AT THE CAMERA - REPLACE PSU IF NECESSARY CHECK AND CORRECT
ABNORMAL SELF CHECK POSSIBLE MOTOR NOISE	MECHANICAL FAILURE CAMERA LOOSE INADEQUATE POWER	REQUIRES REPAIR REFIT CAMERA REPLACE PSU
NORMAL SELF CHECK BUT NO VIDEO	VIDEO SIGNAL FAULT CAMERA FAULT	CHECK CABLE/FITTINGS REPAIR/REPLACE THE CAMERA
SELF CHECK OUT OF CONTROL	RS485 BUS FAULT DOME ID INCORRECT PROTOCOL INCORRECT	CHECK RS485 CONNECTIONS CHECK AND RESELECT CHECK AND RESELECT REBOOT UNIT & KEYPAD
POOR IMAGE QUALITY PICTURES IN B/W	POOR VIDEO CONNECTION LOW POWER	CHECK & REMAKE VIDEO CONNECTIONS CHECK POWER AT PTZ AND CORRECT
THE PTZ HOME POSITION IS IN ERROR	POSITION NEEDS RESETTING	CALL 99 ENTER
DOME RUNS BUT CANNOT USE TELE OR WIDE	CAMERA NEEDS A RESET	CALL 95 ENTER > MAIN MENU > CAMERA SET > EXIT
NO CAMERA MENU DISPLAYED	CAMERA CANNOT BE CONTROLLED	CALL 95 ENTER > MAIN MENU > CAMERA SET > SPECIAL > COMM ADDITION > COMM ID > 0 or 1 > (set these in turn)