



Keyboard Controller

PIH-931D/932T

INSTRUCTION MANUAL

IMPORTANT SAFEGUARDS

1. Read Instructions

All the 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. Read Warnings

All warnings on the unit and in the operating instructions should be adhered to.

4. Follow Instructions

All operating and user instructions should be followed.

5. Electrical Connections

Only a qualified electrician should make electrical connections.

6. Attachments

Do not use attachments not recommended by the product manufacturer as they may cause hazards.

7. Cable Runs

All cable runs must be within permissible distance.

8. Mounting

This unit must be properly and securely mounted to a supporting structure capable of sustaining the weight of the unit.

SAFETY PRECAUTIONS

	CAUTION RISK OF ELECTRIC SHOCK	
CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT OPEN COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.		



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) instructions in the literature accompanying the unit.

UNPACKING

Unpack carefully. Electronic components can be damaged if improperly handled or dropped. If an item appears to have been damaged in shipment, replace it properly in its carton and notify the shipper.

Be sure to save:

1. The shipping carton and packaging material. They are the safest material in which to make future shipments of the equipment.
2. This Installation and Operating Instruction.

SERVICE

If the unit ever needs repair service, the customer should contact our dealer or branch for authorization to return and shipping instructions.



PREFACE

Thank you for choosing PIH-931D/932T keyboard controller. For trouble free installation and optimum performance please read this manual thoroughly before attempting installation or operation.

CONTENTS

1. Introduction	3
2. Specifications	3
3. Keyboard Layout	4
4. Keypad Panel	5
5. Joystick Operation (Pan/Tilt/Zoom Control)	7
6. Keyboard System Setting	8
7. Fast Dome Operation	10
8. Matrix and Receiver Operation	13
9. DVR Operation	16
10. Wiring Diagrams	19
11. Product Components	20
12. System Overview and Wiring	21

INTRODUCTION

The PIH-931D/932T is a keyboard controller for a range of matrix switchers, dome cameras, DVR and telemetry receivers. It allows operation all the functions of equipment and provides a simple operator interface.

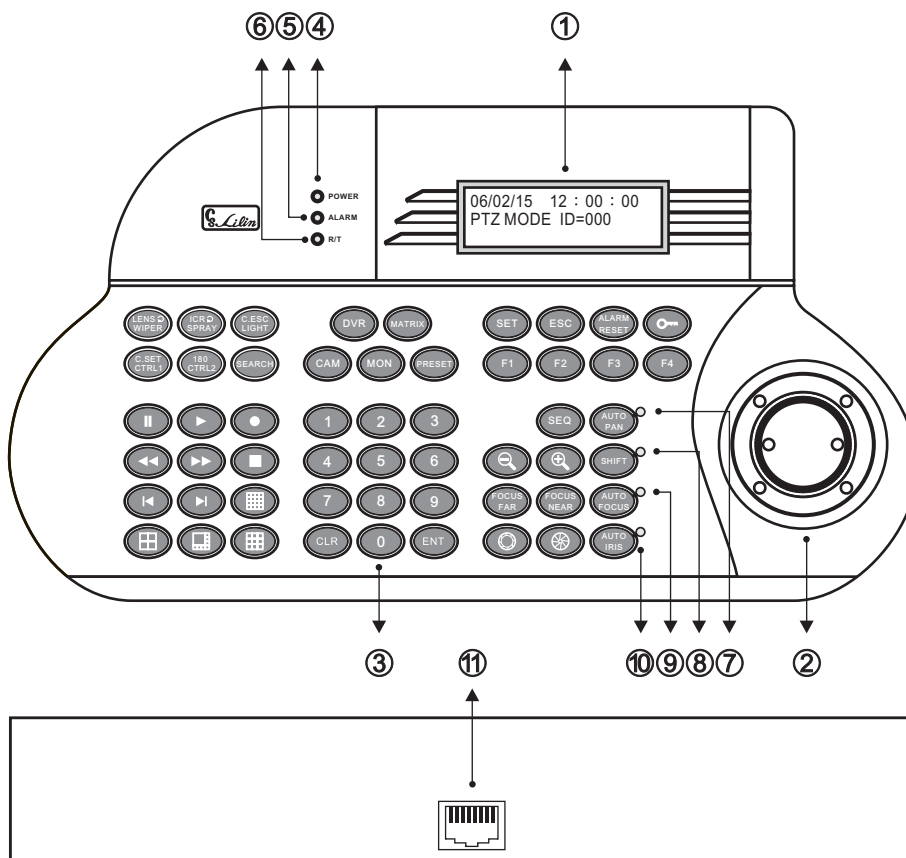
When matrix is present in the system, up to 8 keyboards can be used. However, one of the keyboards must always be configured as the Master, having greater access to settings than the slaves.

Data is transmitted via screened, twisted pair cables, usually in serial configuration. (RS-485)

SPECIFICATIONS

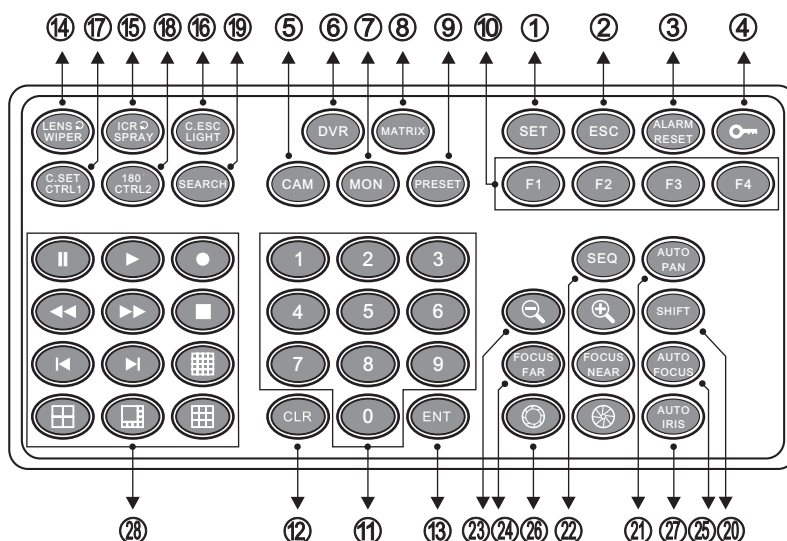
Model No.	PIH-931D	PIH-932T
Joystick	3 Axis (Pan/Tilt/Zoom)	2 Axis (Pan/Tilt)
Movement Speed Control	Pan : 8 Steps Tilt : 8 Steps Zoom : 16 Steps	Pan : 8 Steps Tilt : 8 Steps
Data Communication	RS-485 Standard (Format : N, 8, 1, Baud rate 9600bps)	
Connector	RJ-45 / 8Pin	
Control Mode	PTZ 、 MATRIX 、 DVR	
LCD Display	20 Characters x 4 Lines	
Keyboard Keypad	Total 54 keys : 0~9 Numeric Keys, CAM, MON, MATRIX, DVR, PRESET, CLR, ENT, SET, ESC, ALARM RESET, KEYLOCK, SEQ, AUTO PAN and SHIFT Keys, Lens Control Keys, DVR control Keys, Receiver Control Keys, Function Keys	
Input Voltage	DC 12V $\pm$ 10% / 250mA	
Power Consumption	3W	
Operating Temperature	-5°C ~ +60°C (23°F ~ 140°F)	
Dimension	340(W) x 194(D) x 103(H) mm	
Weight	1350 g	1300 g

KEYBOARD LAYOUT



- ① LCD Display
Display the Keyboard system setup menu and operation information.
- ② Joystick
3 Axis(Pan/Tilt/Zoom) / 2 Axis(Pan/Tilt)
- ③ Keypad Panel
There are 54 Keys which can control PTZ, MATRIX, DVR and Telemetry Receivers.
- ④ Power Indicator
- ⑤ Alarm Indicator
- ⑥ R/T Indicator
Data communicate indication.
- ⑦ Auto pan Indicator
- ⑧ SHIFT Indicator
Shift key status indication.
- ⑨ Auto focus Indicator
- ⑩ Auto iris Indicator
- ⑪ RJ-45 Connector

KEYPAD PANEL



- ① SET key
Enter Setup Menu Mode.
- ② ESC key
Use to exit from any function or programming.
- ③ ALARM RESET key
Reset alarms and video loss alarms.
- ④ (Keyboard Lock) key
Press key for 2 second to enter locking mode.
Press key again for 2 second to unlock the keypad.
- ⑤ CAM key
Select a particular camera.
Or press SHIFT + CAM button to switch to PTZ(Fast Dome) control mode.
- ⑥ DVR key
Select a particular DVR.
Or press SHIFT + DVR button to switch to DVR control mode.
- ⑦ MATRIX key
Press SHIFT + MATRIX button to switch to Matrix control mode.
- ⑧ MON key
Select a particular monitor.
- ⑨ PRESET key
For recalling and storing preset positions.
- ⑩ FUNCTION keys
There are 4 function keys (F1, F2, F3 and F4) to execute different functions under different operation modes.

2006/01/01 12 : 00 : 00

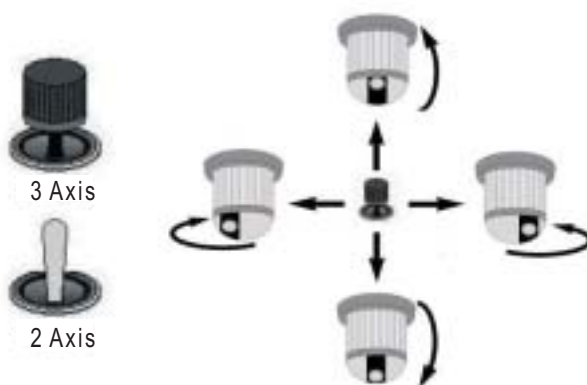
KEYPAD LOCK

- ⑪ Numeric keys
0~9 for entering camera, monitor, DVR number etc.
- ⑫ CLR key
Clear to setting data.
- ⑬ ENT key
Used to enter or confirm data and programming.
- ⑭ WIPER / LENS  key
The housing wiper control key when connects to PIH-820 (Receiver).
➡ Manual speed switch of Zoom, Focus and Iris when connects to PIH-7625D/DW (Day&Night Fast Dome).
- ⑮ SPRAY / ICR  key
This operates the washer system where fitted to a camera housing.
➡ Manual IR Cut Filter Swap when connect to PIH-7625D/DW (Day&Night Fast Dome).
- ⑯ LIGHT / C.ESC key
Auxiliary lighting switch when connects to PIH-820 (Receiver).
➡ OSD Setup Menu escape key when connects PIH-7625D/DW (Day&Night Fast Dome).
- ⑰ CTRL 1 / C.SET key
A spare control key when connects to PIH-820 (Receiver).
➡ OSD Setup Menu recall key when connects to PIH-7625D/DW (Day&Night Fast Dome).
- ⑱ CTRL 2 / 180° key
A spare control key when connects to PIH-820 (Receiver).
➡ 180 Horizontal Instant Flip key when connects to Fast Dome Camera.
- ⑲ SEARCH key
Perform date and time search based on recorded video data when connects to PDR-2160 (DVR).
- ⑳ SHIFT key
Press SHIFT key to switch and match other buttons to execute different functions.
- ㉑ AUTO PAN key
Put a Pan/Tilt head into auto pan mode or a Fast Dome Camera into auto tour mode.
- ㉒ SEQ key
Start an automatic switching sequence on a particular monitor.
- ㉓   (ZOOM IN / ZOOM OUT) keys
Adjust the zoom of the lens manually.
- ㉔ FOCUS FAR / FOCUS NEAR keys
Adjust the focus of the lens manually.

- ⑤ AUTO FOCUS key
Set the focus of the lens to automatic mode when connects to Fast Dome Camera.
- ⑥   (IRIS OPEN / IRIS CLOSE) keys
Open or close the iris of the lens manually.
- ⑦ AUTO IRIS key
Set the iris of the lens to automatic mode.
- ⑧ DVR Control keys
DVR operational keys including 4, 8, 9, 16 split display, record, playback, pause, stop, fast forward and fast rewind.

JOYSTICK OPERATION (Pan/Tilt/Zoom Control)

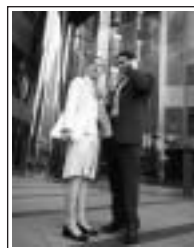
1. The joystick can be used to control the Fast Dome Camera's left, right, up and down movements.



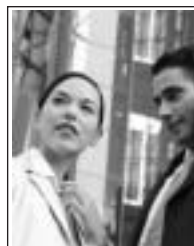
2. The joystick can be used to control Fast Dome Camera's zoom in and zoom out function.



Stick turn counter-clockwise to zoom out.



Stick turn clockwise to zoom in.



KEYBOARD SYSTEM SETTING

Press SHIFT + SET button to activate the Keyboard system setup menu. Tilt the joystick up or down to select the menu setup page. Press the 1~8 button to set the number of the desired sub setup item. Press the ESC button to exit the sub setup item or keyboard system setup menu.



MENU SETUP 1/3
1. KEYBOARD ID
2. SYSTEM MODE
3. PROTOCOL



MENU SETUP 2/3
4. TONE
5. DATE/TIME
6. DATE FORMAT



MENU SETUP 3/3
7. DISPLAY
8. TRANSMISSION
9. INFORMATION

1. KEYBOARD ID

When use multi-keyboard or under MATRIX control mode, have to setup Keyboard ID. Press the 1~8 button to set the Keyboard ID number.

KEYBOARD ID SETUP
Select (1-8) for ID
ID=1

Note : Assign number 1 to set the keyboard ID for the master controller.

2. SYSTEM MODE

Select the system operation mode of the Keyboard controller by tilting the Joystick left or right to change the operation mode.
(PTZ ↔ DVR ↔ MATRIX)

SYSTEM MODE SETUP
Move L/R Select Mode
PTZ MODE

3. PROTOCOL

Select the protocol type of the operation mode, press the 1~3 button to select the operation mode.

- ① Press the 1 button to set the protocol type for PTZ mode.

➡ Press the 1 button to select the protocol for the PIH-7000/7600/7625.
(Same as Lilin 717)

➡ Press the 2 button to select the protocol for the PIH-7601/7602/7610/7622.

PROTOCOL SETUP

1. PTZ
2. DVR
3. MATRIX

PTZ MODE

1. PIH-7000/7600/7625
2. PIH-7601/7602/7610
PIH-7622

- ② Press the 2 button to set the protocol type for DVR mode.

➡ Press the 1 button to select the protocol for PDR-2160.

DVR MODE

1. PDR-2160

- ③ Press the 3 button to set the protocol type for MATRIX mode.

➡ Press the 1 button to select the protocol for PIH-816/832/864.

MATRIX MODE

1. PIH-816/832/864

Note : Finish the setup, display will jump back to previous setup screen.
The setup data will be saved on EEPROM.

4. TONE

Keypad tone and Alarm tone ON/OFF control.

- ① Keypad Tone

Press the 1 button to turn on or turn off the buzzer for keypad tone.

TONE SETUP

Press Digit ON/OFF

1. Keypad tone : ON
2. Alarm tone : ON

Note : Keypad tone ON, when properly operation of keyboard controller, it will send out bi-bi sound to confirm. If wrongful usage, it will send out bi-bi-bi sound to respond.

However, keypad tone OFF, there is no "bi" sound respond.

- ② Alarm Tone

Press the 2 button to turn on or turn off the siren speaker for alarm tone.

5. DATE / TIME

Date and Time setting, press a number on number pad to enter the date and time, used the Joystick left or right to move the cursor position and press the ESC button to finish the setup.

Note : The setup Date format is YY/MM/DD.

DATE / TIME SETUP

06/01/01 12 : 00 : 00

6. DATE FORMAT

Select the Date display format, press the 1~3 button to select the display format.

DATE FORMAT

1. YYYY/MM/DD
2. MM/DD/YYYY
3. DD/MM/YYYY

7. DISPLAY

Setup Time display ON/OFF.

① Time display

Press the 1 button to turn on or turn off the time display on the LCD.

DISPLAY SETUP

Press Digit ON/OFF
1. Time Display : ON

8. TRANSMISSION

① Continue

Press the 1 button to set as continued transmission mode (per 100 millisecond transmits Protocol once).

② One shoot

Press the 2 button to set as single transmission mode. Only when press button, then transmits the protocol.

TRANSMISSION SETUP

1. Continue
2. One shoot

9. INFORMATION

Product mode, Joystick type and System version information display.

SYSTEM INFORMATION

Product :
Joystick 3 axis
Version : 1.0.02

FAST DOME OPERATIONS

● Switch to PTZ Control Mode

Press SHIFT + CAM button to set the keyboard controller to the PTZ operation mode.



2006/01/01 12 : 00 : 00
PTZ MODE ID=000

● Function keys

F1 : To set the speed that Fast Dome Camera travels between preset positions.

F2 : To set the dwell time of preset position.

F3 : To store the preset data and the save data will be show in the LCD.

F4 : To set the preset groups.

SHIFT + F1 : 180 Horizontal Instant Flip. (Same as key)

SHIFT + F2 : Manual speed switch of Zoom, Focus and Iris. (Same as key)

SHIFT + F3 : IR Cut Filter Swap. (Same as key)

● Menu Setup Using Joystick

Press the SET button to activate the Fast Dome Camera setup menu.

	Move cursor up		Move cursor down
	1. Decrease a digit 2. Move cursor left		1. Increase a digit 2. Move cursor right
	Enter a submenu		ESC/Exit a setup menu

● Call Camera

Enter a number from 1~256 using the number pad and press the CAM button to select the camera.

Example : Call camera #12.



2006/01/01 12 : 00 : 00
PTZ MODE ID=xxx

Note : The number entered will be show on LCD panel in the format of PTZ mode ID=XXX.

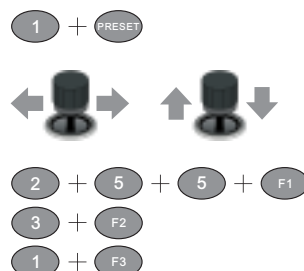
● Setting Preset Position

- ① Enter a number from 1~128 using the number pad and press the PRESET button to select the preset position.
- ② Use the joystick to movement the Fast Dome Camera to monitor the desired area.
- ③ Enter a number from 1~255 and press the F1 button to set the Speed value.
- ④ Enter a number from 1~255 and press the F2 button to set the Dwell value.
- ⑤ Press the 1 button and press the F3 button to save the preset data.

2006/01/01 12 : 00 : 00
 PTZ MODE ID=001
 SAVE PRESET 001
 DWELL=003 SPEED=255

Example : Set preset #1.

- ① Select the preset position.
- ② Use the joystick to movement the Fast Dome Camera to monitor the desired area.
- ③ Set the Speed value.
- ④ Set the Dwell value.
- ⑤ Save the preset data.



Note : Enter a number 9 0 1 1 and press CLR button can clear all preset position data.

● Call Preset Position

Enter a number form 1~128 using the number pad and press the PRESET button to call the preset position.

Example : Call preset #1.



2006/01/01 12 : 00 : 00
 PTZ MODE ID=001
 CALL PRESET 001
 DWELL=003 SPEED=255

Note : The preset position data will be show on the LCD panel.

● Setting Preset Group

The first 16 preset positions of each Fast Dome Camera are separated into 4 groups. Preset group must be set for the auto pan reference.

Group 1 includes : 1st, 2nd, 3rd and 4th preset positions.

Group 2 includes : 5th, 6th, 7th and 8th preset positions.

Group 3 includes : 9th, 10th, 11th and 12th preset positions.

Group 4 includes : 13th, 14th, 15th and 16th preset positions.

Example : 1. To set Group 1

Press the 1 button and press the F4 button to setting.



```
2006/01/01 12 : 00 : 00
PTZ MODE ID=001
PRESET GROUP
SET= 1
```

2. To set Group 2, 3 and 4

Press the 2, 3, 4 buttons and press the F4 button to setting.



```
2006/01/01 12 : 00 : 00
PTZ MODE ID=001
PRESET GROUP
SET= 2+3+4
```

● PTZ & Lens Control

	Pan left		Pan right
	Tilt up		Tilt down
	Zoom in		Zoom out
	Zoom in		Zoom out
	Focus far		Focus near
	Iris close		Iris open

● Pan/Tilt/Zoom display information

- ➡ "Pan_L=000~007" : The camera pan left and movement of speed.
- ➡ "Pan_R=000~007" : The camera pan right and movement of speed.
- ➡ "Pan_U=000~007" : The camera tilt up and movement of speed.
- ➡ "Pan_D=000~007" : The camera tilt down and movement of speed.
- ➡ "Zoom_I =000~015" : The camera zoom in and movement of speed.
- ➡ "Zoom_O=000~015" : The camera zoom out and movement of speed.

2006/01/01 12 : 00 : 00
 PTZ MODE ID=001
 Pan_L=000 Tilt_U=007
 Zoom_I=015

Note : The higher movement values the faster speed.

● Alarm Information

When alarm altering, alarm indicator will be blinking and activate siren speaker (Alarm tone : ON) at same time. LCD can show 6 alarm information in sequence, the 7th alarm information will replace 1st alarm information.

Alarm information will not be cleared automatic, and need to press ALARM RESET button to clear the data.

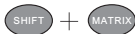
2006/01/01 12 : 00 : 00
 PTZ MODE ID=001
 ID=001 Alarm No=001
 ID=001 Alarm No=002

Note : For setting Fast Dome Camera other features or functions, please refer to PIH-7000/7600/7625 and PIH-7601/7602/7610/7622 Instruction manual.

Matrix and Receiver Operations

● Switch to MATRIX Control Mode

Press SHIFT + MATRIX button to set the keyboard controller to the Matrix operation mode.



2006/01/01 12 : 00 : 00
 MATRIX MODE

● Function Keys

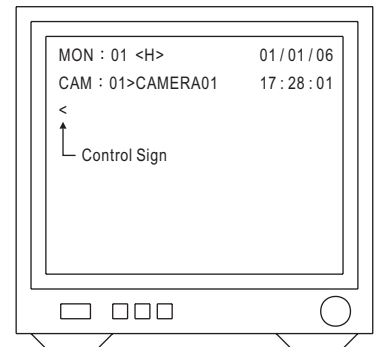
- F1 : Turn on/off the on-screen display (time, date and camera number).
- F2 : Display the list of last 10 alarms or video loss alarms information on the monitor.
- F3 : Adjust the position of the on-screen display.
- F4 : Set the P/T/Z preset position groups.

● KEYBOARD ID Setting

Under MATRIX mode, need to setup keyboard ID. (Please refer to keyboard system setup)

● Prompt "<"

- ① Matrix System can only be controlled and operated when "<" sign is displayed.
- ② Enter a number form 1~16 using the number pad and press MON button to select the monitor and the "<" control sign will appear on the monitor signaling the system is ready for setup or operation.
- ③ The "<" control sign will disappear automatically when there isn't any operation or setting for 5 minutes.



● Menu Setup Mode

Press the SET button under "<" control sign to activate the Matrix setup menu.

	Move cursor up		Move cursor down
	Move cursor left		Move cursor right
	Enter a submenu		ESC/Exit a submenu
~		Use the 0~9 numeric keys to set the number of the desired submenu or setup data.	

● Call Monitor

Enter a number form 1~16 using the number pad and press the MON button to select the monitor.

Example : Call monitor #2

+

Note : The number entered will be show on the Monitor.

● Call Camera

Enter a number form 1~64 using the number pad under "<" control sign and press the CAM button to select the camera.

Example : Call camera #12

+ +

- PTZ Control via Matrix

To control PTZ camera in matrix, perform call camera in the preset monitor. Once a camera of a monitor gets controlled, the following PTZ operations can be performed.

	Pan left		Pan right
	Tilt up		Tilt down
	Zoom in		Zoom out
	Zoom in		Zoom out
	Focus far		Focus near
	Iris close		Iris open
	Auto pan		180° Reverse
	Camera Menu Setup		Camera Menu Esc
	Lens Speed Swap		IR Cut Filter Swap

Note : To enter Fast Dome setup menu under Matrix control mode, must press  key after "<" control sign, and press  key to exit setup mode.

- Alarm Information

If alarm is trigged under matrix control mode, keyboard controller will not respond the alarm information. The alarm information will only show on monitor of matrix.

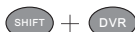
Note : For setting Matrix other features or functions, please refer to PIH-816/832/864 Instruction manual.

DVR OPERATIONS

There are four main DVR features including multiplexer, menu setup, PTZ control and playback controllable by the keyboard controller.

● Switch to DVR Control Mode

Press the SHIFT button and the DVR button to set the keyboard controller to the DVR operation mode.



2006/01/01 12 : 00 : 00
DVR MODE ID=000

● DVR Multiplexer Features

① Control DVR

Enter a number from 1~255 using the number pad and press DVR button to select the DVR.

Example : Control DVR #12



2006/01/01 12 : 00 : 00
DVR MODE ID=xxx

Note : The number entered will be shown on the LCD panel in the format of DVR MODE ID=xxx.

② Call Camera

After a DVR gets controlled, enter a number from 1~16 using the number pad and press the CAM button to select the camera.

Example : Call camera #8 of DVR #12



➡ Direct to access a camera of a particular DVR

Enter the camera's ID (1~4080) and press CAM button. Then camera ID gets resolved (divided by 16) to its DVR by keyboard controller.

Example : 1. Call camera #17

Enter camera number 17
and press the CAM button.
(DVR #2's first camera).



2006/01/01 12 : 00 : 00
DVR MODE ID=002
CAM=001
CALL CAMERA 017

2. Call camera #128

Enter camera number 128
and press the CAM button.
(DVR #8's camera #16)



2006/01/01 12 : 00 : 00
DVR MODE ID=008
CAM=016
CALL CAMERA 128

③ Window-Division Mode

To perform window division feature of a DVR, press the following window division buttons.

 16 window-division.

 9 window-division.

 8 window-division.

 4 window-division.

● DVR Sequential Display

Press SEQ button to display camera's full screen in a sequence with specific time period.

● DVR Menu Setup

After a DVR gets controlled, press the SET button to activate the DVR's setup menu.

	Enter a submenu		ESC/Exit a submenu
	Move cursor up		Move cursor down
	Decrease a digit		Increase a digit
	Enter a submenu		ESC/Exit a submenu

● DVR Playback

To perform DVR playback feature, press PLAY button or SEARCH button.

➡ PLAY button can invoke playback menu. Use 3D joystick to move menu cursor and perform playback feature.

➡ SEARCH button can invoke time search feature of the DVR. Use 3D joystick to move menu cursor.

	1. Enter a submenu in playback menu 2. Fast forward video in playback mode		ESC/Exit a submenu
	1. ESC/Exit a submenu in playback menu 2. Fast reverse video in playback mode		Move cursor down
	Decrease a digit		Increase a digit

● Video Playback Operations

☛ Pause

Press PAUSE button during playing video can pause the video in pause mode.

☛ Play

Replay the video after Pause, Fast Forward or Fast Rewind.

☛ Fast Forward

Fast forward the playback video.

☛ Fast Rewind

Fast rewind the playback video.

☛ Stop

Stop the playback video and return to playback menu.

☛ Record / Stop Record

Perform DVR record or stop DVR recording operation.

Note : Select various split display modes on live and playback monitoring.

● PTZ Control via DVR

To control PTZ camera in live monitoring mode, press ENTER button to gain camera control sequentially in window-division mode or perform call camera in full screen mode.

Once a camera of a DVR gets controlled, the following PTZ operations can be performed.

	Zoom in		Zoom out
	Pan left		Pan right
	Tilt up		Tilt down
	Zoom in		Zoom out
	Focus far		Focus near
	Iris close		Iris open
	Auto pan		

● Recall a Preset

To recall a preset point of a PTZ device , please number key and followed by PRESET key.

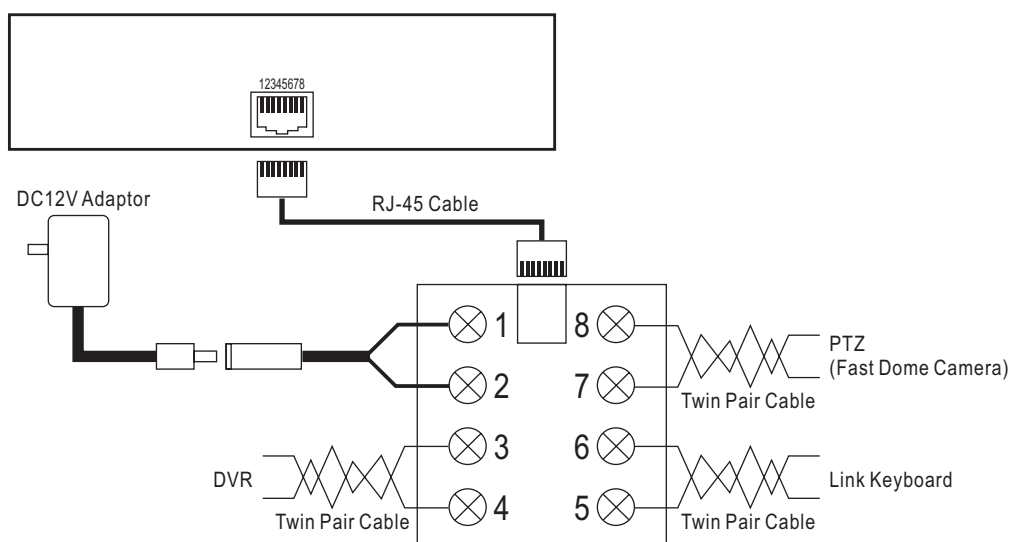
Example : Recall 16 preset of camera #21

2 + 1 + CAM + 1 + 6 + PRESET

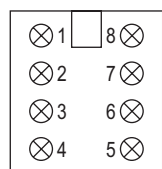
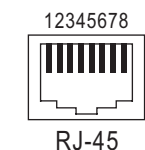
Note : For setting PTZ presets, other features or functions, please refer to PDR-2160/3160 Instruction Manual.

WIRING DIAGRAM

① Connecting Keyboard Controller and Connector Box.



② RJ-45 and Connector Box Pin Assignment.



Connector Box

Terminal	Name	
1	DC +12V input	
2	GND	
3	RS-485 +	DVR
4	RS-485 -	DVR
5	RS-485 + OUT	Link Keyboard
6	RS-485 - OUT	Link Keyboard
7	RS-485 + IN	PTZ or Matrix
8	RS-485 - IN	PTZ or Matrix

PRODUCT COMPONENTS

① Keyboard Controller



② Connector Box



③ RJ-45 Connection Cable



④ Power Adaptor

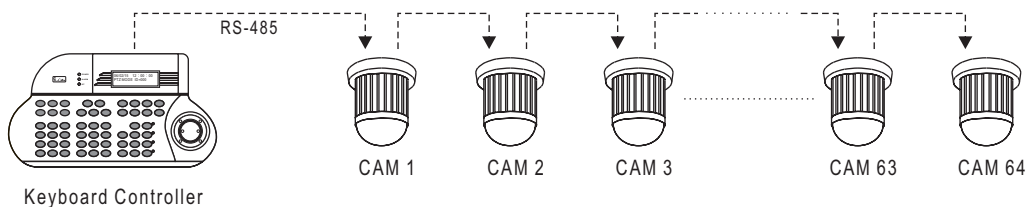


⑤ User's Instruction Manual

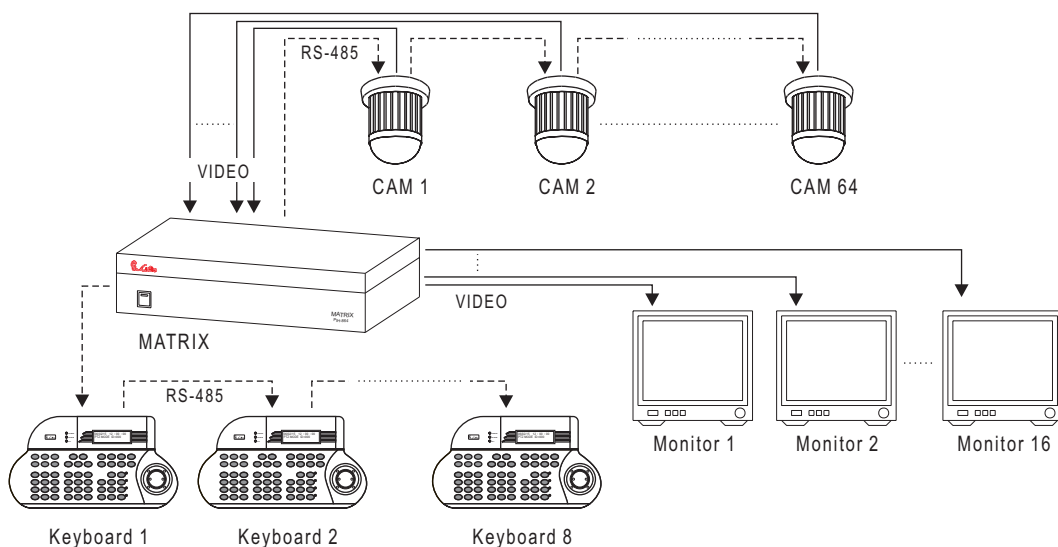


SYSTEM OVERVIEW

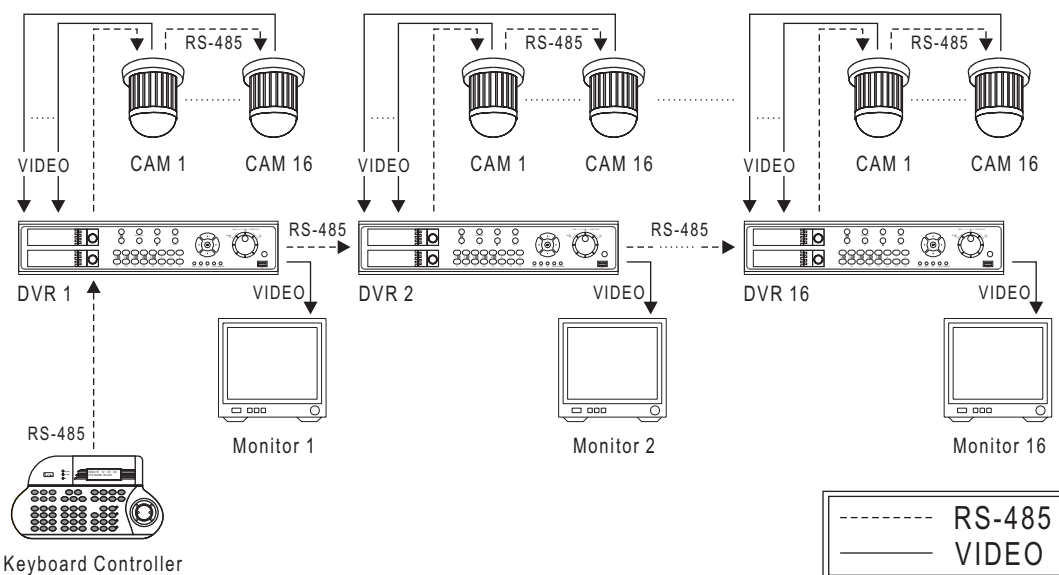
① PTZ (Fast Dome Camera) System Block



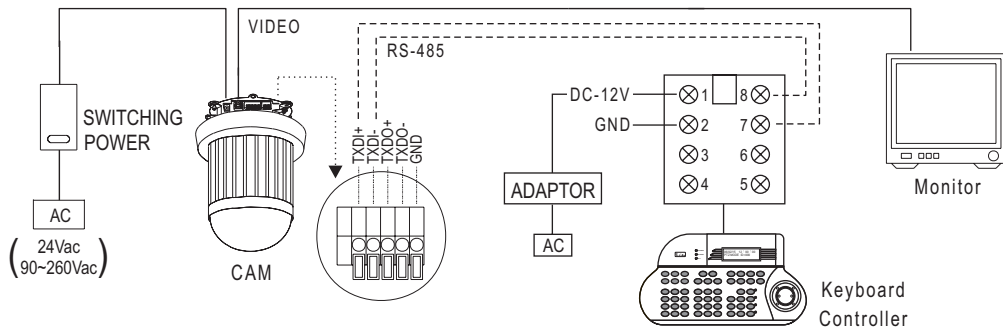
② Matrix System Block



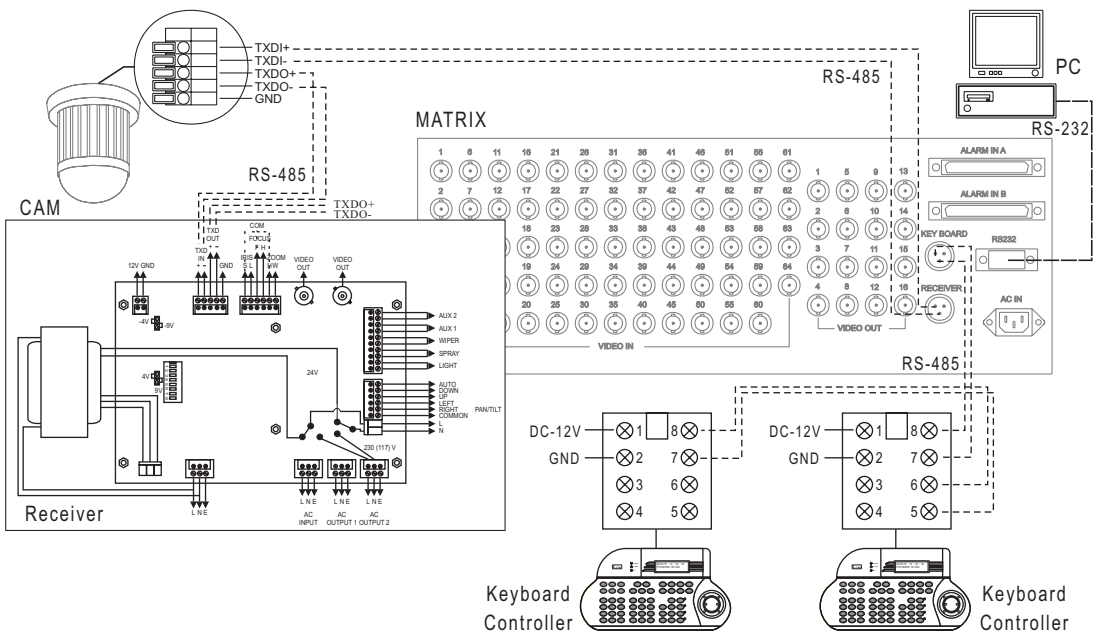
③ DVR System Block



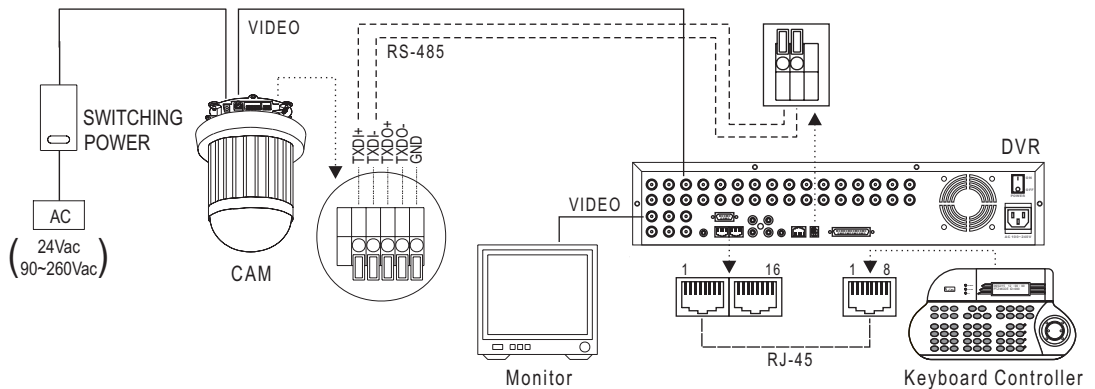
① PTZ (Fast Dome Camera) System Wiring



② Matrix and PTZ (Fast Dome Camera) System Wiring



③ DVR and PTZ (Fast Dome Camera) System Wiring





MERIT LI-LIN ENT. CO., LTD
<http://www.meritlilin.com>

66-931CSE