



ZKX72J and ZKX73J Keyboards  
Installation and Operation Manual

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**BEFORE PROCEEDING, PLEASE READ AND OBSERVE ALL INSTRUCTIONS AND WARNINGS CONTAINED IN THIS MANUAL. RETAIN THIS MANUAL WITH THE ORIGINAL BILL OF SALE FOR FUTURE REFERENCE AND, IF NECESSARY, WARRANTY SERVICE.**

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**PRODUCT SAFETY**

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**⚠ WARNING**

- TO REDUCE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
- TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
- DO NOT INSTALL THIS PRODUCT IN HAZARDOUS AREAS WHERE HIGHLY COMBUSTIBLE OR EXPLOSIVE PRODUCTS ARE STORED OR USED.
- THE EQUIPMENT SUPPLIED WITH THIS MANUAL IS DESIGNED FOR USE IN A GENERAL PURPOSE CCTV INSTALLATION AND HAS NO OTHER FUNCTION. DO NOT EXCEED THE VOLTAGE AND TEMPERATURE LIMITS GIVEN IN THE SPECIFICATIONS. ONLY USE YOUR KEYBOARD IN A CLEAN, DRY, DUST-FREE ENVIRONMENT.
- BEFORE CLEANING, ISOLATE THE UNIT. USE ONLY A DRY, LINT-FREE CLOTH. DO NOT USE CLEANING FLUIDS OR SOLVENTS.
- THE LIGHTNING FLASH/ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, ALERTS THE USER TO THE PRESENCE OF A SHOCK HAZARD WITHIN THE PRODUCT'S ENCLOSURE.

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**ELECTROMAGNETIC COMPATIBILITY (EMC)**

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**⚠ CAUTION**

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.

**Radio Frequency Emissions**

Federal Communications Commission Code of federal regulations Part 15.

British Standard BSEN55022:1998 Limits and methods of measurement of radio disturbance characteristics of information technology equipment.

**Electrical Safety**

British Standard BSEN60950:1999 Safety of information technology equipment, including electrical business equipment.

**Immunity**

British Standard BSEN50130-4 Alarm Systems Part 4 Electromagnetic compatibility Product family standard: Immunity requirements for components of fire, intruder and social alarm systems.

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**EU CONFORMANCE STATEMENT**

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A Declaration of Conformity in accordance with the above EU standards has been made and is on file with the manufacturer. The manufacturer declares that the product supplied with this document is compliant with the provisions of the EMC Directive 89/336 EEC and associated amendments and the Low Voltage Directive LVD 73/23 EEC.

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**REGULATORY NOTICES**

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This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

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**UNPACKING**

Keep your packaging for use if your keyboard is stored for a time or needs to be returned for whatever reason. The packaging should contain:-

- ZKX72J or ZKX73J keyboard
- BAX-NIL2-RJ (two-metre long RJ45 to RJ45 cable)
- These instructions

Check the product code on the serial number label. If you have an incorrect item or it is damaged then inform the suppliers and carriers immediately. If this is the case then do not attempt to use the equipment.

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**ACCESSORIES**

The following accessories can be used with the ZKX7.. keyboards:

**Remote Keyboard Kits**

A remote keyboard wiring kit is available for connecting a keyboard at a distance greater than 10 metres from the main unit. It can also be used to connect multiple keyboards. This kit (BAX-KBD/KIT) includes:

- 2 x BAXKMI (Network Access Point)
- 2 x BAX-NIL/2RJ (RJ45 to RJ45 cable)
- 1 x PSU25 (class 2 isolating, socket-mounted power supply)
- 1 x 6-pin mini-DIN connector

**Network Leads**

The following leads can be used to connect the keyboard to the matrix, multiplexer or digital video recorder. The maximum length of this connection is 10 metres.

- BAX-NIL2/RJ - 2 metre lead, RJ45 to RJ45
- BAX-NIL5-RJ - 5 metre lead, RJ45 to RJ45
- BAX-NIL10-RJ - 10 metre lead, RJ45 to RJ45
- BAX-NIL1 - 1 metre lead, RJ45 to 6 pin mini-din
- BAX-NIL4 - 4 metre lead, RJ45 to 6 pin mini-din
- BAX-NIL9 - 9 metre lead, RJ45 to 6 pin mini-din

The following lead is for connecting local main-units together. It only makes the network connections.

- BAX-NILA - 1 metre lead, 2 x 6 pin mini-din

**Other Accessories**

- BAXKMI - Network Access Point. RJ45 to screw terminal adapter
- BAX-CON1 - Back-to-back RJ45 connector
- PSU25 - 12V DC Class 2 isolated power supply

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**OVERVIEW**

The ZKX72J/ZKX73J is a video control station that is fully compatible with the Baxall ZTX, ZMX, DTL and MDR ranges of products. The ZKX72J/ZKX73J enables the user to view and control cameras and video recorders at local and remote facilities, and to control auxiliary devices such as door locks and lights. Additionally, the operator can acknowledge alarms with the unit.

Operators with key privileges can also perform programming functions using the ZKX73J keyboard. These functions include programming of presets, patterns, tours, menu access and dome menu access.

A summary listing of the ZKX72J/ZKX73J features follows:

- *user ID Entry* - provides passcode logon/logoff capability
- *monitor/camera selection* - provides selection for viewing and control
- *pan/tilt and lens control* - pan and tilt, or pan, tilt, and zoom (ZKX73J only) control through joystick positioning. Zoom, focus, and iris adjustments through lens control keys
- *"Flip" push-button* - enables user to flip cameras 180° from established position
- *tour functions* - enables the running and control of camera sequences
- *view functions* - enables the simultaneous call-up of a specific camera and preset
- *alarm functions* - supports monitor alarm arming, disarming, and alarm acknowledgment
- *pattern and preset functions* - enables programming (ZKX73J only) and display of patterns and presets
- *selectable baud rate* - 1200, 4800, 9600, 19200, 38400, 57600 bps
- *adjustable display brightness/contrast*
- *Auto Focus/Auto Iris capability* - supported when used with Baxall Pro-Dome units
- *DirectSet feature* - allows some dome functions to be quickly accessed

RS485 NETWORK CONNECTIONS

Your keyboard can control ZMX+, ZMXStorm, ZMX/./9, ZMX/./16, ZTX6/., ZTX7/., and MDR.. units over a BaxNet RS485 network. Note throughout this manual, ZMX+, ZMXStorm, ZMX/./9, ZMX/./16 are referred to collectively as ZMX..

**IMPORTANT NOTES**

The default setting for the ZKX7.. keyboard is RS485 mode at 19200 baud. When connecting to ZTX7/.. and ZTX6/.. units these settings should not be changed. Reducing the baud rate from this optimum setting will reduce the number of telemetry operations that can be carried out simultaneously. For example, the ZTX7/.. can simultaneously carry out operations from four ZKX7.. keyboards set at 19200 baud. If the keyboards are set to a baud rate of 9600, only two simultaneous operations can be carried out.

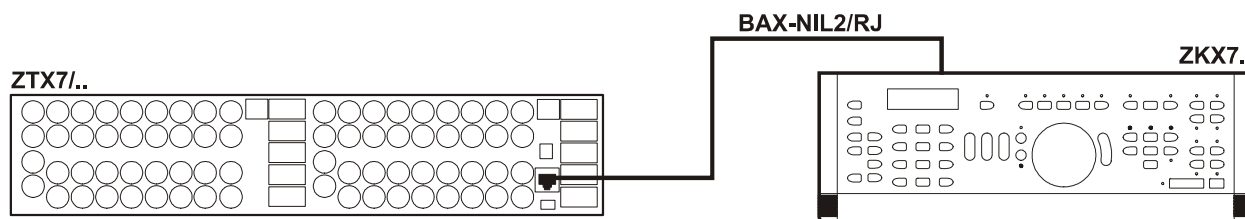
Keyboards connected to ZMX.. and MDR units should be set to RS485 mode at 9600 baud. Although multiple keyboards can be connected to these units, only one operation can be carried out by the unit at any one time.

To change mode and baud rate settings, enter the **Special Config** menu by pressing SHIFT (⇧) and CLEAR (⌫) keys within five seconds of powering up the keyboard. Then press the VCR REWIND (⏮) key and follow the prompts on the keyboard LCD. For more details about keyboard configuration, please see pages 23 and 24.

**Single Keyboard - Connections for Cable Distance of Two Metres or Less**

If the length of the cable connecting the ZKX7.. to the multiplexer, matrix or digital recorder is 2 metres or less, the power to the keyboard is supplied from the connected unit.

When connecting the keyboard to ZTX7/., ZTX6/., ZMXStorm, ZMX+ and MDR units, you can use the supplied BAX-NIL2/RJ lead. Connect from the RJ45 port on the rear of the keyboard to the RJ45 connector on the multiplexer, matrix or digital recorder. The example below shows the keyboard connected to a ZTX7/.. matrix switcher.

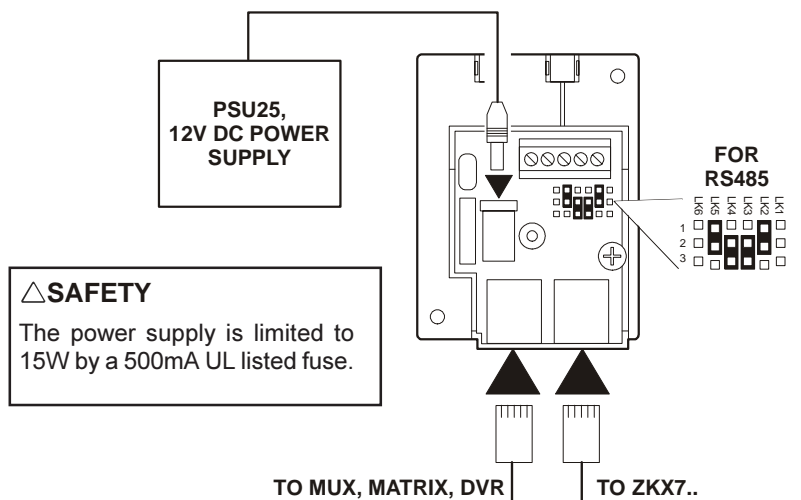


When connecting the keyboard to a ZMX/./9 or ZMX/./16 multiplexer, use a BAX-NIL1 lead. Connect from the RJ45 port on the rear of the keyboard to the 6-pin mini din connector on the multiplexer.

**Single Keyboard - Connections for Cable Distance Greater Than Two Metres**

If the length of the cable connecting the ZKX7.. to the multiplexer, matrix or digital recorder is greater than 2 metres, power to the keyboard must be supplied via a BAXKMI Keyboard Matrix Interface. The BAXKMI has two RJ45 connections—one for the keyboard and one for device to which the keyboard is connected.

Use the diagram below as guidance when connecting a single keyboard with a cable length of over 2 metres. Ensure that the links on the BAXKMI are set for the RS485 BaxNet network.

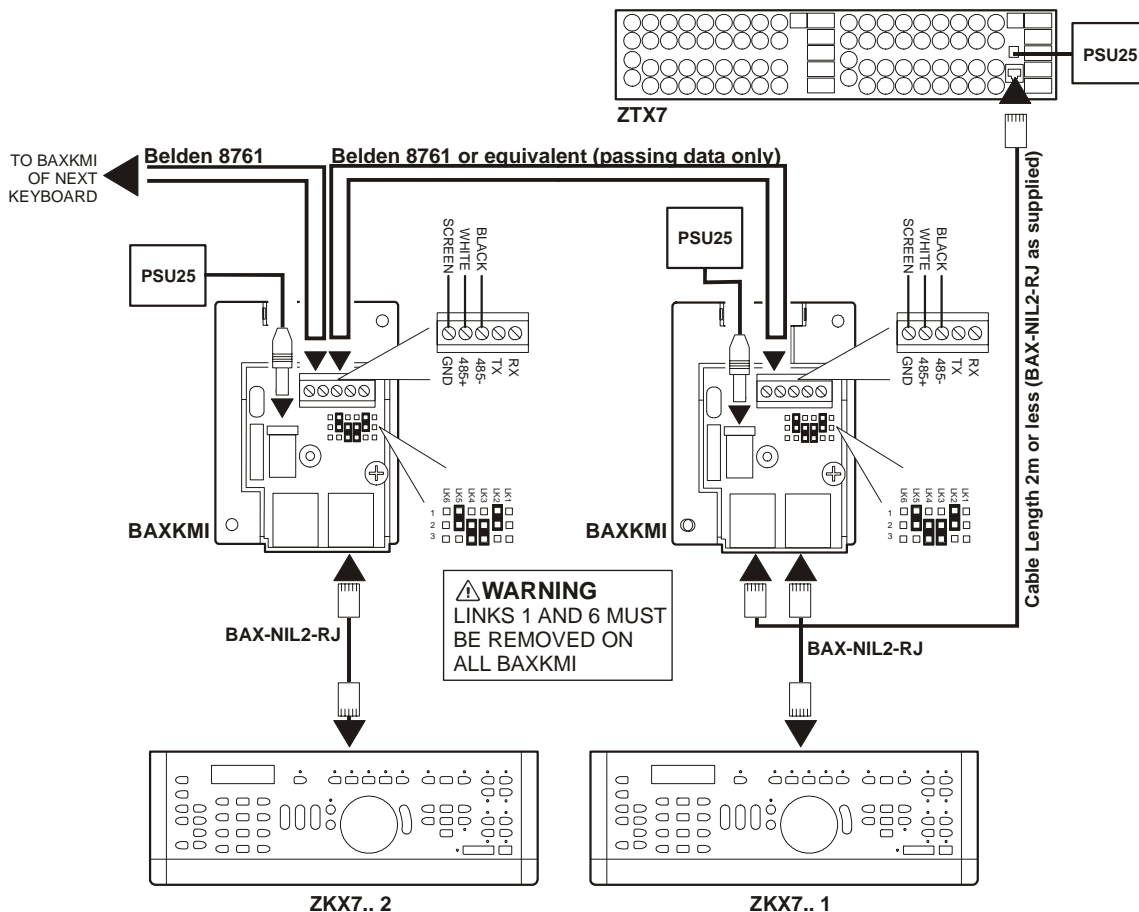




**Multiple Keyboards**

You can connect multiple keyboards as well as multiple matrices, multiplexers and digital recorders on a single network providing that the total number of devices does not exceed 16. A remote keyboard kit provides the facility for remote keyboard connection via BAXKMI keyboard matrix interfaces. Each individual keyboard must be connected to a BAXKMI which in turn must be connected to a PSU25 power supply.

The example below shows two keyboards connected to a ZTX7/.. matrix switcher.



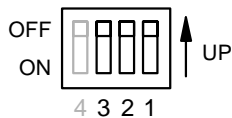
**NOTES**

- For more details on connecting multiple matrices, multiplexers or digital recorders, see the documentation provided with that unit. You can also contact Baxall Technical Support for advice on network design and configuration.
- It is recommended that only pre-assembled cables provided by Baxall are used for network connections. However, the connections on the 8-pin RJ45 sockets on both the ZKX7.. and BAXKMI are given below for your information.

Pin	Connection
Shield	Chassis Ground
1	Power Ground (Transformer)
2	Power supply positive (+12 volts unregulated)
3	RS485 wire 1 (signal +)
4	RS232 Data Transmit
5	RS232 Data Receive
6	RS485 wire 2 (signal -)
7	RS232 Signal Ground
8	Power supply positive (+12 volts unregulated)

**TERMINATING/BIASING THE RS485 NETWORK**

The keyboard has built in RS485 network termination and/or biasing. For most small to medium sized installations, it should not be necessary to change the switches from their default settings. Only for large installations should your network require biasing and/or terminating. The switches are shown below for your reference. The default setting for switches 1, 2 and 3 is OFF (UP). Switch 4 is not used.



<b>Network setting</b>	<b>Switch 1</b>	<b>Switch 2</b>	<b>Network setting</b>	<b>Switch 3</b>
Biased	ON	ON	Terminated	ON
Not Biased*	OFF*	OFF*	Not Terminated*	OFF*

\*Default setting

\*Default setting

**UNIT IDS**

Each unit on the BaxNet RS485 network requires a unit ID number. This unit ID is used to select a unit for control. The unit ID of a keyboard is also used to determine the control priority over other keyboards (lower number keyboards take precedence over higher number keyboards).

The table below defines the maximum number of units which can be installed on a single BaxNet network and their valid unit IDs. Note that Unit ID 0 is reserved do not use it.

Unit	Possible Unit IDs	Maximum Units
ZKX7..	1 to 8	8
ZMX..	9 to 32	*
ZTX6/..	9 to 32	*

\* Total number of devices connected on any physical network, including keyboards, must not exceed 16. Therefore with 8 keyboards 8 other devices may be connected, with 3 keyboards, 13 other devices etc.

For more details on setting the keyboard unit ID, see page 23. For details on setting the ID of a unit connected to the ZKX7.. keyboard, consult the documentation provided with that unit.

**PRIORITY ISSUES**

The priority of keyboards over each other is determined by the value of the unit ID. Keyboards with a lower value unit ID take precedence over keyboards with a higher unit ID. A higher priority keyboard can take control of a connected unit immediately and at any time from a lower priority keyboard. A lower priority keyboard must wait for 30 seconds from the last command by the higher priority unit before it can take control. If another command from the higher priority keyboard is sent in this time then it must wait another 30 seconds. The following control messages are displayed on on the ZKX keyboard:

**CONTROL LOST** Indicated when a higher priority keyboard on the BaxNet RS485 network has taken control or when the current keyboard has timed out.

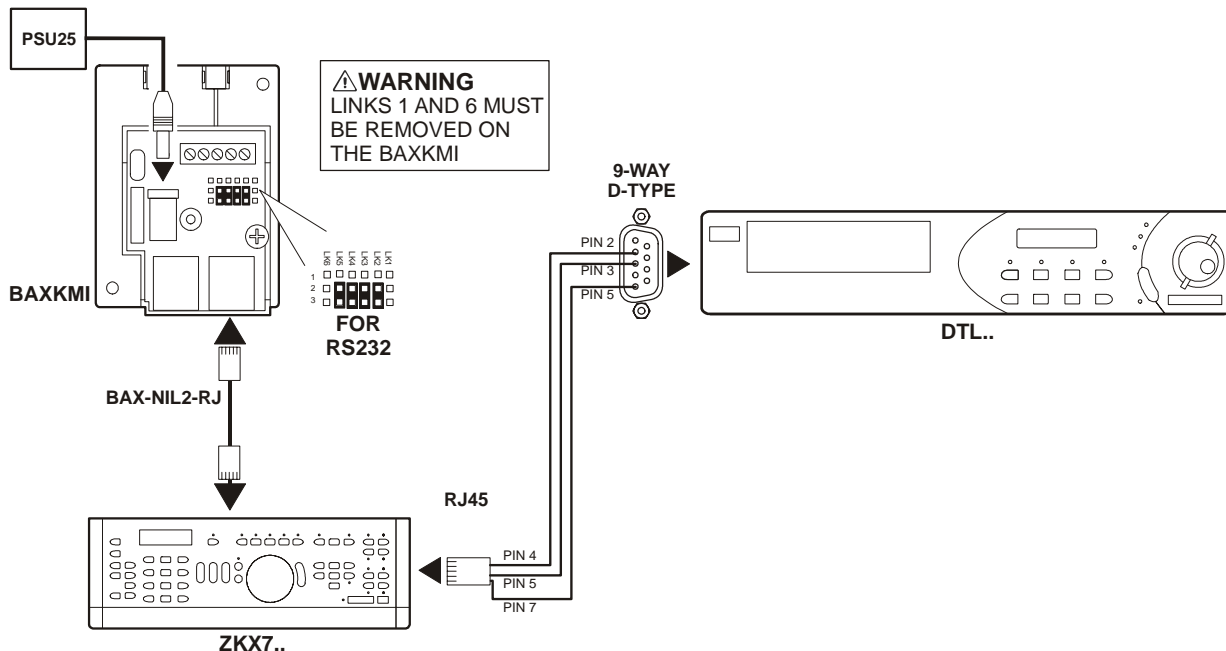
**CONTROL UNIT #n** Indicated when the current keyboard has control over all other keyboards on the RS485 BaxNet network.

To re-activate control of a keyboard that has timed-out (CONTROL LOST), operate the pan or tilt keys.

RS232 NETWORK CONNECTIONS

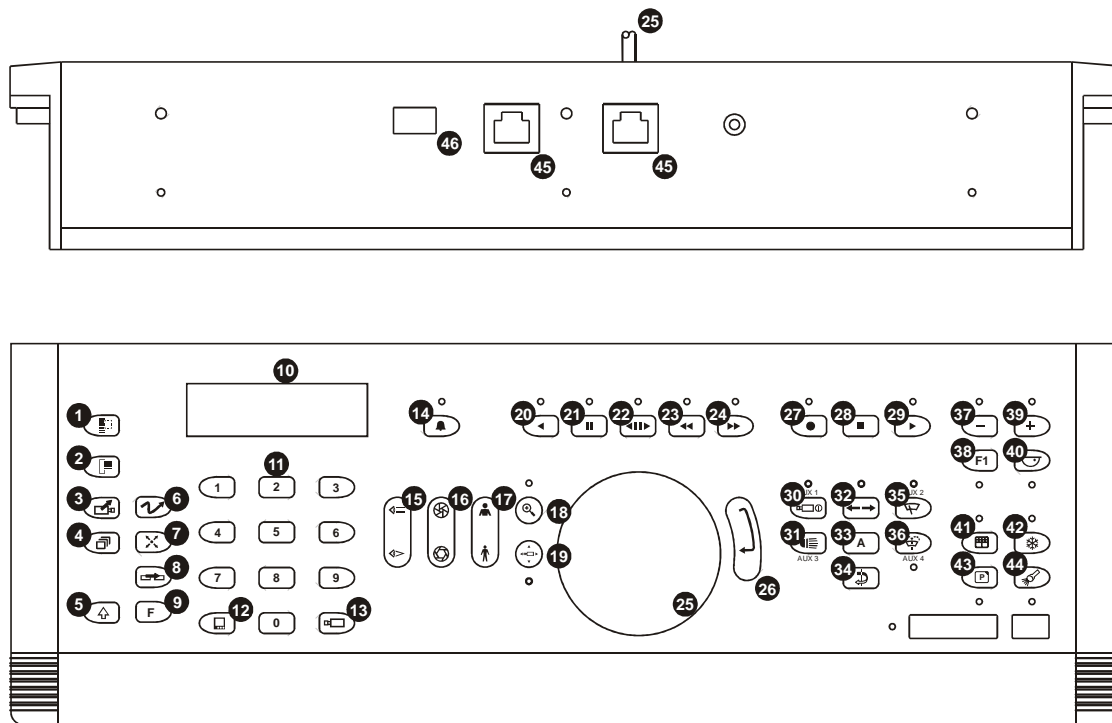
Your keyboard can be used to control a DTL digital video recorder over a RS232 network. The keyboard must be connected to the DTL using an assembled RJ45 to 9-way D-Type cable.

The keyboard must be powered by a separate power supply. The power supply is connected to a BAXKMI and the BAXKMI can then be connected to the second RJ45 port on the rear of the keyboard.



To control the DTL from the keyboard, the keyboard should be set to RS232 mode at 9600 baud. To change mode and baud rate settings, enter the **Special Config** menu by pressing SHIFT (⇧) and CLEAR (⌫) keys within five seconds of powering up the keyboard. Then press the VCR REWIND (⏮) key and follow the prompts on the keyboard LCD.

For more details about keyboard configuration, please see pages 23 and 24.



The keyboard consists of the following elements:

1. **Clear key** - clears any numerical data entered during camera, monitor selection etc. Used to backstep or exit the menu system.
2. **Menu key** - used to enter the matrix menu system.
3. **View key** - used to call views.
4. **Tour/Sequence key** - used to call a sequence.
5. **Shift key** - when held down, allows multiple use of other keys.
6. **Pattern key** - used to call patterns.
7. **Preset key** - used to call and program presets.
8. **Unit select key** - calls control of the target matrix to the keyboard.
9. **Function key** - used in conjunction with other keys to modify their action.
10. **LCD Display** - displays system information, such as the currently selected monitor or camera.
11. **Numeric keypad** - keys ranging from 0 to 9 that enable the user to select specific cameras, monitors, presets, sequences, etc.
12. **Monitor key** - selects the monitor whose number was entered on the numeric keypad.
13. **Camera key** - selects the camera whose number was entered on the numeric keypad.
14. **Alarm acknowledge key** - acknowledges/clears an alarm displayed on the currently active monitor.
15. **Focus Near/Focus Far Key** - adjusts the lens focus for the selected camera.
16. **Open/Close Iris Key** - opens or closes the lens iris for the selected camera.
17. **Zoom In/Zoom Out Key** - zoom in or zoom out with the selected camera.
18. **Search key** - places a DVR into search mode.
19. **Telemetry enable/disable key** - allows telemetry control (note, when the joystick is moved, the keyboard automatically enters telemetry mode).
20. **Reverse play key** - places a VCR/DVR into reverse play mode.
21. **Pause key** - places a VCR/DVR into pause.
22. **Direct Control key** - calls a VCR/DVR to control.
23. **Rewind key** - places a VCR/DVR into rewind.

24. **Fast forward key** - places a VCR/DVR into fast forward.
25. **Joystick**
  - ZKX72J 2-axis joystick enables the user to pan and tilt, the selected camera.
  - ZKX73J 3-axis joystick enables the user to pan, tilt and zoom the selected camera.
26. **Enter key** - used to select options when in a menu system.
27. **Record key** - places a VCR/DVR into record mode.
28. **Stop key** - stops playback of a VCR/DVR.
29. **Start key** - starts playback of a VCR/DVR.
30. **Auxiliary 1 key** - toggles auxiliary 1 between ON state and OFF state.
31. **Auxiliary 3 key** - toggles auxiliary 3 between ON state and OFF state.
32. **Autopan key** - starts autopan function for the selected camera (if function is available).
33. **Auxiliary key** - toggles auxiliary between ON state and OFF state (if function is available).
34. **Flip key** - automatically turns the selected dome through 180°.
35. **Auxiliary 2 key** - toggles auxiliary 2 between ON state and OFF state.
36. **Auxiliary 4 key** - In RS485 mode, momentarily switches auxiliary 4 from its OFF state to its ON state for the period the key is held down. In RS232 mode, toggles auxiliary 4 between ON state and OFF state.
37. **Last/Decrement key** - in Tour hold mode, steps backwards through the tour. In VCR mode, reduces playback or record speed.
38. **F1/F2 key** - this key is reserved for future use.
39. **Next/Increment key** - in Tour hold mode, steps forwards through the tour. In VCR mode, increases playback or record speed.
40. **DirectSet key** - allows dome features for the Baxall Pro-Dome to be called to the keyboard.
41. **Multiscreen key** - toggles the multiple picture display on a multiplexer.
42. **Freeze key** - electronically freezes the picture on a multiplexer.
43. **Print key** - this key is reserved for future use.
44. **Search key** - access the search facility on a multiplexer.
45. **Connection port** - used to connect power to the ZKX72J/ZKX73J, and data to a switching system.
46. **Termination/Biasing switches** - used to terminate and/or bias an RS485 network.




Standard Matrix Operations

FEATURE	KEYBOARD COMMAND
Select Monitor	Monitor number →
Select Camera	Camera number →
Select Matrix/Site	Site number →  AND
Telemetry Enable/Disable	
Pan Left/Right	Joystick Left/Right
Tilt Up/Down	Joystick Up/Down
Zoom In	(or Twist Joystick Clockwise on ZKX73J)
Zoom Out	(or Twist Joystick Anti-Clockwise on ZKX73J)
Focus Near	
Focus Far	
Iris Open	
Iris Close	
Flip	
Engage Auto Iris	AND  or
Engage Auto Focus	AND  or
Select Preset	Preset number →
Record Preset	→ Preset number →
Acknowledge Alarm (on selected monitor)	
Select View	View number →
Run Sequence	Sequence number →
Run Tour	Tour number →
Hold Tour/Sequence	AND
Restart Current Tour/Sequence	
Last and Next Camera (When Held)	or















Dome Operations

FEATURE	KEYBOARD COMMAND
Enter Dome Menu Mode	→  AND
Exit Dome Menu Mode	Via Dome Menu
Scroll Up Dome Menu	Joystick Up
Scroll Down Dome Menu	Joystick Down
Scroll Left in Dome Menu	Joystick Left
Scroll Right in Dome Menu	Joystick Right
Cycle Field Options/Values	or  (or Twist Joystick)
Enter Selection	or
Program Pattern	→ Pattern number →  → Move joystick as required → Pattern number →
Run Pattern Continuous	Pattern number +
Aux 1 On/Off	
Aux 2 On/Off	
Aux 3 On/Off	
Aux 4 On/Off (momentary)	













**Matrix Menu Operations**

FEATURE	KEYBOARD COMMAND
Enter Menu Mode	 AND 
Move Cursor Up	Joystick Up
Move Cursor Down	Joystick Down
Move Cursor Left	Joystick Left
Move Cursor Right	Joystick Right
Menu Select	ENTER key
Menu Escape	

**Multiplexer Operations**

FEATURE	KEYBOARD COMMAND
Select Monitor A to E	Monitor number (1=A, 2=B, 3=C, 4=D, 5=E) → 
Telemetry Enable/Disable	
Toggle Multiscreen Display	
Select Preset	Preset number → 
Record Preset	 → Preset number → 
Select Sequence	Sequence number → 
Run Autolist™ Sequence	 → 
Select Macro	Macro number → 
Acknowledge Alarm	
Freeze Picture	
Electronic Zoom	
Search	

**VCR (PIP) / Direct Control Mode (All Functions Available in Direct Control Mode)**

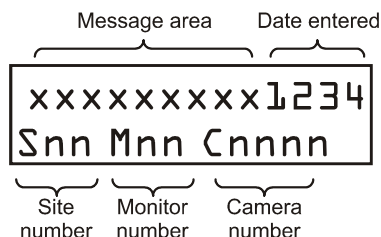
FEATURE	KEYBOARD COMMAND
Select VCR Mode	
Play	
Stop	
Rewind	
Fast Forward	
Record	
Pause	
Reverse Play	
Search	
Menu	
Enter	ENTER key
Increment/Decrement Record or Play Speed	 or 
Up	Joystick Up
Down	Joystick Down
Left	Joystick Left
Right	Joystick Right

**DirectSet Feature**

FEATURE	KEYBOARD COMMAND
Initiate DirectSet	

KEYBOARD DISPLAY

The 16 character, two-line LCD keyboard display shows site, monitor, and camera numbers, as well as various status messages and numerical data entered by the user. The main functional areas of the LCD display are shown below.



**NOTE**

When running a tour, information about the current camera is shown on the monitor displaying the tour. Tour information is not shown on the keyboard LCD display.

SELECTING MONITORS

Workstation monitors display the video from the cameras and domes selected by the operator. Each monitor has an identification number documented by the system administrator.

To select a monitor:

1. Enter the monitor identification number on the numeric keypad. The number entered will appear on the left hand side of the LCD display.
2. Press the MONITOR (M) key. The number entered will appear on the right hand side of the top line of the LCD display.



**NOTE**

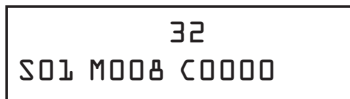
A default system monitor can be selected using the **Special Configuration** menu. This monitor will be automatically selected whenever the keyboard is powered up. See page 24 for more details.

CALLING A CAMERA TO VIEW ON A MONITOR

After a monitor has been called to the control of the keyboard, a camera can be called to view on the monitor. Each system camera has a unique identification number documented by the system administrator.

To call a camera:

1. Enter the camera identification number on the numeric keypad. The number entered will appear on the right hand side of the top line of the LCD display.
2. Press the CAMERA (C) key. The camera number will appear next to the "C" on the display.



The selected video input will now appear on the monitor screen. After calling a camera to the selected monitor, any other camera can be called to the monitor by repeating the two steps above.

ENABLING/DISABLING TELEMETRY

To send telemetry commands to cameras, it is necessary to enable telemetry to the selected camera. The telemetry key has a toggle action.

To enable/disable telemetry on the currently selected camera:

1. Press the TELEMETRY (T) key. Pressing the key again will disable telemetry.

**NOTE**

It is not necessary to enable telemetry in order to use the joystick to control the movement of a camera.



## CONTROLLING A CAMERA'S PAN, TILT AND ZOOM

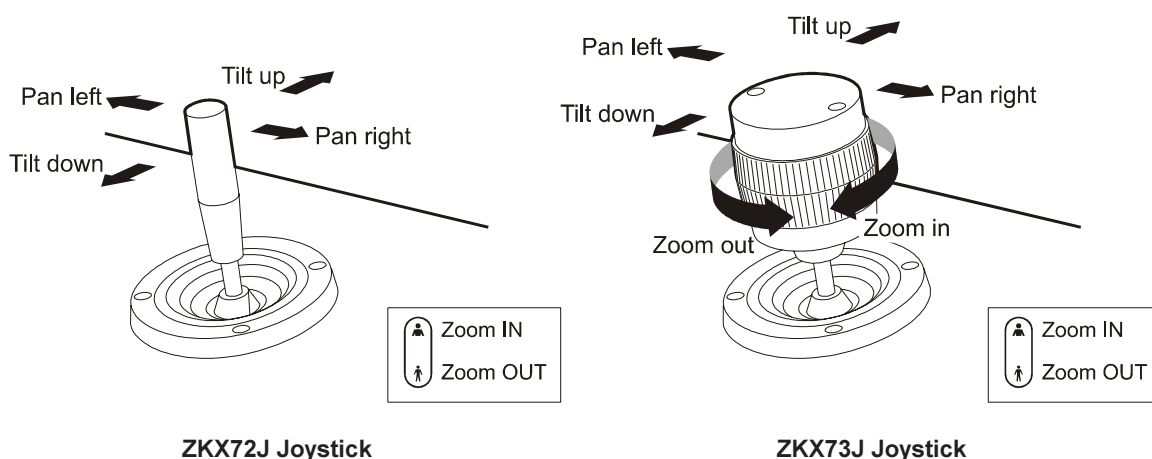
Once an appropriately equipped camera has been called to view on a monitor, the operator can manually control the camera's movement. *Pan* is the side-to-side movement of the camera. *Tilt* is the up and down movement of the camera.

The joystick controls the panning and tilting of cameras connected to the switching matrix. As the joystick is moved to the left or right, and is moved towards or away from the operator, the camera will pan and/or tilt accordingly.

For cameras with variable speed pan/tilt capability, camera movement speed is proportional to the positioning of the joystick. The further from the stationary centre position the joystick travels, the faster the camera will move.

Additionally, the ZKX73J keyboard's 3-axis joystick can control lens *zoom*. *Zoom* refers to the apparent action of moving closer to or farther away from an object, as seen through the camera lens. For cameras equipped with an appropriate zoom lens, the zoom function can be controlled from the ZKX73J joystick by twisting it clockwise or counterclockwise. Twisting clockwise enables the lens to zoom in. Twisting counterclockwise enables the lens to zoom out. The Zoom In/Out button can also be used.

Center the joystick when the camera has been positioned appropriately.



## CONTROLLING CAMERA FOCUS

Focus refers to the action of adjusting the clarity of the camera image displayed on the monitor. To focus the camera on a distant object, press the FAR key. To focus on a closer object, press the NEAR key.



## CONTROLLING THE CAMERA IRIS

Normally, the brightness of a picture is controlled by the camera's auto iris or other feature. However, there may be times when the operator needs the picture on the monitor to appear lighter or darker. To brighten the picture, press the OPEN iris key. To darken the picture, press the CLOSE iris key.



## CONTROLLING CAMERA FLIP

To "flip" a suitably equipped camera 180° from its current position (for uninterrupted surveillance of objects which pass directly beneath the camera), use the FLIP key.

To flip the currently selected camera:

1. Press the FLIP (F) key.

## NOTES

- At present, the ZTX7 matrix switcher is the only unit to support the flip function.
- On suitably equipped dome cameras with the auto-flip function turned on, the dome flips automatically when the subject passes directly beneath the camera.

**AUTO IRIS**

Certain cameras are designed with Auto Iris capability. The feature can be enabled from the keyboard as follows.

To enable auto iris on the currently selected camera:

1. Hold down the FUNCTION (F) key.
2. Press either the OPEN IRIS/CLOSE IRIS keys. Auto-iris operation is enabled.

**NOTE**

Using the manual OPEN or CLOSE iris key will override the Auto Iris function as long as either of these keys is held down. The camera may or may not then return to auto iris mode after a time interval, or it may stay in manual iris mode. This depends on the camera under control and how the camera has been set up.

**AUTO FOCUS**

Certain cameras are designed with Auto Focus capability. The feature can be enabled from the keyboard as follows.

To enable auto focus on the currently selected camera:

1. Hold down the FUNCTION (F) key.
2. Press either the FOCUS NEAR/FOCUS FAR keys. Auto-focus operation is enabled.

**NOTE**

Using the manual Focus FAR or Focus NEAR key will override the Auto Focus function as long as either of these keys is held down. The camera may or may not then return to auto focus mode after a time interval, or it may stay in manual focus mode. This depends on the camera under control and how the camera has been set up.

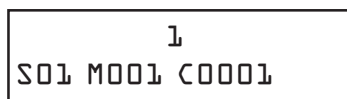
**CALLING PRESETS**

A preset is a memorised location or scene that a pan/tilt camera can display on operator demand. Depending on the connected unit, the operator will have the option of calling a certain number of presets, each with its own unique identification number.

Presets can be positioned and stored using the keyboard (see page 21). Once they have been programmed, presets can be called to view on the selected monitor.

To call a preset:

1. After calling a pan/tilt camera to view, enter the preset identification number using the numeric keys. The number entered will appear on the right hand side of the top line of the LCD display.
2. Press the PRESET (X) key.
3. The preset number entered at step 1 will remain on the right hand side of the top line of the LCD display.



The selected video now appears on the monitor with appropriate pan, tilt, zoom, and focus adjustments.

**CALLING VIEWS**

A view is the simultaneous display of a specific preset position on a specific camera.

To call a view:

1. Enter the view number using the numeric keys. The number entered will appear on the right hand side of the top line of the LCD display.
2. Press the VIEW (V) key.

**RUNNING PATTERNS**

A pattern is a series of pan, tilt, zoom, and focus commands defined for a dome camera. A pattern is programmed in real time, which means that the dome remembers each pattern segment in the actual time it takes the operator to execute a command.

To run a pattern:

1. Call the camera that the pattern will run on.
2. Enter the pattern number using the numeric keys. The number entered will appear on the right hand side of the top line of the LCD display.
3. Press the PATTERN (P) key.

## VIEWING SATELLITE SITES

A *site* is a complete matrix switcher/controller system, providing both local and remote control of resources in a multiple site network. If your workstation supports multiple site switching capabilities, this function accesses remote sites.

To gain access to a remote site:

1. Enter the site number on the numeric keypad. The number entered will appear on the right hand side of the top line of the LCD display.
2. Hold down the SHIFT (⇧) key and press the SITE SELECT (⇄) key. The new site number will appear next to "S" on the LCD display.

```
S03 M0001 C0001
```

It is now possible to call remote site monitors and cameras by the procedures discussed earlier in this manual.

## DOME CAMERA DIRECTSET

The DirectSet feature allows certain dome camera functions to be accessed quickly from the keyboard. Please note that this feature is not available on some dome cameras or controller/matrix systems.

To access the QuickSet menu:

1. Call a monitor.
2. Call a suitable dome camera to command of the keyboard.
3. Press the DIRECTSET (⇄) key.

The dome camera's DirectSet menu will be displayed on the currently selected monitor. Note that the menu options shown depend on the dome camera in use.

```
0 TOGGLE DIRECTSET MENU
1 DOME CONFIG MENU
2 AUTO IRIS/AUTO FOCUS
3 FLIP
4 PEEL PATTERN
10 NIGHT MODE
11 DAY MODE
12 AUTO DAY/NIGHT MODE
13 WDR ON
14 WDR OFF
255 RESET DOME
```

To call a DirectSet function:

1. Enter the number of the function using the numeric keys.
2. Press the DIRECTSET (⇄) key.

For example if a dome flip function was required, enter 3 and press the DIRECTSET key.

If the number for the DirectSet feature is already known to the operator, it can be entered on the numeric keypad and the DirectSet key pressed directly. It is not necessary to call the DirectSet feature menu to the monitor.

**RUNNING TOURS AND SEQUENCES**

A *tour* is a dynamic sequence of camera views, each of which appears on a selected monitor screen for a specified *dwelt time*, and each of which can have a pre-programmed *preset* status, *auxiliary* status, and *connect next* status. When using certain switching devices, the tour function may be referred to as a *sequence*. A sequence is similar to a tour, but whereas a tour will switch between specified views on specified cameras, a sequence simply switches between specified cameras. Both tours and sequences are initiated by following the same procedure.

To run a tour or sequence:

1. Select a monitor.
2. Enter the tour/sequence identification number using the numeric keys. The number entered will appear on the right hand side of the top line of the LCD display.
3. Press the SEQUENCE/TOUR (⏏) key.
4. The LCD display will show "Sequence = *n*" for approximately 5 seconds (where *n* is the tour identification number entered in step 2 above). Whilst the function is running, the text display on the monitor will show the camera number, and in the case of a tour, the view number, currently displayed. e.g. C0023, C0012, C0003, C0023, V001, V124.

**HOLDING A TOUR OR SEQUENCE**

A tour or sequence can be stopped and held on a single camera entry.

To hold a tour:

1. Hold down the SHIFT (⇧) key and press the SEQUENCE/TOUR (⏏) key.

**RESTARTING A HELD TOUR OR SEQUENCE**

To restart a held tour or sequence, press the SEQUENCE/TOUR (⏏) key. The tour or sequence will continue running from the point at which it was previously held.

**STEPPING THROUGH A HELD TOUR OR SEQUENCE**

When a tour or sequence is held, the LAST (←) and NEXT (→) keys can be used to step through it

To step through a tour or sequence:

1. To step forward press the NEXT (→) key.
2. To step backward, press the LAST (←) key.

**REVERSING A TOUR OR SEQUENCE**

When a tour or sequence is running, the NEXT (→) and LAST (←) keys can be used to reverse the direction.

To reverse the direction of a tour:

1. Press the LAST (←) key once. Note, to again reverse the tour, press the NEXT (→) key once.

**STOPPING A TOUR OR SEQUENCE**

A running tour or sequence can be stopped by calling a camera to be displayed on the selected monitor.

**ACKNOWLEDGING ALARMS**

To acknowledge an alarm on a ZMX.. unit:

1. Enter the unit ID number of the ZMX unit.
2. Hold down the SHIFT (⇧) key and press the SITE SELECT (⏏) key.
3. Press the ALARMACKNOWLEDGE (🔔) key.

To acknowledge an alarm on a ZTX6/.. or ZTX7/.. unit, the procedure is slightly different as these units use alarm monitors:

1. Enter the unit ID number of the ZTX6 unit
2. Hold down the SHIFT (⇧) key and press the SITE SELECT (⏏) key.
3. Select the alarm monitor by entering the monitor number and pressing the MONITOR (📺) key
3. Press the ALARMACKNOWLEDGE (🔔) key.

---

**AUXILIARIES**

---

An auxiliary is a relay that switches devices such as camera lights, a camera washer, and a camera wiper, on or off. The keyboard can control four auxiliaries labelled AUX 1, AUX 2, AUX 3, and AUX 4.

AUX 4 has a momentary operation—that is it will remain ON whilst the key is held down. LEDs adjacent to each auxiliary show whether it is currently ON or OFF.

---

**SETTING THE KEYBOARD DISPLAY CONTRAST**

---

The keyboard display contrast can be adjusted if required. To do this:

1. Hold down the FUNCTION (F) key and press the MENU (M) key.
2. Use the Focus NEAR/Focus FAR key to increase/decrease the display's contrast.
3. When the contrast is satisfactory, press the ENTER key.

---

**ENABLING OR DISABLING THE KEYBOARD SOUNDER**

---

By default, the keyboard's sounder sounds each time a key is pressed. This sounder can be disabled if required.

To disable/enable the keyboard sounder:

1. Hold down the FUNCTION (F) key and press the ENTER key to toggle the sounder between enabled and disabled.

---

**OPERATING A VCR OR DIGITAL RECORDER**








---

If Direct Control has been enabled in the Special Configuration menu (see page 24), the operator can control VCR/DVR units in the system.

To initiate VCR/DVR control, the operator performs the following actions:

1. Press the DIRECT CONTROL (DC) key.

The following keys can now be used to control the selected VCR/DVR.

 Reverse Play	 Record key
 Pause key	 Stop key
 Rewind key	 Play key
 Fast forward key	

To cancel VCR/DVR mode, press the DIRECT CONTROL (DC) key again.

**MATRIX MENU**

The keyboard is able to view the main menu of the switching matrix system being used.

To enter matrix menu mode:

1. Hold down the SHIFT (⇧) key and press the MENU (☐) key. This will open the main menu for the switching matrix system on the currently selected monitor.

Using the ZKX73J keyboard, the following functions are available:

- Joystick UP - moves cursor up one character
- Joystick DOWN - moves cursor down one character
- Joystick LEFT - moves cursor left one character
- Joystick RIGHT - moves cursor right one character
- ENTER key - stores entered menu data
- CLEAR (☐) key - return to previous menu

Several Baxall switching systems provide menu programming for a variety of functions. Camera groups, system tours, system salvos, alarm contact tables, monitor arming, and event timers are among the variables that may be defined through menu programming.

For information about the specific tasks that you can do from the main menu, refer to the appropriate switching system operating instructions.

**DOME MENU FUNCTIONS**

The keyboard can be used to configure a suitable dome camera by remotely accessing the dome camera's menu system

To enter the dome camera menu:

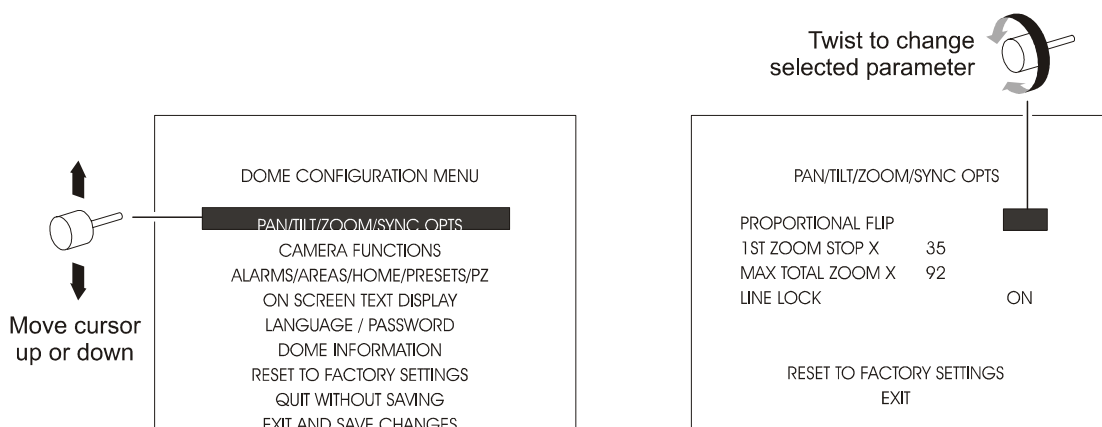
1. Call the dome camera to the monitor.
2. Press the FUNCTION (F) key.
3. Hold down the SHIFT (⇧) key and press the MENU (☐) key. This will open the main menu for the dome on the currently selected monitor.

**NAVIGATING DOME CAMERA MENUS**

The keyboard can be used to navigate through a dome camera's menu system, and to change parameters for the dome camera.

To navigate the dome camera menu:

- Use joystick up/down movements to choose menu items and menu parameters.
- Use joystick left/right movements to move cursor left/right one character.
- Use joystick clockwise/counterclockwise movements, or the Zoom IN/Zoom OUT key to change selected parameters.
- Press the Focus FAR/Focus NEAR key to select menu items or parameters.



To exit a dome camera menu:

1. Use the joystick to select QUIT WITHOUT SAVING - this will exit the dome menu without saving any changes.
2. Use the joystick to select EXIT AND SAVE CHANGES - this will save any changes and exit the dome menu.

---

**SETTING PRESETS**

---

Dome, and pan/tilt cameras can be programmed with one or more presets.

To program a preset:

1. Call the desired camera to a monitor.
2. Maneuver the camera as required using the keyboard's joystick.
3. Press the FUNCTION (F) key.
4. Enter a number for the preset using the numeric keys.
5. Press the PRESET (X) key.

---

**PROGRAMMING DOME PATTERNS**

---

Up to three patterns may be programmed for each programmable dome camera. A pattern is a predefined sequence of dome movements. The three patterns for a dome can collectively consist of up to 98 camera commands. A single pattern cannot have a duration longer than 400 seconds.

To program a pattern:

1. Call the desired dome to a monitor.
2. Maneuver the camera to the position where the pattern will start using the keyboard's joystick.
3. Press the FUNCTION (F) key.
4. Enter a number (1 - 3) for the pattern using the numeric keys.
5. Press the PATTERN (P) key.
6. Maneuver the camera using the joystick to define the pattern.
7. When the pattern movements have been completed, enter the pattern number using the numeric keys.
8. Press the FUNCTION (F) key.

---

**CLEARING PATTERNS**

---

If a dome supports the clear pattern feature, then this keyboard can be used to delete a programmed pattern.

To clear a pattern:

1. Press the FUNCTION (F) key.
2. Enter the pattern number using the numeric keys.
3. Press the PATTERN (P) key.
4. Enter the pattern number using the numeric keys.
5. Press the FUNCTION (F) key.

---

**RECORDING A FULL SCREEN CAMERA SEQUENCE USING THE AUTOLIST™ FUNCTION**

---

ZMX+ series multiplexers are equipped with a system which allows a user to 'teach' it which cameras are to be sequenced and for how long. This facility is called Autolist™. Autolist™ will record your actions as you select cameras including the length of the pauses between selections. Up to 32 camera entries may be included in a Autolist™ sequence and each monitor connected directly to the multiplexer can have an independent Autolist™ sequence programmed for it.

To start an Autolist™ recording:

1. Select the required monitor, ensuring that it is in full-screen live mode.
2. Hold down the SHIFT (⇧) key.
3. Press the Number 1 (1) key followed by the SEQUENCE/TOUR (S/T) key.
4. When the Autolist™ recording is complete, press the Number 1 (1) key followed by the SEQUENCE/TOUR (S/T) key.

Once recorded, an Autolist™ camera sequence can be recalled by selecting the required monitor and then pressing the Number 1 (1) key followed by the SEQUENCE/TOUR (S/T) key. Repeat these key presses to stop the sequence.

**ENTERING THE SPECIAL CONFIGURATION MENU**

During the first five seconds after the unit is powered up, the display shows the current software version number, the selected baud rate, etc. Whilst in this state, the **Special Configuration** menu may be accessed.

1. During the five seconds after power is connected, simultaneously press the SHIFT (⇧) and CLEAR (☒) keys.
2. The LCD will display "Special Config"

**SETTING THE KEYBOARD UNIT ID**

1. Enter the **Special Configuration** menu.
2. Press the VCR REVERSE PLAY (⏮) key.
3. At the "Enter keyboard address" prompt, enter the keyboard address required (default is 1).
4. Press ENTER.

**SETTING THE NUMBER OF KEYBOARD RETRIES**

1. Enter the **Special Configuration** menu.
2. Press the VCR PAUSE (⏸) key.
3. At the "Enter RS485 Retries" prompt, enter the number required (default is 3).
4. Press ENTER.

**SETTING THE NETWORK TIMEOUT PERIOD**

1. Enter the **Special Configuration** menu.
2. Press the VCR SELECT (⏪) key.
3. At the "RS485 Timeout" prompt, enter the period required. The number entered is in units of 5mS e.g. entering 10 will set the timeout period to 50mS.
4. Press ENTER.

**SETTING THE BAUD RATE**

1. Enter the **Special Configuration** menu.
2. Press the VCR REWIND (⏮) key.
3. At the "1=RS485 2=RS232" prompt, press 1 and then the ENTER key. It should be noted that the default is RS485.
4. The display will show:

```
1=1200 2=4800
0=more..
```

Pressing the 0 key will change the display to:

```
3=4800 4=9600
0=more..
```

Pressing the 0 key again will change the display to:

```
5=19200 6=38400
0=more..
```

Pressing the 0 key once more will change the display to:

```
7=57600
0=more..
```

5. Press the number key for the desired baud rate. For example, if the required baud rate is 19200, press the number 5 key, and then the ENTER key.



---

**DISABLING/ENABLING THE SOUNDER**

---

1. Enter the **Special Configuration** menu.
2. Press the VCR FAST FORWARD (⏩) key.
3. At the "Sound 1=On 2=Off" prompt, enter 1, or 2 and then press the ENTER key.

---

**SELECTING RS485 OR RS232 MODE**

---

1. Enter the **Special Configuration** menu.
2. Press the VCR RECORD (⏺) key.
3. At the "Set mode 1=RS485 2=RS232" prompt, enter 1, or 2 and then press the ENTER key.

**? NOTE**

This unit should only be operated in RS485 mode. RS232 mode is included for use with future products.

---

**DISABLING/ENABLING DIRECT CONTROL**

---

1. Enter the **Special Configuration** menu.
2. Press the STOP (■) key.
3. At the "DirectControl 1=On 2=Off" prompt, enter 1, or 2 and then press the ENTER key.

---

**SELECTING THE DEFAULT MONITOR**

---

1. Enter the **Special Configuration** menu.
2. Press the MONITOR (Ⓜ) key.  
The LCD will display the prompt "Enter Default Monitor".
3. Use the numerical keypad to enter the required monitor number and then press the ENTER key.

---

**RESETTING THE KEYBOARD TO FACTORY DEFAULTS**

---

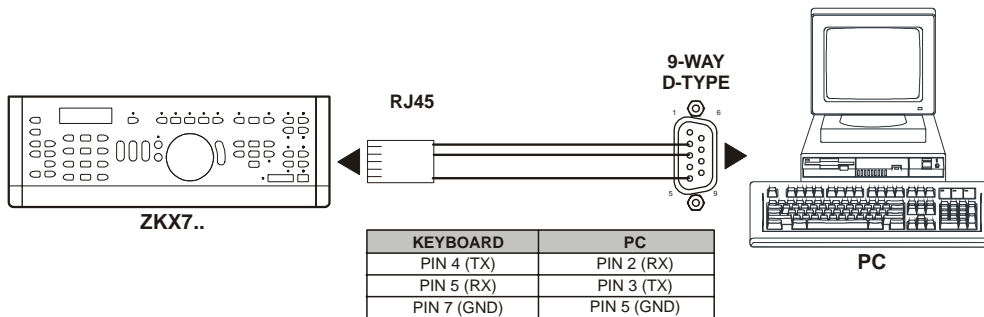
1. Enter the **Special Configuration** menu.
2. Press the VCR PLAY (▶) key.
3. The unit will display the message "Defaults Loaded".

APPENDIX A: VCR REPROGRAMMING

The ability to reprogram the RS232 commands, that are sent out when the unit is in RS485 mode with Direct Control enabled, has been added. The default commands are those applicable to the Direct Control and are shown in the second and third columns below:

Label	Key	Default Command
PLA	Play	<STX>FPL<ETX>
REV	Reverse	<STX>RPL<ETX>
PAU	Pause	<STX>PAU<ETX>
REW	Rewind	<STX>REW<ETX>
FWD	Fast Forward	<STX>FWD<ETX>
REC	Record	<STX>REC<ETX>
STP	Stop	<STX>STO<ETX>
DZM	Digital Zoom	<STX>SEA<ETX>
MEN	Menu	<STX>MEN<ETX>
INC	Increment	<STX>ISP<ETX>
DEC	Decrement	<STX>DSP<ETX>
ENT	Enter	<STX>ENT<ETX>
JLT	Joystick Left	<STX>ARL<ETX>
JRT	Joystick Right	<STX>ARR<ETX>
JUP	Joystick Up	<STX>ARU<ETX>
JDN	Joystick Down	<STX>ARD<ETX>
SLO	-	0x64
FST	-	0x14
PAR	Parity Change	8N1

In order to reprogram these commands, the SEARCH (Ⓢ) key must be pressed within 5 seconds of entering the **Special Configuration** menu (achieved by simultaneously pressing the SHIFT (⇧) and CLEAR (Ⓜ) keys) following a reset. Note that they may only be reprogrammed if the keyboard is configured for RS485 mode with Direct Control enabled. Once this key sequence has been pressed, the reprogramming takes place using a terminal or emulator attached to the RS232 port of the keyboard (as shown below). The baud rate will be whatever was configured on the keyboard for RS232 mode (see **Setting the Baud Rate** on page 23).



The following text should initially be shown on the terminal:

```
PLA 02 46 50 4C 03
REV 02 52 50 4C 03
PAU 02 50 41 55 03
REW 02 52 45 57 03
FWD 02 46 57 44 03
REC 02 52 45 43 03
STP 02 53 54 4F 03
DZM 02 53 45 41 03
MEN 02 4D 45 4E 03
INC 02 49 53 50 03
DEC 02 44 53 50 03
ENT 02 45 4E 54 03
JLT 02 41 52 4C 03
JRT 02 41 52 52 03
JUP 02 41 52 55 03
JDN 02 41 52 44 03
SLO 64
FST 14
```

Type SAV to save, LST to show list, or enter new mapping (eg PLA 41 03)

This text shows the label associated with each key from the table (e.g. PLA) and the hexadecimal values that will be transmitted when the corresponding key is pressed.

To reprogram a particular key, simply type the three-character label, followed by the new command. For example to reprogram the ENTER key to transmit "Hi!", type ENT48 69 21.

Note that:

- Each line is terminated with a carried return (0x0D or CONTROL-M).
- Nothing is displayed if the command is accepted, only if there is an error. Type LST to see what has been done.
- Entries are not case-sensitive.
- All values are 2 digit hexadecimal values.
- Each command string may be 0 (indicating that nothing will be sent) to 10 bytes long.
- Backspaces are not supported. If an error is made, press the ENTER key and retype the line.
- *Values may be separated by spaces, commas or tabs as all are ignored.*

When all the necessary changes have been made, they can be reviewed by typing LST. To save and exit programming, type SAV. To abandon the changes that you have made, simply reset the keyboard.

The two labels SLO and FST represent the time between repeated command transmissions of the 4 joystick operations. The SLO interval is the slow repeat rate when the joystick is deflected a little, and the FST is the fast repeat rate when the joystick is fully deflected. These values are in units of 5mS, so the default slow value of 64 hex is 100 decimal \* 5mS = 500mS.

Changing VCR command parity is specified by PAR DPS where D=Data Bits (7 or 8), P=Parity (N, O or E) and S=Stop Bits (1 or 2), e.g., PAR 8N1 or PAR 7E2. Note that when configuring the VCR, it always uses 8 data bits, no parity and 1 stop bit, and the baud rate selected from the **Special Configuration** menu.

Problem	Check List
X No power to keyboard	<ul style="list-style-type: none"><li>✓ Check AC outlet</li><li>✓ Check wall transformer connections</li><li>✓ Check cable connections to keyboard and keyboard matrix interface</li><li>✓ Measure transformer output at keyboard matrix interface</li></ul>
X No response to keystrokes (power verified)	<ul style="list-style-type: none"><li>✓ Check connection of keyboard matrix interface to system controller's communication port</li><li>✓ Check baud rates for keyboard and system controller</li></ul>
X Keyboard responds to keystrokes on some, but not all keys	<ul style="list-style-type: none"><li>✓ Verify VCR/Monitor status</li></ul>
X Display not visible	<ul style="list-style-type: none"><li>✓ Verify display brightness and contrast level</li></ul>
X Keyboard speaker not audible	<ul style="list-style-type: none"><li>✓ Verify speaker enabled in keyboard menu</li></ul>

**LCD**

Size 16 x 2 white text on black background, user adjustable

**Controls**

Keys 47 Tactile, color coded, rubberised keys

Joystick ZKX72J - Two axis joystick for pan and tilt control  
ZKX73J - Three axis joystick for pan, tilt and zoom control and menu navigation

**Connectors**

RS485, power 2 x RJ45 to switcher/controller via terminal block

**Electrical**

Supply voltage 9 to 15V DC

Maximum current 500mA

**Mechanical**

Dimensions 34.0 x 13.2 x 8.0 cm

Weight (max.) 1.5 kg

Shipping weight 1.9 kg

Construction Mild steel/aluminum with ABS end caps

Color Silver

**Environmental**

Operating temperature 0° to 30° C, 32° to 86° F

Storage temperature 0° to 40° C, 32° to 104° F

Operating humidity 90% max, relative humidity, non-condensing

**Regulatory**

Emissions FCC Part 15, Subpart B Class A  
CE: EN50081-1

Immunity CE: EN50130-4





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