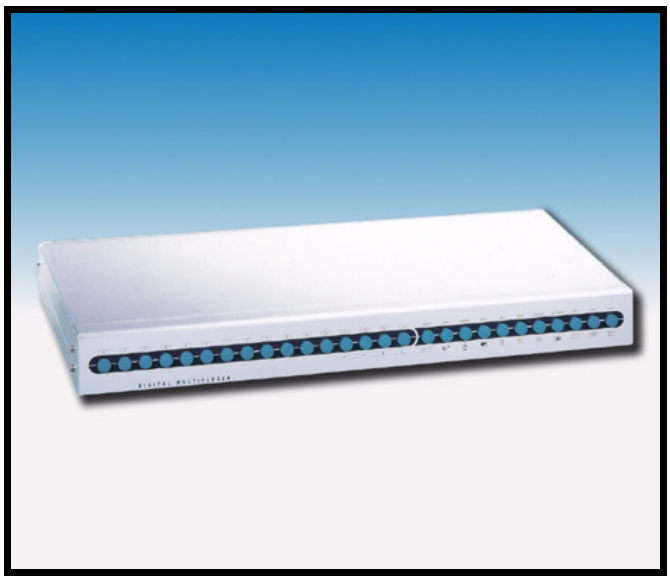
GLOBAL SECURITY SOLUTIONS



CE

DIGITAL MULTIPLEXER

D7261A-RPE model

USER MANUAL

FOREWORD

FOR THE INSTALLER:

Please follow carefully the specifications relative to electric and security systems realization further to the manufacturer's prescriptions indicated in the manual provided.

Provide the user the necessary indication for use and system's limitations, specifying that there exist precise specifications and different safety performances levels that should be proportioned to the user needs. Have the user view the directions indicated in this document.

FOR THE USER:

Periodically check carefully the system functionality making sure all enabling and disabling operations were made correctly.

Have skilled personnel make the periodic system's maintenance. Contact the installer for verifying the correct system operation in case its conditions changed (e.g.: variations in the areas to protect due to extension, change of the access modes etc…

)…….

This device has been projected, assembled and tested with the maximum care, adopting control procedures in accordance with the laws in force. The full correspondence to the functional characteristics is given exclusively when it is used for the purpose it was projected for, which is as follows:

Outdoor B/W minicamera

Any use other than the one mentioned above has not been forecasted and therefore it is not possible to guarantee its correct operativeness.

The manufacturing process is carefully controlled in order to prevent defaults and bad functioning. Nevertheless, an extremely low percentage of the components used is subjected to faults just as any other electronic or meccanic product. As this item is meant to protect both property and people, we invite the user to proportion the level of protection that the system offers to the actual risk (also taking into account the possibility that the system was operated in a degraded manner because of faults and the like), as well reminding that there are precise laws for the design and assemblage of the systems destinated to these kind of applications.

The system's operator is hereby advised to see regularly to the periodic maintenance of the system, at least in accordance with the provisions of current legislation, as well as to carry out checks on the correct running of said system on as regular a basis as the risk involved requires, with particular reference to the control unit, sensors, sounders, dialler(s) and any other device connected. The user must let the installer know how well the system seems to be operating, based on the results of periodic checks, without delay.

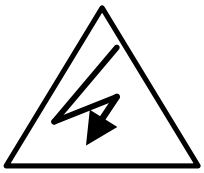
Design, installation and servicing of systems which include this product, should be made by skilled staff with the necessary knowledge to operate in safe conditions in order to prevent accidents. These systems' installation must be made in accordance with the laws in force. Some equipment's inner parts are connected to electric main and therefore electrocution may occur if servicing was made before switching off the main and emergency power. Some products incorporate rechargeable or non rechargeable batteries as emergency power supply. Their wrong connection may damage the product, properties and the operator's safety (burst and fire).

YOUR DEALER::

WARNING!

TO PREVENT FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION!



RISK OF ELECTRIC SHOCK
DO NOT OPEN!

The lightning flash with the arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated ''dangerous voltage'' within the products enclosure that maybe 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 products.

WARNING!

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions in this manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to subpart J of part 15 of FCC rules which are designed to provide reasonable protection against such interference when operated in a commercial environment. This equipment has also been tested and found to comply with the requirements for a CE Class A device safety standards.

Operation of this equipment in a residential area may cause interference, in which case the user is required to take all measures are necessary, at the user's expense, to correct the interference.

Table of Contents

1. Features

1.1. Duplex operation allows video recording and video playback (from VCR).

1.2. Outstanding picture quality provided by 858 x 524 (NTSC/EIA), 864 x 624 (PAL/ CCIR) pixel display with 256 gray levels and 16 million colors.

1.3. Compatible with B&W video cameras (EIA or CCIR standard) and color cameras (NTSC or PAL standard) video sources.

1.4. Loop back connectors are available for every camera inputs, internal termination can be disabled using on screen menu.

1.5. Ensure the fastest possible recording regardless of whether inputs are synchronized or not. Provide up to 30 unique frames per second for both monitor and VCR recording.

1.6. Motion detection area and sensitivity are programmable for each camera's input individually.

1.7. Alarm history log up to 255 records of event, including: Video loss, Motion detect and Alarm Input.

1.8. Two independent monitor outputs: Main Monitor is used to display multi-windows, digital images. Call Monitor provide full screen, live analog output.

1.9. Brightness, Contrast, Saturation and Hue is adjustable.

1.10. Main monitor, VCR input and VCR output are all equipped with BNC and Super-VHS connectors.

1.11. Support Double/Triple density time-lapse VCR.

1.12. Support synchronous (VCR Trigger) record and asynchronous (24hr..) record.

1.13. Diversified multi-windows display mode, Ex Full screen, Quad, 3x3, 4x4.

1.14. Powerful function of Alarm Processor permit elastic alarm trigger and response set up.

1.15. On Screen Display available for: date, time, alarm & video loss indication, and 2-character camera title.

1.16. Built-in color bar pattern generator for monitor calibration.

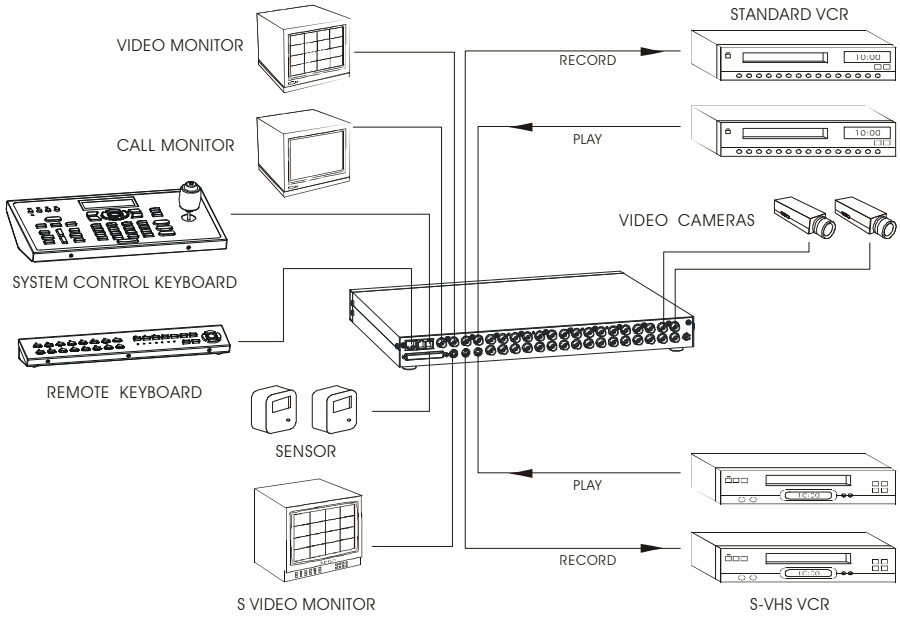
1.17. Provide RS485 communication port for remote control.

1.18. Provide Digital Auto-Gain Control (8 segment, range: 70% - 140%) for each camera.

1.19. Digital auto gain control for VCR play back.

1.20. Sequence mode available.

2. System Installation & Operations



2.1 Basic Connections

- **Cameras**
  Connect the Camera to the VIDEO IN.
- **Main Monitor**
  Connect 'Main Monitor' BNC connector or the 4 pin mini Din connector (S-VHS) to the video input of the video monitor.
- **VCR**
  Connect the VCR In (BNC or S-VHS) and VCR OUT (BNC or S-VHS) connectors to the VCR's Video output and Video input respectively.
- **Power**
  Connect the DC 12V /1.5AMP (or > 1.5 AMP) adapter to the DC jack on the rear panel.

2.2 Optional Connections

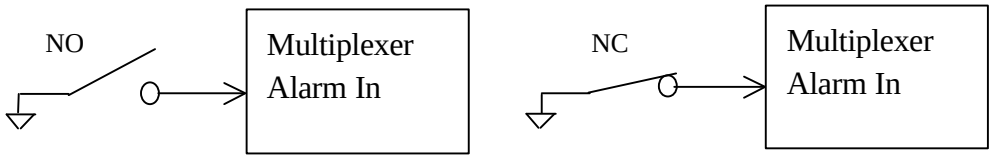
- **Call Monitor**
  Connect the 'Call Mon.' BNC connector to the video input of an NTSC compatible video monitor.
- **RS485 Port**
  Connect the RJ11 RS485 port to a PC or remote keyboard for external control.
- **Remote KeyPad**
  Connect the RJ45 Remote KeyPad Port to the external KeyPad device.
- **External IO Connector**
  Connect the EXT IO board to the 37pin DSUB on the rear panel, from this expansion board you can get the following signals in or out (refer to Appendix A.3)

2.3 System Connect and Install

- **External I/O Connection**

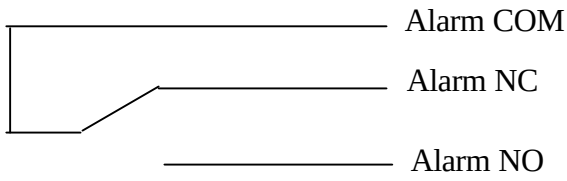
1. Alarm In

TTL level input, you may use NC or NO type of alarm signal her, but the set up must be matched. Please refer to section 4.4.3 for set up procedure.



2. Alarm Out

Two types of Alarm Out signal are provided: Alarm NO and Alarm NC. Connect these pins and to the alarm input of the VCR or other device like siren or flash light.



3. VCR Trigger

TTL level input, connect to VCR trigger out.(Apply to SYNC mode VCR recording)

4. Set Alarm

TTL level input, normal open (NO). Short this pin to ground will activate Alarm output, if enabled in setup menu.

5. Reset Alarm

TTL level input, normal open (NO). Short this pin to ground will stop Alarm output, if enabled in setup menu.

2.3.1 VCR Record

The multiplex allows recording of multiple cameras onto a single videotape. This operation is always performed in the background, and does not interfere with other operations. All the other features remain available while a recording is being made. Like, tape playback does not affect recording. It is possible to review a previously recorded tape while recording continues on a second VCR.

There are two types of operation for the VCR recording:

A) Synchronous: Time Lapse VCR must be used in this mode, the Trigger(or SW) Signal must be connected from the VCR to Multiplexer. The recording operation is conducted according to the Trigger(or SW) signal form the VCR.

B) Asynchronous: either a Time Lapse VCR or normal VCR can be used in this mode. If time lapse VCR is used, the recording time must be set according to the VCR setting: it ranges from Real, SYNC, 4 hr, 6 hr, 8 hr, 12 hr, 18 hr, 24 hr, 28 hr, 30hr, 48 hr, 72 hr, 168hr, 240 hr, 480 hr, 720 hr to 960 hr. If a normal VCR is used, the recording time must be set to Real mode.

For optimum tape recording and play back, the multiplexer must be configured correctly. Please refer to section 4.6.2 VCR SET UP for detail descriptions.

2.3.2. Playback

To review a previously recorded tape, the Video Output connector of VCR must be connected to Multiplexer's VCR IN connector (either BNC or S-VHS). Decoding of recorded tapes consists of automatically separating the multiplexed camera fields and then grouping each camera's fields together for display. Using the coded data that was inserted into each recorded field, the unit can automatically reconstruct each camera's ID, status, date, time information. The images can be displayed in any multi-windows format on the Main monitor, just like in live camera mode. Moreover, user can enable or disable the OSD of the recorded date, time and alarm information.

2.4 Alarm Processor

There are two affairs will trigger Alarm Out, Video Loss and Alarm In. Alarm Processor can handle all triggered Alarm and react properly.

2.4.1 Video Loss

If the video decoder can not detect the video signal from a particular camera channel, that camera is considered as 'Video Loss'. The following action will be proceeded:

1) The 'Alarm NC' output will be open.
2) The 'Alarm NO' output will be short to ground.
3) The internal Buzzer will start beeping (if enabled).
4) The corresponded window on the Main Monitor will display background color, and corresponded window on the Main Monitor will show 'Loss'.
5) Encode the camera as 'video loss' to the VCR output.

The above actions will keep until the following conditions are met:

1) The alarm response duration time has elapsed.
2) Press any key to stop.

2.4.2 Alarm In

The following responses will be activated (if enabled), when any one of the Alarm In pins is active:

1) The 'Alarm NC' output will be open.
2) The 'Alarm NO' output will be short to ground.
3) The corresponded window on the Main Monitor will show 'ALARM'.
4) Encode the camera as 'ALARM' for the VCR OUT.
5) The Internal buzzer will start beeping (if enabled).
6) Switch the Call Monitor to the alarmed camera channel. If more than one camera, these alarm cameras will be displayed in sequence.

The above actions will keep until the following conditions are met:

1) All the Alarm In pins become non-active condition.
2) The alarm input release time has been past, and no more Alarm In has been sensed again.
3) The alarm output response duration time has elapsed.
4) Press any key to stop.

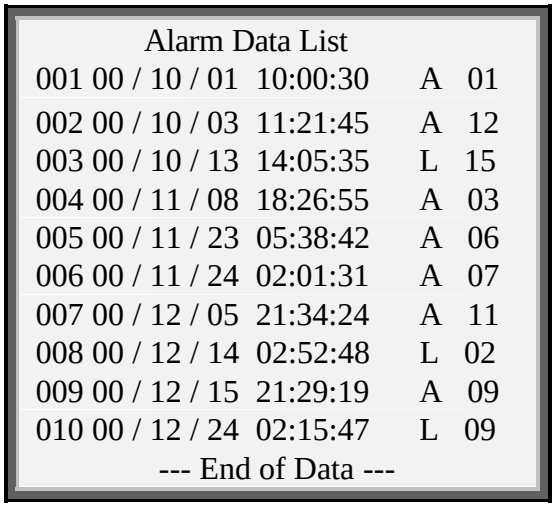
2.4.3 Motion Detect

The response triggered by motion detection is the same as Alarm In, please refer to section 2.4.2 for detail.

2.4.4 Alarm List

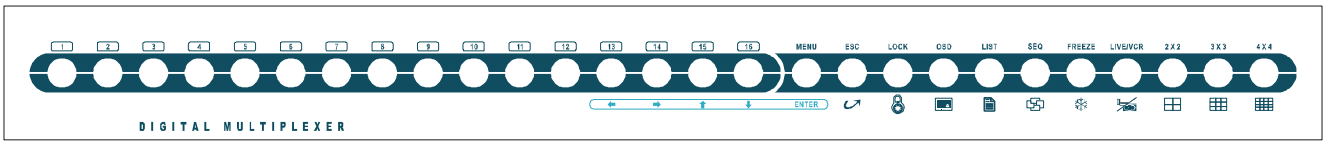
The alarm events will be logged in the non-volatile memory. By pushing the LIST key, the list will be displayed by the OSD as shown below. The first column is the item number, followed by the date and time of the alarm and the 'type of alarm': A means Alarm Input, L means Video Lost. The last column is the channel number of the alarm.

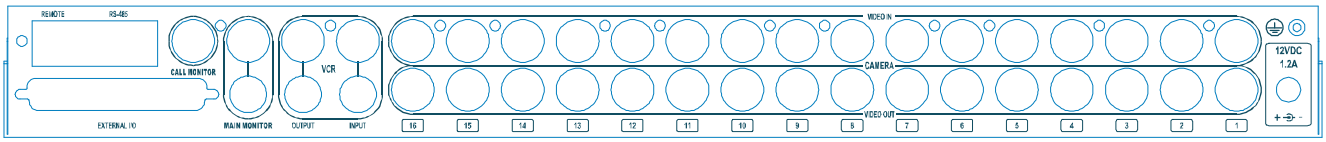
You may browse the list using the direction key, the LEFT/RIGHT key will scroll one page up and down, while UP/DOWN key will move the cursor one row up or down. You may also use the Mode Select key (2*2, 3*3) to jump to the top or bottom of the list.



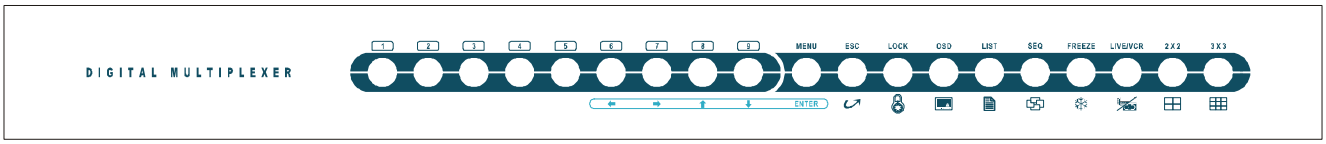
3. Basic Operation

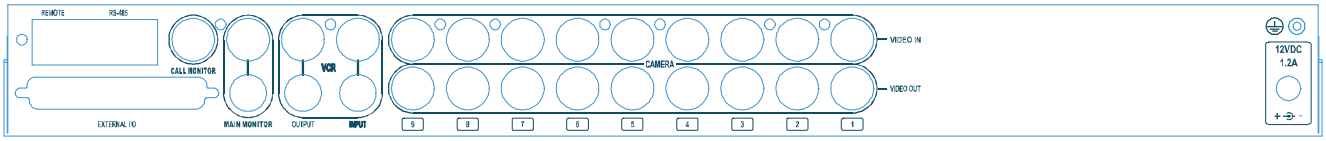
3.1 Front and Rear Panel 16CH Model



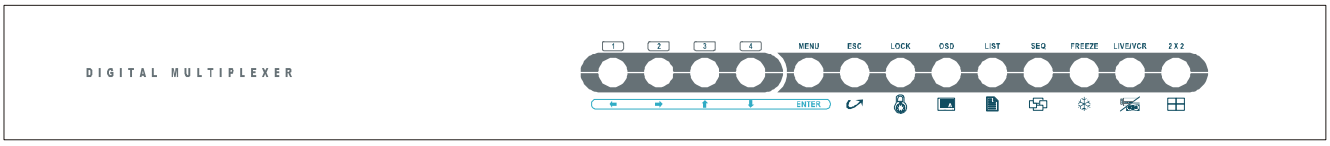


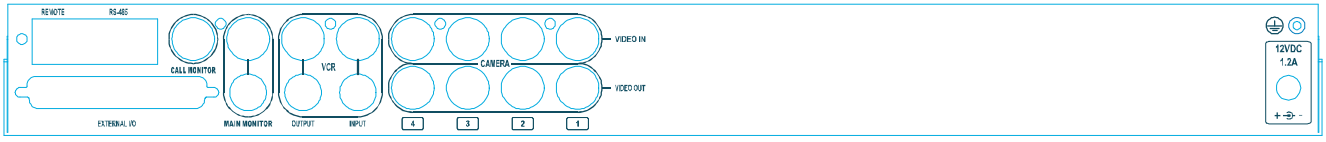
3.2 Front and Rear Panel 9CH Model





3.3 Front and Rear Panel 4CH Model





3.4 Function Keys Description

3.4.1 LIVE/VCR Key

Pressing this key will switch the display between live camera and VCR playback. When LIVE/VCR LED is “On”, all the displayed video comes from live camera, otherwise, all video come from VCR playback. Both Camera title and date/time display will be reversed, to be distinguished with the live mode.

3.4.2 FREEZE Key

When the multiplexer is in sequence mode, press the FREEZE key will stop the sequence, press it again will return to sequence mode.

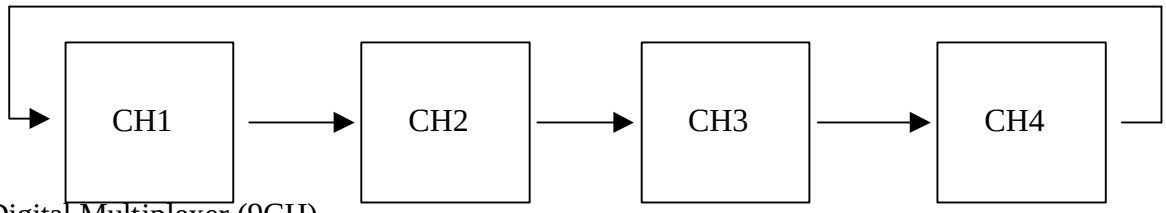
When the multiplexer is not in Sequence mode, press it once will freeze the video image on the screen. Pressing FREEZE key again or press any key will release freeze mode. If in the Full screen, press it once will freeze the video image on the screen in frame mode. Frame mode is suitable for static image. If user press freeze-key again, multiplexer will change from frame mode to field mode. Press freeze-key again, multiplexer will release **FREEZE** mode.

3.4.3 SEQ Key

Press SEQ key will make the multiplexer enter sequence mode. There are totally three sequences, you may select different sequence by pressing SEQ key.

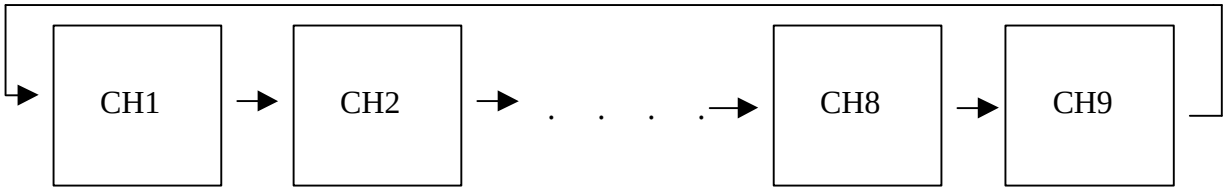
Digital Multiplexer (4CH)

SEQ1: Full screen

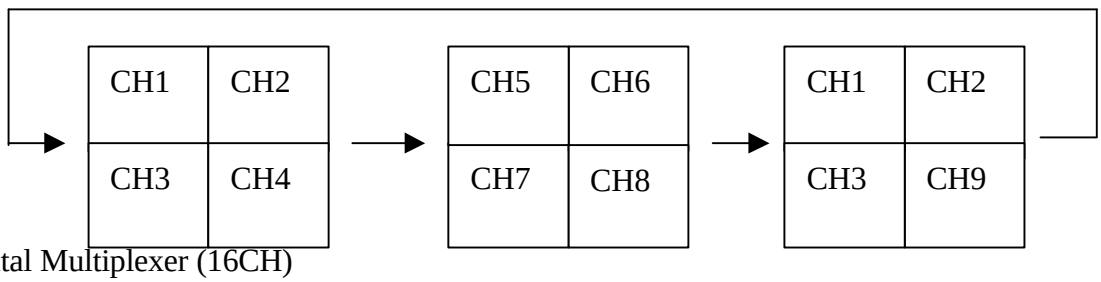


Digital Multiplexer (9CH)

SEQ1: Full screen

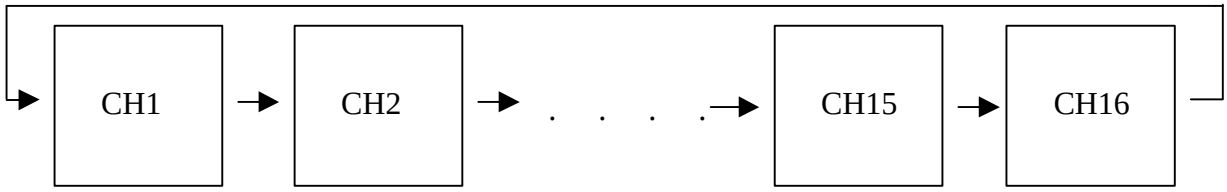


SEQ2: Quad

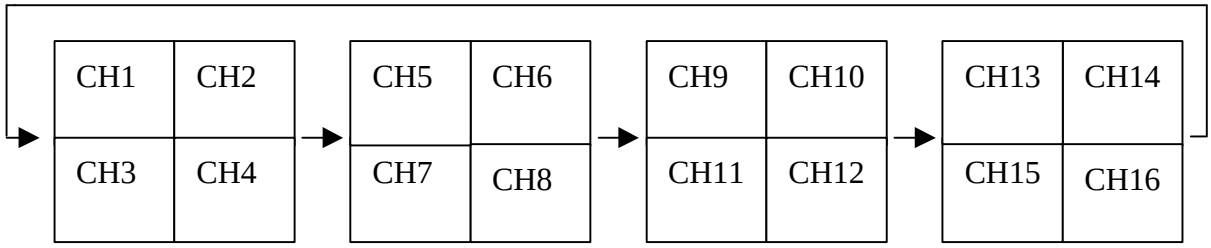


Digital Multiplexer (16CH)

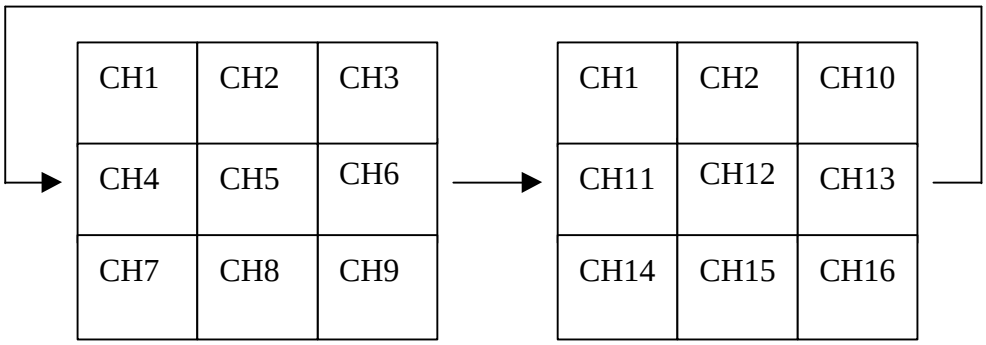
SEQ1: Full screen



SEQ2: Quad



SEQ3: 3x3



3.4.4 LIST Key

Pressing LIST key will show the Alarm History Log on the screen. You may browse the list using the direction key: the LEFT/RIGHT key will scroll one page up or down, while UP/DOWN key will move the cursor one row up or down. You may also use the Mode Select Key (2x2, 3x3) to go to the top or bottom of the list.

3.4.5 OSD Key

Pressing OSD key, the Date/Time & Title OSD will be turned On/Off.

3.4.6 LOCK Key

Keep press LOCK key over 3 seconds, the keypads will be locked/ unlocked. This function is to prevent accidental changing the system setup. When the keyboard is locked, the LOCK key LED will be lit. The other key will be void simultaneously. In this mode, if the other key is pressed, the screen will show <<< Key Lock >>>. Lock mode will be removed if you keep press the LOCK key over 3 seconds again.

3.4.7 MENU Key

Press MENU key simultaneously, the Set Up Menu will appear, please refer to section 4 for detail operation.

3.4.8 MODE SELECT KEY (2x2,3x3,4x4)

Press MODE SELECT KEY (2X2 , 3X3 , 4X4) to select difference splits of screen mode

 2X2 press this key to be 4 splits of screen, all models support this mode.

 3X3 press this key to be 9 splits of screen, 9CH and 16CH model support this mode.

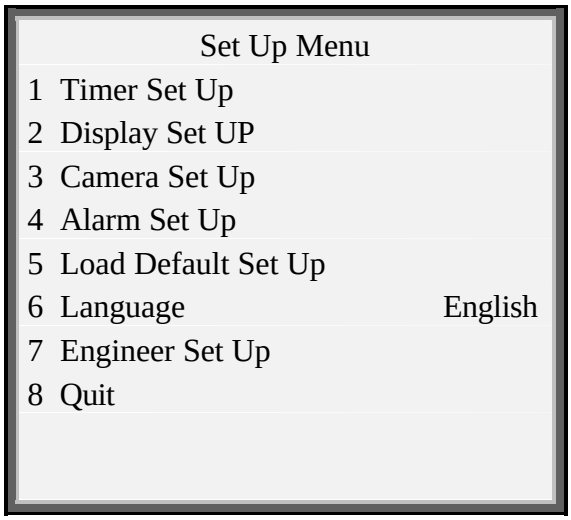
 4X4 press this key to be 16 splits of screen, only 16CH model support this mode.

3.5 Call Monitor

The Call Monitor is always switching full screen video of all installed cameras. When the main monitor is switching full screen, the call monitor is show the same video too. After the Spot Time between switching of call monitor. The call monitor will return switching mode. If you want to switch call monitor and not affect to main monitor. You can press ESC key + Channel key simultaneously, the call monitor will switching to the channel video. After the Spot Time between switching of call monitor, the call monitor will return switching mode.

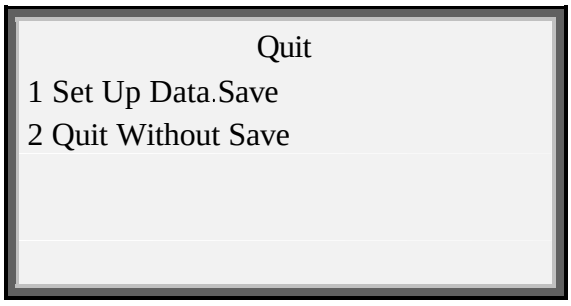
4. Set Up Menu

The set up menu is composed in hierarchy architecture, it allows the user to configure the multiplexer according to the application environment. Many advanced functions can be activated, many options can be selected via the operation of setup menu. To enter the Setup Menu, press “MENU” key, the following ‘Set Up Menu’ will be appear:



There is a cursor (highlighted bar) which can be moved up and down by the Direction keys. All the items in the setup menu contain several ‘sub menu’. Each sub menu will be described step-by-step in the following sections.

If you want to exit the Set Up Menu, you may either select 8 Quit and press ENTER, or press ESC key on the front panel. The following menu will be displayed on the screen:

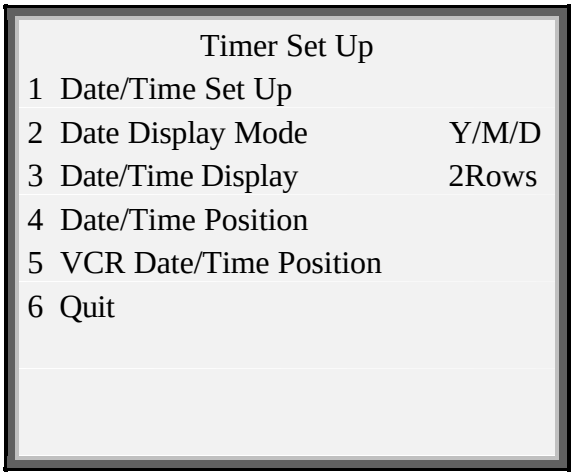


If you move the cursor to 1 Set Up Data : Save and press ENTER, the modifications you made before will be saved into the non-volatile memory (EEPROM).

If you move the cursor to 2 Quit Without Save and press ENTER, or press ESC key on the front panel, the modification you made will keep affective, but not saved into EEPROM. So, if you power OFF and ON the machine, these modifications will be disappeared.

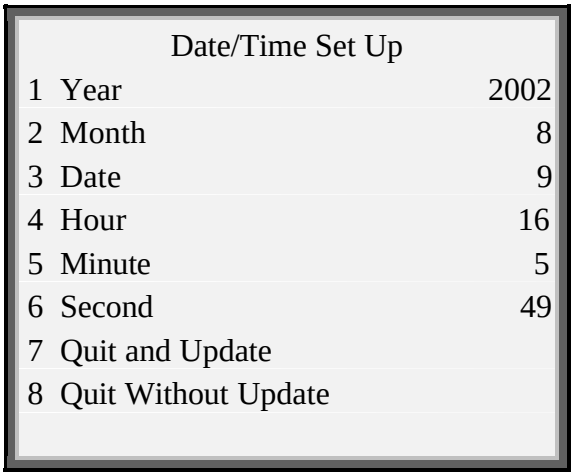
4.1 Timer Set Up

This menu allows you to setup the current date/time. In the main menu, move the cursor to 1 Timer Set Up , press the ENTER key, the following menu will appear on the screen:



4.1.1 Date/Time Set Up

In the Timer Set Up menu, move the cursor to 1 Date/Time Set Up , press ENTER key, the following menu will appear:



A. Item 1~6 allows you to set up the date and time, use RIGHT/LEFT keys to adjust.
B. If you want to give up all the changes, move cursor to 8 Quit Without Update , then press ENTER key, all the adjusted items will be discarded.
C. If you want to save the changes, move the cursor to 7 Quit and Update , then press ENTER key, the adjusted items will be memorized.

4.1.2 Date Display Mode

There are three different types of date/time OSD: Y/M/D, M/D/Y and D/M/Y. Move the cursor to 2 Date Display Mode , then use RIGHT/LEFT keys to select the option.

4.1.3 Date/Time Display

The date/time OSD can be shown in one or two rows, move the cursor to 3 Date/Time Display , then use RIGHT/LEFT keys to select the option.

4.1.4 Date/Time Position

In the Timer Set Up menu, move the cursor to 4 Date/Time Position , press ENTER key, the menu will disappear, only the date/time display left on the main monitor. Use the Direction(**??? ?**) keys to adjust the position of date/time display.

4.1.5 VCR Date/Time Position

When VCR playback video is shown on the screen, both Camera title and date/time display will be reversed, to be distinguished with the live mode. This menu allows you to locate the VCR date/time position.

In the Timer Set Up menu, move the cursor to 5 VCR Date/Time Position , press ENTER key, the menu will disappear, only the playback date/time display left on the screen, you can use the direction keys (**??? ?**) to move it to any position you want.

4.2 Display Set Up

This menu allows you to tune the quality of the displayed image. In the set up menu, move the cursor to 2 Display Set Up, press ENTER key, the following menu will appear. Item 1~4 allows you to adjust the display quality, just use RIGHT/LEFT(**? ?**) keys to adjust the OSD bars.

Display Set Up		
1 Brightness	116	IIIIIIIIIIII
2 Contrast	130	IIIIIIIIIIII
3 Saturation	150	IIIIIIIIIIII
4 Hue	128	IIIIIIIIIIII
5 Split Resolution		High
6 Spot Monitor Dwell		5
7 Sequence_1 Dwell		5
8 Sequence_2 Dwell		5
9 Sequence_3 Dwell		5
10 Quit		

4.2.1 Split Resolution

If there is a flicker phenomenon because of the sharp video, you can set the Split Resolution to 'Low' to eliminate it. In the split mode, use LEFT/RIGHT keys (**? ?**) to set up.

4.2.2 Spot Monitor Dwell

The call monitor is always switching full screen video of all installed cameras, this item allows you to set the Spot Time between switching. The timer value range from 1 to 255, that means the dwell time of each camera video on the call monitor range from 1 second to 255 seconds. Move the cursor to 6 Spot Monitor Dwell , use RIGHT/LEFT (**? ?**) keys to change the dwell time.

4.2.3 Sequence Dwell

You can use direction keys (**??**) to move cursor to 7 Sequence_1 Dwell or 8 Sequence_2 Dwell or 9 Sequence_3 Dwell , and you can use direction keys (**? ?**) to change sequence dwell time. The value range from 1 to 255, that means the dwell time of each page (Full , quad ,3X3) on the main monitor range from 1 second to 255 seconds.

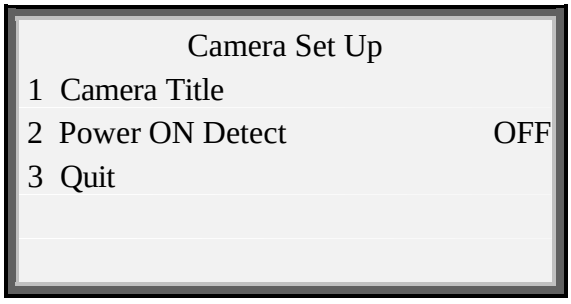
PS:Digital Multiplexer (4CH) have one sequence (Sequence_1),

Digital Multiplexer (9CH) have two sequences (Sequence_1, Sequence_2),

Digital Multiplexer (16CH) have three sequences (Sequence_1, Sequence_2, Sequence_3).

4.3 Camera Set Up

This menu allows you to enter title for each camera. In the main menu, move the cursor to 3 Camera Set Up , press ENTER key, the following menu will appear:



4.3.1 Camera Title

Each display window on the main monitor has a 'Title' for the user to tell the position of that camera. The Title can be turned on or off by pressing OSD key on the front panel. The default title for each camera is CH1~CH16.

This menu allows you to enter special Title (up to 12 characters) for each camera. In the Camera Set Up menu, move the cursor to 1 Camera Title , press ENTER key, the following list of cameras will appear:

Camera Title	
1 Camera _ 1	10 Camera _10
2 Camera _ 2	11 Camera _11
3 Camera _ 3	12 Camera _12
4 Camera _ 4	13 Camera _13
5 Camera _ 5	14 Camera _14
6 Camera _ 6	15 Camera _15
7 Camera _ 7	16 Camera _16
8 Camera _ 8	17 Quit
9 Camera _ 9	

A. Use Up/Down key to select camera, press ENTER key to enter 'title edit' page.
B. Use the 2x2 key to move the cursor in the entry field.
C. Use the direction keys (**??? ?**) to move the cursor in the character lists to the one you need, then press ENTER key to select. Press ESC after title edit is finished.

4.3.2 Power ON Detect

The item allows you to enable/disable camera auto-detect when Power-ON. Use direction keys (**? ?**) to select ON/OFF.

4.4 Alarm Set Up

This menu allows you to set up how the multiplexer should respond to the triggered alarm. In the Set Up Menu, move the cursor to 4 Alarm Set Up , press ENTER, the following menu will appear:

Alarm Set Up	
1 Internal Buzzer	ON
2 Response Duration	10
3 Motion Detect	
4 Alarm In	
5 Alarm Full Screen	Dis
5 Video Loss Alarm	Dis
6 Clear Alarm List	
7 Quit	

4.4.1 Internal Buzzer

This item allows you to set the internal buzzer activated or not when an alarm is triggered or video loss. In the Alarm Set Up menu, move the cursor to 1 Internal Buzzer , use direction keys (**? ?**) to select ON/OFF.

4.4.2 Response Duration

This item allows you to decide how long time the internal buzzer and Alarm Out relay will keep after alarm is triggered.

In the Alarm Set Up menu, move the cursor to 2 Response Duration , then use direction keys (**? ?**) to adjust the value. The value could range from 1 to 9999, which means the alarm output can keep from 1second to 9999seconds.

4.4.3 Motion Detect

This menu allows you to configure how Motion Detection works. Each camera can have it's 'Detect Area' and 'Sensitivity' defined individually.

In the Alarm Processor menu, move the cursor to 3 Motion Detect , press ENTER key, the following menu will appear:

Motion Detect	
1 Motion Detect	OFF
2 Condition Set Up	
3 Quit	

4.4.3.1 Motion Detect

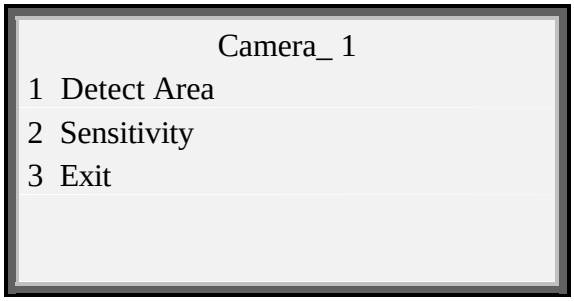
This item allows you to enable or disable the motion detect function of this multiplexer.

4.4.3.2 Condition Set Up

This menu allows you to set up the detect area and sensitivity for each camera inputs.

Condition Set Up	
1 Camera_1	10 Camera_10
2 Camera_2	11 Camera_11
3 Camera_3	12 Camera_12
4 Camera_4	13 Camera_13
5 Camera_5	14 Camera_14
6 Camera_6	15 Camera_15
7 Camera_7	16 Camera_16
8 Camera_8	17 Quit
9 Camera_9	

Move the cursor to Camera_1 , preset ENTER key, the following menu appear:



4.4.3.2.1 Detect Area

This item allows you to set up the motion detect area.

Move the cursor to 1 Detect Area , press ENTER key, the screen will be covered by 192 'detection grids'. You can use the direction key and ENTER key to enable/disable the grids. (small circle: disabled; big circle: enabled)

The default 'cursor size' is only one grid, that means you can only toggle the setting one grid each time. You can use the Mode Select keys to change the cursor size from 1x1 grid to 2x2, 3x3 or 4x4 grids, this makes the set up process more easier. You may also use PAGE key to turn the grids all on or all off.

4.4.3.2.2 Sensitivity

This item allows you to set up the sensitivity of motion detection.

Move the cursor to 2 Sensitivity , press ENTER key, two OSD bars and Motion detect area grids will be shown on the screen now. The upper bar shows the current detected amount of motion of this camera. The lower bar allows you to set up the 'trigger level', once the detected motion amount become larger than this level, the alarm will be triggered. (If Motion Detect function is ON)

4.4.4 Alarm In

In the Alarm Set Up menu, move the cursor to 3 Alarm In , press ENTER, the following menu will appear:

Alm In Type define signal type of external alarm sensor is Normal-Open or Normal-Close. O= Normal-Open, C= Normal-Close.

Alm In Enable define each Alarm In pin is enabled or not. √=enabled, • =disabled.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
In type	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Enable	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

ESC For Return

4.4.5 Alarm Full Screen

When an alarm event is detected at certain camera, the channel will turn to a full screen view. Use direction keys (**? ?**) to select En/Dis.

4.4.6 Video Loss Alarm

This item allows you to enable or disable the multiplexer to detect Video Loss as an alarm event. Use direction keys (**? ?**) to select En/Dis.

4.4.7 Clear Alarm List

In the Alarm Set Up menu, move the cursor to 6 Clear Alarm List , press ENTER key, the following menu will appear:

Move the cursor to 1 Quit and Clear press ENTER key, the alarm list data will be erased. If you move the cursor to 2 Quit Without Clear , and press ENTER key, the alarm list data won't be erased. This arrangement is to avoid user erase the list by mistake.

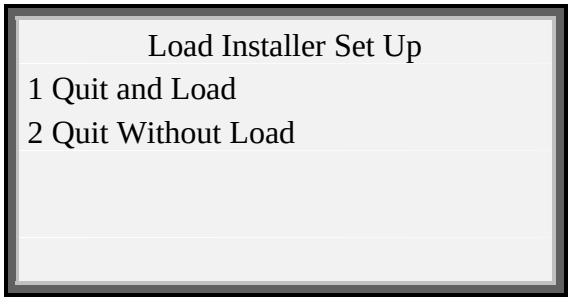
4.5 Load Default Set Up

This menu allows you to restore the machine to the default configuration which was done by the installer (engineer).

In the Set Up Menu, move the cursor to 5 Load Default Set Up , press ENTER key, the following menu will appear:

4.5.1 Load Installer Set Up

This item allows you to recall the "Installer's Configuration" from the on-board non-volatile memory. Move the cursor to 1 Load Installer Set Up and press ENTER key, the following menu will appear:



Move the cursor to 1 Quit and Load and press ENTER key, the Configuration will load from the on-board non-volatile memory. If you move the cursor to 2 Quit Without Load , press the ENTER key, the Configuration will not change.

4.5.2 Load Factory Password

This item allows you to reload the factory password in case you forget your own password.

4.5.3 Default Factory Setting

1.2 Date Display Mode : **Y/M/D**

1.3 Date/Time Display : **2Rows**

2.1 Brightness : **115/115(NTSC/PAL)**

2.2 Contrast : **162/160 (NTSC/PAL)**

2.3 Saturation : **255/230 (NTSC/PAL)**

2.4 Hue : **128/128 (NTSC/PAL)**

2.5 Split Resolution : **High**

2.6 Spot Monitor Dwell : **5**

2.7 Sequence_1 : **5**

2.8 Sequence_2 : **5** (for 9 channel & 16 channel)

2.9 Sequence_3 : **5** (for 16 channel)

3.2 Power ON Detect : **OFF**

4.1 Internal Buzzer : **ON**

4.2 Response Duration : **10**

4.3.1 Motion Detect : **OFF**

4.4 Alarm In : **All Normal Open** & **All Disable**

4.4.5 Alarm Full Screen : **Dis**

4.4.6 Video Loss Alarm : **Dis**

7.1 Engineer Table: **All camera Install** & **No Covert** & **Terminal Resistor on** & Gain Control**=5**

7.2.1.1 DAGC : **Dis**

7.2.1.2 Brightness : **106/114 (NTSC/PAL)**

7.2.1.3 Contrast : **171/166 (NTSC/PAL)**

7.2.1.4 Saturation : **302/281 (NTSC/PAL)**

7.2.1.5 Hue : **128/128 (NTSC/PAL)**

7.2.2 VCR Source : **BNC**

7.2.3 Rec Time : **24Hr**

7.2.4 VCR Rec Mode : **Field**

7.2.5 Rec Density : **Standard**

7.2.6 Sync-Trig : **Fall**

7.2.7 Playback Adjust : **Auto**

7.2.8 VCR Input Check : **OFF**

7.2.9 VCR Type : **VCR**

7.2.10 VCR Output : **Normal**

7.3 Change Password : **9667**

7.5.1 RS-485 ID Setup : **224**

7.5.2 Baud Rate : **9600bps**

4.6 Language

This item shows the language of the Set Up Menu.

4.7 Engineer Set Up

In the Set Up Menu. Move the cursor to 7 Engineer Set Up and press the ENTER key, the following menu will appear:

Engineer Set Up	
1 Input Password	9999
2 Engineer Set Up	
3 Quit	

If you want to entry 'Engineer Set Up' menu, you must input password.

Move the cursor to 1 Input Password , use direction keys (**? ?**) to adjust the password, then move the cursor to 2 Engineer Set Up , press the ENTER key, the Engineer Set Up menu will appear. Now you can adjust these parameters that's only available for the engineer.

Engineer Set Up	
1 Engineer Table	
2 VCR Set Up	
3 Change Password	9667
4 Camera Auto-Detect	
5 RS-485	
6 Software Information	
7 Monitor Adjust	
8 Save Installer Set Up	
9 Load Factory Set Up	
10 Quit	

4.7.1 Engineer Table

In the Engineer Set Up menu, move the cursor to 1 Engineer Table , press ENTER key, the following menu will appear:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Install	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Covert	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Term_Res	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Gain	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

ESC For Return

Install.√ = camera installed, • =camera not installed

Covert. The second row of the configuration table allows you to make some of the camera's input invisible (covert) on both main and spot monitor, while VCR keep recording the camera's video. √ = camera invisible, . = camera visible. The default setting is every camera visible.

Terminal. The third row of the configuration table allows you to enable/disable the terminal resister of each camera. √ = terminal resister is enabled, • =terminal resister is disabled.

If the camera loop-back connector is not used, the terminal resister should be enabled to get correct signal termination, this is the default condition.

Otherwise, the terminal resister should be disabled.

Gain Control. You can use key direction (… .) to select camera.

And then press ENTER will be change value (range 1~8),

1 is smallest gain value, 8 is largest gain value.

4.7.2 VCR Set Up

To set up the VCR recording correctly is one of the most important part of using the multiplexer.

In the Engineer Set Up menu, move the cursor to 2 VCR Set Up , press ENTER key, the following menu will appear:

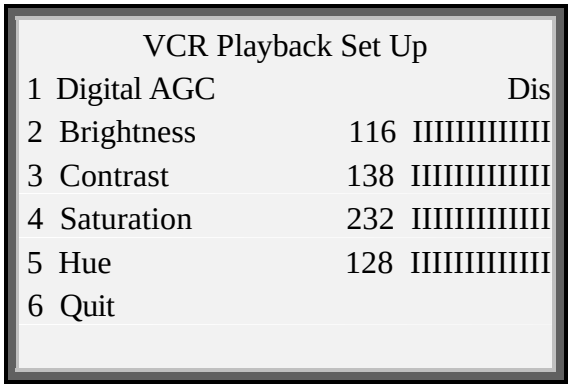
VCR Set Up	
1 VCR Playback Setup	
2 VCR Source	BNC
3 Rec Time	24Hr
4 VCR Rec Mode	Field
5 Rec Density	Standard
6 Sync-Trig Edge	Fall
7 Playback Adjust	Auto
8 VCR Input Check	OFF
9 VCR Type	VCR
10 VCR Output	Normal
11 Quit	

4.7.2.1 VCR Playback Set Up

When VCR playback video is shown on the main monitor, the picture quality can be adjusted in this menu. This function can only be executed when the main monitor displaying VCR playback video (VCR mode), otherwise, '—Not VCR Mode—' massage will be shown on the main monitor.

In the VCR Set Up menu, move the cursor to 1 VCR Playback Setup, press the ENTER key, the following menu will appear. Then you can adjust these parameters to get the best display quality on the monitor.

Item 2~5 allows you to adjust the display quality, just use RIGHT/LEFT(**? ?**) keys to adjust the OSD bars.



4.7.2.1.1 Digital AGC

Digital AGC (Digital auto gain control) is used to control playback video level. That means if VCR recording cause lower video level, when you playback by MUX, the video level will be recovered by DAGC (If DAGC is enabled). You can use direction keys (**? ?**) to change (enable or disable).

4.7.2.2 VCR Source

There're two types of connector for VCR IN: BNC and S-VHS (4pin mini-DIN), you must connect either one to the VCR's Video OUT when you want to play back previously recorded video tape. This item allows you to select the connector type according to the real application. In the VCR Set Up menu. Move the cursor to 2 VCR Source , press LEFT/RIGHT (**? ?**) keys to select BNC or S-VHS.

4.7.2.3 Rec Time

This item allows you to select the record period, you can select one of the following options: Real/ SYNC/ 4Hr/ 6Hr/ 8Hr/ 12Hr/ 18Hr/ / 24Hr/ 28Hr/ 30Hr/ 48Hr/ 72Hr/ 168Hr/ 240Hr/ 480Hr/ 720Hr/ 960Hr.

"Real" means real time mode, the recorded period depends on the length of the tape. If you use 120 minutes tape, you can record 2 hour. If you use 180 minutes tape, you can record 3 hour.

"SYNC" means multiplexer output the video synchronized with VCR, the 'VCR trigger' input (in the external IO connector) must be connected to the VCR (Sw Out). If the Time Lapse VCR provides the Sw Out (or Trig Out) signal, it's recommended to use Sync mode.

4.7.2.4 VCR Rec Mode

This item allows you to select the VCR record mode. There're two modes, one is Field Mode and the other is Frame Mode. Press LEFT/RIGHT (**? ?**) keys to select it.

4.7.2.5 Rec Density

This item allows you to select the recording density of VCR. You may select Standard/ Double/ Triple according to the Time Lapse VCR setting. The double/triple density is sometimes called 'virtue real time' VCR, you can get higher recording bandwidth if you use this kind of time lapse VCR.

4.7.2.6 Sync-Trig Edge

This item allows you to select rising or falling edge of the sync (trigger) signal from the VCR.

4.7.2.7 Playback Adjust

This item allows you to select the sampling video of playback. There're six choices (Auto,1,2,3,4,5) for choosing.

4.7.2.8 VCR Input Check

This function can be used by the engineer to check the VCR playback video is good or not. Change this item to 'ON', and select VCR playback mode, there will be two rows on the screen, the first row display the total number of fields come from the VCR, the second row display the field with error encoding data detected.

4.7.2.9 VCR Type

This item allows you to select the VCR IN & VCR OUT are for normal VCR or DVR.

4.7.2.10 VCR Output

This item allows you to select the signal that VCR Output for VCR (Normal) or Gateway.

4.7.3 Change Password

The password can be changed to any four-digit number, use Left/Right (**? ?)** keys to change to your preferred number, press ESC when finished, the password will be saved into non-volatile memory. If the user forget this new password, he can recall the factory password by using Load Factory Password in Load Default Set Up menu. The factory password is 9667.

4.7.4 Camera Auto-Detect

The multiplexer can check the camera BNC connectors for video signal and judge the camera is connected or not. If any one of the cameras is not exist, it's recommended to set that channel as 'not installed'. Otherwise that camera will be recognized as 'video loss', besides, the VCR record bandwidth is wasted.

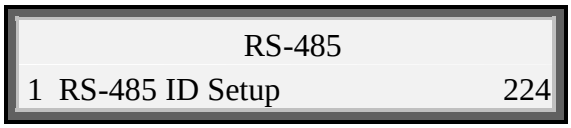
In the Engineer Set Up menu, move the cursor to 4 Camera Auto-Detect , press ENTER key, the configuration table will appear. The camera which is not exist will have a dot symbol in the corresponding position.

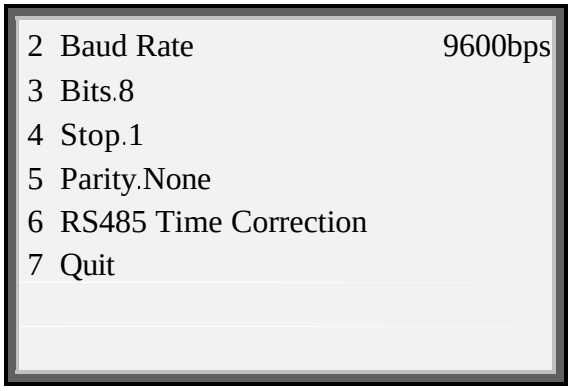
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Install	v	v	v	.	.	v	v	v	v	.	v	v	v	v	v	v
Covert	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Term_Res	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Gain	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Install.√ = camera installed, • =camera not installed

4.7.5 RS-485

This menu show the detail of RS 485 protocol, the settings are fixed, and can't be changed by the user or installer. In the Engineer Set Up menu, move the cursor to 5 RS-485 , press the ENTER key, the following menu will appear:





4.7.5.1 RS-485 ID Setup

This item can only be accessed by the installer, the RS485 ID address of this multiplexer can be modified here. (Refer to Appendix A.2)

4.7.5.2 Baud Rate

This item can only be accessed by the installer, The Baud Rate of this multiplexer can be modified here. You may select 2400bps, 4800 bps, 9600 bps, 19200 bps or 38400 bps for the baud rate.

4.7.5.3 Bits : 8

This menu shows the detail of RS-485 protocol, the settings are fixed, and can't be changed by the user or installer.

4.7.5.4 Stop : 1

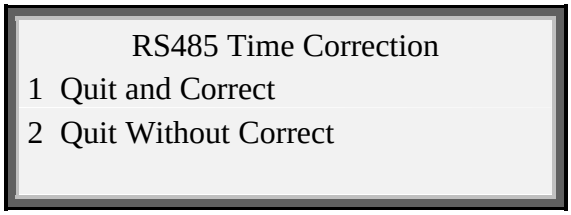
This menu shows the detail of RS-485 protocol, the settings are fixed, and can't be changed by the user or installer.

4.7.5.5 Parity : None

This menu shows the detail of RS-485 protocol, the settings are fixed, and can't be changed by the user or installer.

4.7.5.6 RS 485 Time Correction

In RS-485 menu, move the cursor to 6 RS485 Time Correction , press the ENTER key, the following menu will appear:



In the RS-485 Time Correction menu, move the cursor to 1 Quit and Correct , press ENTER key, then the other multiplexers which was connected by RS 485 will be calibrated to the same date/time with this set.

4.7.6 Software Information

This menu presents the software information including the version and date code. In the Engineer Set Up menu, move the cursor to 6 Software Information , and press ENTER, the following menu will appear:

Software Information	
1 Filename	D6A10206
2 Date	2002/02/07
3 Channel Number	16
4 System Type	NTSC
5 VCR Encode Type	04
6 HW Version	060AC6
7 Quit	

4.7.7 Monitor Adjust

This function allows you to adjust the screen center pointer and fine tune the monitor's performance using color bar pattern generated by the multiplexer. Move the cursor to 7 Monitor Adjust , press ENTER key, the following menu will appear.

Monitor Adjust
1 Screen Center Adjust
2 Show Color Bar
3 Quit

Move the cursor to 1 Screen Center Adjust and press Enter key, the menu will be cleared. And then use direction keys(… .) to adjust the screen center point. Push ESC to exit when monitor adjustment is finished.

Move the cursor to 2 Show Color Bar , press ENTER key, the color bar will show up. Push ESC to exit when monitor adjustment is finished.

4.7.8 Save Installer Set Up

In the Engineer Set Up menu, move the cursor to 8 Save Installer Set Up, press ENTER key, the following menu will appear:

Save Installer Set Up
1 Quit and Save
2 Quit Without Save

Move cursor to 1 Quit and Save and press ENTER, all parameters will be saved as installer setting.

4.7.9 Load Factory Set Up

This item allows you to recall the "Factory's Default" from the read only memory.

4.8 Password

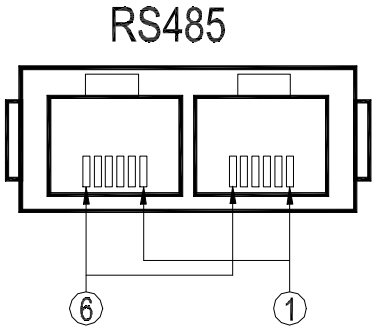
The factory password is 9667.

Appendix A. Connector Pin Assignment

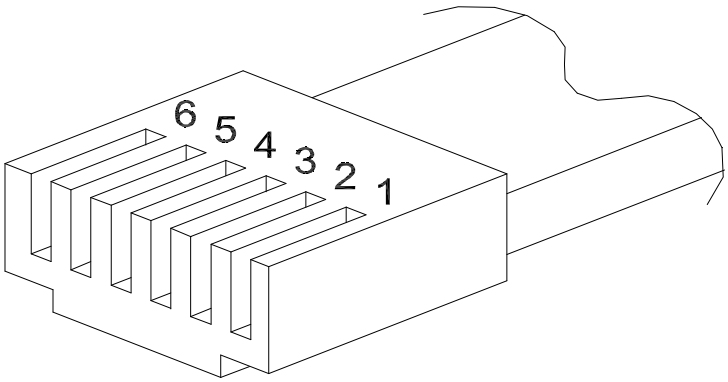
A.1. RS-485 (RJ-11 6P6C)

Pin No.	Definition	Direction
1	-	-
2	+12V	Power
3	GND	Power
4	DA (D +)	IO
5	DB (D -)	IO
6	-	-

The default RS485 port connector is RJ11 6P6C connector:



RJ11 Cable 6P6C pin definition:



A.2. RS-485 ID

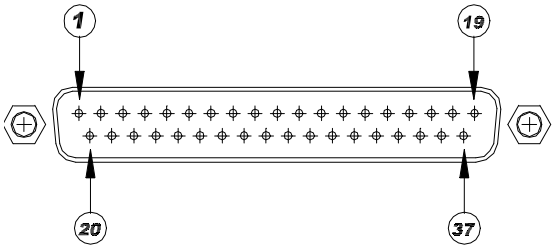
a. System ID setting

Item	ID address	Device name	Remark
1	00H,0	Host controller	Keyboard or computer
2	01H–DFH, 1~223	Speed dome	Total 223 Dome sets
3	E0H–EFH, 224~239	Multiplexer	224~239 (Mpx1~Mpx16)
4	F0H–FEH, 240~254	Control keyboard	Keyboard or computer
5	FFH, 255	Matrix	

b. Multiplexer (MPX) Channels and Camera ID Mapping

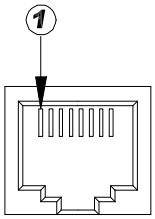
MPX NO	MPX ID	Camera ID	Remark
1	E0H,224	01H – 10H,1~16	Channel 1~16
2	E1H,225	11H – 20H,17~32	
3	E2H,226	21H – 30H,33~48	
4	E3H,227	31H – 40H,49~64	
5	E4H,228	41H – 50H,65~80	
6	E5H,229	51H – 60H,81~96	
7	E6H,230	61H – 70H,97~112	
8	E7H,231	71H – 80H,113~128	
9	E8H,232	81H – 90H,129~144	
10	E9H,233	91H – A0H,145~160	
11	EAH,234	A1H – B0H,161~176	
12	EBH,235	B1H – C0H,177~192	
13	ECH,236	C1H – D0H,193~208	
14	EDH,237	D0H – DFH,209~223	Only 15 Dome can be connect
15	EEH,238	None	Can connect to normal camera
16	EFH,239	None	Can connect to normal camera

A.3. External I/O Port (37pin DSUB)



Pin No.	Definition	Direction	Pin No.	Definition	Direction
1	GND	Power	20	Reserved	Input
2	GND	Power	21	Reset Alarm	Input
3	GND	Power	22	Day / Night output	Output
4	GND	Power	23	Day / Night switch	Input
5	RX-232 (reserved)	Output	24	Set Alarm	Input
6	TX-232 (reserved)	Input	25	VCR trigger	Input
7	Alarm NO	Output	26	Alarm In 13	Input
8	Alarm COM	Output	27	Alarm In 12	Input
9	Alarm NC	Output	28	Alarm In 11	Input
10	GND	Power	29	Alarm In 10	Input
11	GND	Power	30	Alarm In 9	Input
12	GND	Power	31	Alarm In 8	Input
13	GND	Power	32	Alarm In 7	Input
14	GND	Power	33	Alarm In 6	Input
15	GND	Power	34	Alarm In 5	Input
16	Alarm In 16	Input	35	Alarm In 4	Input
17	Alarm In 15	Input	36	Alarm In 3	Input
18	Alarm In 14	Input	37	Alarm In 2	Input
19	Alarm In 1	Input			

A.4. Remote (Key Pad Port, RJ-45, 8P8C)



Pin No.	Definition	Pin No.	Definition
1	GND	5	LED-
2	Key-	6	+12V
3	GND	7	LED+
4	Key+	8	+12V

Appendix B. Technical Specifications

The following specifications apply to this multiplexer. All specifications are subject to change without notice.

Item		Description
Video Level	Camera Inputs	1.0Vpp, 75Ω terminated
	Camera Outputs	Loop through of camera inputs
	Main Monitor Output	Composite: 1.0Vpp, 75Ω loaded S-VHS- Y: 1.0Vpp, 75Ω loaded - C: 0.286Vpp, 75Ω loaded
	Call Monitor Output	1.0Vpp, 75Ω loaded
	VCR Inputs	Composite: 1.0Vpp, 75Ω terminated S-VHS- Y: 1.0Vpp, 75Ω terminated - C: 0.286Vpp, 75Ω terminated
	VCR Outputs	Composite: 1.0Vpp, 75Ω loaded S-VHS:- Y: 1.0Vpp, 75Ω loaded - C: 0.286Vpp, 75Ω loaded
Display	Gray Level	256 (8bits)
	Color Palette	16M colors (24bits)
	Resolution	720x480(NTSC/EIA), 720x576(PAL/CCIR)
Connectors	Power	DC Jack
	Camera In	BNC Female Connector
	Camera Out	BNC Female Connector
	Main Monitor	BNC Female Connector & S-VHS
	Call Monitor	BNC Female Connector
	VCR In	BNC Female Connector & S-VHS
	VCR Out	BNC Female Connector & S-VHS
	Alarm input	DSUB 37 pin male (TTL level)
	Alarm output	2(NO,NC)2.0A/24V
	RS-485	RJ-11 (6P6C)
	Remote control	RJ-45 (8P8C)
Power Supply	Input Voltage:	12V + - 10% DC
	Power Consumption	14W (MAX)
	Safety Approval	CE, FCC
Dimension	Width	R : 432mm
	Height	R : 44mm
	Depth	R : 270mm
Net Weight		3.106 Kg
Environmental	Operation Temperature	0. ~ 40.
	Humidity	0%~90% RH, Non-condensation
	Storage Temperature	-20.~70.

Appendix C. RS-485 Command Set

The texts of Data 0, 1 is in **ASCII** code format

Command		OP_code	Data 0,1	Note
Channel select		A0	“01”~”0G”	Channel 1~16
Screen mode select	Right		“MR”	Detail setting must reference User’s manual
	Left		“ML”	
Sequence			“S1”~”S3”	Sequence 1~3
Up key			“DU”	
Down key			“DD”	
Left key			“DL”	
Right key			“DR”	
Enter			“DZ”	
Live/VCR			“KV”	
Freeze			“KA”	
ESC			“KE”	
List			“KL”	
Date/Time			“SD”	
Title			“ST”	
Menu			“SP”	
Key Lock			“SK”	
Universal End			“UE”	

Example:

If the Keyboard ID is 00H, the Multiplexer ID is E0H.

If you want to select camera 0 on the main monitor, you can use ‘**01**’ command.

(The ASCII Code of ‘01’ is **30** & **31H**.)

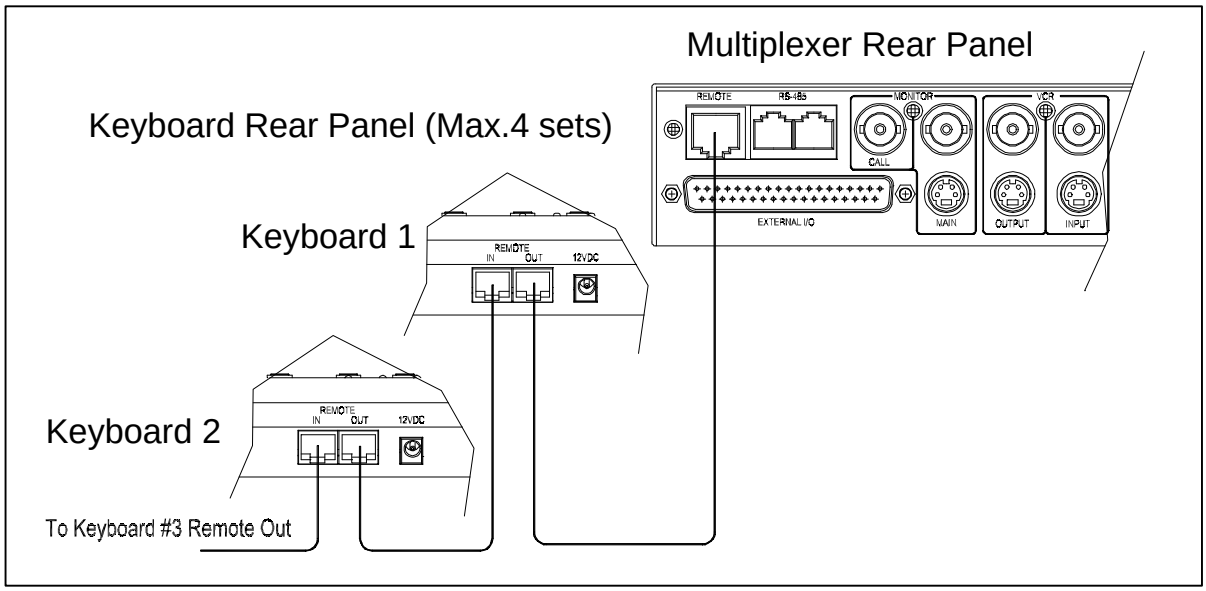
Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6
Receiver ID	Transmitter ID	OP Code	Data0	Data1	Checksum
E0H	00H	A0H	30H	31H	41H

NOTE : These six bytes must be sent out in 12ms.

Appendix D. Remote Control Keyboard

D.1 System Diagram

The remote keyboard is used to control the multiplexer in remote site, four remote keyboard can be used to control one multiplexer in daisy chain connection.



D.2 Specification and connectors

1. Specification
   Power input: 12Volt DC(-15%~+15%)
   Power Consumption: 0.5Watt
   Environment Temperature 0.~50.
   Humidity: less than90%
   Dimension: 350(W)x60(D)x35(H) mm
2. Connector
   Power: DC Jack (center positive)
   Remote I/O: RJ45 8P8C
3. Cable:
   RJ45 8P8C one to one, 1000 meter maximum.

DIGITAL MULTIPLEXER mod. D7261A-RPE - USER MANUAL
June 2004 edition

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