DYNAMIC

CONTROL KEYBOARD

USER MANUAL

DYN-SD/KBD

CONTENTS

1. Advisement

⚠ WARNING

Always have the unit installed by the store it was purchased from.
- Improper connections and/or installation could result in electrical shock, fire or other serious injury or damage.

Do not place the unit on an unstable surface.
- Always checks the strength and stability of the installation location.
- A falling unit will result in damage and could cause serious injury

Never disassemble or attempt to repair or modify the unit.
- Disassembly by untrained personnel could result in serious electrical shock, fire and/or malfunction.

Never use in locations where combustible materials are used.
- The unit should never be used where combustible materials, such as gases, are being used.
- Fire, explosion or other serious accidents could occur.

Never touch electrical connections with wet hands.
- Touching electrical connections with wet hands could result in serious electrical shock.

Never expose the unit to water.
- If the unit becomes wet, turn off the power and unplug it immediately.
- Stop using the unit if it becomes wet and contact your nearest supplier or installer.

Never use the unit if there is an abnormality.
- Turn off the power and unplug the unit immediately if there is any type of abnormality, such as a strange smell or smoke.
- Continuing to use a unit that is not operation properly could result in serious injury or damage to the unit.

Always use the designated power supply.
- Failure to use the proper power supply could result in fire, electrical shock, serious injury and/or damage.
- Always uses the designated power supply.

Always handle the connecting cords properly.
- Never damage or modify the connecting cords.
- Never pull on the connecting cord, expose them to extreme heat and/or place heavy objects on top of them.
- Failure to follow these warnings could result in fire, electrical shock or other damage or injury.

⚠ CAUTION

Always use the unit indoors.
- The unit should never be used outdoors, or in any place where it will be exposed to rain or other extremes of moisture.
- Direct exposure to water will result in rust and will damage the unit.

Never use in environments that have heavy concentrations of dust, smoke, steam or humidity.
- Environments such as these could result in fire, electrical shock or other serious damage or injury.

Never place the unit in extremes of high or low temperatures.
- Extreme temperatures will damage the unit.
- Always use within an operating range of 0°C to 40°C.

Never mount in areas exposed to direct sunlight.
- Direct sunlight can also discolor the unit and cause other damage.

Never expose the unit to impact.
- Strong impact may seriously damage the unit.

⚠ FOR PROPER OPERATION

Never install the unit yourself.
- The unit should be installed by trained personnel.

CE

This product has been designed and manufactured in accordance with the harmonize European standards, following the provisions of the below stated directives.

Electromagnetic Compatibility Directive 89/336/EEC(EN 61000-3-2:1995, EN 61000-3-3:1995, EN 50081-1:1992, EN 50082-1:1997)

This devise 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.

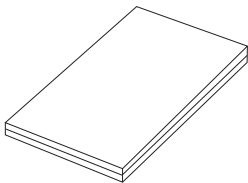# 2. Confirming the Contents of the Package.

1) Control keyboard unit 1EA.

2) Junction box 1EA.

3) Connection cable (modular jack) 1EA.

4) Instruction manual.

3. Main Features and Functions

Synopsis

This controller is used to operate pan / tilt / zoom dome cameras and speed dome cameras.

This is able to control the maximum of 255 cameras and lot of sub-keyboards.

It is also controlled CCTV Receivers, Matrix Systems, Alarm Receiver and other controlled Equipments.

Dome Camera can set and fulfill the surveillance functions as preset, swing, group(it means tour), tour(it means auto-tour) and etc with the keyboard controller.

Features

- Control up to maximum 255 cameras
- Several keyboard can be used to simultaneous control of a camera
- Easy operation of pan/tilt/zoom with the joystick.
- Same effect as 64 fixed surveillance cameras by setting the maximum 64 preset positions.
- Pan/tilt swing function (it means auto pan surveillance)
- Group function (it means tour surveillance)
- Tour function (it means auto-tour surveillance)
- PTZ trace function (it means pattern surveillance)
- OSD (On Screen Display) function
- Spiral surveillance function
- Easy setup mode by LCD (Liquid Crystal Diode) module
- Back light for LCD module.

4. Appearance and Function Key

1) Controller function button

ALL Button
Simultaneous on/off of cameras, lights and AUX1. (Only for Receiver unit)

RUN Button
#

Numeric Keypad (0~9)
These keys are use to make input for settings and other functions.

HOLD Button
#

AUX (Auxiliary) Buttons
These buttons are use to control of Auto-Pan (AUX1) and other unit (AUX2).
(Only for Receiver unit)

ALARM Button
This button is used to on/off of registered sensor detection.

SWING Button
This button is use to move the camera between two preset points.

**P-Set (Preset) Button**
This button is used to input and confirmation of preset points.
(Max. 64 positions each camera).

GROUP Button
This button is use to monitor the preset points sequentially.

TOUR Button
This button is use to monitor the groups sequentially.

Z/I (Zoom in), Z/O (Zoom out) Button
Operate the zoom control of camera.

SET Button
This button is use to start the setting mode of various function.

ENT (Enter) Button
This button is use to save when camera or program is inputted.

CLR (Clear) Button
This button is use to clear the wrong number or function.

L/P (Light power) Button
This button is used to on/off the light.
(Only for Receiver unit)

C/P (Camera power) Button
This button is used to on/off the camera.
(Only for Receiver unit)

MON (Monitor) Button
#

CAM (Camera) Button
This button is use to select a camera.

VIEW Button
#

ON Button
This button is use to execute the functions.

OFF Button
This button is use to stop the functions.

MENU Button
This button is use to setup the function with number button.
(Refer to function guidance).

F/F (Focus far), F/N (Focus near) Button
Operate the focus control of camera.

STAUS (Status) Button
#

PTZ Joystick
This joystick is used to control the pan/tilt/zoom and move the cursor in the OSD menu.

 # : This button is allowed to be used only for the control of matrix system. So not allowed to be used for speed dome camera control

2) Connecting the Junction Box

The keyboard is wired directly to a maximum of 255 receivers, dome cameras. You can communicate using dedicated protocol. It has an exclusive RS-485/RS-422 chip set into the keyboard to communicate. There is power supply terminal to use keyboard in rear junction box. The power supply is for 12 Vdc included package.
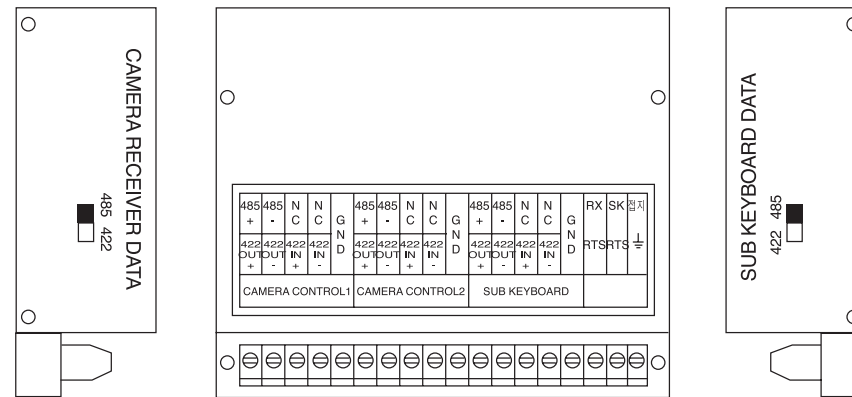
INPUT/OUTPUT TERMINAL OF DATA JUNCTION BOX

- Camera controls 1
The keyboard can be installed, using either RS-485 or RS-422 communication. When you communicate with RS-485, convert the 422/485 switch on the left side and when you communicate withRS-422, convert the 422/485-switch on the left side. Connect end of RS485+ data cable from camera to terminal of data(+) and end of RS485- data cable from camera to terminal of data(-) on the junction box. It is input and output terminals.

- Camera controls 2
Same as camera control 1.

- Sub keyboard

Sub keyboard must be used only with sub keyboard and linked with same line.

It can be used up to 8-sub keyboard with one of main keyboard. For communicating with RS-485, the 422/485 switch on the right side of junction box must be converted to 485. For communicating with RS-422, the 422/485 switch on the right side of junction box must be converted to 422.

Communication to the keyboards is RS-485. Maximum cable distance for RS-485 communication over 24-gauge wire is 1.2 Km (App. 4000 feet). We recommend using shielded twisted pairs cable that meets or exceeds the basic requirements for EIA RS-485 applications.

- Junction Box's input and output terminal

Plug the power supply, 12 VDC into suitable outlet on the rear of the junction box.

It is also supplied power to keyboard. It is included into keyboard package.

Use the data cable that is supplied with keyboard package. Plug one end of cable into the RJ-45 connector on the rear of the keyboard and other end into the RJ-45 connector on the rear of the data junction box.

- "Exteriorly pull up" is?

Don't put pull up resistance to collector of transistor and make 'The line driver' pull up, then it can run function normally.

- Ascertain

The check voltage of GND and RTS should be over 5V.

- Caution

Sub keyboard can run function only in general control. Under the situation that alarm is on in main keyboard, you can hear alarm sound when sensor actuated.

Data cable using for control of camera only connected to main junction box, can make sub keyboard function.
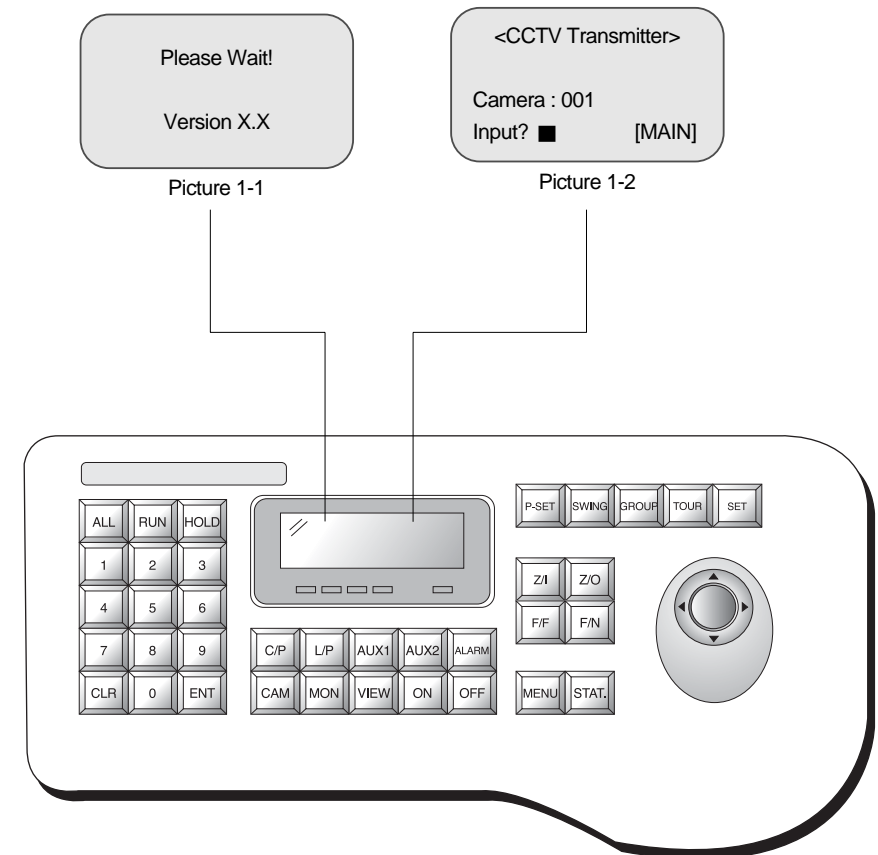
5. Functions and Operations

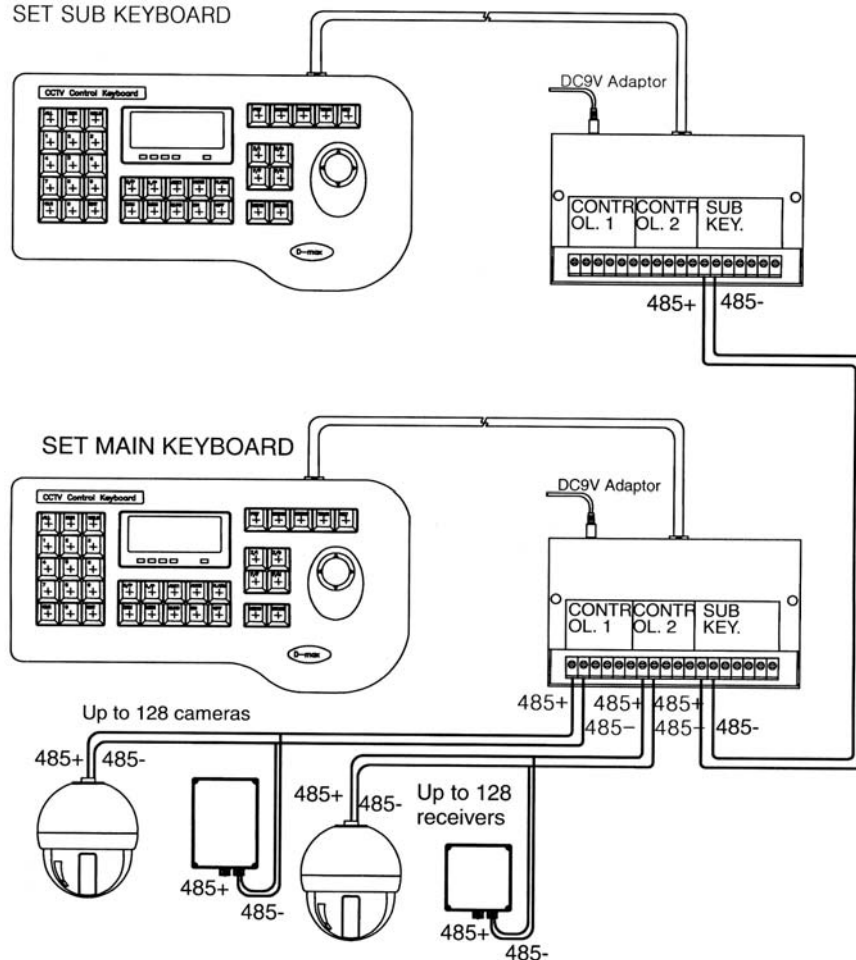Main keyboard is setup for regular products. So sub keyboard needs to be set.

(If you want to use sub keyboard, please ask to the supplier of it.)

1) Initial Setup of Main / Sub keyboard

Plug in the power supply and then the menu screen appears on LCD with a sound as below.

Please Wait!

Version X.X

Picture 1-1

<CCTV Transmitter>

Camera : 001
Input? ■   [MAIN]

Picture 1-2

SET SUB KEYBOARD

DC9V Adaptor

CONTROL. 1 | CONTROL. 2 | SUB KEY.

485+ 485-

SET MAIN KEYBOARD

DC9V Adaptor

CONTROL. 1 | CONTROL. 2 | SUB KEY.

485+ | 485+ 485- | 485+ 485-
      | 485- | 485-

Up to 128 cameras

485+ 485-

485+ 485- Up to 128 receivers

485+
485-

485+
485-

The keyboard can be converted to Matrix main (or, sub) keyboard, CCTV Transmitter main (or, sub) keyboard. For matrix, please refer to the matrix manual.
The defult is CCTV Transmitter main and one of sub kyboard.
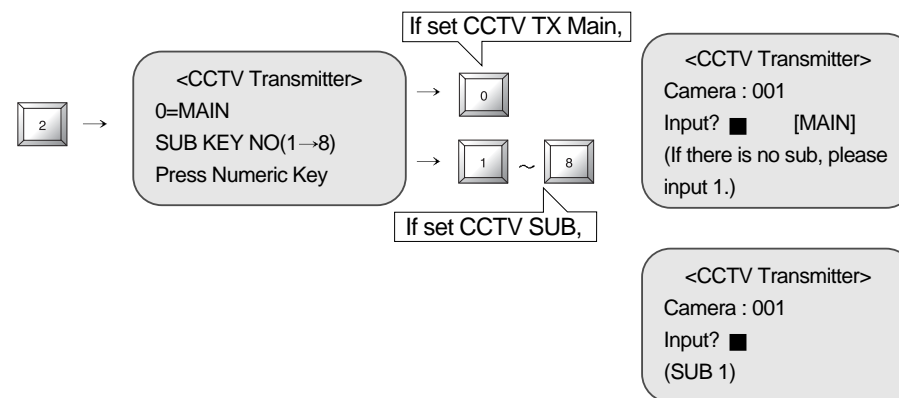
1.1) Initial Setting Keyboard

- Select Sub-keyboard.

Plug in one end of RJ-45 cable(8-pin cable) from data junction box to rear of the keyboard terminal port at the same time press SET button during 3 seconds.

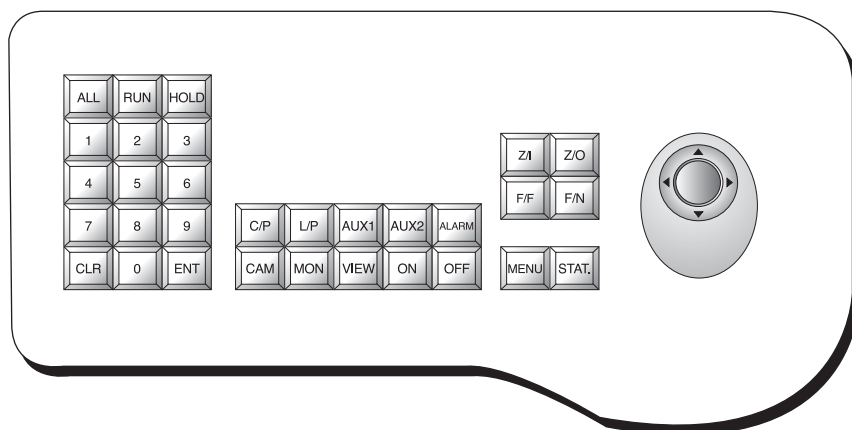It appears message with a sound as below figure.

<User Keyboard Set>
1.Matrix   2.TX Key
3.Receiver Select
4.Alarm Set
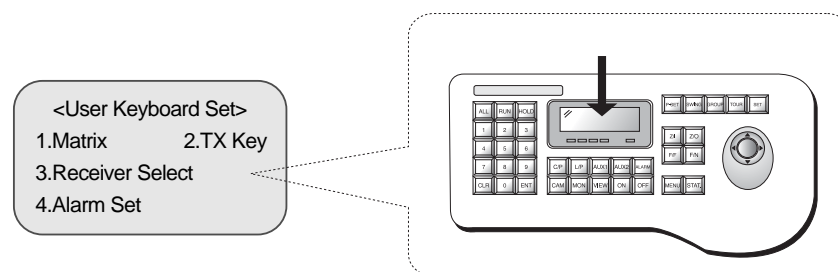
Select number (2) TX Key and then it appears as below message in the LCD on the keyboard.

If set CCTV TX Main,

<CCTV Transmitter>
0=MAIN
SUB KEY NO(1→8)
Press Numeric Key

If set CCTV SUB,

<CCTV Transmitter>
Camera : 001
Input? ■   [MAIN]
(If there is no sub, please input 1.)

<CCTV Transmitter>
Camera : 001
Input? ■
(SUB 1)

It can be programmed up to 8-sub keyboard.

2) Camera Selection

KEYBOARD FIGURE

Enter camera number (1 ~ 255) and press CAM to select.

Select camera : [1~255] ○ [CAM]

3) Operating joystick and camera in manual

Using the joystick, the selected camera can be operated. It should be operated pan / tilt / zoom with the joystick.

(a) Pan/Tilt/Zoom Operating

Move the joystick until the camera reached the desired position. To increase the speed of movement, move the joystick further from center.

Twist the joystick clockwise to zoom in, counterclockwise to zoom out.

(b) F/F Button

FOCUS FAR button in manual makes the focus lens of camera until the desired effect is seen. It is also used as a "enter" button in OSD menu.

(c) F/N Button

FOCUS NEAR button in manual makes the focus lens of camera until the desired effect is seen. It is also used as a "escape" button in OSD menu.

(d) Z/I Button

ZOOM IN button in manual makes the zoom in of camera until the desired.
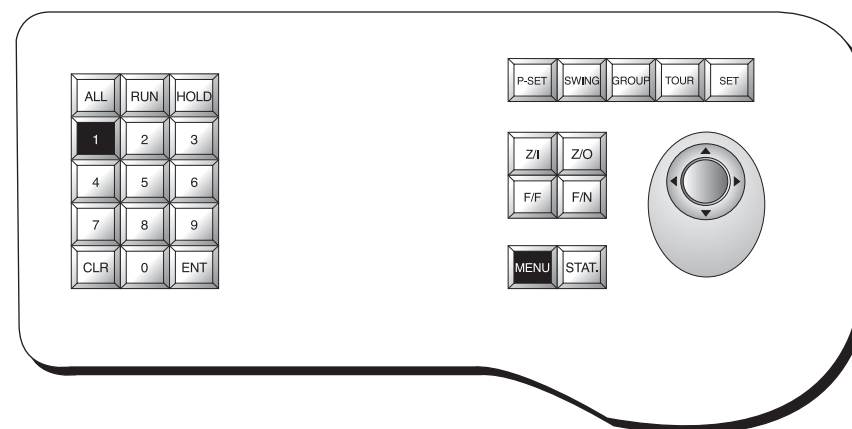
(e) Z/O Button

ZOOM OUT button in manual makes the zoom out of camera until desired.

4) Camera Setup (Enter into OSD Menu)

- OSD (On Screen Display) Control

The Keyboard can be controlled speed dome camera, ptz dome camera with OSD menu.

- Enter into OSD Menu

KEYBOARD FIGURE

[1] + [MENU]

(1) Enter number(1) and press MENU button respectively to enter OSD menu on the screen.

NOTE : *The distance time between push 1 and MENU button is about 2 ~ 3 sec.*

- The shift of cursor in OSD Menu

(a) Cursor to left - move the joystick left

(b) Cursor to right - move the joystick right

(c) Cursor to up - move the joystick up

(d) Cursor to down - move the joystick down

(e) Enter - move the joystick left or right on the parameter

(f) ESC - move the joystick left or right according to message on parameter

**- Save and exit in OSD**

[1] + [MENU] (press buttons in order)

(a) Press again number (1) and MENU button

(b) After set or change parameters, enter again number (1) and press MENU button
respectively to escape from OSD menu with saving or without saving.

NOTE : The distance time between push number (1) and MENU button is about 2 ~ 3 sec.

5) Presets

The keyboard can be programmed up to 64 preset positions for each camera.

The memorized preset position is available to replace new preset position and it can be changed.

KEYBOARD FIGURE
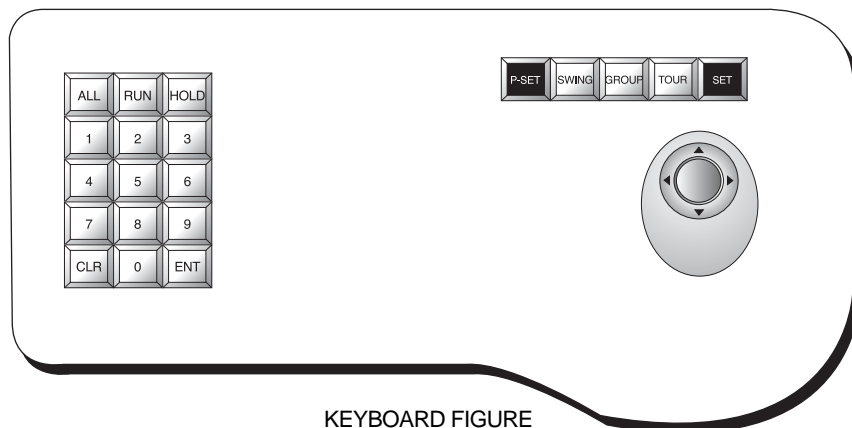
- Programming the preset mode

[SET] ○ [1~64] ○ [P-SET] (press buttons in order)

To program, position camera, enter desired preset number (1~64), and press P-SET button then it should be set preset.

The function enables program together with pan, tilt, zoom, focus by the joystick.

- Movement to a preset position

Enter memorized preset position number with the keypad and press P-SET key then the camera move to the programmed position as you desired.

In error, it will be buzzor sound in two times.

[1~64] ○ [P-SET] (press buttons in order)

- Delete programmed preset

Press the CLR button for a while. (more than 3 sec)

[1~64] ○ [P-SET] ○ [ENT] (press buttons in order)

Ex) delete the preset number 5.

[CLR] ○ [5] ○ [P-SET] ○ [ENT] (press buttons in order)

(press more than 3 sec)

Press CLR button, number (5), P-SET, and ENT button respectively.

- Delete all preset

Press CLR button for a while (more than 3 sec), and press PST button and press finally ENT button.

[CLR] ○ [P-SET] ○ [ENT] (press buttons in order)

6) Swing

The keyboard can be programmed 1 of swing for pan swing and tilt swing in each.
It should be run auto pan surveillance between memorized two preset position in horizontal as desired and it should be also auto tilt surveillance between memorized two preset position in vertical as desired.

- Set swing mode

(a) Press SET and SWING button in order.
(c) It appears message on the LCD as left.
(d) Enter number 1 or 2 to select pan/tilt swing.

[1or 2] ○ [ENT]

(e) If you select pan swing. It appears next view.
(f) Enter preset number for Swing Start No.

[1~64] ○ [ENT]

(g) Enter preset number for Swing End No.

[1~64] ○ [ENT]

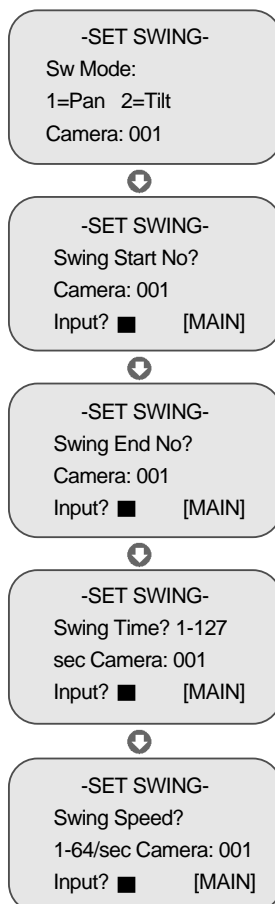(h) Enter swing dwell time on the LCD.

[1~127] ○ [ENT]

(i) The dwell time can be set 1 to 127 seconds.
(j) Enter swing speed value on the LCD.

[1~64] ○ [ENT]

(k) The swing speed can be set 1 to 64 steps.

(l) Finally, after enter speed value, it should be escaped the swing set mode automatically.

```
-SET SWING-
Sw Mode:
1=Pan   2=Tilt
Camera: 001
```
↓
```
-SET SWING-
Swing Start No?
Camera: 001
Input? ■      [MAIN]
```
↓
```
-SET SWING-
Swing End No?
Camera: 001
Input? ■      [MAIN]
```
↓
```
-SET SWING-
Swing Time? 1-127
sec Camera: 001
Input? ■      [MAIN]
```
↓
```
-SET SWING-
Swing Speed?
1-64/sec Camera: 001
Input? ■      [MAIN]
```

- Run swing

(a) Auto-pan : Enter number (1) and press SWING button.

[1] ○ [SWING]

(b) Auto-tilt : Enter number (2) and press SWING button.
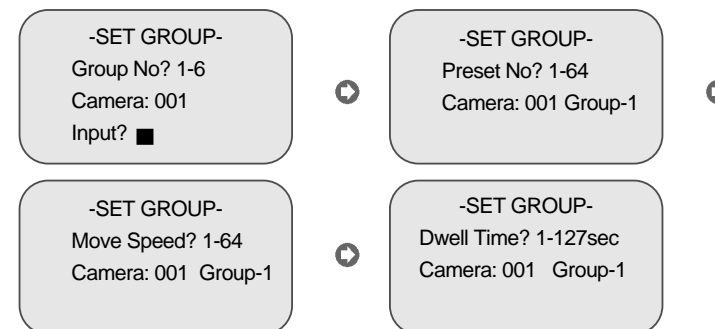
[2] ○ [SWING]

- Stop swing

Press SWING button or touch the joystick.

7) Groups (It means Tour Surveillance Function)

It is a sequence surveillance function with presets. With the function, it should be run tour surveillance to preset positions as desired automatically.
In the setting mode, it can be programmed speed value, dwell time and number of sequence.

- Set Group Mode

```
-SET GROUP-
Group No? 1-6
Camera: 001
Input? ■
```
○
```
-SET GROUP-
Preset No? 1-64
Camera: 001 Group-1
```
○

```
-SET GROUP-
Move Speed? 1-64
Camera: 001  Group-1
```
○
```
-SET GROUP-
Dwell Time? 1-127sec
Camera: 001   Group-1
```

(a) Press SET button and GROUP button in order.

[SET] ○ [GROUP]

(b) Enter group number (1 ~ 6).

[1~6] ○ [ENT]

(c) Enter preset number (1 ~ 64). It should be memorized up to 12 preset in one group.

[1~127] ○ [ENT]

(d) Enter preset speed value (1~64). The 1 of value is the lowest speed and 64 is the highest speed. The speed of step 1 is 0.1 degree per second and step 64 is 360 degrees per second.

[1~6] ○ [ENT]

(d) Enter dwell time (1 ~ 127).

[1~64] ○ [ENT]

(e) To save and exit group set mode press SET button.

■**Run Group** : Enter group number (1~6) as desired and press GROUP button.

[1~127] ○ [ENT]

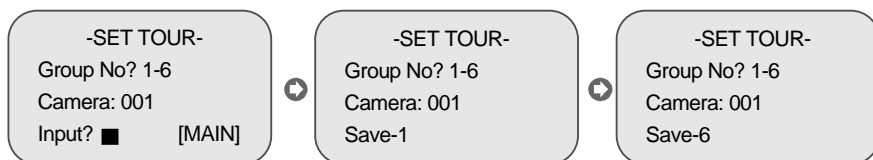■**Stop Group** : press GROUP button or touch the joystick.

■**All Group Clear**
Press CLR button for a while (more than 3 sec.) and press GROUP and ENT button.

[CLR] ○ [GROUP] ○ [ENT]

8) Tour (it means auto-tour surveillance function)

The keyboard should be programmed 1 of tour sequence included up to 6 groups.
It means auto-tour with memorized group.

```
-SET TOUR-
Group No? 1-6
Camera: 001
Input? ■      [MAIN]
```
○
```
-SET TOUR-
Group No? 1-6
Camera: 001
Save-1
```
○
```
-SET TOUR-
Group No? 1-6
Camera: 001
Save-6
```

- Set tour mode
(a) Press SET and TOUR button in order.

[SET] ○ [TOUR]

(b) Enter group number as desired number. It should be programmed up to 6 groups.

[1~6] ○ [ENT]

(c) Adding group number, repeat the process of (b). For example, if the desired 6 groups in a tour sequence, set as follows.

[1] ○ [ENT] ○ [2] ○ [ENT] ○ [3] ○ [ENT] ○
[4] ○ [ENT] ○ [5] ○ [ENT] ○ [6] ○ [ENT]

(d) To finish setting, press SET button.
- Run Tour : Press TOUR button.
- Stop Tour : Press TOUR button or touch the joystick.
- Clear all tour : Press CLR button for a while. (more than 3 sec) and press TOUR and ENT button.

[CLR] ○ [TOUR] ○ [ENT]

9) Spiral Function

This function will be supported only on speed dome cameras, the fixed pan speed and tilt speed is operated at the same time that can make a spiral surveillance function.

- Enter number (7) and then press MENU, ON/OFF button.
- Run Spiral : Enter number (7) then press MENU, ON button.

[7] ○ [MENU] ○ [ON]

- Stop Spiral : Enter number (7) and then press MENU, OFF button or touch the joystick.

[7] ○ [MENU] ○ [OFF]

10) PTZ Trace (It means pattern surveillance function)

The keyboard makes sure of meeting for this function in speed dome camera.
The function makes to memorize pan/tilt/zoom movement for 120seconds and play
back that trace to memorized movement.

```
- CCTV Transmitter -
Trace ON / OFF?
Camera: 001
Input? 8        [MAIN]
```

```
- CCTV Transmitter -
Trace Set / Delete?
Camera: 001
Input? 9        [MAIN]
```

- Run Trace : Enter number (8) and then press MENU button, ON button respectively.

- Stop Trace : Enter number (8) and then press MENU button, OFF button respectively
or touch the joystick.

- Memorize PTZ Trace : Enter number (9) and then press MENU button, ON button
respectively.

- Delete memorized PTZ Trace : Enter number (9) and then press MENU button,
OFF button respectively.

When manipulating according this setting the message of "Trace memory" appears on
the screen. At the moment, move pan, tilt and zoom with the joystick.
If the memory time expires, the memorizing stop automatically and memorized ptz is
registered.

11) Camera Remote Reset

This is same as the action switching power off and on (it means reboot) and doesn't
influence preset memory data.
- Enter desired camera number (1~255) and then press CAM button, then enter
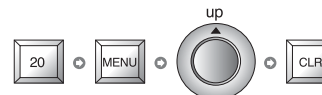number 10, press MENU button, ENT button.

12) Brightness control of LCD

This function is controlling the brightness of LCD and being able to be used where
desired location.
- Enter number (20) and then press MENU button and move JOYSTICK UP/DOWN
and then press CLR button.
- Brightness Up

- Brightness Down

13) Alarm On/Off

Using alarm sensor with presets or any equipment, press ALARM button and if related
sensor actuated then it makes sure of alarm sound at the same time the related
equipment is working. Press again ALARM button or CLR button then the function is
cancelled.

  - Alarm On :

  - Alarm Off : or

14) Privacy Zone

With the Keyboard Controller, it can be setup the privacy zone up to 6 zones on the monitor.

- How to setup the privacy zone

- Set Privacy Zone

Press 17 and MENU button on the keypad. Then you can see as below figure on the LCD of keyboard.
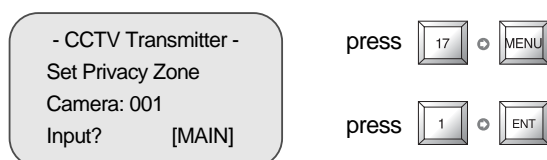
```
- CCTV Transmitter -          press   17  o  MENU
Set Privacy Zone
Camera: 001
Input?          [MAIN]        press   1   o  ENT
```

Fig. (a) Display on Keyboard

After view the above figure, please press 1 buttom(as desired privacy zone number) and ENT button on the keypad, then it appears cursor on the monitor for privacy zone.
- First, please put the privacy zone as desired location on the screen with the joystick.
- If you want to control size of privacy zone, it should be control with Z/I or Z/O button on the keyboard.

[Z/I] : SIZE DOWN

[Z/O] : SIZE UP

- Save Privacy Zone

- To save the privacy zone, press 16 button and MENU button. Then it appears the following figure.

```
- CCTV Transmitter -          press   16  o  MENU
Privacy Zone Disp?
Camera: 001
Input?          [MAIN]        press   1   o  OFF
```
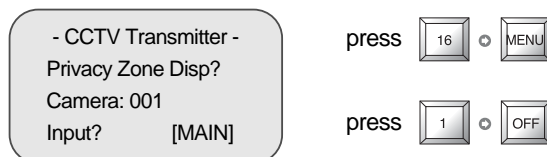
Fig. (b) Display on Keyboard

- Please press 1 (as desired privacy zone number) and OFF button.
- It should be displayed 'SAVING' on the screen. The appeared message is gone few seconds later.

- Display ON/OFF Privacy Zone

In this time, it remains masking mark on the monitor. You can remove the privacy zone that is ready to save on the monitor in temporary.
Press 16 and MENU, it appears figure (b) again.
Press 1 and OFF button

: the saved privacy zone disapears on the monitor in temporary.
If you want to display the privacy zones as desire, press 1~ 6 + ON : it appears privacy zone on the monitor.

- Delete Privacy Zone

```
- CCTV Transmitter -          press   18  o  MENU
Clear Privacy Zone
Camera: 001
Input?          [MAIN]        press   1   o  ENT
```
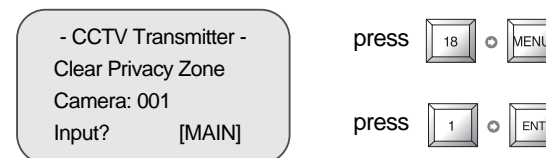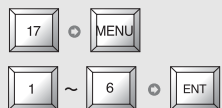
Fig. (c) Display on the Keyboard

Push 18 + MENU : Clear privacy zone

After press 18 button and MENU button, you can delete marks 1 to 6 which was input the mark.
- You can delete each number that was input the mark in permanent.
- After view the figure (c), press 1 button and ENT button, then memory of number 1 is delete in permanent.
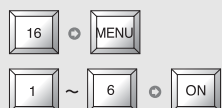- To delete memory of 1 to 6 is same way to the above.

• **Input privacy zone**

| 17 | ○ | MENU |

| 1 | ~ | 6 | ○ | ENT |

• **Saving privacy zone**

| 16 | ○ | MENU |

| 1 | ~ | 6 | ○ | OFF |

• **Display on the privacy zone**

| 16 | ○ | MENU |

| 1 | ~ | 6 | ○ | ON |

• **Display off the privacy zone**

| 16 | ○ | MENU |

| 1 | ~ | 6 | ○ | OFF |

• **Delete the privacy zone**

| 18 | ○ | MENU |

| 1 | ~ | 6 | ○ | ENT |

No. [1] button is your desired privacy zone number up to [6] zones.

If the surface of the keyboard becomes dirty, turn off the power and wipe the surface with a soft dry cloth.

⚠ **CAUTION**

❗ · Never use strong cleaners, such as alcohol, benzene or paint thinner to clean the surface of the unit. They will damage the surface and could cause fire or other accidents.

· Cleaning and inspecting of the internal components should only be performed by authorized technicians. Contact your nearest representative for details.

⚠ **FOR PROPER OPERATION**

🚫 **Never install the unit yourself.**
· The unit should be installed by trained personnel.

Trouble Shooting	Check Point	References
It does not power on.	Does the RJ-45 data cable plug in between junction box and keyboard?	Please plug in suitable outlet between keyboard and junction box.
	Does the power sources supply now?	Please make sure of the plug power supply into power consent.
It does not work pan/tilt movement.	Did you make sure of input camera number as desired?	After press CLR button and then input camera number exactly.
It does not work in a sub-keyboard.	Did you set address of sub-keyboard in initial setting?	Please check the address of sub-keyboard again.
	Did you plug into data cable in tight?	Please check plug in data cable and polarity of data cable.
It does not work preset movement.	Did you set preset position in preset setting mode?	Please make sure of setting preset position as desired.
It does not work alarm on.	Did you make sure of turn off all of alarm channels?	If alarm channel is off, it does not work alarm on.

7. Dimensions

KEYBOARD
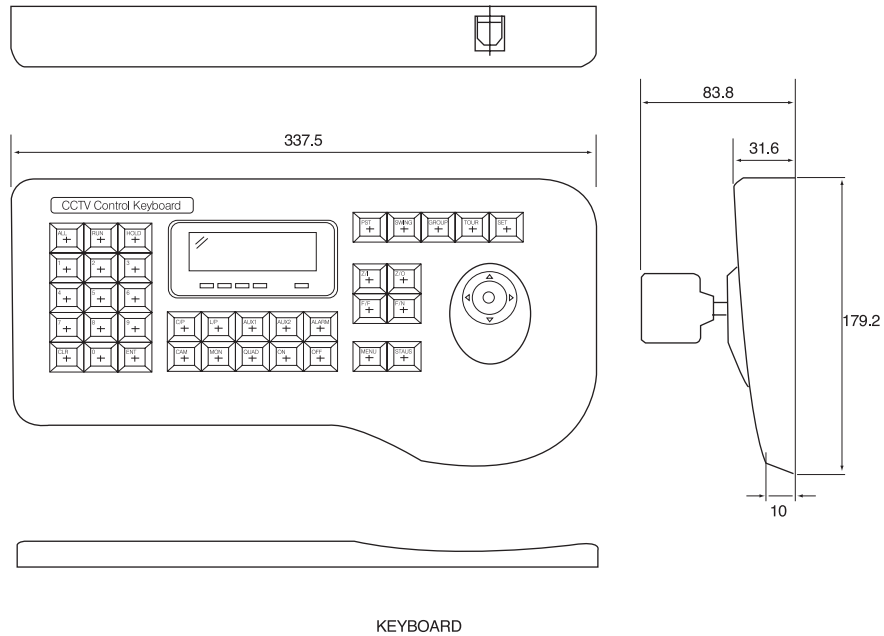
Unit : mm
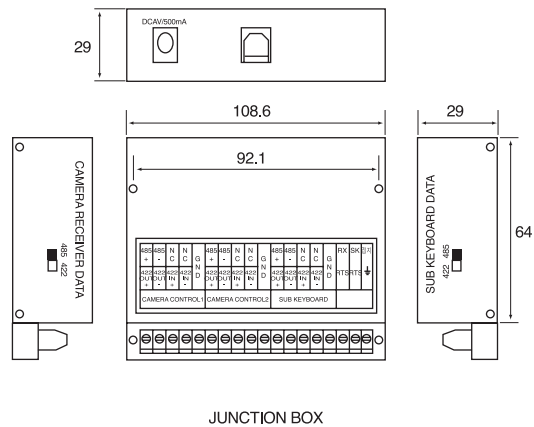
JUNCTION BOX

8. General Specifications

1) Controller

Item	Specification
In/ Output terminal	Modular jack
I/F between Junction box	TTL
Working temperature	0 - 40°C
Storage temperature	- 5 - 55°C
Working humidity	10-75%
Storage humidity	10-95%
Dimension	338(L) ×180(W) ×45(H)
Weight	about 1.2 Kg

2) Junction Box

Item	Specification
Power supply	DC 9V, 500mA Adapter
In/output terminal	Modular jack
Control I/F between camera and controller	RS-485 / RS-422
Working temperature	0 - 40°C
Storage temperature	- 5 - 55°C
Working humidity	10-75%
Storage humidity	10-95%
Dimension	109(L) ×66(W) ×27(H)
Weight	about 0.3 Kg

3) DC power supply

Voltage :DC12V(±10%)
Current: 1A (min)
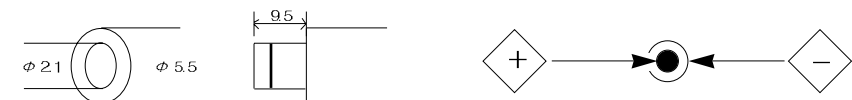
4) Camera control interface

Item	Specification
Synchronization	Asynchronous serial interface
System & word length	1 Start bit
	8 Data bit
	No parity
	1 Stop bit
	11 Byte command
Signal polarity	Mark logic "1"
	Space logic "0"
Transmit direction	Half duplex
Transmit speed	9600 BPS
Hardware	3 Cable(twist + ground)

5) Constitution of junction box

Item	Input / Output	
Camera control 1	Camera ↔ Junction box ↔ Sub Key	
	RS-485+	Camera data +
	RS-485-	Camera data -
	RS-422 In +	
	RS-422 In -	
	GND	
Camera control 2	RS-485+	Camera data +
	RS-485-	Camera data -
	RS-422 In +	
	RS-422 In -	
	GND	
Sub keyboard	RS-485+	RS-485+
	RS-485-	RS-485-
	RS-422 In +	RS-422 In +
	RS-422 In -	RS-422 In -
	GND	
	SK RTS	
	RX RTS	
	GND	

※Camera control 1 and 2 compose each separate driver circuit internally

6) Constitution of pin between controller and Junction box (modular jack)

Pin no.	Controller ↔ Junction box
1	RX-TXD
2	B +12V
3	RX-RXD
4	RX-RTS
5	GND
6	SK-TXD
7	SK-RTS
8	SK-RXD

9. Quick Reference

Operation	Function	Function input Main	Function input Sub
[Keypad 1~255]+[CAM]	Select camera	◎	◎
Power supply ON +[SET]	First stage controller setting	◎	◎
[SET]	Start set mode	◎	◎
[SET]+[J.S Stop]+[Keypad 1~64]+[PST]	Input and set the preset point		
[Preset No]+[PST]	Move to preset point		
[CLR+3sec]+[Keypad 1~64]+[PST]+[ENT]	Partial deletion of preset		
[CLR+3sec]+[PST]+[ENT]	Whole deletion of preset		
[SET]+[SWING]	Start set swing mode	◎	◎
[1/2]+[ENT]	Select of pan or tilt swing		
[Keypad1~64]+[ENT]+[Keypad 1~64]+[ENT]	Set up of two preset point		
[Keypad 1~127]+[ENT]	Set up of swing speed		
[Keypad 1~64]+[ENT]	Set up of stop time		
[1/2]+[SWING]	Start pan or tilt swing		
[SWING]/Joystick	Stop swing		
[SET]+[GROUP]	Start set group mode	◎	◎
[Keypad 1~6]+[ENT]	Select of group number		
[Keypad 1~64]+[ENT]	Select of preset point		
[Keypad 1~64]+[ENT]	Set up the move speed of group between presets		
[Keypad 1~127]+[ENT]	Set up the dwell time of group		
[SET]	Complete setting of group		
[Keypad 1~6]+[GROUP]	Start group surveillance		
[GROUP]/Joystick	Stop group surveillance		
[SET]+[TOUR]	Start set tour mode	◎	◎
[Keypad 1~6]+[ENT]←repeat	Set up tour		
[SET]	Ending of setting up Tour		
[TOUR]	Start tour surveillance		
[TOUR]/Joystick	Stop tour surveillance		
[MENU]	Start menu mode		
[1]+[MENU]	Mark of OSD Menu	◎	◎
[F/F]/Joystick	OSD Menu enter		
[F/N]	OSD Menu escape		
[2]+[MENU]+[ON/OFF]	Set motion detect ON or OFF	◎	
[3]+[MENU]+[ON/OFF]	Place of detection display ON/OFF		

Operation	Function	Function input Main	Function input Sub
[4]+[MENU]	Mode of set up zone size displayed	◎	
Joystick	Expansion of zone size(up/down, light/left)		
[Z/I,Z/O]/[F/F,F/N]	Reduction of Zone size(up/down, light/left)		
[5]+[MENU]	Motion sensitivity control mode	◎	
[Keypad 1~10]+[ENT]	Motion sensitivity highest →10		
	Motion sensitivity lowest →1		
[6]+[MENU]	Motion preset set up mode	◎	
[keypad 1~64]+[ENT]	Motion preset set up		
[7]+[MENU]+[ON]	Spiral function practice	◎	
[7]+[MENU]+[OFF]	Spiral ending		
[8]+[MENU]+[ON]	P/T/Z Trace practice	◎	
[8]+[MENU]+[OFF]	P/T/Z Trace ending		
[9]+[MENU]+[ON]	P/T/Z Trace memorizing	◎	
[9]+[MENU]+[OFF]	Deleting memorized P/T/Z Trace		
[Keypad 1~255]+[CAM]+[10]+[MENU]+[ENT]	Reset of chosen camera	◎	◎
[20]+[MENU]	LCD brightness mode	◎	◎
Joystick up/down +[CLR]	Ending brightness control		
[STAUS]	Freeze practice	◎	◎
[STAUS]	Freeze discharge		
[1]+[STATUS]	Confirmation of MD set camera	◎	
[ALARM]	Go into alert mode	◎	
[ALARM]	Out of alert mode		
[17]+[MENU], [1~6]+[ENT]	Input Privacy Zone setting	◎	
[16]+[MENU], [1~6]+[OFF]	Saving privacy zone & exit		
[16]+[MENU], [1~6]+[ON]	Display on the privacy zone		
[16]+[MENU], [1~6]+[OFF]	Display off the privacy zone		
[18]+[MENU], [1~6]+[ENT]	Delete the privacy zone		
	*[1] button is your desired privacy zone number up to 6 zones.		

※The motion functions are depends on the camera

MEMO

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