

HJZTP/HJZTPX

**Joystick Controller for
PTZ Cameras, DVRs, and Multiplexers**

User Manual

ISSUE	DATE	REVISIONS
HJZMU001150		
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FCC COMPLIANCE STATEMENT

Information to the User: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CANADIAN COMPLIANCE STATEMENT



This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EUROPEAN COMPLIANCE STATEMENT


This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

CAUTION: Users of the product are responsible for checking and complying with all federal, state and local laws and statutes concerning the monitoring and recording of video and audio signals. Honeywell Video Systems shall not be held responsible for the use of this product in violation of current laws and statutes.

EXPLANATION OF GRAPHICAL SYMBOLS

	The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the product.

IMPORTANT SAFEGUARDS

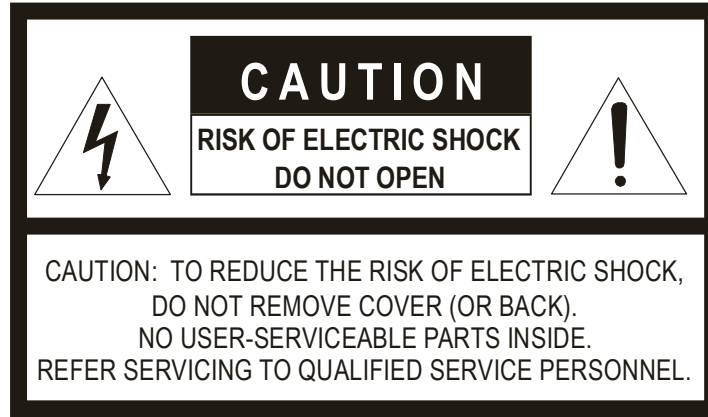
1. **READ INSTRUCTIONS** – All safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS** – The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS** – All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS** – All operating and use instructions should be followed.
5. **CLEANING** – Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. **ATTACHMENTS** – Do not use attachments not recommended by the product manufacturer as they may result in the risk of fire, electric shock, or injury to persons.
7. **WATER AND MOISTURE** – Do not use this unit near water or in an unprotected outdoor installation, or any area classified as a wet location.
8. **ACCESSORIES** - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult and serious damage to the equipment. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer. Wall or shelf mounting should follow the manufacturer's instructions and should use a mounting kit approved by the manufacturer. 
9. A product and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the product and cart combination to overturn.
10. **POWER SOURCES** – This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your facility, consult your product dealer or local power company.
11. **OVERLOADING** – Do not overload outlets and extension cords as this can result in a risk of fire or electric shock.
12. **POWER-CORD PROTECTION** – Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords, plugs, and convenience receptacles.
13. **SERVICING** – Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

IMPORTANT SAFEGUARDS

14. **DAMAGE REQUIRING SERVICE** – Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power-supply cord or plug is damaged.
 - b. If liquid has been spilled, or objects have fallen into the unit.
 - c. If the unit has been exposed to rain or water.
 - d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
 - e. If the unit has been dropped or the enclosure has been damaged.
 - f. When the unit exhibits a distinct change in performance - this indicates a need for service.
15. **REPLACEMENT PARTS** – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
16. **SAFETY CHECK** – Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
17. **LIGHTNING AND POWER LINE SURGES** – For added protection of this unit when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power-line surges.
18. **HEAT** – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
19. **INSTALLATION** – Do not install the unit in an extremely hot or humid location, or in a place subject to dust or mechanical vibration. The unit is not designed to be waterproof. Exposure to rain or water may damage the unit.

Prior to installation and use of this product, please observe the following cautions and warnings.

CAUTION



WARNINGS




- | | |
|---|--|
|  | WARNING: Installation and servicing must be performed by qualified personnel in accordance with current IEE wiring regulations. |
|  | WARNING: The PSU must be wired to a double pole fuse spur with 3mm separation. The 3A fuse spur must be located close to the PSU. |
|  | WARNING: Using replacement parts or accessories other than the original manufacturers may invalidate warranty. |

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SECTION 1: INTRODUCTION

1.1 PRODUCT DESCRIPTION

The HJZTP Keyboard can control DVRs, multiplexers, and PTZs using Honeywell VCL (Orbiter/RapidDome) or Honeywell Diamond (KD6/HD6) protocol. It can control systems with up to a maximum of 128 PTZ cameras, 99 DVRs, and 32 multiplexers (using RS485 distribution boxes such as the HDCD8TP).

Up to four HJZTP keyboards can be connected together to providing a system controlled by one (1) master keyboard, and three (3) slave keyboards.

RapidDome/Orbiter dome data can also be input into the keyboards. This data is then added to the dome data output along with dome data generated by the keyboards.

Model	Description
HJZTP	Joystick Controller for controlling PTZs, DVRs, and Multiplexers. Power supply requires 120 VAC.
HJZTPX	Joystick Controller for controlling PTZs, DVRs, and Multiplexers. Power supply requires 230 VAC.

1.2 COMPATIBLE PRODUCTS

The HJZTP Controller is compatible with the following products:

- **Multiplexers**
 - AXCD16E, AXCD9E, AXCD4E, AXMD16E, AXMD9E, AXMD4E
 - HXCT4, HXCT9, HXCT16, HXMT4, HXMT9, HXMT16
- **DVRs**
 - HRHD1, HRHD410, HRHD4, HRHD9, HRHD16
 - AHDR4X, AHDR9X, and AHDR16X (firmware version 2.3.2.000 or above)
- **Compatible Domes**
 - KD6, KD6i, HD6i
 - Orbiter Insight, Lite, Gold, Platinum
 - RapidDome Gold

1.3 PACKAGE CONTENTS

Quantity	Description
1	HJZTP or HJZTPX Joystick Controller
1	HJZMU001150 User Manual
1	120 VAC to 12VDC 300mA power supply (HJZTP) or 230 VAC to 12VDC 300mA power supply (HJZTPX)
2	Cable, 8-Way RJ45 Connector on both ends (connect between keyboards and DVRs/Multiplexers)
1	Cable, RJ45 connector one end and fly leads with green wire and blue wire on other end
1	Cable, 8-Way RJ45 Connector one end and fly lead with white/orange and orange wires on other end

SECTION 2: INSTALLATION

2.1 CONNECTIONS

All connections to and from the keyboard are made to the RJ type connectors located on the rear panel of the unit.



Figure 1: HJZTP Rear Panel

Connector	Function
KBD (RS485)	Master keyboard – To connect to a slave keyboard. Slave keyboard – To connect to a higher number slave keyboard. VCL dome data input to master keyboard or last slave keyboard.
AUX (RS485)	Master keyboard – To connect either to a DVR or a multiplexer. slave keyboard – To connect either to the master keyboard, or a lower number slave keyboard.
CONTROL (RS485)	RS485 telemetry output – for connection to PTZs (Honeywell domes) or RS485 distribution box.
POWER	Connection to 12VDC 300mA power supply (supplied).

2.2 SUPPLIED CABLES

2.2.1 Eight-Way RJ45 Connector to Eight-Way RJ45 Connector

This cable is used to connect a slave keyboard to a master keyboard, a slave keyboard to a slave keyboard, and a master keyboard to a multiplexer.

2.2.2 Eight-Way RJ45 Connector to White/Orange Wire and Orange Wire

This cable is used to connect the master keyboard to the domes RS485 connection. The orange/white wire is data +, and the orange wire is data -.

2.2.3 Eight-Way RJ45 Connector to Green Wire and Blue Wire

This cable is used to connect the master keyboard to the DVRs RS485 connection. The green wire is data +, and the blue wire is data -.

This cable can also be used to input Orbiter / RapidDome RS485 data from a control device to the master keyboard, or last slave keyboard. Again the green wire is data +, and the blue wire is data -.

2.3 DOME CONNECTIONS

2.3.1 Daisy chain

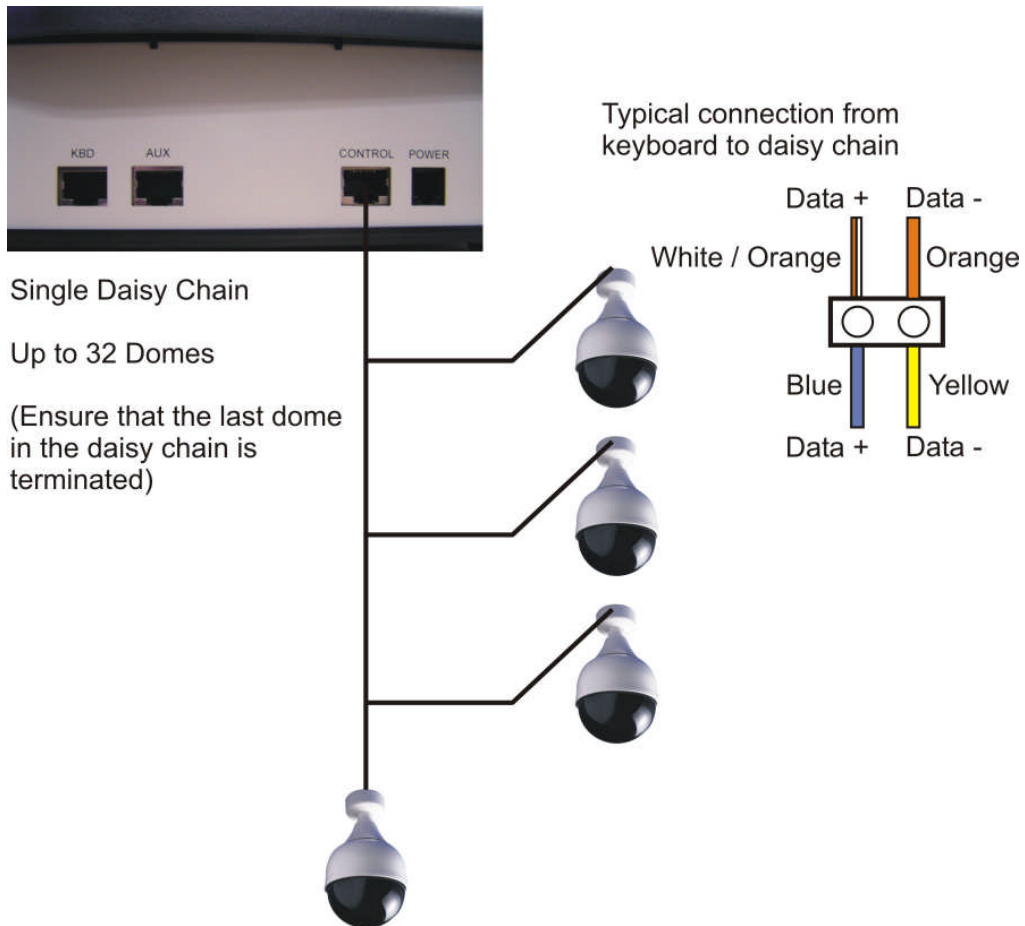
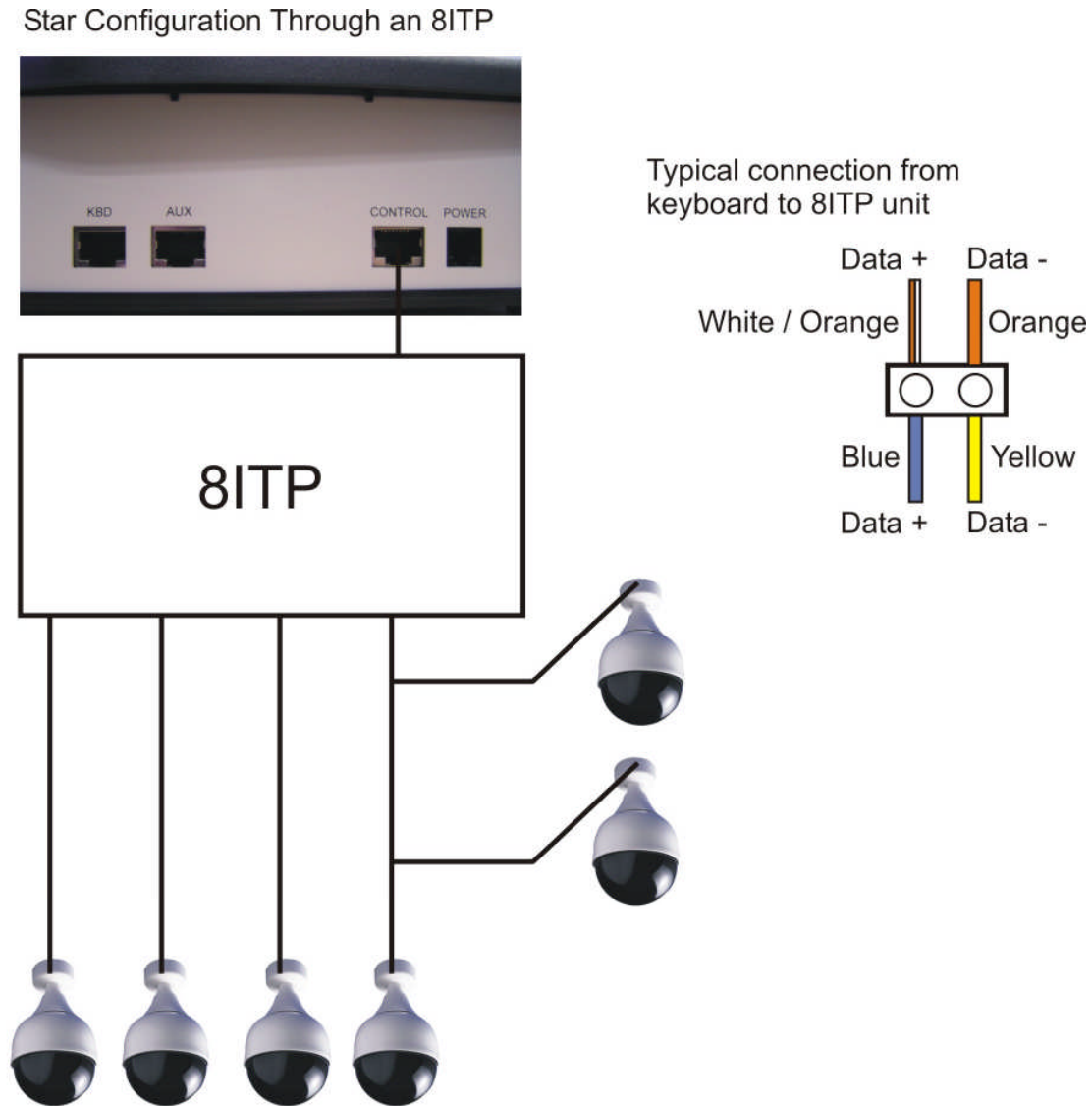


Figure 4. DOME DAISY CHAIN CONFIGURATION

2.3 DOME CONNECTIONS, CONTINUED

2.3.2 Star Wiring Configuration



Note: Details on termination and dome installation are covered in the dome manual.

Figure 5. DOME STAR WIRING CONFIGURATION

2.4 DVR AND MULTIPLEXER CONNECTION

2.4.1 DVR Setup

The DVR unit ID and RS485 port settings must be correctly set using the menus on the DVR before it can be controlled using the HJZTP keyboard.

Baud Rate - 9600
Parity - None
Data - 8
Stop - 1
Usage - Remote control
Unit ID - 1 for DVR 1, 2 for DVR 2 etc.

2.4.2 Multiplexer Setup

The multiplexer address and communication settings must be correctly set using the menus on the multiplexer before it can be controlled using the HJZTP keyboard.

Network Type - RS485
Baud Rate - 9600
Protocol - A
Unit Address - 001 for multiplexer 1, 002 for multiplexer 2 etc

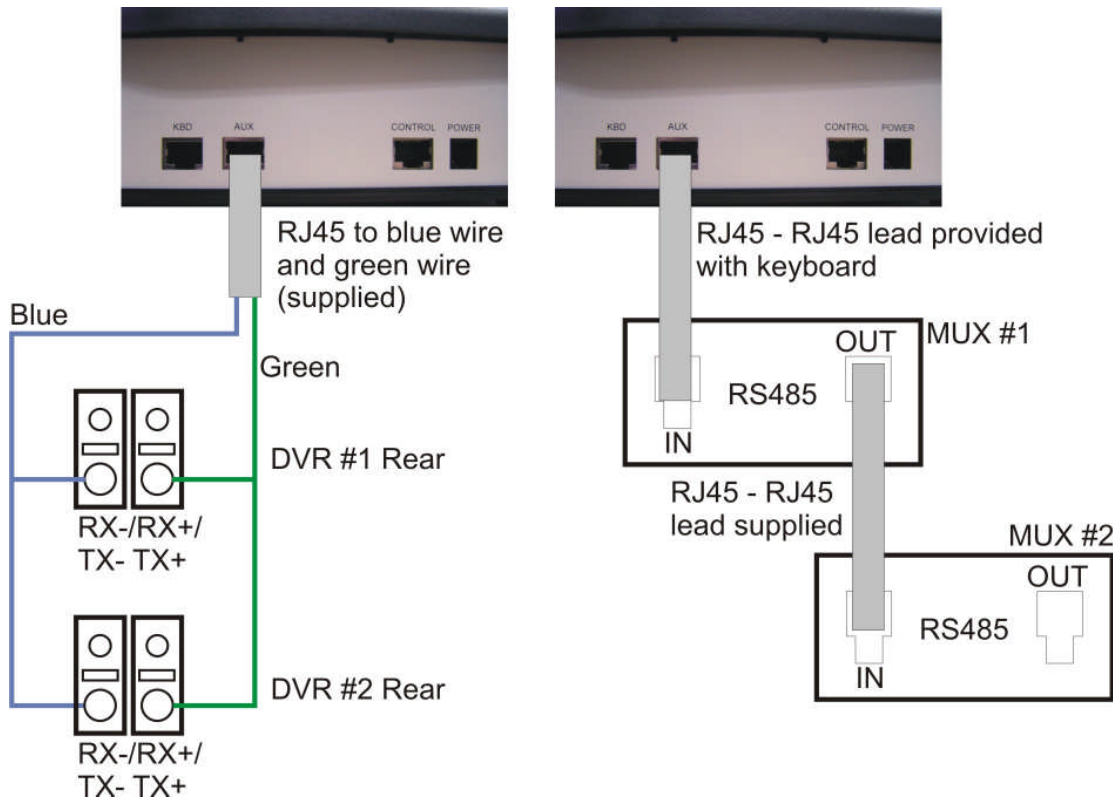


Figure 6. CONNECTION TO MULTIPLEXERS AND DVRs

2.5 KEYBOARD CASCADING

It is possible to cascade up to three slave keyboards off a master keyboard that is connected to the multiplexer / DVR and dome RS485 line. All keyboards in the cascade can communicate with any DVR, multiplexer, or dome connected to the master.

2.5.1 Master/Slave Connection

A system of cascaded keyboards is connected as shown below.

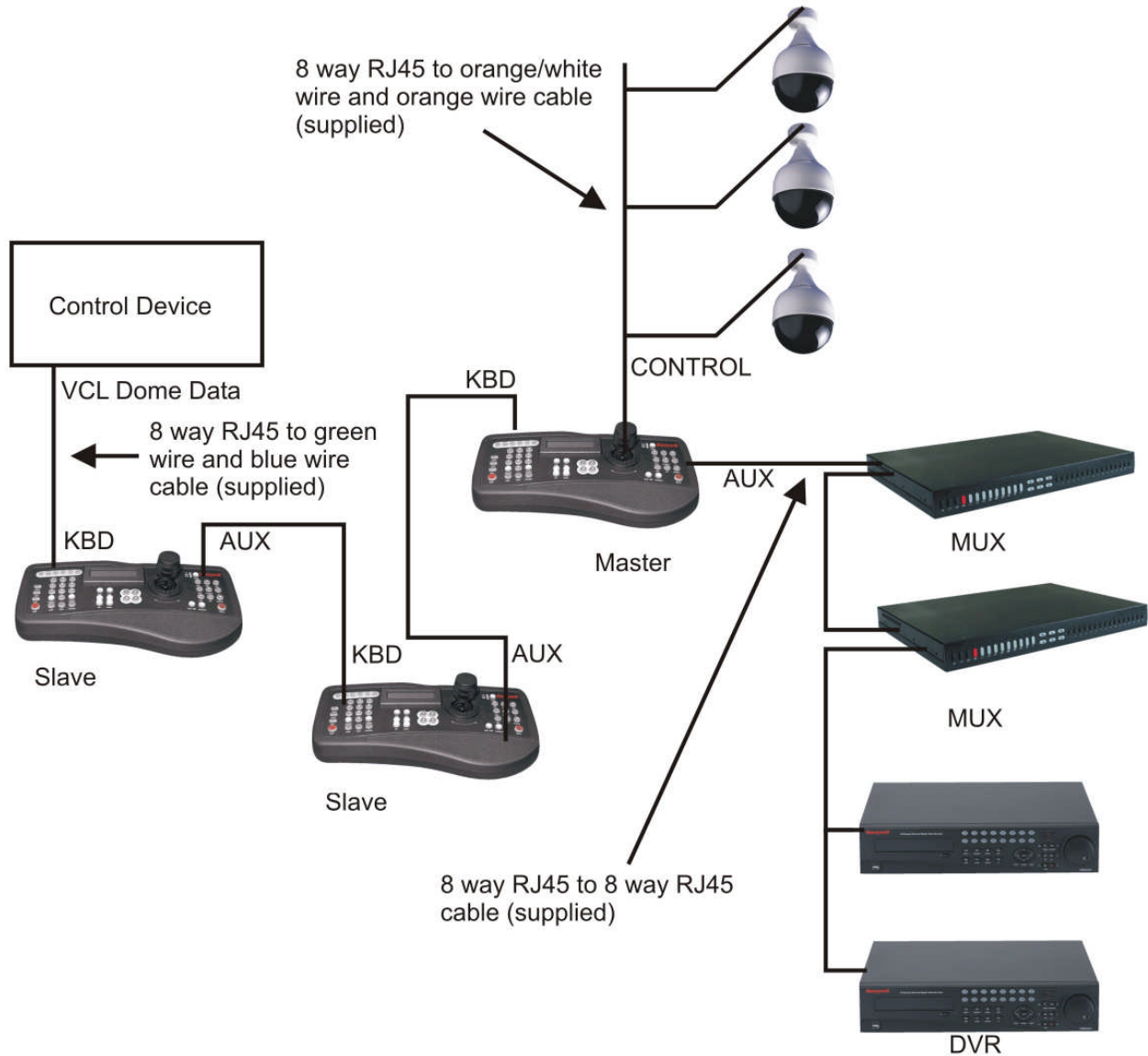
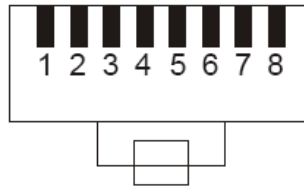


Figure 7. SAMPLE SYSTEM OF CASCADED KEYBOARDS.

In the above system two slave keyboards are connected to a master keyboard. The system also has two multiplexers, and two DVRs connected. And VCL (Orbiter / Rapid) dome data is being input into the system from a control device.

2.6 CONNECTOR PIN ASSIGNMENTS

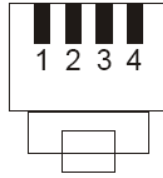


Viewed from wiring input side of plug

Figure 2. KBD/AUX/CONTROL CONNECTORS

KBD		
Pin	Signal	Usual colour
1	To slave D+	White / Orange
2	To slave D-	Orange
4	From slave or VCL data in D-	Blue
5	GND	White / Blue
6	From slave or VCL data in D+	Green
AUX		
Pin	Signal	Usual colour
1	From master D+	White / Orange
2	From master D-	Orange
4	To DVR or master D-	Blue
5	GND	White / Blue
6	To DVR or master D+	Green
CONTROL		
Pin	Signal	Usual colour
1	To / from dome D+	White / Orange
2	To / from dome D-	Orange
3	GND	White / Green

2.6 CONNECTOR PIN ASSIGNMENTS, CONTINUED



Viewed from wiring input side of plug

Figure 3. POWER CONNECTOR

POWER		
Pin	Signal	Usual colour
1	GND	Green
4	+12 VOLTS	Red

SECTION 3: SETUP

3.1 KEYBOARD LOCK

If the keyboard is locked, the 'lock' key will be illuminated, and the LCD display will display:



The keyboard can be unlocked with different user control levels. Pressing and holding the 'lock' key and entering the four digit unlock code will unlock the keyboard.

XXXX is the user level 1 unlock code. (Code not shown)

3434 is the user level 2 unlock code.

User level 1 allows all the features of the keyboard to be controlled by the user. When the keyboard is unlocked with user level 1 control, 'U1' will be displayed on the LCD.

User level 2 allows limited control of the keyboard's features by the user. When the keyboard is unlocked with user level 2 control, 'U2' will be displayed on the LCD.

Use the same key sequences to lock the keyboard ('lock' + 3434 or 'lock' + XXXX) where XXXX is the user level 1 password.

If the keyboard is in user level 1 mode, and the 'lock' 3434 key sequence is entered, then the keyboard will be put into user level 2 mode.

3.2 LCD DISPLAY

The LCD display shows information about the current operating state of the keyboard. If the keyboard is operating in DVR control mode, then the display will be as shown below:

C	A	M	E	R	A	n	n	n	D	V	R	n	n		
P	R	E	S	E	T	n	n	n						U	n

'CAMERA nnn' is the camera which the keyboard is currently sending telemetry control to. This camera may not always be a camera which is being displayed, as it is possible to change the controlled camera without changing the displayed camera when in PTZ mode (PTZ LED illuminated). Also if the DVR or multiplexer are showing a camera sequence, then their displayed camera may be different to the controlled camera.

'DVR nn' is the DVR which is being controlled.

'PRESET nnn' will be displayed if the controlled camera is at preset number 'nnn'.

Note: 'PRESET nnn' is not displayed when the keyboard is set to send Diamond protocol.

'Un' is the user control level. 'U1' means the keyboard is in user level 1 control mode, 'U2', means the keyboard is in user level 2 control mode.

If the keyboard is operating in multiplexer control mode then the display will be as shown below:

C	A	M	E	R	A	n	n	n	M	U	X	n	n		
P	R	E	S	E	T	n	n	n	S	P	O	T	n	U	n

'MUX nn' is the multiplexer which is being controlled.

'SPOT n' will be displayed when the keyboard is controlling the multiplexers spot monitor number n. When the keyboard is controlling the multiplexers main monitor 'MAIN' will be displayed instead.

3.3 SYSTEM SETUP

Before using the HJZTP keyboard it must be set-up to meet the systems requirements. There are three aspects of the keyboards set-up which need to be set. These are keyboard type, DVR / multiplexer / camera connection, dome protocol.

Pressing and holding the 'lock' key and entering XXXX (code not shown) on the numeric keypad, will display the keyboard setup menu, as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D			
K	E	Y	B	R	D	D	V	R	/	M	U	X	P	R	T	C	L

'KEYBRD' will be flashing. Use the joystick left and right or the 'F3' ('◀') and 'F4' ('▶') keys (or 'camera' and 'preset' buttons), to select the required option. Pressing 'aux' will then enter the required menu.

3.3.1 Keyboard Type

The keyboard can be set as a master keyboard or one of 3 slave keyboards. The default setting is as a master keyboard.

If there is only one keyboard in the system or the keyboard is to be the one which is connected to the domes and DVRs / multiplexers, then the keyboard must be set as a master keyboard. Other keyboards in the system must be set as slaves. Up to three slave keyboards can be connected to the master keyboard, each slave keyboard must have a different slave keyboard number.

To set the keyboard type, select 'KEYBRD' in the keyboard setup menu. The following menu will be displayed:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D	
M	S	T	R	S	L	V	1	S	L	V	2	S	L	V	3

If the keyboard has not been set-up before 'MSTR' will be flashing, otherwise the keyboards current setting will be flashing. Use the joystick left and right or the 'F3' ('◀') and 'F4' ('▶') keys (or 'camera' and 'preset' keys) to select the required option, then press 'aux'. The keyboard type selected will be displayed for 1 second to confirm the selection, as shown below (n is the Slave number):

		S	L	A	V	E	n	K	E	Y	B	O	A	R	D		
--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--

Or:

		M	A	S	T	E	R	K	E	Y	B	O	A	R	D		
--	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--

Once the required keyboard type has been selected, press 'lock' to exit the menu.

3.3.2 DVR/Multiplexer/Camera Connection

Note: The DVR/multiplexer/camera connection can only be set from the master keyboard. The DVR/MUX menu can be viewed on a slave keyboard, but 'AUX = SET' will not be displayed, and no editing will be allowed. To ensure slave keyboards have the correct DVR/multiplexer/camera connection configuration, they must be set as slave keyboards, and connected to the master keyboard before editing the configuration on the master keyboard. Alternately, entering and exiting the DVR/MUX menu on the master keyboard, or powering up the master keyboard, will resend the configuration to the slave keyboards.

By default the keyboard it is set to control eight 16-way DVRs, and eight 16-way multiplexers. With cameras 1 to 16 connected to DVR 1 and multiplexer 1, cameras 17 to 32 connected to DVR 2 and multiplexer 2, etc., up to cameras 113 to 128 connected to DVR 8 and multiplexer 8.

The keyboard can control 1, 4, 9 and 16-way DVRs and/or 4, 9, 16-way multiplexers

To set the DVR/multiplexer/camera connection, select 'DVR / MUX' in the keyboard setup menu. The following menu will be displayed:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D	
C	A	M	1			D	V	R	1			M	U	X	1

The menu shows that camera 1 is connected to DVR 1 and Multiplexer 1. The number '1' next to 'DVR' will be flashing indicating that this number will be edited by pressing the 'aux' key.

Use the joystick up and down or the 'F1' ('▲') and 'F2' ('▼') keys, to scroll through all 128 cameras.

Use the joystick left and right or the 'F3' ('◀') and 'F4' ('▶') keys (or 'camera' and 'preset' keys) to select the DVR or MUX number.

Pressing the 'aux' key will cycle through all legal settings of the selected DVR or multiplexer number. 'NO', indicates no DVR or no multiplexer is connected to the camera.

The menu only allows cameras be assigned to DVRs in blocks of 1, 4, 9 or 16, or to Multiplexers in blocks of 4, 9 or 16, to correspond with 1, 4, 9 or 16-way DVRs/Multiplexers. If 'AUX = SET' is not displayed, then there are no legal alternatives to the number already displayed, and so the number cannot be edited.

3.3.2 DVR/Multiplexer/Camera Connection, Continued

Example: If a system has 40 cameras with:

DVR 1, a 4-way DVR connected to cameras 1 through 4 inclusive

DVR 2, a 4-way DVR connected to cameras 5 through 8 inclusive

DVR 3, a 16-way DVR connected to cameras 9 through 24 inclusive

DVR 4, a 9-way DVR connected to cameras 25 through 33 inclusive

DVR 5, a 4-way DVR connected to cameras 35 through 38 inclusive

DVR 6, a 1-way DVR connected to camera 39

Cameras 34 and 40 not connected to a DVR

Multiplexer 1, a 16-way multiplexer connected to cameras 1 through 16 inclusive

Multiplexer 2, a 16-way multiplexer connected to cameras 17 through 32 inclusive

Multiplexer 3, a 4-way multiplexer connected to cameras 33 through 36 inclusive

Cameras 37 through 40 inclusive not connected to a multiplexer.

Then this system would be shown as in the table below:

CAM 1	DVR 1	MUX 1
CAM 2	DVR 1	MUX 1
CAM 3	DVR 1	MUX 1
CAM 4	DVR 1	MUX 1
CAM 5	DVR 2	MUX 1
CAM 6	DVR 2	MUX 1
CAM 7	DVR 2	MUX 1
CAM 8	DVR 2	MUX 1
CAM 9	DVR 3	MUX 1
CAM 10	DVR 3	MUX 1
CAM 11	DVR 3	MUX 1
CAM 12	DVR 3	MUX 1
CAM 13	DVR 3	MUX 1
CAM 14	DVR 3	MUX 1
CAM 15	DVR 3	MUX 1
CAM 16	DVR 3	MUX 1
CAM 17	DVR 3	MUX 2
CAM 18	DVR 3	MUX 2
CAM 19	DVR 3	MUX 2
CAM 20	DVR 3	MUX 2
CAM 21	DVR 3	MUX 2
CAM 22	DVR 3	MUX 2
CAM 23	DVR 3	MUX 2
CAM 24	DVR 3	MUX 2
CAM 25	DVR 4	MUX 2
CAM 26	DVR 4	MUX 2
CAM 27	DVR 4	MUX 2
CAM 28	DVR 4	MUX 2
CAM 29	DVR 4	MUX 2
CAM 30	DVR 4	MUX 2
CAM 31	DVR 4	MUX 2
CAM 32	DVR 4	MUX 2
CAM 33	DVR 4	MUX 3
CAM 34	DVR NO	MUX 3
CAM 35	DVR 5	MUX 3
CAM 36	DVR 5	MUX 3
CAM 37	DVR 5	MUX NO
CAM 38	DVR 5	MUX NO
CAM 39	DVR 6	MUX NO
CAM 40	DVR NO	MUX NO

4 way DVR (DVR 1)	16 way multiplexer (MUX 1)	
4 way DVR (DVR 2)		
16 way DVR (DVR 3)		
9 way DVR (DVR 4)		
No DVR		
4 way DVR (DVR 5)		
1 way DVR (DVR 6)		
No DVR		
		4 way multiplexer (MUX 3)
		No multiplexer
		No multiplexer
		No multiplexer
		No multiplexer
		No multiplexer
		No multiplexer

Only one row of this table is displayed at a time on the LCD menu.

Once the DVR/multiplexer/camera configuration has been set, press 'lock' to exit the menu.

3.3.3 Dome (PTZ) Protocol

The keyboard can be set up to control RapidDome/Orbiter type domes using Honeywell VCL protocol or KD6/HD6 type domes using Honeywell Diamond protocol.

Note: The protocol can only be set from the master keyboard. The protocol menu can be viewed on a slave keyboard, but 'AUX = SET' will not be displayed, and no selection will be allowed. To ensure slave keyboards have the correct protocol setting, they must be set as slave keyboards, and connected to the master keyboard, before editing the protocol on the master keyboard. Alternately entering and exiting the protocol menu on the master keyboard, or powering up the master keyboard will re-send the protocol setting to the slave keyboards.

To set the dome protocol, select '**PRTCL**' in the keyboard setup menu. The following menu will be displayed:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D
P	R	O	T	O	C	O	L	-	V	C	L			

Press 'aux' to toggle between '**VCL**' and '**DIAMOND**'. Once the required protocol has been selected, press '**lock**' to exit the menu.

SECTION 4: DVR CONTROL FUNCTIONS

4.1 DVR MODE

Press the 'mode' key to toggle between multiplexer and DVR mode.

4.2 NUMBER ENTRY (FOR ENTERING PASSWORDS)

To send numbers to the DVR, **press and hold** the 'Fn' key, then press the number keys. Alternately, **press and hold** the 'F6' ('menu'), 'rw', 'ff', 'play', 'rec', 'search' or 'alarm' keys, to send numbers to there password screens.

4.3 DVR MENUS

Press and hold the 'F6' ('menu') key to bring up the password screen.

Whilst holding the 'F6' ('menu') key, press the number keys to enter numbers on the password screen.

Press the 'F5' ('enter') key to enter the password and gain access to the DVR set-up menus.

Navigation around these menus is achieved by using the function keys as indicated in the following table:

Key	Function
F1 (▲)	Up
F2 (▼)	Down
F3 (◀)	Left
F4 (▶)	Right
F5 (enter)	Enter
F6 (menu)	Menu

Press the 'F1' ('▲'), 'F2' ('▼'), 'F3' ('◀') or 'F4' ('▶') keys to move around the menu pages.

Press the 'F5' ('enter') key to select an option within the menus.

Press the 'F6' ('menu') key to exit the current menu. (If the user presses 'F6' when in the 'set-up screen', the DVR exits the menus and returns to normal operation.)

Note: Menus are not accessible to users logged in as user level 2 (U2 displayed on the LCD).

4.4 PICTURE CONTROL

The following table indicates the keys used for picture control:

Key	Function
display	Display
sequence	Sequence
freeze	Freeze

Press the 'display' key to select the next display setting (in the cycle of '4x4', '3x3', '2x2' and 'PIP').

Use the F3 (◀) and F4 (▶) keys to cycle through the other cameras when displaying 2x2 and 3x3 displays.

The screen layout of the multi-camera displays can be set by pressing the 'F5' ('enter') key, then 'F1' ('▲'), 'F2' ('▼'), 'F3' ('◀') or 'F4' ('▶') keys to select an active cameo (highlight box displayed). Then press one or two of the number keys (to enter a legal camera number) followed by the 'camera' key to select that number camera to be displayed in that cameo.

Press the 'sequence' key to put the DVR output into a sequence (the sequence depends on the current display mode and set-up). If the key is pressed again, the sequence stops (displaying the current step in the sequence).

Press the 'freeze' key to freeze the current display. Press the key again to return to the 'live' picture(s).

4.5 CAMERA SELECTION

Press one or two of the number keys (to enter a legal camera number) followed by the 'camera' key to select that number camera for full-screen display on the DVR output. This also selects the associated DVR.

Press the 'camera' key by itself to increment the camera selection by one.

Note: Both of the above selection processes also make the displayed camera the controlled camera as shown on the keyboards LCD display. The controlled camera can be changed independently of the DVRs displayed camera(s) by putting the keyboard in PTZ mode. To enable/disable PTZ mode, press and hold the 'Fn' key, then press the 'mode' key. When in PTZ mode the PTZ LED will be on

4.6 DVR SELECTION

Pressing a number followed by the 'Fn' key selects a DVR to control. This also selects the last camera controlled on that DVR (or the first camera input on that DVR if it has not been selected previously).

4.7 RECORDING AND PLAYBACK

The following table indicates the keys used for recording and playback, only the counter function is available to users logged in as user level 2 (U2 displayed on the LCD):

Key	Function	User Level Required
search	Search	U1
play	Play/Pause	U1
rw	Rewind	U1
ff	Fast Forward	U1
stop	Stop	U1
rec	Record	U1
counter	Counter	U1 or U2
Fn + Joystick Right/Left	Shuttle Forwards/Backwards	U1
Fn + Joystick Up/Down	Jog Forwards/Backwards	U1
Fn + rec	Panic	U1

Note: If user password is enabled on the DVR, then pressing the 'search', 'play', 'rw', 'ff', or 'rec', key will cause a user password screen to be displayed. If a user password is required, keep the key ('search', 'play', 'rw', 'ff', or 'rec') pressed whilst entering the password. Alternately, **press and hold** the 'Fn' key, then press the number keys

Press the 'search' key to bring up the 'search' menu. Press the key again to exit the 'search' menu.

Press the 'counter' key to toggle the DVR display between displaying or not displaying the remaining storage capacity.

To increase the speed of rewind or fast forward, press the 'rew' or 'ff' key up to four times to reach the maximum speed. Alternately, if the DVR is in 'playback' mode, press **and hold** the 'Fn' key and move the joystick right to play the video forwards or left to play the video backwards. The more the joystick is moved the faster the video is played. If the joystick is returned to the centre position or the 'Fn' key is released, the shuttle is returned to the centre position (and the playback is paused).

If the DVR is paused in 'playback' mode, press **and hold** the 'Fn' key and move the joystick up to play the video forwards image-by-image or down to play the video backwards image-by-image. If the joystick is held up or down, the video is moved on to the next image (either forwards or backwards) every 0.5 seconds.

4.8 ALARM FUNCTION

If an alarm is active, press the 'alarm' key to reset the DVR's outputs (including internal buzzer).

If the DVR is in the live monitoring mode (and no alarm is active), press the 'alarm' key to display the event log. (Once in the event log, it is navigated in the same way as the menus as detailed in '4.3 DVR Menus').

Note: If user password is enabled on the DVR, then pressing the 'alarm' key will cause a user password screen to be displayed. If a user password is required, keep 'alarm' pressed whilst entering the password. Alternately, press and hold the 'Fn' key, then press the number keys.

4.9 SPOT FUNCTION

To display a camera on the spot monitor, first press the 'monitor' key, then press one or two of the number keys (to enter a legal camera number) followed by the 'camera' key to select that number camera for display on the spot monitor.

Press 'monitor' then 'sequence' to put the spot monitor into a camera sequence.

SECTION 5: MULTIPLEXER CONTROL FUNCTIONS

5.1 MULTIPLEXER MODE

Press the 'mode' key to toggle between multiplexer and DVR mode.

5.2 MENUS

Navigation around menus is achieved by using the function keys as indicated in the following table

Key	Function
F1 (▲)	Up
F2 (▼)	Down
F3 (◀)	Left
F4 (▶)	Right
F5 (enter)	Set
F6 (menu)	Esc

Note: Menus are not accessible to users logged in as user level 2 (U2 displayed on the LCD).

5.2.1 Setup (Top) Menu

To enter the multiplexer set-up menu press the 'F1' ('▲') key twice to display:

LIVE	Playback	Preview	Setup	Cancel
------	----------	---------	-------	--------

Use the 'F3' ('◀') or 'F4' ('▶') keys to select 'Setup', then press 'F5' ('enter').

Press the 'F1' ('▲'), 'F2' ('▼'), 'F3' ('◀') or 'F4' ('▶') keys to move around the menu pages.

Press the 'F5' ('enter') key to select an option within the menus.

To exit the menus select 'Exit', and then press the 'F5' ('enter') key.

5.2.2 Bottom Menu

To enter the multiplexer bottom menu press the 'F2' ('▼'), key twice to display:

Full	2x2	3x3	4x4	PIP
User Def1	User Def2	User Def3	User Def4	Cancel

Use the 'F1' ('▲'), 'F2' ('▼'), 'F3' ('◀') or 'F4' ('▶') keys to select the required option, then press 'F5' ('enter').

5.2.3 Pop Up Menu

Pressing the 'F1' ('▲'), 'F2' ('▼'), 'F3' ('◀') or 'F4' ('▶') keys in live screen mode will select a camera image (red border around image). Once the required image has been selected, press the 'F5' ('enter') to display:

Live Cam Change...
Zoom...
Full
Priority On
Histogram On..
Panic Record On
Freeze On
Sequence
Utilities
Cancel

Use the 'F1' ('▲'), 'F2' ('▼') keys to select the required option, then press 'F5' ('enter').

5.3 PICTURE CONTROL

The following table indicates the keys used for picture control:

Key	Function
display	Display
sequence	Sequence
freeze	Freeze
play	Toggle VCR input
search	Digital Zoom

Press the 'display' key to select the next display setting (in the cycle of '4x4', '3x3', '2x2' and 'PIP' for a 16 way multiplexer, '3x3', '2x2' and 'PIP' for a 9 way multiplexer or '2x2' and 'PIP' for a 4 way multiplexer).

Press **and hold** the 'Fn' key, then press the 'display' key to cycle through the other cameras when displaying 2x2 and 3x3 displays.

Press the 'sequence' key to put the multiplexer output into a sequence (the sequence depends on the current display mode and set-up). If the key is pressed again, the sequence stops (displaying the current step in the sequence).

Press the 'freeze' key to freeze the current display. Press the key again to return to the 'live' picture(s).

5.3 PICTURE CONTROL, CONTINUED

Press the 'play' key to select the VCR input for display. (Pressing the key again will return the multiplexer to 'live' picture(s).

Press the 'search' key to select the 'zoom' mode (see below). Once in 'zoom' mode, press the 'search' key again to exit 'zoom' mode.

Note: Zoom is not accessible to users logged in as user level 2 (U2 displayed on the LCD)

To use the zoom feature (once in 'zoom' mode), press the following keys to move the zoomed area.

Key	Function
F1 (▲)	Up
F2 (▼)	Down
F3 (◀)	Left
F4 (▶)	Right
F5 (enter)	Zoom In
F6 (menu)	Zoom Out
Search	Exit

5.4 AUXILIARY MONITOR SELECTION

Pressing a number (1 to 4) followed by the 'monitor' key selects that number auxiliary monitor for control by the keyboard (the spot monitor number will be displayed on the LCD).

Pressing the 'monitor' key without first entering a number returns the keyboard control back to the main monitor (MAIN displayed on the LCD).

Note: Pressing 'F6' ('menu'), 'display', 'alarm' and 'play' will also put the multiplexer back to main monitor control

5.5 CAMERA SELECTION

Camera selection will be performed on the monitor currently under control (Main or Spot 1 to 4).

Pressing a number followed by the 'camera' key selects a camera to display. This also selects the associated multiplexer.

Pressing the 'camera' key by itself increments the camera selection.

Note: that both of the above selection processes also make the displayed camera the controlled camera as shown on the keyboards LCD display. The controlled camera can be changed independently of the multiplexer display camera by putting the keyboard in PTZ mode. To enable/disable PTZ mode, press and hold the 'Fn' key, then press the 'mode' key. When in PTZ mode the PTZ LED will be on.

5.6 MULTIPLEXER SELECTION

Pressing a number followed by the 'Fn' key selects a multiplexer to control. This also selects the last camera controlled on that multiplexer (or the first camera input on that multiplexer if it has not been selected previously).

SECTION 6: PTZ CONTROL FUNCTIONS WHEN USING HONEYWELL VCL (RAPIDDOME/ORBITER DOME) PROTOCOL

6.1 PTZ CAMERA SELECTION CONTROL

The PTZ cameras can be controlled while the keyboard is in any mode (DVR, Multiplexer, or PTZ). The keyboard sends out standard telemetry to a PTZ or other receiver connected via RS485.

Before a PTZ can be controlled it must first be selected by pressing one or two of the number keys (to enter a legal camera number) followed by the 'camera' key. The camera number that is displayed on the LCD is the camera that is being controlled.

6.2 PTZ MODE

PTZ mode changes the way the keyboard selects domes. To toggle between PTZ mode ON and OFF, press **and hold** the 'Fn' key, then press the 'mode' key.

PTZ Mode OFF (PTZ LED OFF)	Selecting a camera for control will also cause a full screen picture from that camera to be displayed on the DVR (in DVR mode) or Multiplexer (in MUX mode).
PTZ Mode ON (PTZ LED ON)	Enables cameras to be selected for control without changing what is displayed on the monitors.

6.3 PAN AND TILT

Very precise control of pan and tilt can be achieved using the joystick. The speed of pan and tilt is relative to the amount of movement applied to the joystick.

6.4 TURN 180°

This function allows the PTZ to view a person who is walking underneath the camera.

Press the 'auto 180°' key to pan the camera 180°.

The camera will pan 180° at the maximum speed. (Up to 400° per second.)

HONEYWELL VCL PROTOCOL, CONTINUED

6.5 ZOOM

Rotate the top of the joystick clockwise to zoom in.

Rotate the top of the joystick counter-clockwise to zoom out.

6.6 FOCUS AND IRIS

Press the auto key above the focus control keys to toggle the camera in and out of 'auto-focus' mode, if the feature is available on the selected camera/receiver.

Press the '+' (FAR) or '-' (NEAR) keys to manually focus the camera. (The camera automatically changes to 'manual focus' mode if one of these two keys is pressed.)

Press the auto key above the iris control key to toggle the camera in and out of 'auto-iris' mode, if the feature is available on the selected camera / receiver. Press the '+' (OPEN) or '-' (CLOSE) keys to manually alter the camera iris. (The camera automatically changes to 'manual iris' mode if one of these two keys are pressed.)

6.7 WASH, WIPE AND AUXILIARY FUNCTIONS

If the receiver being controlled has WASH and WIPE functions, they are controlled as follows:

FOR WIPE.

Press the 'wipe' key to activate the wiper.
Press the 'wipe' key again to turn off the wiper.

FOR WASH.

Press and hold the 'wash' key to activate the washer.
Release the 'wash' key to turn off the washer.

If the receiver has a separate momentary function (auxiliary), it is controlled as follows:

Press the '0' key, then **press and hold** the 'aux' key to activate the auxiliary function.
Release the 'aux' key to turn off the auxiliary function.

Note: The 'aux' key illumination is not altered by this operation as it is used to monitor 'Change Over' RapidDome/Orbiter domes.

HONEYWELL VCL PROTOCOL, CONTINUED

6.8 MANUAL CHANGE OVER (CHANGE OVER RAPIDDOME/ORBITER DOMES ONLY)

The operator can force the camera to change from MONO to COLOUR or COLOUR to MONO by pressing the 'aux' key. The camera automatically changes back dependant on the level of illumination.

If the camera is in the mode selected by the operator (and is different to the mode that the camera would have automatically selected), the 'aux' key is illuminated.

If the camera is in the mode that the camera has automatically selected, the 'aux' key is not illuminated.

6.9 PRESETS AND TOURS

6.9.1 To Define a Preset

Up to 128 presets can be defined. Presets are numbered 0 - 127.

For example, to define Preset 1.

1. Move the selected dome to view the desired preset position, using the joystick, zoom, focus and iris keys.
2. **Press and hold** the 'preset' key.
3. Press '1'.
4. **Release** the 'preset' key.

The current position of the dome has now been defined as Preset 1.

6.9.2 To Seek a Preset

Note: A preset seek will only occur if the preset has previously been defined.

For Example, to seek Preset 1.

1. Press '1'.
2. Press the 'preset' key.

The camera will now move at the maximum speed to the previously defined Preset 1.

The user may also select presets 1 - 4 by single key presses using the keys labelled 'preset' '1' to '4'.

HONEYWELL VCL PROTOCOL, CONTINUED

6.9.3 To Start a Tour of Presets

A RapidDome/Orbiter can store four different preset tours. After programming the tours, as detailed in the next sections, they may be recalled in the following way.

1. Press the number key that corresponds to the tour number, either '1', '2', '3', or '4'.
2. Press the 'autopan' key.

6.9.4 To Define a Simple Tour

For example to define a tour for three preset positions in memory as 'Tour 1'.

Note: First, define the three preset positions, as detailed in section 6.1.7.1 above.

1. Press '1', then **press and hold** the 'autopan' key. (This will define 'Tour 1'.)
2. Press '1', then press the 'preset' key. (This selects the first preset in 'Tour 1'.)
3. Press '2', then press the 'preset' key. (This selects the second preset in 'Tour 1'.)
3. Press '3', then press the 'preset' key. (This selects the third preset in 'Tour 1'.)
4. **Release** the 'autopan' key.

The tour is now set up. To operate 'Tour 1'

5. Press '1', then press the 'autopan' key.

The tour will now be set with a standard speed of 30°/sec and the dwell time at each preset set to a standard 60 seconds.

6.9.5 To Vary the Standard Speed of a Tour

For example to define a tour (as set in 6.1.7.4, above.) in memory as 'Tour 2' with different speeds between preset positions:

1. Press '2', then **press and hold** the 'autopan' key. (This will define 'Tour 2'.)
2. Press '1', then press the 'preset' key. (This selects the first preset in 'Tour 2'.)
3. Press '5', then press '0', then press the '180°' key. (This defines 50°/sec to this preset position.)
4. Press '2', then press the 'preset' key. (This selects the second preset in 'Tour 2'.)
5. Press '1', then press '0', then press '0', then press the '180°' key. (This defines 100°/sec to this preset position.)
6. Press '3', then press the 'preset' key. (This selects the third preset in 'Tour 2'.)

HONEYWELL VCL PROTOCOL, CONTINUED

6.9.5 To Vary the Standard Speed of a Tour, Continued

7. Press '2', then press the '180°' key. (This defines 2°/sec to this preset position.)
8. **Release** the 'autopan' key.

6.9.6 To Vary the Standard Speed of a Tour, Continued

The tour is now set up. To operate 'Tour 2':

Press '2', then press the 'autopan' key.

Note: The range of speeds that can be selected goes from '1' = 1°/sec up to '100' = 100°/sec. To select the maximum seek speed, press '0'.

6.9.7 To Vary the Standard Speeds and Dwell Times of a Tour

For example to define a tour (as set in 6.1.7.4, above.) in memory as 'Tour 3' with different dwell times between preset positions:

1. Press '3', then **press and hold** the 'autopan' key. (This will define 'Tour 3'.)
2. Press '1', then press the 'preset' key. (This selects the first preset in 'Tour 3'.)
3. Press '5', then press '0', then press the '180°' key. (This defines 50°/sec to this preset position.)
4. Press '1', then press '0', then press the 'counter' key. (This defines a 10 second dwell time at this preset position.)
5. Press '2', then press the 'preset' key. (This selects the second preset in 'Tour 3'.)
6. Press '1', then press '0', then press '0', then press the '180°' key. (This defines 100°/sec to this preset position.)
7. Press '1', then press '6', then press the 'counter' key. (This defines a 16 second dwell time at this preset position.)
8. Press '3', then press the 'preset' key. (This selects the third preset in 'Tour 3'.)
9. Press '2', then press the '180°' key. (This defines 2°/ sec to this preset position.)
10. Press '1', then press '4', then press the 'counter' key. (This defines a 14 second dwell time at this preset position.)
11. **Release** the 'autopan' key.

HONEYWELL VCL PROTOCOL, CONTINUED

6.9.7 To Vary the Standard Speeds and Dwell Times of a Tour, Continued

The tour is now set up. To operate 'Tour 3':

Press '3', then press the 'autopan' key.

Note: The range of the dwell times that can be set varies from 1 to 254 seconds. Entering a time of '0' will select 1 second dwell time.

6.9.8 To Stop a Tour of Presets

Press the 'autopan' key. (This will turn off the tour.)

The tour will also stop if the telemetry buttons or the joystick are used to control the dome.

6.9.9 To Restart a Tour of Presets

Press the 'autopan' key. (This will start the last tour that the dome was carrying out.)

6.10 ENHANCED FUNCTIONS

The keyboard can also access most of the advanced functions of the RapidDome /Orbiter series of domes by using its LCD menus. Joystick up, down, left and right or the 'F1' ('▲'), 'F2' ('▼'), 'F3' ('◀') or 'F4' ('▶') keys, are used to select options within the menus. The 'camera' and 'preset' keys can also be used to move to the left or right option.

The LCD menus adjust the setup of the dome that is currently being controlled (camera number displayed on LCD display, before entering the menu).

Note: Menus are not accessible to users logged in as user level 2 (U2 displayed on the LCD).

To enter the camera setup menu, press **and hold** 'lock', then press 'F6' ('menu'). The camera setup menu will be shown as below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D		
H	O	M	E		P	R	I	V	A	C	Y	R	E	S	E	T

'HOME' will be flashing to indicate that 'HOME' is the currently selected option.

Use joystick down or 'F2' ('▼'), to select the other options as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D			
Z	O	O	M	I	R	/	L	A	M	P	A	U	T	O	1	8	0

Use joystick up or 'F1' ('▲'), to return to the 'HOME', 'PRIVACY', 'RESET' options.

HONEYWELL VCL PROTOCOL, CONTINUED

6.10.1 Home

Select '**HOME**' in the camera setup menu, then press 'aux' to display the home menu as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D	
P	R	E	S	E	T		T	O	U	R			O	F	F

To set a home preset or a home tour. Select '**PRESET**' or '**TOUR**' then press 'aux'. The home time-out menu will be displayed as below:

H	O	M	E				L	O	C	K	=	E	N	D	
E	N	T	E	R	T	I	M	E	O	U	T	n	n	n	

nnn is the current time-out in minutes.(1 to 127.)

The time in minutes can be edited using the numeric keys. Once the time has been entered press 'lock' to exit the menu.

Note: Before the Home Preset (preset 0) or Home Tour (tour 1) can function they must first be defined. See section 6.1.7 for instruction on how to define the tours and presets.

To turn off a home preset or home tour, select '**OFF**' in the home menu, then press 'aux'. '**HOME OFF**' will be displayed for 1 second to confirm the selection, as shown below:

						H	O	M	E	O	F	F					

6.10.2 Privacy Zones

Select '**PRIVACY**' in the camera setup menu, then press 'aux' to display the privacy menu as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D			
P	R	E	S	E	T	n	n	n	P	R	I	V	A	C	Y		

nnn is the preset number. If the preset is a normal preset '**PRESET**' will be displayed instead of '**PRIVACY**'.

Preset numbers 100 to 127 can be set as either a privacy zone or a normal preset.

Selected the required preset number by using the joystick up and down or 'F1' ('▲'), 'F2' ('▼') keys. Then press the 'aux' key to toggle the preset status between '**PRIVACY**' and '**PRESET**'.

Once the required privacy setup has been entered press 'lock' to exit the menu.

HONEYWELL VCL PROTOCOL, CONTINUED

6.10.3 Remote Reset

Select **'RESET'** in the camera setup menu, then press 'aux' to display the reset menu as shown below:

A	U	X	=	S	E	N	D	L	O	C	K	=	E	N	D		
P	O	W	E	R	C	A	M	E	R	A	F	A	C	T	O	R	Y

6.10.3.1 Power Reset

To perform a power reset on the dome, select **'POWER'** in the reset menu, then press 'aux'. The keyboard will be locked for 30 seconds whilst the dome resets, and the following message will be displayed:

				P	O	W	E	R		U	P		R	E	S	E	T				
--	--	--	--	---	---	---	---	---	--	---	---	--	---	---	---	---	---	--	--	--	--

6.10.3.2 Factory Reset

To perform a factory reset on the dome, select **'FACTORY'** in the reset menu, then press 'aux'. The keyboard will be locked for 30 seconds whilst the dome resets, and the following message will be displayed:

				F	A	C	T	O	R	Y		R	E	S	E	T				
--	--	--	--	---	---	---	---	---	---	---	--	---	---	---	---	---	--	--	--	--

6.10.3.3 Camera Reset

To perform a camera reset on the dome, select **'CAMERA'** in the reset menu, then press 'aux'. The keyboard will be locked for 12 seconds whilst the camera resets, and the following message will be displayed:

				C	A	M	E	R	A		R	E	S	E	T				
--	--	--	--	---	---	---	---	---	---	--	---	---	---	---	---	--	--	--	--

6.10.4 Digital Zoom

Select **'ZOOM'** in the camera setup menu, then press 'aux' to display the zoom menu as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D				
D	I	G	I	T	A	L	Z	O	O	M		O	F	F				

Press 'aux' to toggle the digital zoom setting between **'OFF'** and **'ON'**.

Once the required digital zoom setting has been set, press 'lock' to exit the menu.

HONEYWELL VCL PROTOCOL, CONTINUED

6.10.5 IR Lamps

Select 'IR/LAMP' in the camera setup menu, then press 'aux' to display the IR lamps menu as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D
I	R	\	L	A	M	P	S		O	F	F			

Press 'aux' to toggle the IR lamps setting between 'OFF' and 'ON'.

If the system uses IR lamps, set the IR lamp setting to 'ON'. When the IR lamp setting is set to 'ON', the dome's camera, will switch to mono in low light conditions without integrating in colour first.

Once the required IR lamp setting has been set, press 'lock' to exit the menu.

6.10.6 Auto 180

Select 'AUTO180' in the camera setup menu, then press 'aux' to display the auto180 menu as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D
A	U	T	O	1	8	0		O	F	F				

Press 'aux' to toggle the auto 180 setting between 'OFF' and 'ON'.

Once the required auto 180 setting has been set, press 'lock' to exit the menu.

6.10.7 Mimic Tour

The keyboard can be used to record mimic tours. Tour numbers 5 to 8 are mimic tours.

To record a mimic tour, first press a number key from 5 to 8 (tour 5 to 8), then press **and hold** the 'autopan' key, then press 'lock'. The following message will be displayed:

C	A	M	E	R	A	n	n	n	M	U	X	n	n	
R	E	C	O	R	D	I	N	G	M	I	M	I	C	n

Whilst the mimic tour is being recorded, 'RECORDING MIMIC n' flashes on and off.

Press 'LOCK' to stop recording a mimic tour.

To play a mimic tour, press a number key from '5' to '8', then press the 'autopan' key.

This menu times out after 3 minutes, if 'LOCK' has not already been pressed. ('DVR nn' will be displayed in DVR mode.)

Notes:

SECTION 7: PTZ CONTROL FUNCTIONS WHEN USING HONEYWELL DIAMOND (KD6/HD6) PROTOCOL

7.1 PTZ CAMERA SELECTION (HONEYWELL DIAMOND PROTOCOL)

The PTZs can be controlled while the keyboard is in any mode (DVR, Multiplexer, or PTZ). The keyboard sends out standard telemetry to a dome or other receiver connected via RS485.

Before a PTZ can be controlled it must first be selected by pressing one or two of the number keys (to enter a legal camera number) followed by the 'camera' key. The camera number that is displayed on the LCD is the camera that is being controlled.

The following functions are available:

- Variable speed pan and tilt.
- Zoom control.
- Manual and automatic iris control.
- Manual focus control.
- Preshot programming and selection.
- Vectorscan selection.
- Freeze
- Flashback
- Nightshot
- Home position selection.
- Return to manual

The keyboard can also control the on-screen display (OSD) menus on the dome.

7.2 PTZ MODE

PTZ mode changes the way the keyboard selects cameras. To toggle between PTZ mode ON and OFF, press **and hold** the 'Fn' key, then press the 'mode' key.

PTZ Mode OFF (PTZ LED OFF)	Selecting a camera for control will also cause a full screen picture from that camera to be displayed on the DVR (in DVR mode) or Multiplexer (in MUX mode).
PTZ Mode ON (PTZ LED ON)	Enables cameras to be selected for control without changing what is displayed on the monitors.

HONEYWELL DIAMOND PROTOCOL, CONTINUED

7.3 PAN AND TILT

Precise control of pan and tilt can be achieved using the joystick. The speed of pan and tilt is relative to the amount of movement applied to the joystick.

7.4 ZOOM

Rotate the top of the joystick clockwise to zoom in.

Rotate the top of the joystick counter-clockwise to zoom out.

7.5 IRIS

Press the '+' (OPEN) or '-' (CLOSE) keys to manually alter the camera's iris. Press the 'auto' key above the iris control keys to put the camera in auto-iris mode.

7.6 FOCUS

Press the '+' (FAR) or '-' (NEAR) keys to manually focus the camera.

Note. The 'auto' key above the focus keys has no action when in Diamond protocol mode. Auto focus control can be set using the dome's OSD menus, to come on when the camera is zoomed, or when the camera is panned, tilted or zoomed

7.7 PRESHOT DEFINITION

Up to 100 preshots can be defined, and these are numbered 0 to 99.

Note: Preshot 99 is used to toggle the nightshot mode on some versions of KD6 / HD6.

To define preshot 1:

1. Move the dome to view the desired preshot position, using the joystick, zoom, focus and iris keys.
2. Press **and hold** the 'preset' key.
3. Press key '1'.
4. **Release** the 'preset' key.

The current position of the dome has now been defined as preshot 1.

Note: Preshots can also be defined using the OSD menus. When preshots are defined using the OSD menu, the preshot title can also be edited

HONEYWELL DIAMOND PROTOCOL, CONTINUED

7.8 PRESHOT SEEK

To seek preshot 1:

1. Press key '1'.
2. Press the 'preset' key.

Preshots 1 to 4 can also be selected by single key presses using the keys labelled 'preset' '1' to '4'.

If a preshot seek is attempted for a preshot number which has not been defined, the dome will not move, and the message "Does Not Exist" will be displayed on screen.

Note: Preshots can also be selected using the OSD menus

7.9 VECTORSCAN SELECTION

Up to 10 vectorscans can be selected numbered 0 to 9.

To recall a vectorscan 1:

1. Press key '1'.
2. Press the 'autopan' key.

If a vectorscan is selected which has not been defined, the dome will not move, and the message "Does Not Exist" will be displayed on screen.

Note. Vectorscans can also be selected using the OSD menus. Vectorscans can only be programmed using the OSD menus

7.10 FREEZE

Press **and hold** 'Fn', then press 'F2' ('▼') or 'freeze' to toggle the camera between freeze mode on and freeze mode off.

7.11 FLASHBACK

Press **and hold** 'Fn', then press 'F3' ('◀') or just press 'auto 180' to operate the flashback function.

HONEYWELL DIAMOND PROTOCOL, CONTINUED

7.12 NIGHTSHOT

Press 'aux' or enter preshot 99 to toggle the camera between nightshot mode on and nightshot mode off.

Note. Nightshot is only available on domes with colour / mono cameras

7.13 RETURN TO MANUAL

Press **and hold** 'Fn', then press 'F6' ('menu'), to send the 'return to manual' (ESC) command.

The 'return to manual' command is used to cancel automatic dome actions such as VectorScans, tours, and alarm actions.

7.14 MECHANICAL HOME

Press **and hold** 'Fn', then press 'F1' ('▲'), to send the dome to its mechanical home position.

7.15 ON SCREEN DISPLAY (OSD) MENUS

Note. OSD menus are not accessible to users logged in as user level 2 (U2 displayed on the LCD)

To enter the domes OSD menus, first press **and hold** 'lock', then press 'F6' ('menu'). The keyboards LCD display will show the menu selection menu as below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D		
S	E	T	U	P	P	R	E	S	V	E	C	T	S	E	C	T

'**SETUP**' will be flashing to indicate that '**SETUP**' is the currently selected option.

The LCD menu selection menu is used to select the required menu on the dome.

Use joystick left and right or 'F3' ('◀') and 'F4' ('▶') or 'camera' (left) and 'preset' (right) keys, then the 'aux' key to select options within the LCD menus.

Selecting '**SETUP**' will display the domes 'setup' menu on the monitor. Refer to the KD6/HD6 user manual for detailed information and navigation of the menus.

Selecting '**PRES**' will display the preshot menu selection menu, as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D
G	O	T	O	P	R	O	G	R	A	M	L	I	S	T

HONEYWELL DIAMOND PROTOCOL, CONTINUED

7.15 ON SCREEN DISPLAY (OSD) MENUS, CONTINUED

Selecting '**GOTO**' will display the domes 'preshot go to' menu on screen.

Selecting '**PROGRAM**' will display the domes 'preshot program' menu on screen.

Selecting '**LIST**' will display the domes 'preshot list' menu on screen.

Selecting '**VECT**' will display the vectorscan menu selection menu, as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D	
C	O	N	O	N	E	V	I	E	W	P	R	G	L	S	T

Selecting '**CON**' will display the domes 'select vectorscan continuous' menu on screen.

Selecting '**ONE**' will display the domes 'select vectorscan once' menu on screen.

Selecting '**VIEW**' will display the domes 'vectorscan view' menu on screen.

Selecting '**PRG**' will display the domes 'vectorscan program' menu on screen.

Selecting '**LST**' will display the domes 'vectorscan list' menu on screen.

Selecting '**SECT**' will display the sector menu selection menu, as shown below:

A	U	X	=	S	E	T	L	O	C	K	=	E	N	D		
				P	R	O	G	R	A	M			L	I	S	T

Selecting '**PROGRAM**' will display the domes 'sector program' menu on screen.

Selecting '**LIST**' will display the domes 'sector list' menu on screen.

Depending on which on screen menu has been selected, one of three LCD menus will be displayed.

For 'preshot goto', 'select vectorscan continuous', 'select vectorscan once' and 'vectorscan view', the selection menu will be displayed as below:

				L	O	C	K	=	E	N	D				
--	--	--	--	---	---	---	---	---	---	---	---	--	--	--	--

For 'preshot list', 'vectorscan list' and 'sector list', the list menu will be displayed as below:

		A	U	X	=	N	E	X	T	P	A	G	E		
		L	O	C	K	=	E	N	D						

HONEYWELL DIAMOND PROTOCOL, CONTINUED

7.15 ON SCREEN DISPLAY (OSD) MENUS, CONTINUED

For 'setup', 'preshot program', 'vectorscan program' and 'sector program', the programming menu will be displayed as below:

A	U	X	=	S	E	N	D	A		L	O	C	K	=	E	N	D		
<	C	A	M					S	C	R	O	L	L			P	R	E	>

When in the programming menu, on the first display the letter 'A' will be flashing to indicate 'A' will be sent to the domes menu when the 'aux' key is pressed.

Press the 'camera' and 'preset' keys to scroll through all available characters.

Pressing the 'counter' key will jump the selection between upper case and lower case letters. If a symbol character is being displayed when the 'counter' key is pressed, the selection will jump to lower case 'a'.

Press **and hold** 'Fn', then press 'counter' to jump to symbol characters when letter characters are being displayed.

Press 'monitor' to send 'BACKSPACE' to the dome to delete the last character.

Press **and hold** 'Fn', then press 'monitor' to send the space character. The space character is also the character between 'Z' and 'a' when scrolling through the characters.

Press the number keys to send numbers to the domes menu.

The following keys are also used to control the OSD menus:

Press the 'F1' ('▲'), 'F2' ('▼'), 'F3' ('◀') and 'F4' ('▶') keys to move around the menu pages.

Press 'F5' ('enter') to send 'ENTER' to the domes menu.

Press 'F6' ('menu') to send 'ESC' to the domes menu.

Press 'wash' to send 'INSERT' to the domes to insert a line (in a vectorscan programming menu).

Press 'wipe' to send 'DELETE' to the domes to delete a line (in a vectorscan programming menu).

Press 'sequence' to send 'S' to the dome (for saving settings).

Press 'aux' in list menus, to display the next page of items (if available).

Press 'lock' to exit the OSD and LCD menus, and return the dome and keyboard to normal operation.

The keyboard will also shut down the menus if there has been no keyboard activity for over one minute

SECTION 8: PTZ CONTROL FUNCTIONS WHEN USING HONEYWELL MAXPRO MODE (KD6/HD6) PROTOCOL

8.1 INTRODUCTION

This section provides information on controlling and programming the HD6i/KD6i set for Maxpro Mode protocol.

8.2 RESET KD6i/HD6i

The KD6i/HD6i must be reset through the setup menu. Send the HD6i to **PreShot 90** to access the setup menus, then access the diagnostics menu, then select the Reset Scan and Camera option. Refer to Section 7.15.

8.3 CONTROLLING SCAN ASSEMBLIES

- The lens iris is automatically controlled by the camera, but can be controlled manually from a controller.
- The camera lens auto exposure mode can be enabled or disabled using the controller. PreShot 92 toggles the unit between auto and manual exposure. A message "AUTO EXPOSURE ON" or "AUTO EXPOSURE OFF" is displayed on the video when the scan executes PreShot 92.
- Auto lens exposure control is the factory default for scans set for Maxpro mode.
- If the KD6/HD6 has a day/night camera with an IR block filter it can be controlled manually through the setup menus or by sending the scan to a preprogrammed PreShot reserved for the NightShot mode. **PreShot 94** is reserved for Maxpro

8.4 FREEZE / UNFREEZE VIDEO

The freeze/unfreeze video function described in Section 7.10 can be invoked using **PreShot 95**.

8.5 FLASHBACK OPERATION

The flashback function described in Section 7.11 can be invoked using **PreShot 96**.

8.6 PRESHOTS

When using Maxpro mode, there are several PreShots (views or presets) reserved for controlling and programming the scan. Refer to Table 1 for a listing of the preprogrammed PreShots and their functions.

Program PreShots as described Section 7.7 and send the KD6i/HD6i to PreShots as described in Section 7.8.

The PreShots reserved for scan setup, programming, and control functions **cannot be programmed and cannot be included in VectorScans.**

Table 1: Preprogrammed Preshots KD6/HD6 (Maxpro Mode)	
PreShot 80	Run PTZ Tour 1
PreShot 81	Run PTZ Tour 2
PreShot 82	Run PTZ Tour 3
PreShot 83	Program PTZ Tour 1
PreShot 84	Program PTZ Tour 2
PreShot 85	Program PTZ Tour 3
PreShot 86	Terminate PTZ Programming Mode
PreShot 87	Start VectorScan 1
PreShot 88	Start VectorScan 2
PreShot 89	Start VectorScan 3
PreShot 90	Setup the Scan and Camera (OSD Menus)
PreShot 91	Toggles the error table display
PreShot 92	Toggles auto exposure ON and OFF. (Factory default is ON.)
PreShot 93	Toggles backlight compensation ON and OFF. The unit must be in auto exposure mode for backlight compensation to function.
PreShot 94	Toggles between standard operation and NightShot mode. (Camera models 843216-1011, 843216-1013, 843216-0984, and 843216-0985 only.)
PreShot 95	Toggles between freeze and unfreeze video
PreShot 96	Invokes the Flashback Function
PreShot 97	Reserved
PreShot 98	Camera/Scan Reset
PreShot 99	Reserved

8.7 VECTORSCANS (VIDEO TOUR)



CAUTION: Continuous VectorScan operation for extended periods of time (> 8 hours) is not recommended. Continuous operation results in increased zoom lens failure and maintenance expense.

When using Maxpro mode VectorScans can be programmed using the setup menu accessed by the **PreShot 90** command. Refer to Section 7.15 for programming VectorScans using the setup menus.

8.7.1 Run VectorScan

VectorScans 1, 2, and 3 can be started using **PreShot** commands **87**, **88**, and **89**.

Example: To start VectorScan 2, send a **PreShot 88** command.

VectorScans 0 and 4 - 9 can be assigned to alarms or the default function.

When a scan receives a command to run a VectorScan, the scan goes to the first PreShot programmed in the VectorScan at maximum velocity (400°/second) for the programmed dwell time, then goes to the next PreShot in the VectorScan at the programmed velocity for the specified dwell time, etc. When a VectorScan is running continuously, the unit goes from the last PreShot to the first PreShot at the programmed velocity. The amount of time the scan takes to go to each PreShot depends on the programmed velocity and the distance to the next PreShot's pan and tilt coordinates. The velocity is programmable between 1° to 400° per second.

8.7.2 Stop a VectorScan

- Take manual control (pan, tilt, zoom, focus, or iris) of the scan.
- Send the scan to a PreShot.
- Start a PTZ tour or a different VectorScan.
- Execute any other command addressed to that HD6i.

8.8 PROGRAMMING SECTOR IDS

Sector IDs cannot be programmed when using Maxpro mode.

8.9 PROGRAMMING PRIVACY ZONES

Privacy zones cannot be programmed when using Maxpro mode.

8.10 PROGRAMMING PTZ TOURS

PreShots 83, 84, and 85 have been reserved for programming PTZ tours 1, 2, and 3.

1. Enter a **PreShot 83** command on the controller to program **PTZ tour 1**.
(Enter a PreShot 84 command for PTZ tour 2 or PreShot 85 command for PTZ tour 3.)
2. During the 120 second countdown, pan and tilt the scan and adjust the lens zoom setting. The scan stores the PTZ commands in the order they were performed during the 120 seconds.
3. Wait for the countdown to reach 0 or send a **PreShot 86** command to end the programming mode. The message "PTZ Tour Complete" is displayed. The scan stores the PTZ commands in the order you entered them between the time you started the programming mode until you entered the PreShot 86 command.

8.11 PTZ TOUR OPERATION

PreShot commands 80, 81, and 82 are reserved for running **PTZ tours 1, 2, and 3**, respectively. The scan, where the PTZ tour is stored, must be the control camera on the system controller. The scan continues to run the PTZ tour from beginning to end.

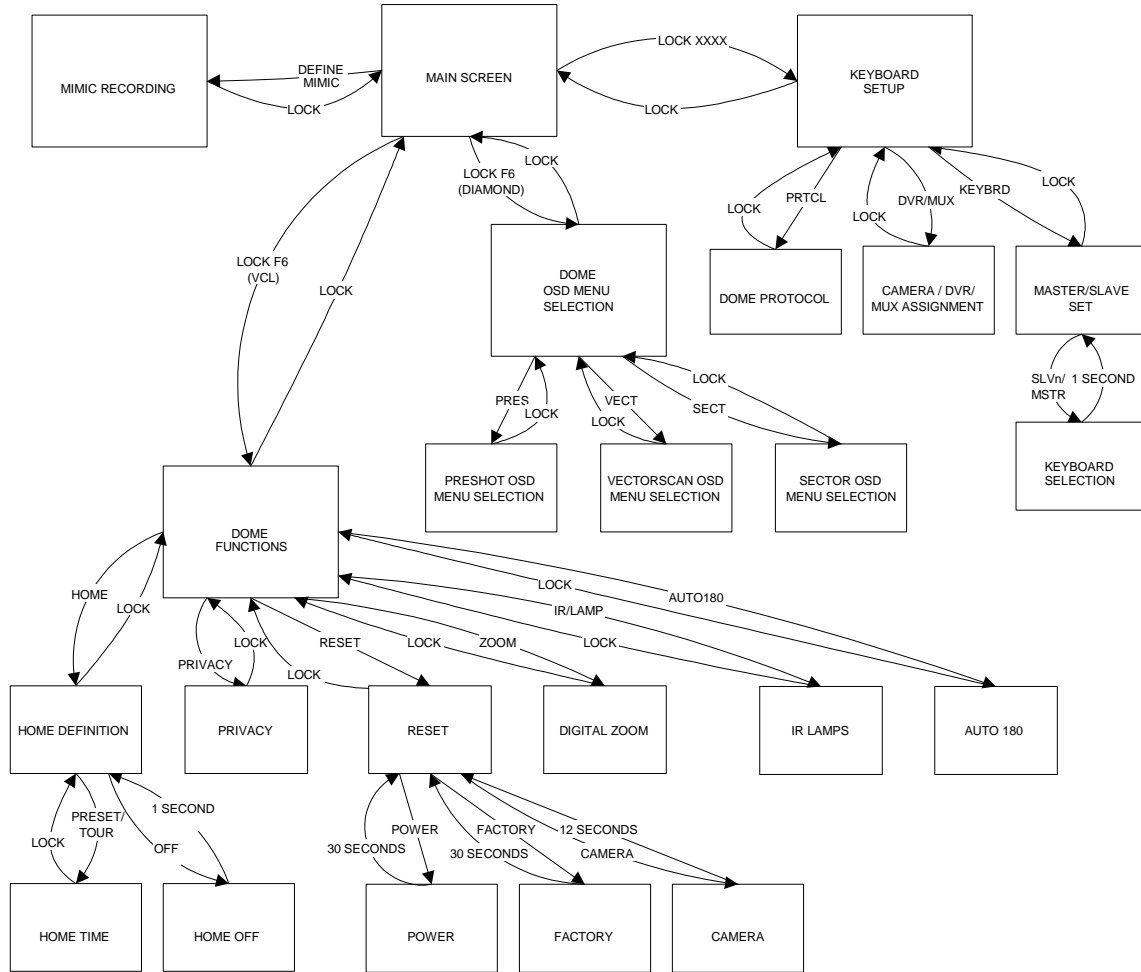
1. Enter a **PreShot 80** command on the controller to run **PTZ tour 1**.
(Enter a PreShot 81 command to run PTZ tour 2 or PreShot 82 command to run PTZ tour 3.)
2. Stop the PTZ tour by manually controlling the scan or by sending the scan a PreShot, VectorScan, or other command.

SECTION 9: TECHNICAL SPECIFICATIONS

Features	HJZTP / HJZTPX	
Max dome control	128	
Max DVR control	8 x 16 way, 14 x 9 way, 32 x 4 way, 99 x 1 way (or any mixture up to 128 inputs)	
Max multiplexer Control	8 x 16 way, 14 x 9 way, 32 x 4 way (or any mixture up to 128 inputs)	
Compatible DVRs, multiplexers and domes	AHDR DVRs, HRHD DVRs, AXCD multiplexers, AXMD multiplexers, Orbiter/RapidDomes, KD6/HD6 domes	
Max linked keyboards	1 master and 3 slaves	
RS485 connections	1 half duplex and 2 full duplex	
LCD	2 rows of 20 characters	
DVR / multiplexer functions controllable via HJZTP	DVRs	Multiplexers
	Full screen picture cameras 1 to 16 picture in picture 2 x 2 picture 3 x 3 picture 4 x 4 picture Picture sequence, picture freeze, play, rewind, fast forward, stop, record, panic, spot Shuttle forwards/backwards Jog forwards/backwards Time / counter, alarm cancel Event log menu, search menu, main menu	Full screen picture cameras 1 to 16 Picture in picture 2 x 2 picture 3 x 3 picture 4 x 4 picture Picture sequence Picture freeze 4 Spot monitors Zoom mode Tape input selection Menus
Dome functions controllable via HJZTP	Orbiter/RapidDome domes (VCL protocol)	KD6/HD6 domes (Diamond protocol)
	Variable speed pan / tilt via joystick Zoom via twist joystick Focus near, focus far, auto focus Iris open, iris close, auto Iris Colour / mono change-over Auto 180 turn around 128 presets (program and selection) 4 rapid preset selections (1 to 4) 4 preset tours (program and selection) 4 mimic tours (program and selection) Privacy zone programming Home preset / tour programming Digital zoom, IR lamp, auto180 setup Power, camera and factory reset Wash, wipe, aux	Variable speed pan / tilt via joystick Zoom via twist joystick Focus near, focus far Iris open, iris close, auto Iris 99 presets (program and selection) 4 rapid preset selections (1 to 4) 10 vectorscans (selection) Nightshot mode, freeze, flashback, home, return to manual Full control of on screen menus to program presets, vectorscans, PTZ tours, privacy zones, sectors, and also control all camera setting and diagnostic options.
Dimensions WxHxD	355mm x 180mm x 60mm	
Weight (Approximate)	3.0kg	
Power Supply Provided	12V DC regulated 300mA	
Operating Temperature	0C to 40C	

Notes:

APPENDIX A: MENU NAVIGATION



Notes:

APPENDIX B: DIAGNOSTICS

B.1 JOYSTICK AUTO CALIBRATION

Pressing and holding the 'lock' key and pressing 'F1' ('▲') will calibrate the joystick centre position. It is important that the joystick is at its centre position when this is performed.

B.2 KEY TEST

Pressing and holding the 'lock' key and entering 2323 on the numeric keypad will put the keyboard into key test mode.

Press each key in sequence from top left to bottom right. A short audible beep will be heard each time a key is pressed and again when released. A long error beep will be given if any key is pressed out of sequence. The unit will automatically exit from the test mode when all buttons have been successfully tested or the 'Alarm' key is pressed.

Notes:

APPENDIX C: VCL (ORBITER/RAPIDDOME) DATA INPUT

The following Honeywell VCL (Orbiter/RapidDome) commands can be input into the keyboard using an RS485 connection to the KBD port.

UP	UP STOP
DOWN	DOWN STOP
LEFT	LEFT STOP
RIGHT	RIGHT STOP
ZOOM IN	ZOOM IN STOP
ZOOM OUT	ZOOM OUT STOP
FOCUS NEAR	FOCUS NEAR STOP
FOCUS FAR	FOCUS FAR STOP
AUTO FOCUS ON	AUTO FOCUS OFF
IRIS OPEN	IRIS OPEN STOP
IRIS CLOSE	IRIS CLOSE STOP
AUTO IRIS ON	AUTO IRIS OFF
START RESUME TOUR OR AUTOPAN	TOUR OFF
SEEK PRESET	PROGRAM PRESET
WASH ON	WASH OFF
WIPE ON	WIPE OFF
LAMPS ON	LAMPS OFF
AUX ON	AUX OFF
NUMBERED AUX ON	NUMBERED AUX OFF
CAMERA NUMBERED AUX ON	CAMERA NUMBERED AUX OFF
TOGGLE MONO / COLOUR	AUTOMATIC MONO / COLOUR
DEFINE TOUR START	DEFINE TOUR STOP
DEFINE SECTOR RHS	DEFINE SECTOR LHS
ALARM MODE ON	ALARM MODE OFF
PRIVACY ZONE SETUP	CAMERA SETUP
TOUR POINT DATA	TURN 180 DEGREES
CAMERA AUTO ALARM SEEK TIME	DEFINE HOME FUNCTION
REMOTE RESET	SEEK ABSOLUTE POSITION
KD6_SEND_CHAR	KD6_COMMAND

The following commands are ignored:

- STATUS REQUEST
- CAMERA ALARM STATUS REQUEST
- ZONE STATUS REQUEST
- ABSOLUTE POSITION REQUEST
- ALARM STATUS REQUEST
- GLOBAL COMMAND
- PATROL
- RELEASE RS485 BUS

Notes:

APPENDIX D: PASSWORDS

The are two user passwords and a keyboard setup code:

User level 1 9078

User level 2 3434

Keyboard Setup Menu 4769

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