SPECO TECHNOLOGIES KEYBOARD CONTROLLER
KBD-927

Instruction Manual

L

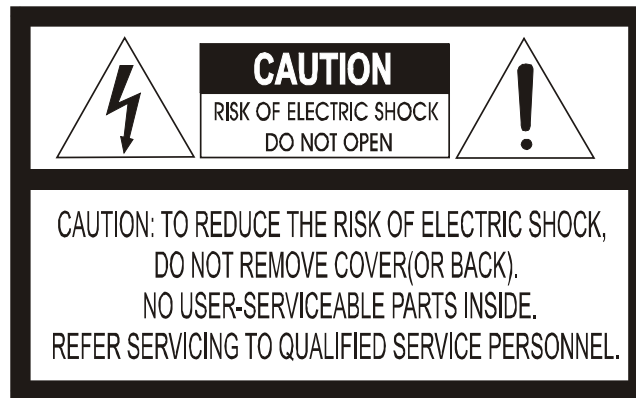*Please read this manual thoroughly before use and keep it handy for future reference.*

Rev.040130

WARNING AND CAUTION

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECTS THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

CAUTION

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER(OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

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.

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FCC COMPLIANCE STATEMENT

FCC INFORMATION: 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 HIS 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.

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.

CE COMPLIANCE STATEMENT

WARNING

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.

IMPORTANT SAFEGUARDS

1. READ INSTRUCTIONS -- All the safety and operating instructions should be read before the appliance is operated.

2. RETAIN INSTRUCTIONS -- The safety and operating instructions should be retained for future reference.

3. CLEANING -- Unplug video monitor or equipment from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

4. ATTACHMENTS -- Do not use attachments not recommended by the video monitor or equipment manufacturer as they may result in the risk of fire, electric shock or injury to persons.

5. WATER AND MOISTURE -- Do not use video monitor or equipment near water -- for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, or the like.

6. ACCESSORIES -- Do not place video monitor or equipment on an unstable cart, stand or table. The video monitor or equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.

6A. Video monitor or equipment and cart combinations should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the equipment and cart combination to overturn.

7. VENTILATION -- Slots and openings in the cabinet and the back or bottom are provided for ventilation, and to ensure reliable operation of the video monitor or equipment and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the video monitor or equipment on a bed, sofa, rug, or other similar surface. Video monitor or equipment should never be placed near or over a radiator or heat register. Video monitor or equipment receiver should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.

8. POWER SOURCES -- Video monitor or equipment 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 home, consult your video monitor or equipment dealer or local power company. For video monitor or equipment designed to operate from battery power refer to the operating instructions.

9. GROUNDING OR POLARIZATION -- This video monitor may be equipped with a polarized alternating - current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

Alternate Warnings - This video monitor is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.

10. POWER CORDS -- Do not allow anything to rest on the power cord. Do not locate video monitor or equipment where the cord will be abused by persons walking on it.

11. HEED WARNINGS -- Follow all instructions marked on the video monitor or equipment.

12. LIGHTNING -- For added protection for video monitor or equipment during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video product due to lightning and power-line surges.

13. OVERLOADING --Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

14. OBJECT AND LIQUID ENTRY -- Never push objects of any kind into video monitor or equipment through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

15. SERVICING -- Do not attempt to service video monitor or equipment yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

16. DAMAGE REQUIRING SERVICE -- Unplug video monitor or equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions:

A. When the power-supply cord or the plug has been damaged.
B. If liquid has spilled, or objects have fallen into the video product.
C. If the video product has been exposed to rain or water.
D. If the video product 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 video product to its normal operation.
E. If the video product has been dropped, or the cabinet damaged.
F. When the video product exhibits a distinct change in performance -- this indicates a need for service.

17. REPLACEMENT PARTS -- When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.

18. SAFETY CHECK -- Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine that the video product is in proper operating condition.

19. FIELD INSTALLATION -- This installation should be made by a qualified service person and should conform to all local codes.

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INTRODUCITON

1.1 Features

This keyboard controller is capable to control 32 FastraxII dome cameras and remote control functions for variety of external switching devices like Multiplexer(max 255), Digital Video Recorder(max 99) etc…

The keyboard controller features:

- The capability of control a camera's panning and tilting movement with variable speed from 0.5 °/sec to 90°/sec as well as its zoom, focus, and iris command. Normal speed is inversely proportional to the current zoom ratio. Turbo speed is Max 380°/sec when **Ctrl** key pressed.
- The ability to define and recall up to 240 **presets**, which are immediate camera call-ups of preset position view, with automatic zoom and focus.
- The ability to define and run up to 8 **patterns**, which comprise a sequential series of pan, tilt, zoom, and focus movements from a single camera.
- The ability to define and run up to 8 **scans**, which scan between two limits.
- The capability to incorporate up to 300 of the presets, patterns, scan and tour itself in up to 8 **tours**, where the presets, patterns and scan automatically displayed one after the other on the Main monitor.
- **Global preset** recalls preset of all dome cameras.
- Auto Iris mode activated by moving the joystick slightly.
- Auto Focus mode is activated by twisting the zoom handle slightly.
- Programmable user preferences (alarm, preset, title, etc.).
- Administrator and user, two levels of password are supported for higher security.
- One Master and slave Keyboard is supported to control in a distant place.
- Multiplexers (Max 255) and DVR system (Max 99) can be controlled remotely.
- Up to two programmed data from domes can be downloaded to none volatile memory space in KBD, and uploads to a new dome.
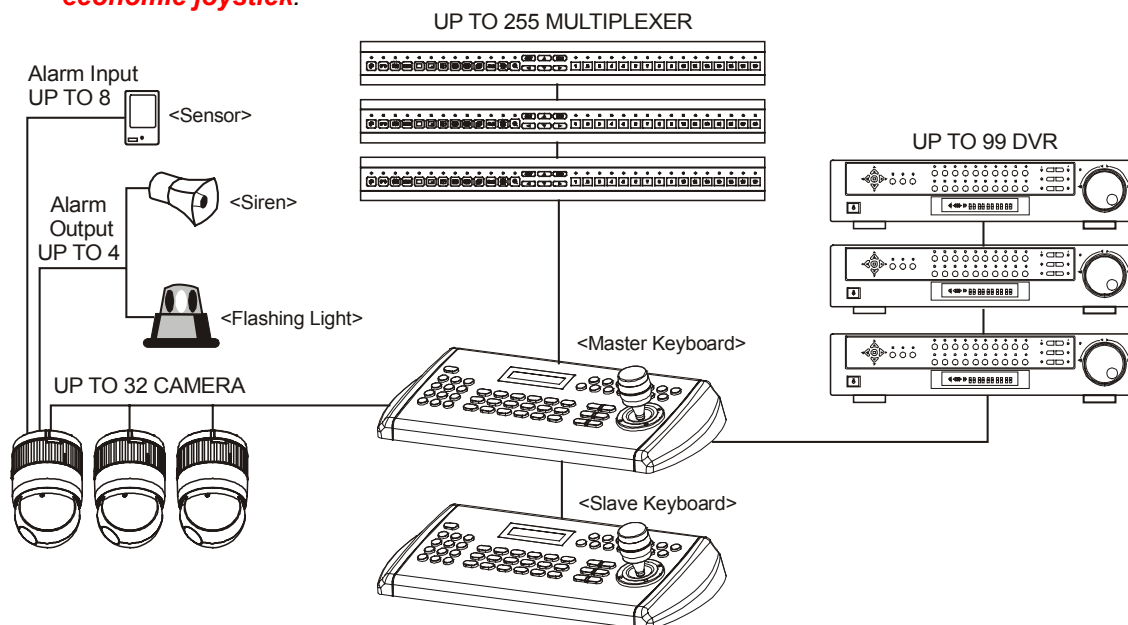- ***There are two type of controller which has professional joystick with zoom handle or simple economic joystick.***

Figure 1 – Typical system Configuration

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1.2 Unpacking

Unpack the equipment and make sure all listed items are included in the box.

Contents of Keyboard box

Keyboard controller ------------------------------- 1

Junction box --------------------------------------- 1

3m cable -- 2

M4 Self tapping screws ------------------------- 4

Instruction manual ------------------------------- 1

12VDC SMPS -------------------------------------- 1

Chapter 2
INSTALLATION

2.1 Connection Diagram
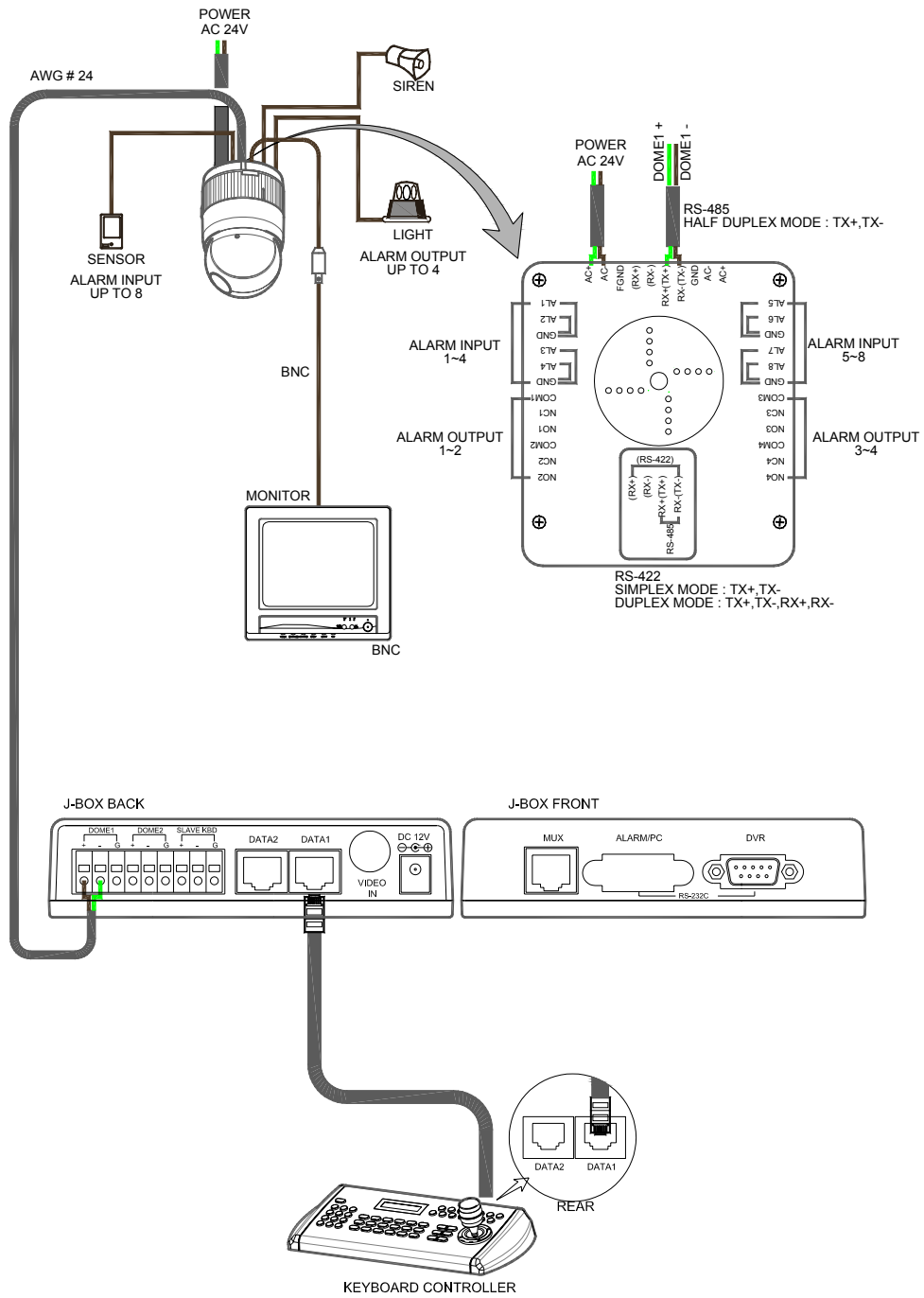### 2.1.1 Basic Installation Diagram

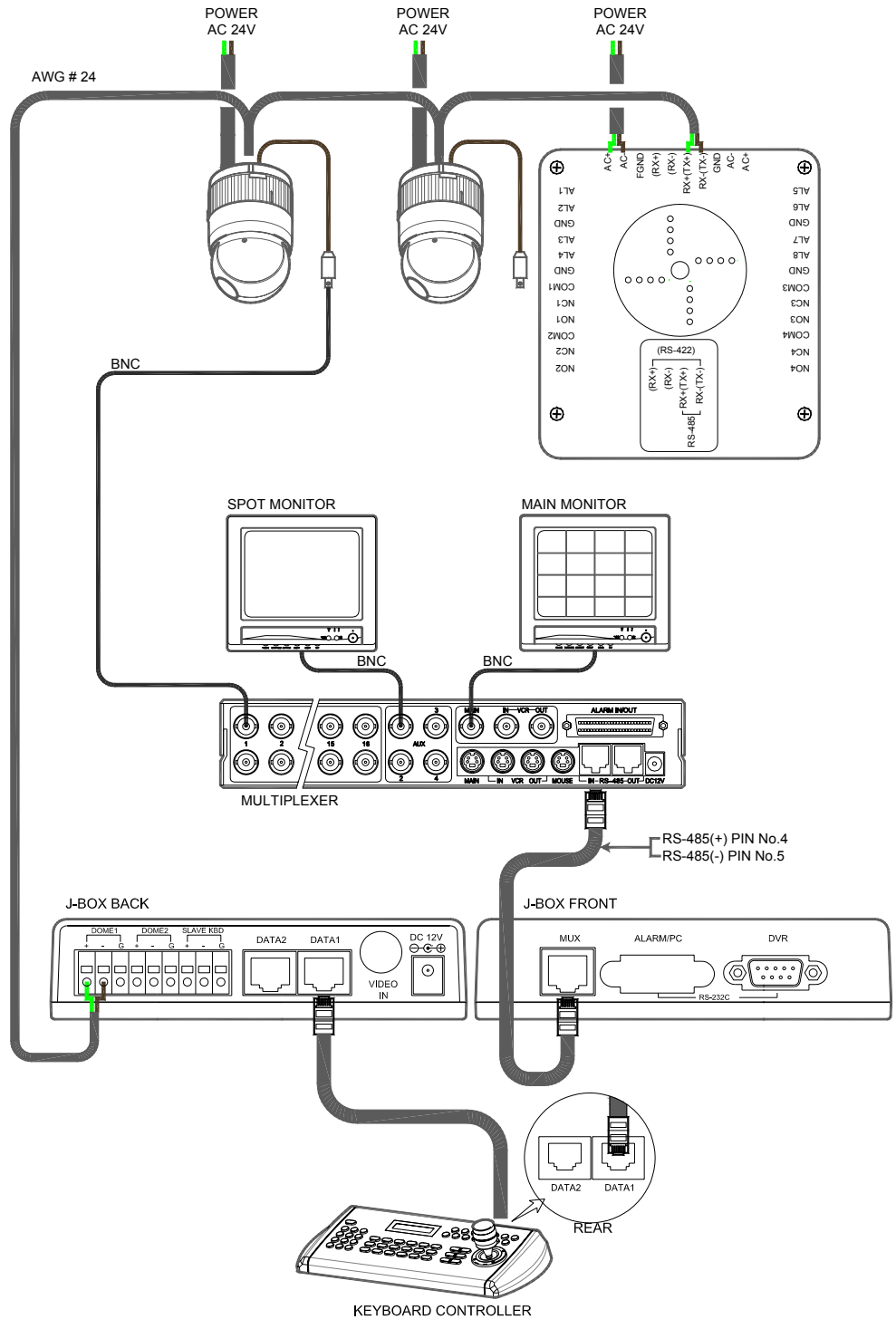**Figure 2 – Basic installation diagram**

2.1.2 Single Multiplexer

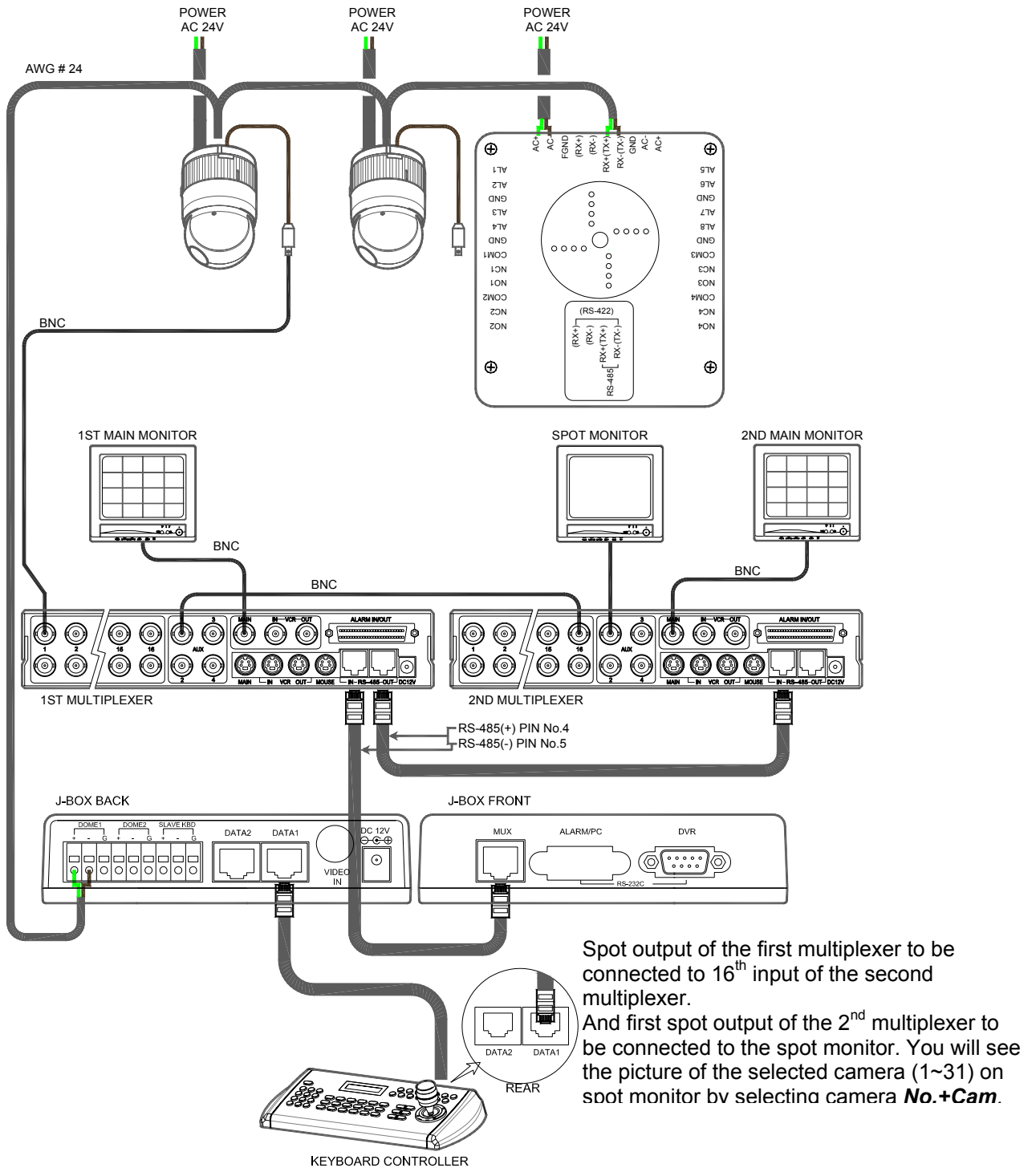**Figure 3 – Single Multiplexer**
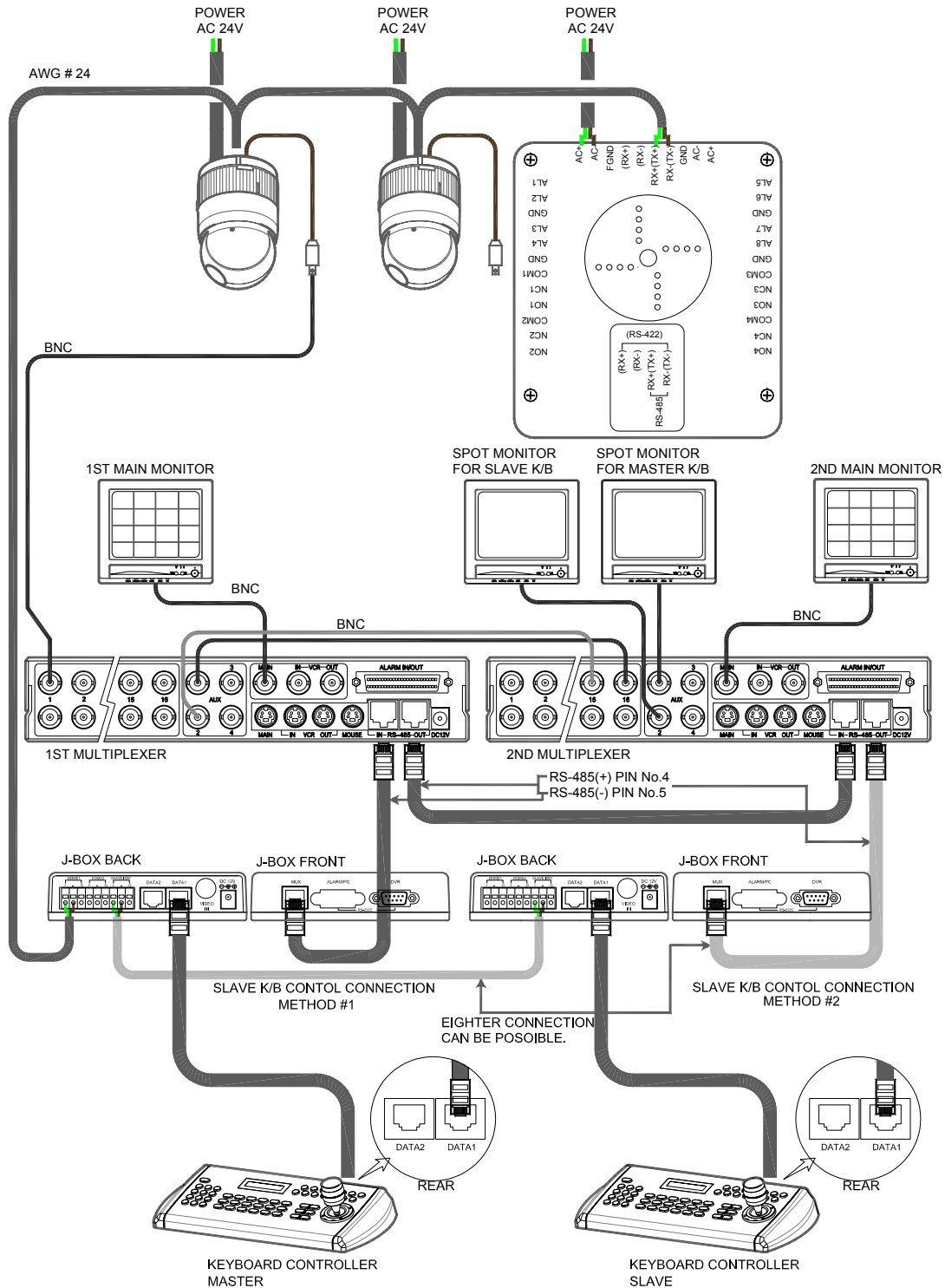
2.1.3 Single User with Two Multiplexer

Figure 4 – Two Multiplexer

Spot output of the first multiplexer to be connected to 16th input of the second multiplexer.
And first spot output of the 2nd multiplexer to be connected to the spot monitor. You will see the picture of the selected camera (1~31) on spot monitor by selecting camera *No.+Cam*.

RS-485(+) PIN No.4
RS-485(-) PIN No.5

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2.1.4 Two Multiplexer with Slave Keyboard Controller

Spot output 1 of the first multiplexer to be connected to 16th input of the second multiplexer. n: User, Spot out of nth to be connected to $(15-n)^{th}$ camera input of the 2nd multiplexer. n^{th} spot out of the 2nd multiplexer to be connected to the nth use spot monitor. Each user will see the picture of the selected camera $(1~(31-n))$ on n^{th} spot monitor of the Mux 2 by selecting camera **No.+Cam**.

Figure 5 – Two Multiplexer with Slave Keyboard Controller

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2.2 Termination & Dip Switch Setting

The first and last devices in an installation (dome and keyboard controller) must have the data line terminated by setting the DIP switch. Without proper termination, there is potential for control signal errors. Total length of the cable for communication should not exceed 1 mile. Refer to Figure 7 for setting the dome camera and keyboard controller termination.
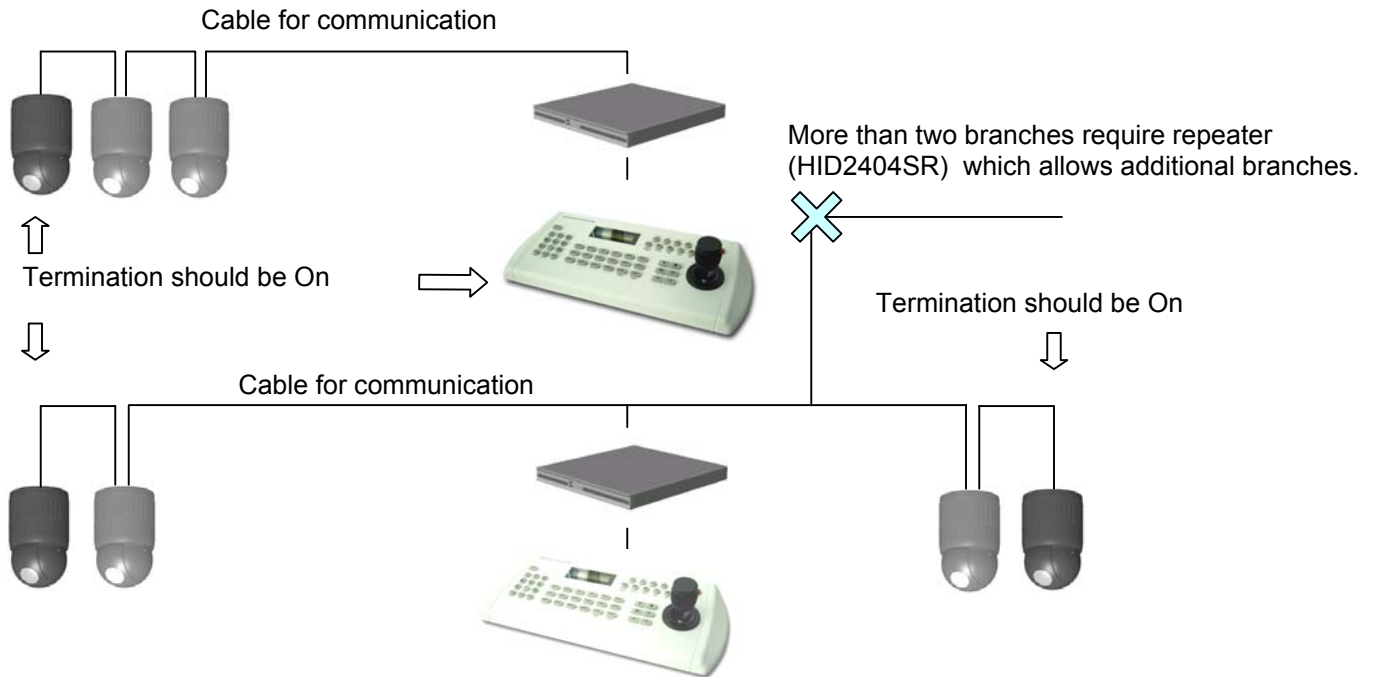

Figure 7 – Termination and ID Switches.

Termination and Master/Slave: Set the switches according to your configuration.
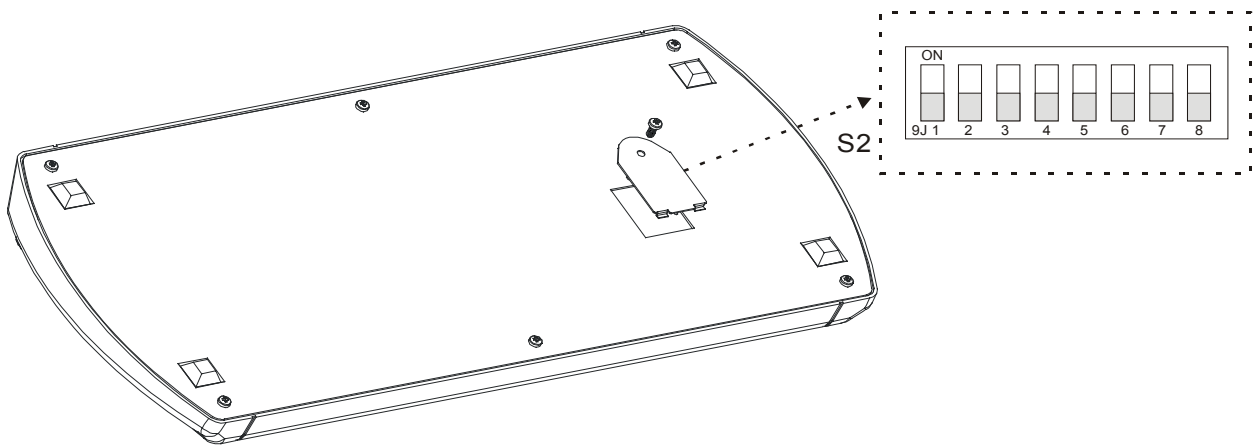

Figure 8 – Keyboard DIP Switches

Termination	DOME	Multi-plexer	Sub-controll er				Controller		
	1	2	3	4	5	6		7	8
ON	ON	ON	ON	reserved			SLAVE	ON	Factory Use
OFF	OFF	OFF	OFF				MASTER	OFF	

Table 1 - S1 Switch Setting

2.3 Multiplexer Control

● **Duplex setup:**
NOTE: Multiplexers require a new ROM version to be controlled by the keyboard controller. The new multiplexer ROM accepts control instructions from the keyboard controller. If your multiplexer's serial number is **M104xxxx** or higher, then it is ready to accept control instructions. Alternately, you can check the status of your multiplexer by pressing the Menu key of the multiplexer and then selecting item 9. If you see the "** Protocol" option line in the Communication Setup menu, your multiplexer has the new ROM, and you do not need to replace the ROM. If your multiplexer has the old ROM version, contact your distributor on how to get new a ROM.

CAUTION: Before opening the multiplexer, make certain you are working on an antistatic work surface and that you are wearing a grounding wrist strap. Also, be very careful to orient the ROM chip correctly and not bend any of the pins.

NOTE: Replace the multiplexer firmware with the new multiplexer ROM (U45) as follows;
Remove the top cover of the multiplexer, and locate the **ROM (U45).** Before removing the ROM, note the orientation of the ROM. After removing the old ROM from the socket, insert the new ROM.
Be careful to orient the new ROM the same as the old ROM.
(Refer to the Multiplexer instruction manual.)

Set the multiplexer functions as follows:
(Press the Menu key of the multiplexer to enter the Unit Options menu.)

> 9. Unit Options
> Unit Number: 001 (first Mux) or 002 (second Mux)
>
> Communication Type: RS 485
> Baud rate: 9600 bps
> PORT: ON
>
> ** Protocol:**   B (If you see this line, the multiplexer has the new ROM)

** The old ROM version does not show Protocol selection option.
Multiplexer alarm inputs will function normally, but the Dome controller has no way of knowing about alarms wired to the Multiplexer. If a Dome preset is required for such an alarm, you must connect the same alarm input to both the multiplexer and Dome.

● **Triplex setup:**   Unit setup
> Network Type: RS 485
> Baud Rate: 9600 bps

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Unit address: 001 ~ 128
            Protocol: B1

2.4 Keyboard Setup

User need to setup network, passwords and special functions such as Uploading and Downloading programmed data from the dome cameras. To enter the Keyboard menu, press ***Ctrl + Menu***. You will see the following menu. Joystick Up/Down scrolls menu items, push the stick to Right to enter the sub-menu.

```
Configuration
Network
Data Bank
Alarm
Exit
```
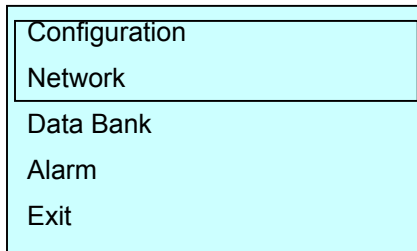
Configuration

```
- Key Beep            : ON  - enable key beep sound,
                         OFF - Disable beep sound.
- Key-Lock            : OFF~60Min - After elapsed setup time, keyboard lock automatically.
                         OFF - Disable Auto Key-Lock function.
                        User needs login password to operate Keyboard again.
- Chg User Pin    -     Change 4digit of user  password.
      CurrentPin  :   Enter 4 digits of current user's password.
      NewPin      :   Enter 4 digits of new password.
      ConfirmPin :   Confirm 4 digits of new password.

- Chg Admin Pin    -     Change 4 digits of administrator's password.
      CurrentPin  :   Enter 4 digits of new password.
      NewPin      :   Enter 4 digits of new password.
      ConfirmPin :   Confirm 4 digits of new password.
```

Note) Factory default Administrator's password is 9999+Enter and user password is 1111+Enter.
If you forgot your own password, contact service personnel or distributor.

```
- Rescan Domes        Scan newly installed dome cameras without turn off the Keyboard power.

- Save and Exit        Save the programmed data and return to the previous Menu
                        (Exit without saving if you press ESC key)
```

Network   Setup properties of devices to be connected.

```
- Set Baud rate
      Dome      : 2400~230K       Correspond with dome setting (9600bps)
      MUX       : 2400~230K
      DVR485   : 2400~230K
      DVR232   : 2400~230K
      Save and Exit
```

- Com Ports   Select the device to be connected on selected port.
      Dome   : None/Dome …
      MUX   : None/DUPLEX/TRIPLEX/AUX IN/AUX I/O…
      DVR485   : None/ADR/SDR/IDR/AUX IN/AUX I/O…
      DVR232   : None/ADR/SDR/IDR/AUX IN/AUX I/O…
      Save and Exit   Save the programmed data and return to the previous Menu
                           (Exit without saving if you press *ESC* key)
   Note) AUX IN : auxiliary signal input (simplex mode)
   *   AUX I/O : when auxiliary signal input , respond to the signal (Half duplex mode)*

  - Set Slave kbd
      Slave kbd   : ON/OFF   ON- Slave KBD exit, OFF- Not exist.
      MUX control : ON/OFF   Set accessibility of the multiplexer menu at slave keyboard
      Dome Menu: ON/OFF   Set accessibility of the dome camera menu at slave keyboard
      Release :INF/001~200s   INF (Infinite) - Slave Keyboard user never have the control right of the
                               dome which is selected by master Keyboard users
                               1 ~ 200s(Second) - After elapse of programmed time since master
                               Keyboard user use the dome, slave Keyboard user can get the control
                               right of the dome.
      Save and Exit   Save the programmed data and return to the previous Menu
   - Exit

- Data Bank   -   Up/Download saved data of the dome
      DataBank 1 : 001   001— Data from Dome ID 001 is exist on Bank 1
        Upload   If you are sure to upload or clear data to the selected dome then
        Clear Data   press *Enter* key, *ESC* key to cancel and exit.

      DataBank 2 : Empty
        DownLoad   If you are sure to download data from the selected dome then
        Exit   Press *Enter* key, *ESC* key to cancel and exit.

- Alarm
   - Alarm Check : ON/OFF   Whether K/B check the alarm input of domes or not.
                                  On : 32 domes, Off : 64 dome cameras supported.
   - Alarm Beep : ON/OFF   When dome's alarm, beep sound on or off
   - Exit

2.4 Maser & Slave Keyboard setting

You can use two keyboards at distant site.

Master keyboard should be setup as following procedure.
1. Check for dip switch the 7th of S2 "OFF".
2. Press ***Ctrl + Menu***. Check Slave KBD setting "ON". (Network   Set Slave Kbd   Slave kbd:ON/OFF)

Slave keyboard need to setup as following procedure.
1. Check for dip switch the 7th of S2 "ON".
2. If you setup all connection correctly (See Figure 4) and turn on slave keyboard, you can see
following screen.

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```
FASTRAX-2L Vxxx
Slave ID = 1                    ← Current Device ID = 1
Input Password : xxxx
CAM:000                         ← Default setting is **9999** for administrator **1111** for user
```

3. Press **Ctrl + Menu**. Set the Slave ID to 01
4. Set Slave Node to "B" in case that master keyboard model is KBD-927(N : NTSC,P : PAL)

```
Slave ID = 1
Slave Node : A/B               ← A : KBD-927
```
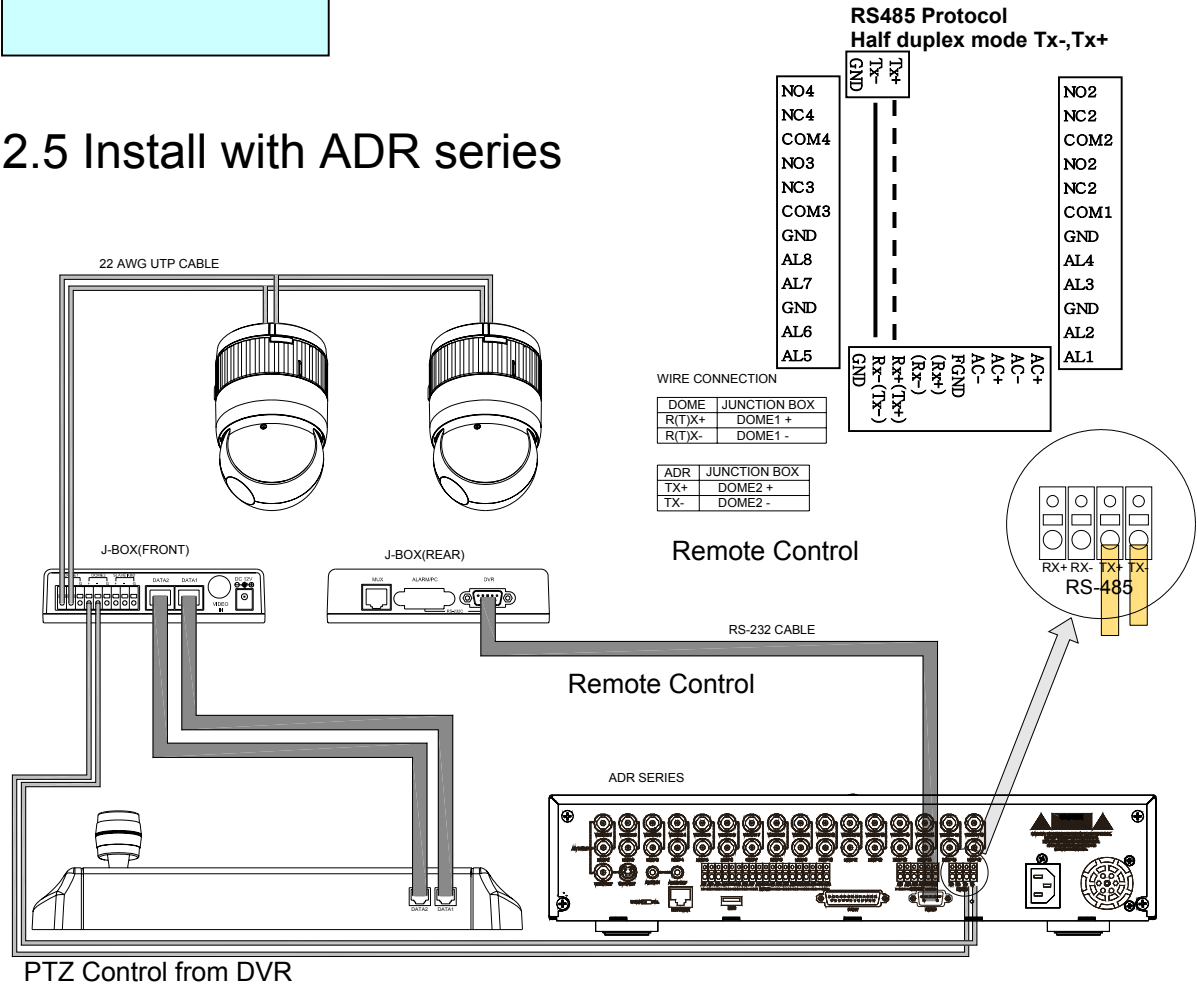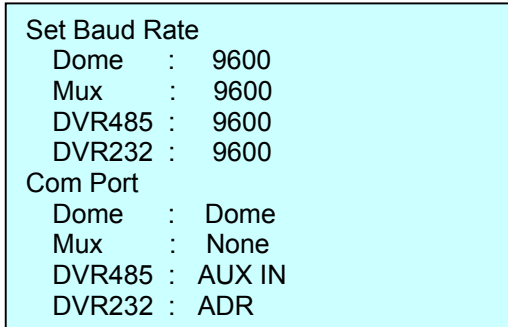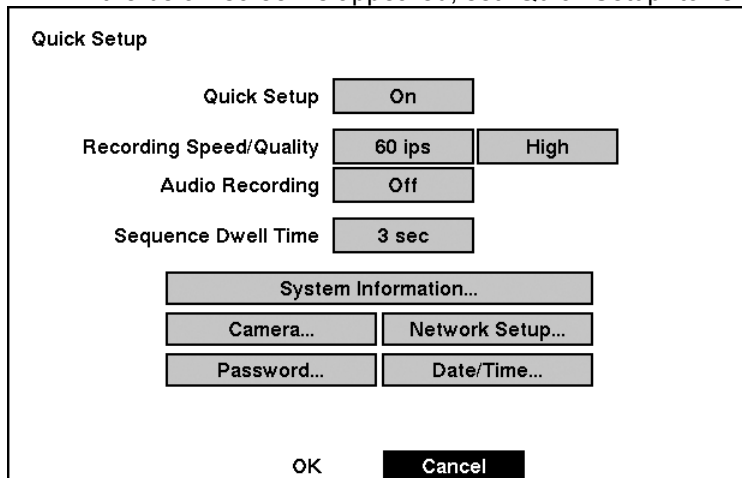
2.5 Install with ADR series

Figure 9 – ADR Connection Diagram

If user wants to connect with ADR, proceed as the following order.

1) Connect RS232 cable between RS-232 Port of ADR and DVR port of the J-box. (This connection enables ADR control remotely from KBD controller)
2) Connect wires between the TX(+/-) of ADR and Data2(+/-) of J-Box.
   (This connection enables ADR PTZ control from the keyboard controller)
3) How to setup the controller.

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A. Switch the keyboard controller ON
B. Input password (Factory setting is *9999*)
C. Open the menu of the keyboard controller by pressing ***Ctrl + Main*** Key.
D. Set as below in Network menu.

```
Set Baud Rate
   Dome      :    9600
   Mux       :    9600
   DVR485  :    9600
   DVR232  :    9600
Com Port
   Dome      :    Dome
   Mux       :    None
   DVR485  :    AUX IN
   DVR232  :    ADR
```
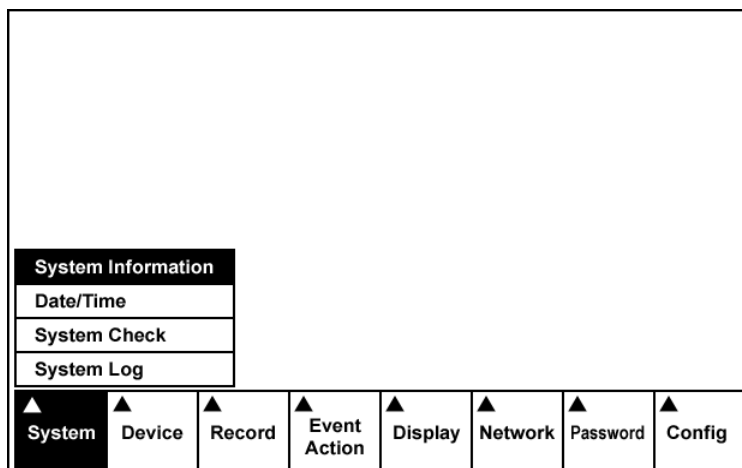
4) How to setup ADR
   - Switch the ADR on.
   - Press the Menu button. Input password according to the instruction. (Factory setting is *4321*)
   - If the below screen is appeared, set "Quick Setup" to "Off".

```
Quick Setup

              Quick Setup    [   On   ]

   Recording Speed/Quality   [ 60 ips ]   [   High   ]
          Audio Recording    [   Off  ]

       Sequence Dwell Time   [  3 sec ]

              [      System Information...      ]
              [ Camera... ]     [ Network Setup... ]
              [ Password... ]   [   Date/Time...   ]


                   OK        [   Cancel   ]
```

Press "OK", and the below screen will be appeared.

```
System Information
Date/Time
System Check
System Log
▲        ▲        ▲        ▲        ▲        ▲        ▲        ▲
System  Device  Record   Event   Display Network Password Config
                         Action
```

Select "System Information" on the system menu and change UNIT ID.

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```
System Information Change

              Site Description  [                              ]

                     Unit ID    [        0        ]

                    Language    [  English  ]
                                [ English      ]
                                [ Français     ]
                                [ Deutsch      ]
                                [ Italiano     ]
                                [ Español      ]

                     OK              Cancel
```

Select "Camera" on the Device menu.
Unit ID should be 1 up to 99. Unit ID is not allowed number "0".

```
Camera

  | Camera | On/Off |   Title   | PTZ Device | ID |
  |   1    |   On   |   CAM1    |    None     |    |
  |   2    |   On   |   CAM2    |    None     |    |
  |   3    |   On   |   CAM3    |    None     |    |
  |   4    |   On   |   CAM4    |    None     |    |

        [ 1 – 4 ] [ 5 – 8 ] [ 9 – 12 ] [ 13 – 16 ]

                  OK        Cancel
```

Set "PTZ Device" and "ID" of the dome camera.
Select RS232/RS485 after PTZ is installed, and then set-up as below table.

```
RS232/RS485

  | RS232/RS485 | Baud Rate | Parity | Data | Stop |    Usage       |
  |   RS232     |   9600    |  None  |  8   |  1   | External Modem |
  |   RS485     |   57600   |  None  |  8   |  1   | Remote Control |

                    OK        Cancel
```

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RS232/RS485	Baud Rate	Parity	Data	Stop	Usage
RS232	9600	None	8	1	Remote Control
RS485	9600	None	8	1	PTZ Control

5) After setting Unit ID, Camera, and RS232/RS485, installing dome camera is basically completed. Please refer to the manual of ADR for the other installation.
6) Press the related number of the controller which is correspondent to unit ID of ADR. Then press DVR button and adjust unit ID of the controller
7) Make sure if any change is appeared on screen when you press ⊞ button of the controller for basic testing. If there's no change appeared, verify cable connection and setting of installation.
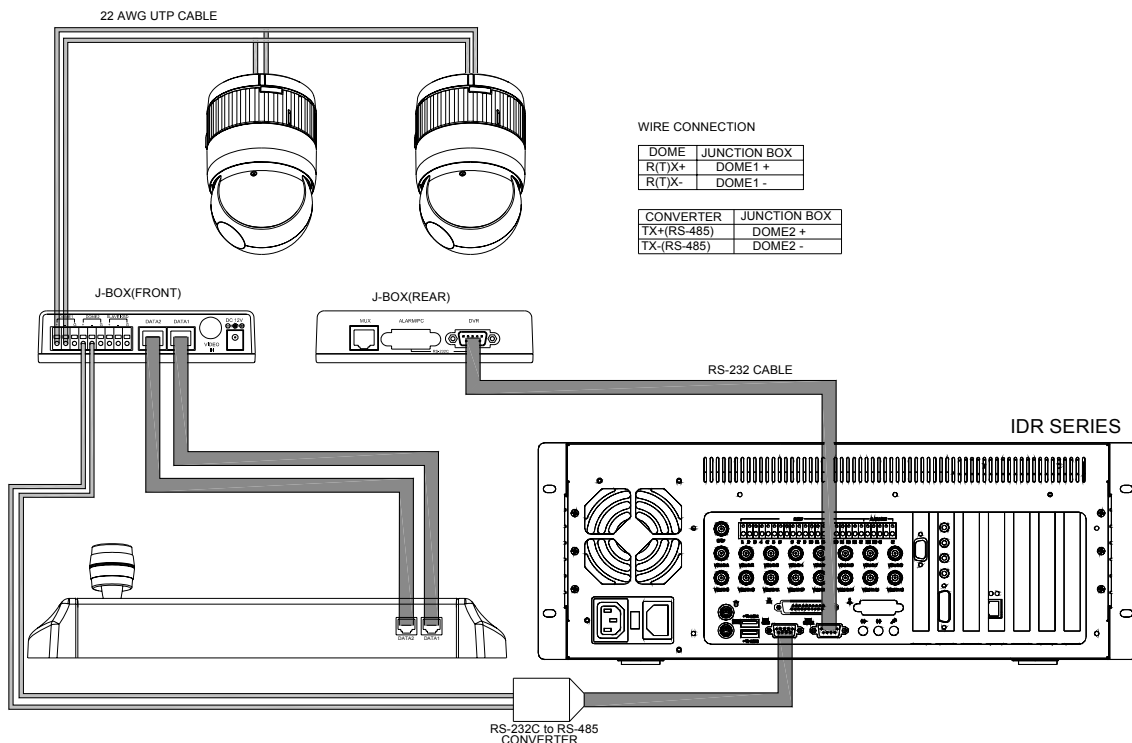
2.6 Install with SDR series
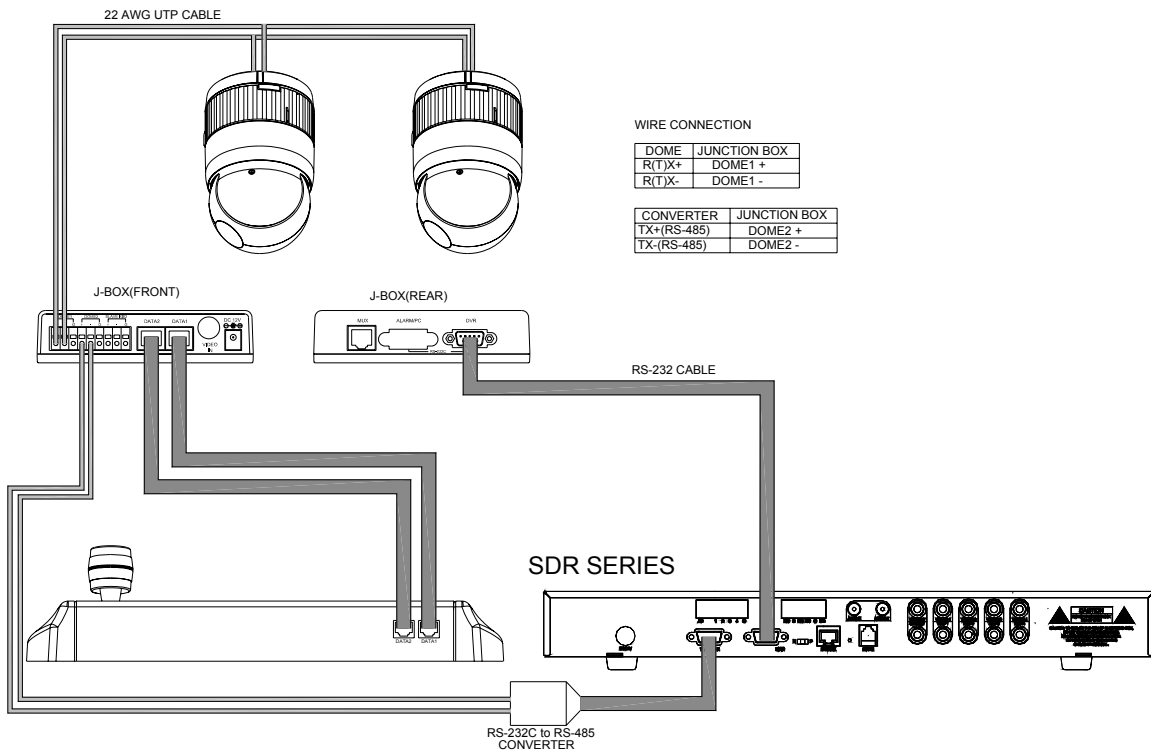
Figure 10 – SDR Connection Diagram

If user wants to connect with SDR, proceed as the following order.
1) Connect RS-232 cable between RS-232C Port of SDR and DVR port of the J-box. (This connection enables SDR control remotely from KBD controller)
2) Plug the RS-232C TO RS-485 converter in the RS-232C Port of SDR. Connect wires between the TX(+/-) of converter and Data2(+/-) of J-Box.
   (This connection enables ADR PTZ control from KBD controller)
3) How to setup the controller.
   A. SWITCH THE KBD controller ON
   B. INPUT PASSWORD (Factory Setting is *9999*)
   C. Open the menu of the KBD controller by pressing ***Ctrl + Main*** Key.

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D. Set as below in Network menu.

```
Set Baud Rate
   Dome    :    9600
   Mux     :    9600
   DVR485  :    9600
   DVR232  :    9600
Com Ports
   Dome    :  Dome
   Mux     :   None
   DVR485  :  AUX IN
   DVR232  :  SDR
```

4) How to setup SDR
- Switch the SDR on.
- Press the Menu button. Input password according to the instruction. (Factory setting is **4321**)
- If the below screen is appeared, set "Quick Setup" to "Off".

Quick Setup – SDR40 E 1.1.3.1

Quick Setup	On	
Record Speed/Quality	30 ips	Standard
Audio Recording	Off	
Sequence Dwell Time	1 sec	

System Information...

Camera...	Network Setup...
Password...	Date/Time...

OK   Cancel
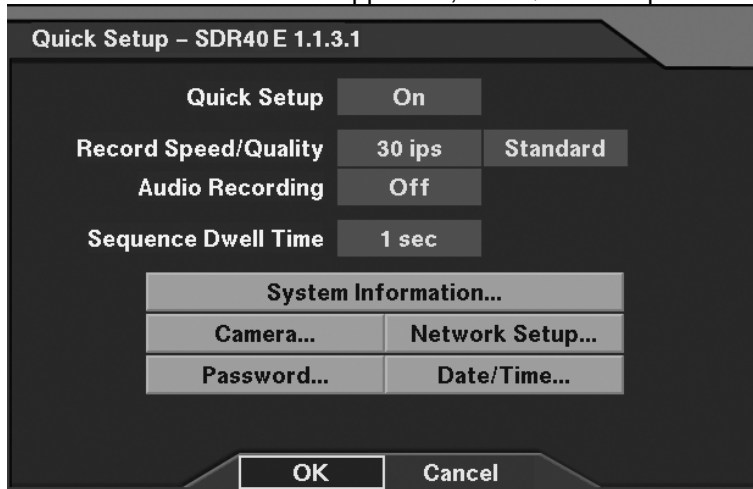
If press OK after putting Quick Setup to off status, the below screen will be appeared.
Besides, the below screen will be appeared according to installation status.

01–28–2002 04:24:11 PM

System
System Information
Date/Time
System Check
System Log

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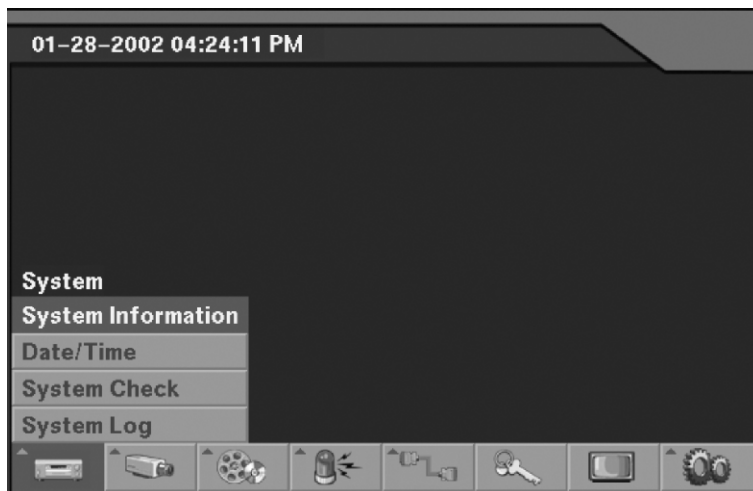
Select Camera of Device menu on the above menu.

PTZ set up on the above Setup menu
Select TEXT IN/PTZ after PTZ is installed, and then set-up as below
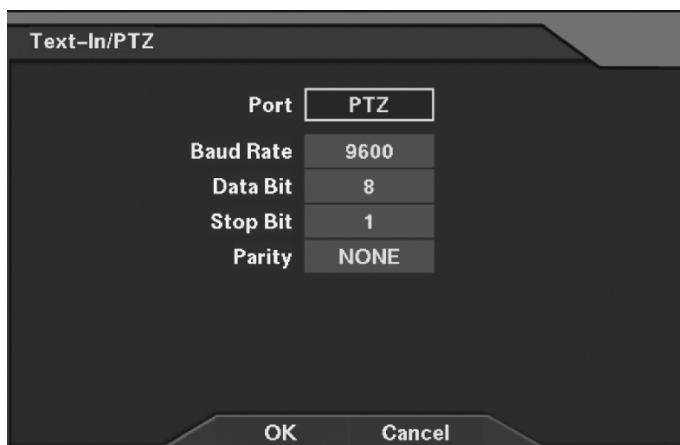
RS232/TEXT IN	Baud Rate	Parity	Data	Stop	Usage
RS232	9600	None	8	1	Remote Control
TEXT IN/PTZ	9600	None	8	1	PTZ Control

1) After installing Camera, and RS232 & TEXT IN/PTZ setup, the installation with dome camera is basically completed. Please refer to manual of SDR for the other installation.
2) Press the related number of a controller which correspondent to unit ID of SDR. Then press DVR button and adjust unit ID of a controller. Unit ID is not allowed number "0".
3) Make sure if any change is appeared on screen to press ⊞ button of a controller for basic testing. If there's no change appeared, check cable connection and installation again.

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2.7 Install with IDR series

Figure 11 – IDR Connection Diagram

If user wants to connect with IDR, please proceed as the following order.

1) Connect RS-232C cable between RS-232C Port of IDR and DVR port of the J-box. (This connection enables IDR control remotely from KBD controller)
2) Plug the RS-232C TO RS-485 converter in the RS-232C Port of IDR. Connect wires between the TX(+/-) of converter and Data2(+/-) of J-Box.
   (This connection enables IDR PTZ control from KBD controller)
3) How to setup the controller.
   A. SWITCH THE KBD controller ON
   B. INPUT PASSWORD (Factory Setting is **9999**)
   C. Open the menu of the KBD controller by pressing **_Ctrl + Menu_** Key.
   D. Set as below in Network menu.

> Set Baud Rate
>   Dome   :   9600
>   Mux   :   9600
>   DVR485 :   9600
>   DVR232 :   9600
> Com Ports
>   Dome   :   Dome
>   Mux   :   None
>   DVR485 :   AUX IN
>   DVR232 :   IDR

4) How to setup IDR

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- Switch the IDR on.

If press setup button on the above screen, the below screen will be appeared.
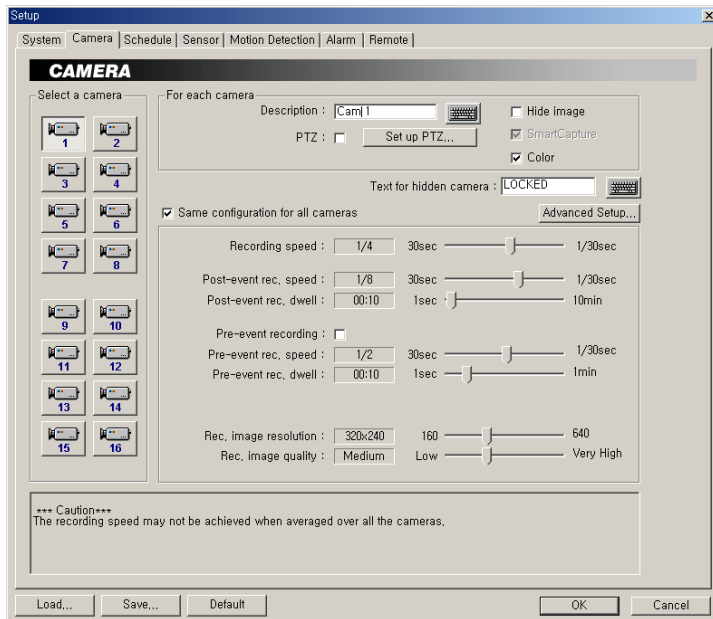
Select camera input number that dome camera connected. Then install as below to select set-up PTZ after checking PTZ box.

Port : COM2

RX Device : Fastrax….

Baud Rate : 9600

Data : 8

Parity : None

Stop Bit : 1

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If PTZ is not necessary for IDR, cable and installation here is not needed. (IDR is able to be controlled remotely and there's no PTZ function)

      8) How to IDR Remote setup
- If selects Setup on main menu, the below screen will be appeared.
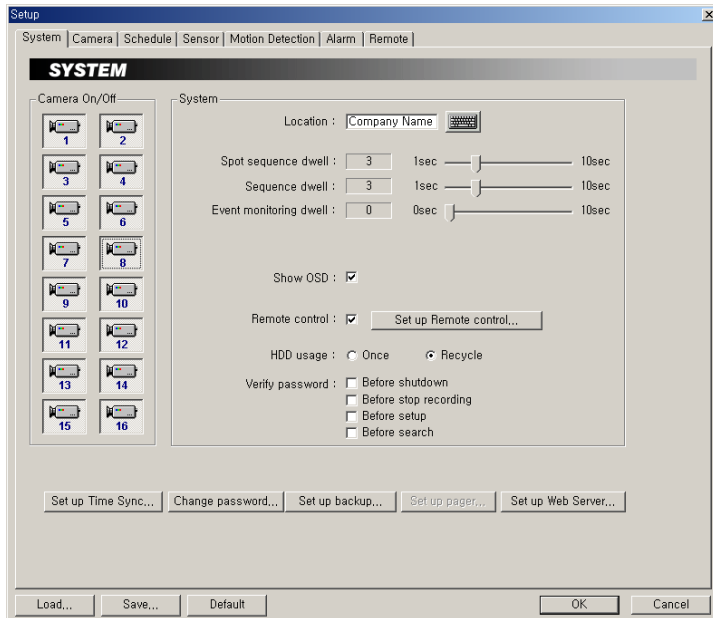
After selecting System and checking Remote control box, please install as below to select Setup remote control. Device ID is not allowed number "0".

> Port : COM1
>
> Baud Rate : 9600
>
> Date : 8
>
> Parity : None
>
> Stop Bit : 1
>
> Device ID : XX

   3) Make sure if any change is appeared on screen to press **_Ctrl + 9_** (Next Screen) button of a controller for basic testing. If there's no change appeared, check cable connection and installation again.

OPERATION

3.1 Keyboard Lock/Unlock (Hidden command)

When the user leaves the control desk, he may wish to lock the keyboard controller to prevent unauthorized use.

Pressing *777 + Enter* will lock the keyboard controller. Pressing *777 + Enter* while the keyboard is locked will open the password screen. If the correct password is entered, the keyboard controller will return to normal operation.

If the power is turned OFF and ON while the keyboard is locked, it will ask for the password. Entering the correct password will cause the keyboard controller to return to normal operation.

> ** *If you forget your own passwords, turn off the keyboard controller, contact distributor to get 4-digit back door password. This will change the passwords to the factory default 1111 and 9999. Contact your service personnel to get 4-digit back door password.*

3.2 Controlling Multiplexer

Using a multiplexer allows more flexibility in the types of cameras that can be used in a full system. Dome cameras and regular cameras can be mixed.

The keys *PIP, 2x2, 3x3, 4x4, Zoom, Set*, etc., are keys that are used to operate the multiplexer.
See Figure x for details.

3.2.1 Selecting Multiplexer

Duplexer :   Press *Macro/Menu* key to enter Multiplexer set up menu and hold down the *Enter* Key while navigating using the joystick. (*Enter+Joystick)*

Triplexer :   Push the *Jostick* to upward with *Enter* pressed *(Enter+Joystick*)will show the Mux menu. It will act like a mouse. Rotatingthe handle clockwise will act like the set key of the multiplexer. Rotating counterclockwise will act like the *ESC* key of the Multiplexer.

3.2.2 Dome Camera Selection

There are three types of dome camera selection, *No.+Cam, No.+Main* and *Prev* or *Next*. And with these selections, the keyboard controller has full control of the selected camera if it is a dome camera.

Single multiplexer configuration
By pressing the camera No. *1* to *16+ Cam*, you will see the picture of the selected camera through the spot monitor which connected to the spot output of the multiplexer.

Two multiplexer configurations
By pressing the camera No. *1* to *31 + Cam*, you can see the picture of the selected camera through the spot monitor which is connected to the spot output of the second multiplexer.
Spot output of the first multiplexer is connected to the 16th camera input of the second multiplexer.

For example, *1 + Cam* will switch the camera 1 to second multiplexer spot output. If the selected camera is a dome, the keyboard controller has control of it, and you can control all functions of the selected camera using the keyboard controller.

Pressing the **Next** or **Prev** keys will scroll through all connected dome cameras and display them on the Spot output.

Viewing full screen mode (*m + Mux, n + Main*)

Select cameras 1 to 16 by pressing the camera number and then Main. The selected camera will appear in the full screen mode and is under control if it was dome camera.
Even if no camera is connected to the multiplexer input, the screen will show the camera input (see following example).

To select first multiplexer under control, press **1 + Mux** (m: ID of Mux – up to 128)successively
  Multiplexer 1   Keyboard controller

    1   ***1+ Main***
    2   ***2+ Main***
    .
    .
    15   ***15+ Main***
    16   ***16+ Main***

This sequence (***No.+Main***) is same as pressing the 1, 2, 3…16 buttons on the multiplexer.

To select second multiplexer under control, press **2 + Mux**
      when a second multiplexer is connected:
    Multiplexer 2   Keyboard controller
    1   ***1+ Main***
    2   ***2+ Main***
    3   ***3+ Main***
    .
    .
    16   ***16+Main***
    When using two multiplexer configuration, connect the main or spot output of the first multiplexer to the Camera 16 input of the second multiplexer.

If the spot output of the first multiplexer is connected to the Camera 16 input of the second multiplexer, you can see selected camera output through the spot output of second multiplexer by pressing camera No. (**1** to **31**) + **Cam**   Successive camera call is valid on two Mux configuration only.
For example: ***1+Cam*** will switch camera 1 to the second multiplexer spot output and you can control all functions of the selected camera using the keyboard controller.
If you install more than two Multiplexers, the unit number (ID : up to 128) of the Multiplexer and selection of the Multiplexer must be the same in order to control the Multiplexer with the Keyboard.
      Example: *If the unit address (number, see page 15) of the Multiplexer is 128, you should press*
        128 + Mux *to control the 128th Multiplexer.*

Picture on Spot output monitor (Camera No.1~16+Aux1~4)

Pressing Camera No. **1** to**16 + Aux1~ 4** will switch the selected camera number to the specific spot monitor output of the multiplexer. The selected camera can be a dome camera or a standard camera. The Keyboard controller maintains control of the previously selected dome camera. It does not change the main output of the multiplexer.

Example: m+Mux, n+AuxN ***m****: ID of Mux,* ***n****: input No. of camera,* ***N****: spot output No.*
     1+MUX*, 2+Aux1(~4) will switch camera 2 on multiplexer 1 to the spot output of multiplexer 1.*
     2+MUX*, 3+Aux1(~4) will switch camera 3 on multiplexer 2 to spot output of multiplexer 2.*
     1*+Cam will switch camera 1 to the spot output of multiplexer 1 and the keyboard controller has control of the selected camera.*
     In a two multiplexer configuration, ***18****+Cam will switch camera 18 (second camera on Multiplexer*

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2) to the spot output of multiplexer 2 and the keyboard controller has control of the selected camera.
31+Cam *= camera 15 of the second multiplexer.*
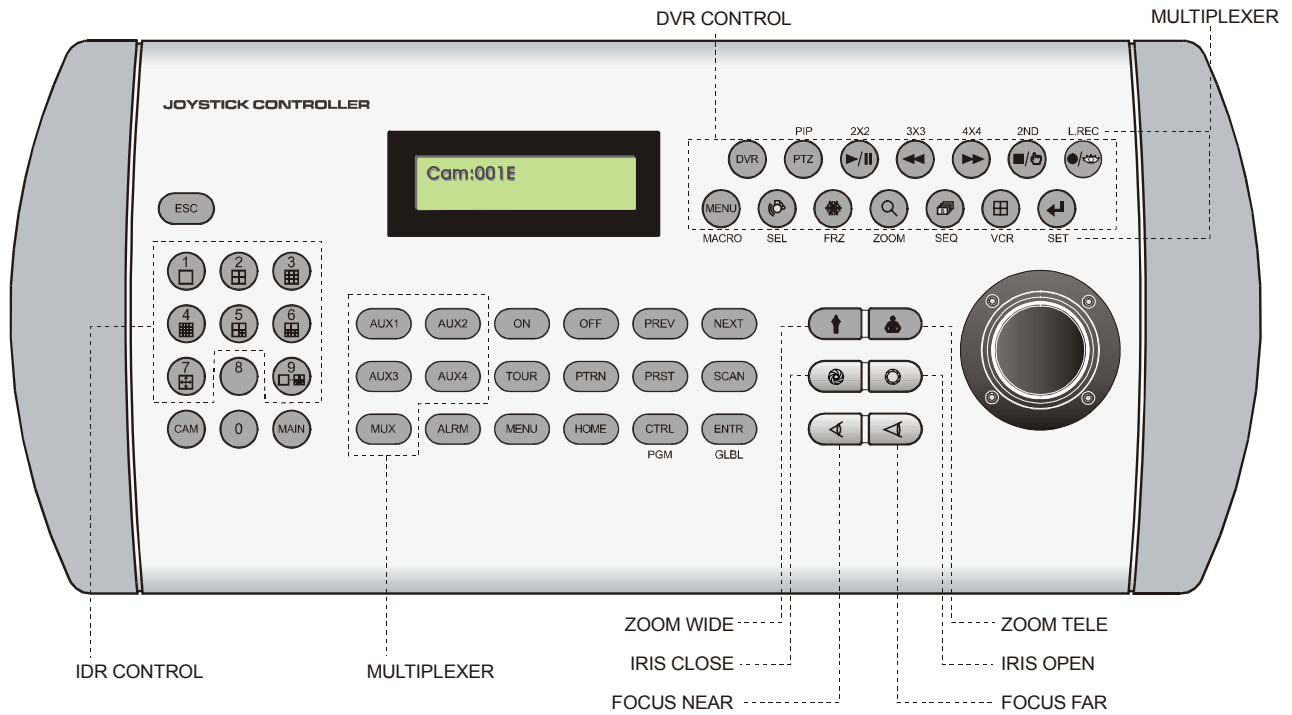
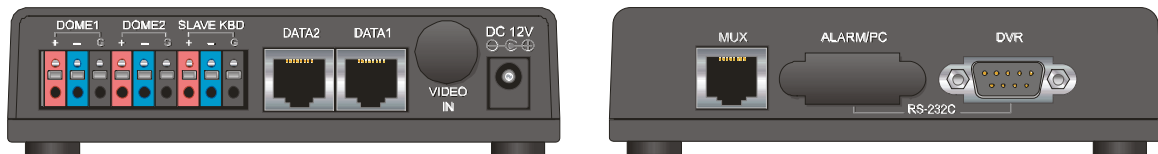# 3.3 Summary of Keyboard Controls

Figure 12 – Keyboard Key map

Figure 13 – J-box Front & Rear

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3.3.1 Keys for Dome camera

Function	Key Label	Descriptions
1,2, ... 9,0	*1,2, ... 9,0*	Camera selection with **Cam** key. Function number selection with function keys. (e.g., *1+Cam, 3+Tour, 5+Scan, 6+Prst*)
Camera	*CAM*	Displays the selected camera on the spot out of the multiplexer and allows the camera to be controlled by the keyboard controller, if the selected camera is a dome camera.
Full	*MAIN*	Camera No. *1~16+Main* will display the selected camera full screen
Cancel	*ESC*	Cancels current inputs. Exits from currently running functions or menu, error status, etc.
Alarm	*ALRM*	Disregards all currently activated alarms and turns off the beep temporarily. If alarm is activated again within the programmed hold time, the timer will restart and beep again.
Relay ON	*ON*	Relay No. *1~4+ ON* will activate the selected relay.
Relay OFF	*OFF*	Relay No. *1~4+ OFF* will disable the selected relay.
Previous	*PREV*	Allows the previous dome camera to be controlled manually.
Next	*NEXT*	Allows the next higher number dome camera to be controlled manually.
Home	*HOME*	Immediately calls Home function. Deletes selected value or function in programming mode
Global	*GLBL*	Sends all cameras to preset (e.g., *1, 2… 55 + Enter/Glbl*). *888+Enter/Glbl*: Night shot mode, *999+Enter/Glbl*: Normal mode
Call Preset position	*PRST*	Pressing Prst will bring up the preset programming menu. Recalls preset; e.g.; *1, 2… 31… 240 + Prst* In the preset or tour programming mode, the operator can review the exiting preset (selected by cursor) by pressing this key.
Tour	*TOUR*	Pressing *Tour* will bring up the tour programming menu directly Recalls programmed presets or functions sequentially. (e.g., *1 ~ 8+Tour*)
Pattern	*PTRN*	Pressing *Ptrn* will bring up the pattern programming menu directly. Repeats the selected pattern of the current dome camera. (e.g., *1 ~ 4+Ptrn*)
Auto Scan	*SCAN*	Pressing Scan will bring up the Auto Scan programming menu. Calls Auto panning function (e.g., 2+Scan repeats Auto Scan 2).
Configuration	*MENU*	Enters programming menu. *Ctrl+Menu* will invoke Keyboard set up menu
Program	*PGM*	*No.+Pgm+Prst* will store current view as a preset directly. *No.+Pgm+Tour will open programming menu* *No.+Pgm+Scan will open programming menu*
Control	*CTRL*	*Ctrl+Joystick :* In a programming mode (Preset, Pattern, Scan, Privacy….) the joystick operates as if in the normal control mode. While pressing and holding down the *Ctrl* key, all movements of the joystick will start recording when in the pattern programming menu. *Ctrl+Joystick:*, In normal operation mode, manual speed of the joystick control will be operated in turbo mode. (Max. speed = 380° /sec)
Enter	*ENTER*	Completes entering data for the password or title *ENTER+Joystick : Direction* key in DVR remote mode or Mux (PTZ, Mouse, Cursor)

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Manual Focus	◁ ◁	Overrides auto focus. Moving the Zoom handle reactivates Auto Focus mode.
Manual Iris	℗ ○	Overrides auto iris. Moving the joystick reactivates Auto Iris mode.
Zoom	♦ ♦	Zoom control.
Joystick	**Twist** **Up / Down** **Left / Right** **Press(Toggle)**	Zoom control (proportional to position).(HID2404CZx model only). Tilt control, Cursor Up / Down in the PGM. menu Pan control, Cursor Left / Right or Page scroll in the PGM. Menu Pressing the joystick toggles between zoom control mode on and off. When zoom control mode is on, you can see "Z" letter at LCD right down corner. (joystick up : zoom in & joystick down : zoom out) (HID2404CLx model only).

3.3.2 Keys for Multiplexer

Function	**Key Label**	**Descriptions**
PiP	*PIP*	Picture-in-Picture mode
2 by 2 Display	*2X2*	Displays view of four cameras. The remaining cameras can be sequenced in the lower-right window.
3 by 3 Display	*3X3*	Displays view of nine cameras. The remaining cameras can be sequenced in the lower-right window.
4 by 4 Display	*4X4*	Displays view of 16 cameras in 1/16-size pictures.
	2ND	Second mode of PIP multiplexer. Pressing 2nd+Enter again will return to normal mode.
	L.REC	Put a camera in the Panic Record Mode.
	MACRO	Same as Menu key in the Duplexer model. Same as Macro key in the Triplexer model.
Select or Alarm	*SEL*	Same as Select key in the Duplexer model. Same as Alarm key in the Triplexer model.
Freeze	*FRZ*	Freeze the video from the currently selected camera.
Digital Zoom	*ZOOM*	Enter the Zoom Mode.
Sequence	*SEQ*	Put the multiplexer in the Sequence Mode.
VCR	*VCR*	Switch the multiplexer into VCR playback mode.
SET	*SET*	This button has several functions. It brings up a Popup Menu, sets selections on the OSD menus and decreases numbers in the number setup function.
Spot output	*AUX1 (~4)*	Displays selected camera as spot output of the current Multiplexer. (e.g., 2+Aux1 will display camera 2 as a spot output of the current Multiplexer)
Select Mux ID	*MUX*	Select Multiplexer (e.g.; 1 or 2+Mux)
Cursor movement	***Enter +*** ***Joystick***	Up / Down / Left / Right control in the ZOOM and SET UP mode. Handle turn clockwise for SET mode. Handle turn counterclockwise for ESC mode.

3.3.3 Keys for DVR

Function	Key Label	Descriptions
Id Selection	(DVR)	DVR ID Selection. (e.g.:1 or 2+DVR).
PTZ	(PTZ)	Open a Pan/Tilt/Zoom screen which allows you to control properly configured cameras.
Play/Pause	(►/‖)	Play recorded data / Pause playing.
Rewind	(◄◄)	Play video backward at high speed. Pressing the button again toggles the playback speed
Fast Forward	(►►)	Play video forward at high speed. Pressing the button again toggles the playback speed from
Stop/Preset Save	(■/☝)	During Playback mode returns the DVR to the Live Monitoring mode.
Record/Preset Call	(●/👁)	Set the DVR so that it is ready to record video.
Menu	(MENU)	Enter the Quick Setup screen. You will need to enter the administrator password to access the Quick Setup. Pressing the button also closes the current menu or setup dialog box.
Alarm	(👋)	First, it will reset the DVR's outputs including the internal buzzer during an alarm. Second, it will display the event log when you are in the live monitoring mode unless there is an active alarm.
Freeze	(❄)	Freeze the current live screen.
Search	(🔍)	Display the Search menu. Pressing the button again will exit the Search menu.
Sequence	(🗗)	When in the live mode, pressing the SEQUENCE button displays another full live channel sequentially. When in one of the multi-view formats, pressing this button will cause the DVR to sequence cameras in two sequence modes: "Page" and "Cameo". In the Page mode, the DVR sequences through user-defined screen layouts (pages). In the Cameo mode, the bottom, right screen to display live cameras sequentially. Pressing the SEQUENCE button while in the Sequence mode will exit the Sequence mode.
Display Mode	(⊞)	Toggle between different display formats. The available formats are: full, 4x4, 3x3, 2x2 and PIP.
Enter	(↵)	Select a highlighted item or completes an entry that you have made.
Display Mode	**CTRL+1-7,9**	IDR screen mode.
Go last	**CTRL +** (◄◄)	Go last in IDR
Go First	**CTRL +** (►►)	Go first in IDR
X times Backward play	**No.+** (◄◄)	Fast play at x(No.) times speed in IDR

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X times Forward play	No.+ ▶▶	Fast rewind at x(*1~8*) times speed in IDR
Shuttle ring	*CTRL+ENTR+ Joystick*	The Shuttle Ring only functions in the Playback mode. Turning the ring clockwise plays video forward. Turning the ring counterclockwise plays video backward.
Jog dial	*CTRL+ENTR+Zoom of Joystick*	The Jog Dial only functions when playback video has been paused. By turning the jog dial clockwise, you can play video forward image-by-image.

Appendix A
Trouble Shooting

If problems occur, verify the installation of the camera with the instructions in this manual and with other operating equipment. Isolate the problem to the specific piece of equipment in the system and refer to the equipment manual for further information.

Problem	Possible Solution
Joystick can't control system.	1. Check that the dome camera IDs are set properly (See Figures 1 to 6). Check the polarity of the data line
Camera number does not match the multiplexer number.	1. Check the camera ID and insert the BNC cable into the proper input of the multiplexer.
Forgot password	1. Consult your supplier, distributor or service Center
Multiplexer & DVR can't work with the Joystick controller.	1. Check that the data cable for the multiplexer has the correct Pin configuration (1=1, 2=2, 3=3 .... 8=8). 2. Check the communication menu of Multiplexer as per Pages 15 (setting Multiplexer)

Appendix B
SPECIFICATION

Power Consumption	12VDC, 0.5W
Control Method	RS-485, RS-232C
Baud Rates	2400~230K bps
Operating Temperature	0°C to 50°C(32°F to 122°F)
Humidity	0 to 90%RH(non-condensing)
Storage temperature	-20°C to 60°C(-40°F to 122°F)
Dimension	380x168x70
Weight	Professional Joystick : 1.2k
	Economic Joystick : 1.1kg
Communication	Dome Connection : Max 32
	Multiplexer Connection : Max 255
	DVR Connection : Max 99

(Design and Product specifications subject to change without notice)

SPECO TECHNOLOGIES KEYBOARD CONTROLLER

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