

16 / 9 / 4 Channel Color & B/W Triplex Multiplexer

Installation & Instruction Manual

*** Before operating this equipment, please read the manual carefully**

NOTE

1. This unit must be located in a position away from water, moisture or other liquids. Avoid placing this unit where it will be subject to vibration or excessive temperatures. This unit does not contain user serviceable parts.
2. To ensure sound operation of this unit, it should be located in an environment where the temperature is between + 5°C ~ + 40°C (+ 41°F ~ + 104°F). Humidity should be less than 90%.
3. The ventilation holes must remain free from obstruction. Failure to comply may result in damage to the appliance.



CAUTION - REFER TO ACCOMPANYING DOCUMENTS

Note : This equipment has been certified to comply with the limits for a Class B digital device, pursuant to subpart J of Part 15 of FCC Rules. Only peripherals certified to comply with the class B limits that may be attached to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

FCC , C E , 

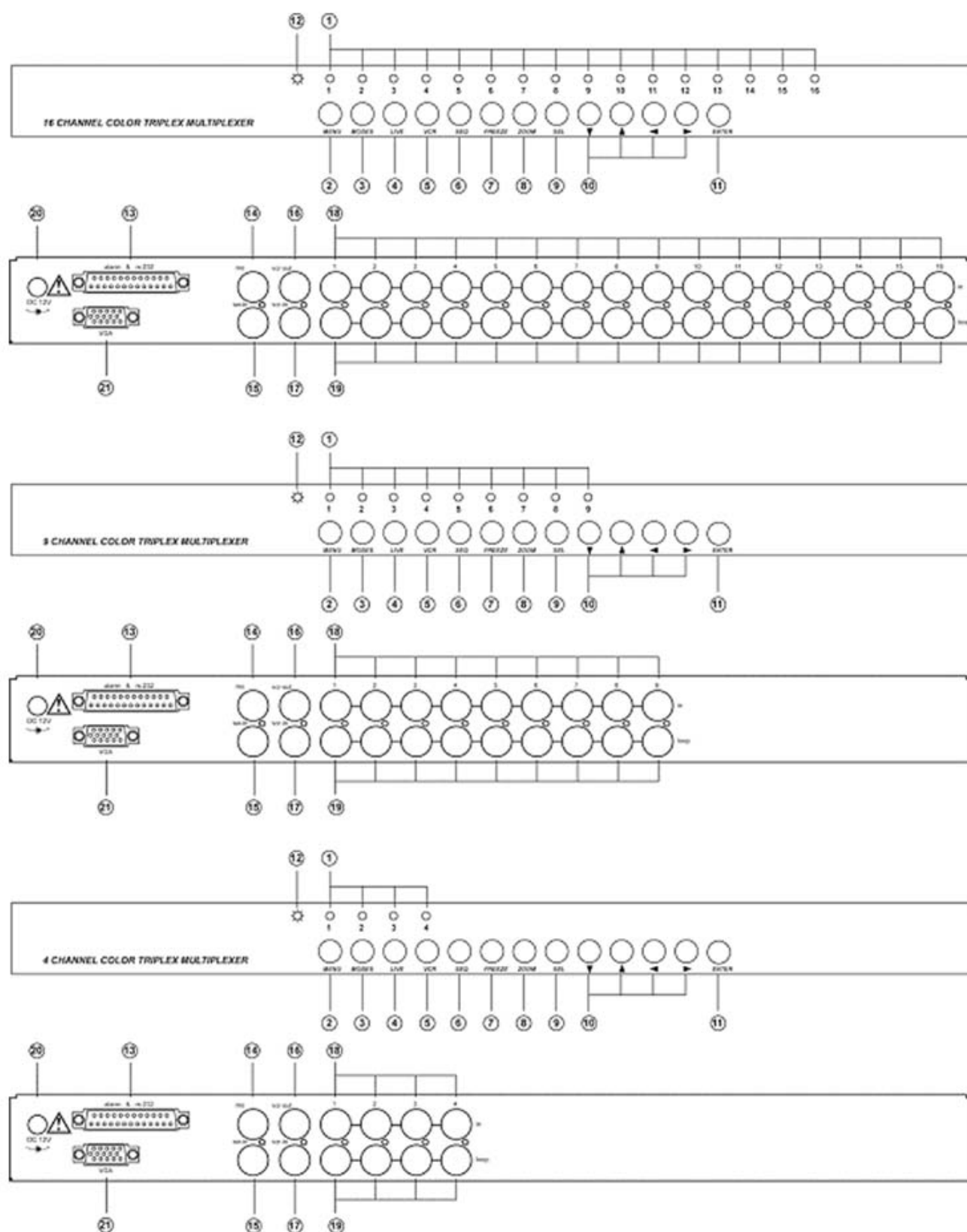
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■ Product Features

- A brand-new 16/9/4 channel color triplex multiplexer will not just bring you more effective and greater facilities either in live monitoring or in videotape playing, but also are RoHS compliance.
- True real time with high-resolution performance, no more lag in the split pictures.
- Various display modes allow to be chosen for live monitoring or videotape playing.
- Available to zoom or freeze the pictures whatever it is in live monitoring or playback.
- Perfectly synchronous recording that can be set in the menu or via the Switch Input jack to trigger. No specific VCR is required when recording.
- Full frame pictures recording from up to 16/9/4 image sources via a single VCR/DVR while simultaneously monitoring on a monitor.
- Cameras in the split pictures that the displaying position can be chosen and placed.
- Adjustable brightness, contrast, color and tint for each camera inputs.
- Built-in time/date generator, plus 8 characters camera titling function.
- Provides on-screen setup menus for ease of operation.
- Control by computer via RS-232 port greatly enhances product application. Note. Control software for RS-232 is not included.
- 100 alarm records available to automatically record the sensor alarm and video loss channel with time/date stamp.
- Provides automatic detection of video loss, sensor and motion detection alarm if selected.

■ Drawing Of The Front And Rear Panel



■ Description Of The Front Panel

1. **CAMERA BUTTONS:** Pressing any of the numbered buttons indicates that camera full screen view is selected.
2. **MENU BUTTON:** This button is used for setting and altering date, time, titling, alarm, etc.
 - ①. Hold this button for one second more that will enter into PASSWORD picture. It is allowed to set up a new code if necessary.
 - ②. Press the ENTER button after keying in the code that can do setting or altering for each item in the menus.
 - ③. Press the ENTER button again after completion of the settings that can exit this menu.
3. **MODE BUTTON:** This button is used for selecting a favorite displaying mode for surveillance. Hold this button, there are 16 different displaying modes will be displayed in sequence in the monitor that can be chosen and release it while the displaying mode is chosen.
4. **LIVE BUTTON:** This button is for live monitoring for all cameras. It is in live monitoring mode while power on.
5. **VCR BUTTON:** Press this button to view the recordings from hard disk or tape playing.
6. **SEQ BUTTON:** Press this button the unit will switch between the cameras at the predetermined time intervals (The time between switching is set up via the MENU screen.)
7. **FREEZE BUTTON:**
 - ①. Press this button that will be able to freeze the live or playback picture.
 - ②. Press this button again to exit the frozen picture.
8. **ZOOM BUTTON:**
 - ①. Press this button that the picture being framed with gray background is the range to enlarge. Then use the UP, DOWN, LEFT and RIGHT buttons to move the range to where the picture desires to enlarge. At last, press the ENTER button to enlarge.
 - ②. Press this button again to exit the zoom function.
9. **SEL BUTTON:** This button is used to select the displaying position for all cameras where they will be viewed in the split pictures.
10. **DIRECTION BUTTONS:** They are the UP, DOWN, LEFT and RIGHT buttons used for either moving subject to an appropriate place to execute or to alter the contents.
11. **ENTER BUTTON:** This button is used to do a confirmation and an execution after keying in the password and finishing the chosen picture to zoom in.
12. **POWER INDICATOR:** LED light indicates power on.

■ Description Of The Rear Panel

13. **ALARM SENSOR & RS-232 CONNECTOR:** This is a D-SUB 25 pin female connector that is RS-232 and alarm sensor used in common. Please refer to Description of RS-232 & Alarm Sensor Pin Assignments and the ASCII Command Sets.
14. **MONITOR OUT:** Connect the monitor's Video In to this jack for live monitoring.
15. **SWITCH IN:** This connector accepts an external trigger signal from Switch Out of the Time Lapse VCR or DVR for synchronous recording.
16. **VCR OUT:** Connect the VCR's / DVR's Video In to this jack for recording.
17. **VCR IN:** Connect VCR's / DVR's Video Output to this jack for playing the recordings.
18. **CAMERA INPUTS:** These are the connectors where the camera's Video Out should be inserted.
19. **LOOPING CAMERA OUTPUTS:** These connectors are used for extending the camera inputs to other accessories.
20. **POWER IN:** DC 12V, 1.2 Amp input.
21. **VGA OUT:** This jack allows connecting to PC monitor for live monitoring. **(OPTION)**

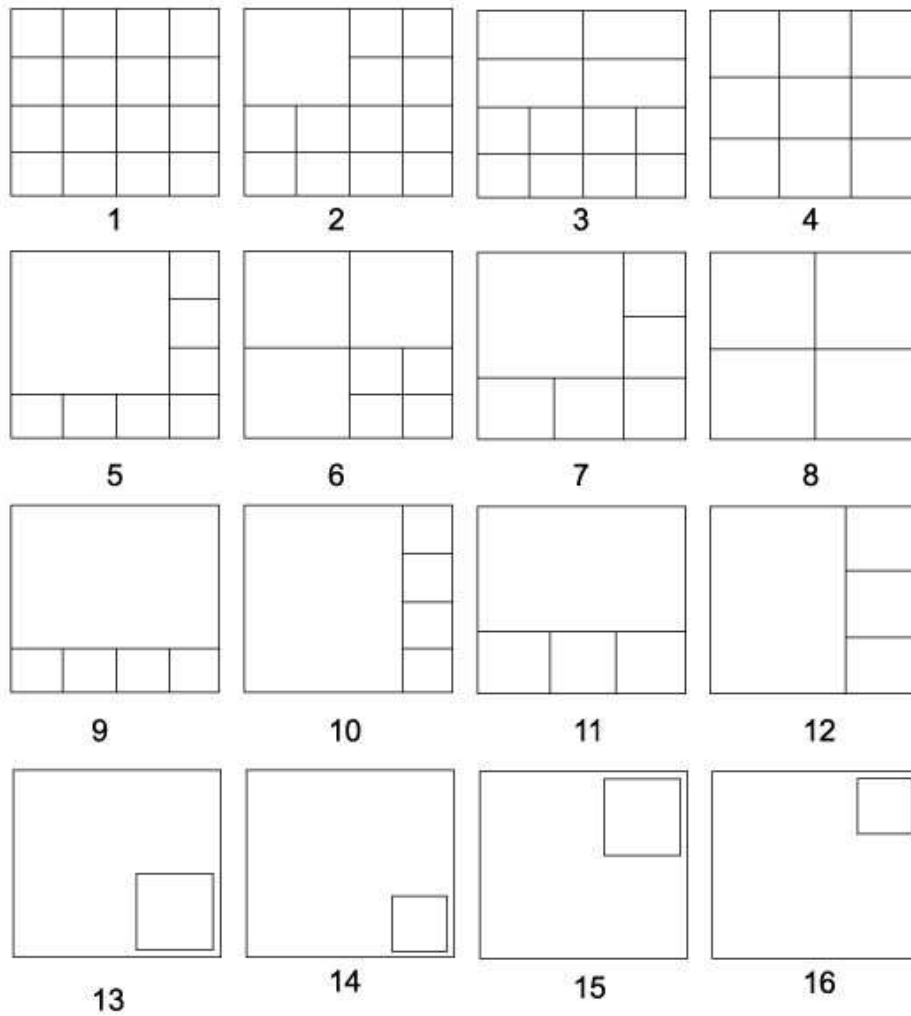
HOW TO OPERATE

I. Surveillance Functions:

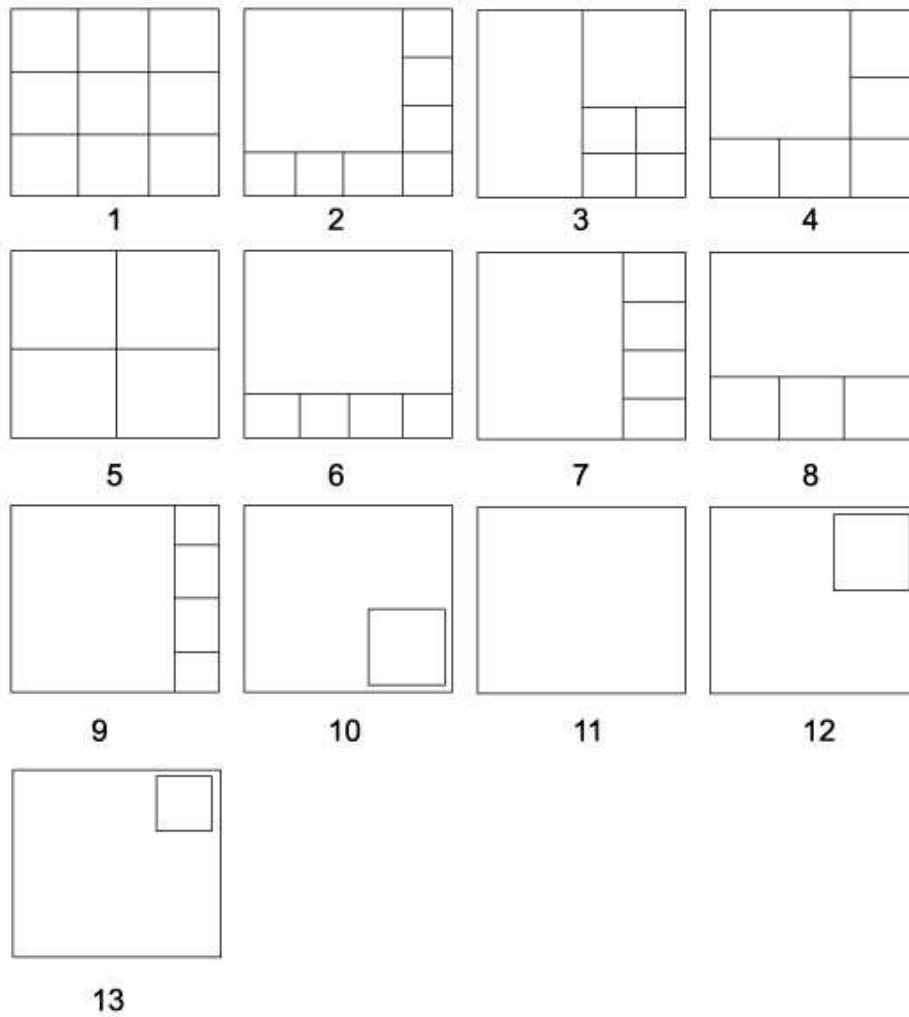
1. Initial Picture:

After plugged in for approx. 1 second the monitor displays as belo

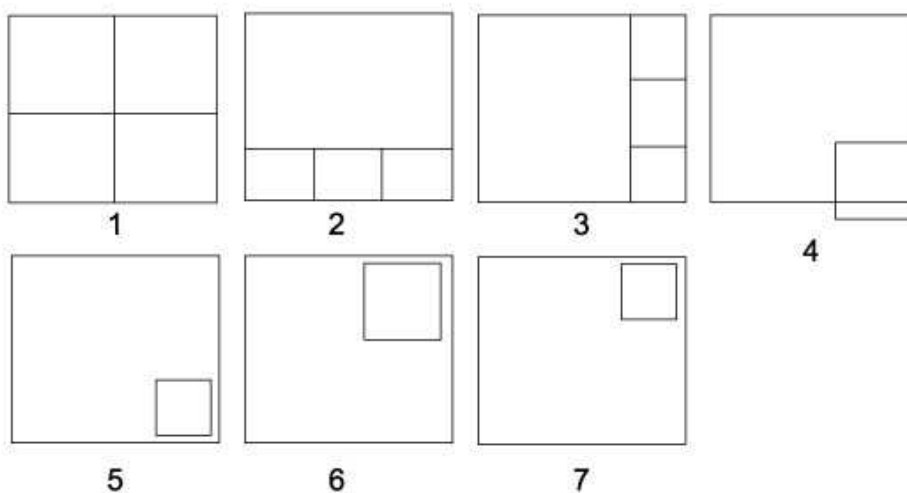
	07-16-05	05:16:01	
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16



For 16 channel multiplexer, the sequence of 16 different displaying modes are shown as above. It allows selecting a favorite mode for monitoring by pressing the MODE button, if necessary.



For 9 channel multiplexer, the sequence of 13 different displaying modes are shown as above. It allows selecting a favorite mode for monitoring by pressing the MODE button, if necessary.



For 4 channel multiplexer, the sequence of 7 different displaying modes are shown as above. It allows selecting a favorite mode for monitoring by pressing the MODE button, if necessary.

2. LIVE/PLAYBACK MONITORING: To view the recordings just press the VCR button.

Press the LIVE button that will return to live monitoring

3. AUTOMATIC SEQUENTIAL SWITCHING MODE: Press the SEQUENCE button that will enter into automatic sequential switching mode.

(a). When in full screen mode, all cameras will be automatically switched in sequence. The switching rate is determined by the dwell time setting on the MENU (Please refer to How to Program the Menu).

(b). When in the split picture mode, press this button, cameras not yet displayed on the screen will sequence in the lower right window.

4. FREEZE FUNCTION:

Press the FREEZE button that will still all pictures either in live monitoring mode or playback mode.

5. ZOOM FUNCTION:

(a). It will appear a gray and square frame while pressing the ZOOM button, then use the DIRECTION buttons to move the gray frame.

(b). When the position of the picture is chosen, press the ENTER button to enlarge it.

6. HOW TO CHANGE THE CAMERA'S LOCATION DISPLAYED ON THE SCREEN:

Press SEL button that can select the sequence of cameras in the split picture.

Ex.: Demonstrate with a Quadrant picture as below.

SELECT	2
3	4

Press the SEL button that a " SELECT " will blink displaying on the upper left window

→ then, press the camera key 8, the camera 1 initially displayed on the upper left window is

changed to 8

8	SELECT
3	4

and this " SELECT " word will move to the upper right window and

blink → press the camera key 5, the camera 2 initially displayed on the upper right window is

changed to 5

8	5
SELECT	4

and this " SELECT " word will keep moving to the lower left window

→ press the camera key 7,

8	5
7	SELECT

 the camera 3 will be changed to 7 and this " SELECT " word moves to the lower right window → press the camera 9, the camera 4 will be changed to 9

8	5
7	9

→ Finish

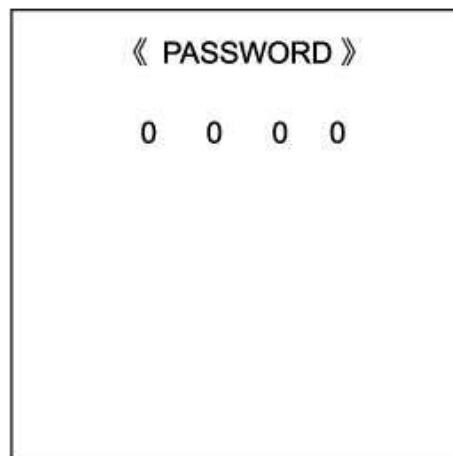
7. DIRECTION FUNCTION: They are the UP, DOWN, LEFT and RIGHT buttons used for either moving subject to an appropriate place to execute or to alter the contents.

8. ENTER BUTTON: This button is used to do confirmation and execution after keying in the password and to finish the chosen picture to zoom in.

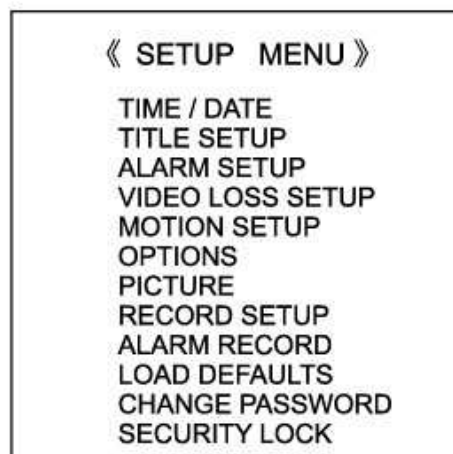
II. Password And The Setup Menu:

Hold the MENU button for 2 seconds, a " Password " menu appears, then key in the password of "0 0 0 0" while using this equipment at the first time and press the Enter button to enter into the main setup menu. To change the password just press the ◀ 、 ▶ buttons to move the position and set a new number for the password with the ▲ 、 ▼ buttons. Note. The factory default for the password is 0 0 0 0

■ The Password Menu.



■ The Setup Menu.



How To Program The Setup Menus

1. TIME / DATE:

《 DATE / TIME 》		
DATE	MM-DD-YY	
	01 -01 -02	
TIME	HH-MM-SS	
	08 -00 -00	
FORMAT	M	-D -Y

This menu is used for time/date and format setting.

A. DATE : Default is Month - Day - Year. Format is changeable.

B. TIME : Default is Time - Minute - Second. Format is fixed.

C. FORMAT : Month - Day - Year (M-D-Y)

Day - Month - Year (D-M-Y)

Year - Month - Day (Y-M-D)

2. TITLE / INTERVAL :

《 TITLE/INTRVAL 》		
CH01	1	_____03
CH02	2	_____03
CH03	3	_____03
CH04	4	_____03
CH05	5	_____03
CH06	6	_____03
⋮		
CH15	15	_____03
CH16	16	_____03

This menu is used for camera title and dwell time setting.

A. 8 characters available to be selected for each camera title.

B. The dwell time between two cameras is available from 00 to 99 seconds. 3 seconds is the factory default.

3. ALARM SETUP:

《 ALARM SETUP 》			
ALM. IN	BUZZER	RELAY	
CH01	NO	ON	ON
CH02	NO	ON	ON
CH15	NO	ON	ON
CH16	NO	ON	ON
SENSITIVITY		0.3 S	
AUTO-RESET		030 S	

There are two types of N.C. (normally closed) and N.O. (normally open) in the alarm sensor. When the sensor type setting on the screen doesn't correspond with current sensor status, a " ? " mark will appear between sensor status and sensor type, that means an error.

CH01 ? NC, ON, ON

When the sensor switch is set in the 'ON ' position and the corresponding alarm sensor is triggered, then the unit will enter into an alarm status. If the sensor switch is set to the 'OFF ' position, the unit will not have any response even if the corresponding alarm sensor is triggered.

SENSITIVITY: Available to be set from 0.1 second to 2.0 seconds. This allows selecting an appropriate sensitivity for each alarm sensor to ensure an alarm will activate when triggered.

The shorter the time is set, the more sensitivity the sensor alarm activates. 0.3 second is preset in factory. **AUTO-RESET:** Available to be set from 000 second ~ 999 seconds.

The alarm status will be released automatically when the time preset is reached.

NOTE: An alarm signal input can only be sensed if the triggering pulse is longer than the time set for the sensitivity, because of this false triggering is reduced.

4. VIDEO LOSS SETUP:

《 VIDEO LOSS SETUP 》			
VID loss	BUZZER RELAY		
CH01	ON	ON	ON
CH02	ON	ON	ON
CH15	ON	ON	ON
CH16	ON	ON	ON
SENSITIVITY		0.5 S	

When video loss function is set to 'ON ', the unit will respond to a loss of camera video as an alarm status. If it is set to ' OFF ', the unit will not detect the loss of the camera images, even if a video loss occurs.

BUZZER: This is an alarm sound ON/OFF switch.

RELAY: This is a switch of Enable/Disable relay.

SENSITIVITY: Available to be set from 0.1 second to 2.0 seconds. 0.5 second is preset in factory.

5. MOTION SETUP:

《 MOTION SETUP 》				
	MOTION	BUZZER	RELAY	AREA
CH01	OFF	ON	ON	←
CH02	OFF	ON	ON	←
				←
				←
				←
				←
CH15	OFF	ON	ON	←
CH16	OFF	ON	ON	←
SENSITIVITY 6				
AUTO RESET 030 S				

This menu is used for motion detection setting.

Setup contents:

- ①. MOTION: This is an ON/OFF switch for motion detection.
- ②. BUZZER: This is an alarm sound ON/OFF switch.
- ③. RELAY: This is a switch of Enable/Disable relay.
- ④. AREA: To move the direction buttons to AREA of the channel in this menu that wish to detect, press the ENTER button, it will appear many grids on the screen, then free select the grid where wish to detect by pressing the ENTER button. After the setting is done, press the MENU button to exit. **Note: In B&W multiplexer the area can not be moved is fixed because the grids can not be seen.**
- ⑤. SENSITIVITY: Available to be set from 1 to 7 degrees. The number 6 is preset in factory. The larger the value is set, the more sensitivity the motion detection activates.
- ⑥. AUTO-RESET: Available to be set from 000 second ~ 999 seconds. The alarm status will be released automatically when the time preset is reached. 30 seconds is preset in factory.

6. OPTION:

《 OPTION 》		
OSD	DATE	ON
	TIME	ON
	TITLE	ON
CROSS	LINE	8

- OSD DATE ON/OFF : It is an On/Off switch for the display of Date.
TIME ON/OFF : It is an On/Off switch for the display of Time.
TITLE ON/OFF : It is an On/Off switch for the display of Title.
CROSS LINE : The contrast of the cross line is ranged from 0~15 that can be adjusted. The value of 8 is preset in factory.

7. PICTURE:

《 PICTURE 》	
CHANNEL	: 01
BRIGHTNESS	: 32
CONTRAST	: 32
COLOR	: 32
TINT	: 32

This menu is used for Brightness 、 Contrast 、 Color and Tint adjustment.

Each item is ranged from 01 to 63. **Note: In B&W multiplexer they will be '0' preset for Color and Tint.** CHANNEL : Select the channel for adjustment.

8. RECORD SETUP:

《 RECORD SETUP 》				
		START	STOP	
DAY	:	08 : 00	20 : 00	
		DELAY	INTERVAL	
DAY	:	009	0.180 S	
NIGHT	:	009	0.180 S	
ALARM	:	001	20.00mS	
MOTION	:	001	20.00mS	
Record switch				
CH01		ON	CH02	ON
.....				
CH15		ON	CH16	ON

START STOP

DAY : 08:00 20:00 - This is used to set the time for daytime recording.

DELAY/INTERVAL: To set how many pictures being recorded per second /
To set the refresh speed of the pictures.

DAY: For daytime setting.

NIGHT: For nighttime setting.

ALARM: The sensor alarm setting.

MOTION: Motion detection alarm setting.

Note: If any item including Day, Night, Alarm and Motion in "DELAY" is set to 000, a "SW-IN" will appear in "INTERVAL" this means that item will be activated according to the setting values come from VCR/DVR through the Switch Input terminal.

Record switch : It is an On / Off switch for recording. Note. The channel will not be recorded if this switch for that channel is set to ' Off '.

9. ALARM RECORD:

《 ALARM RECORD 》				P.01
V	CH04	01-02-02	08:46:48	
A	CH02	01-02-02	09:36:20	
M	CH03	01-01-02	08:46:43	
V	CH03	01-01-02	12:32:31	
↑	↑	↑	↑	
[1]	[2]	[3]	[4]	

This menu is where you can find out when the alarm sensor, the loss of camera image and motion detection were activated. 100 records are separated in 10 pages and the last hundred alarm events are recorded, with the oldest one being deleted when triggered again.

【1】 : A : Sensor alarm. V : Video loss alarm. M : Motion detection alarm.

【2】 : The alarmed channel.

【3】 : The date that the sensor alarm or the video loss happened.

【4】 : The time that the sensor alarm or the video loss occurred.

10. LOAD DEFAULTS:

《 LOAD DEFAULTS 》

LOAD DEFAULTS NO

This menu is used to recover internal initial values for all menus.

Press the ▲ 、 ▼ buttons to choose YES and press the ENTER button. At the time, a dialogue will appear on the screen to be confirmed again, if wish to recover internal initial values, just choose YES and press ENTER. Note. If do this setup, all previous settings will be deleted and return to the factory defaults.

11. CHANGE PASSWORD:

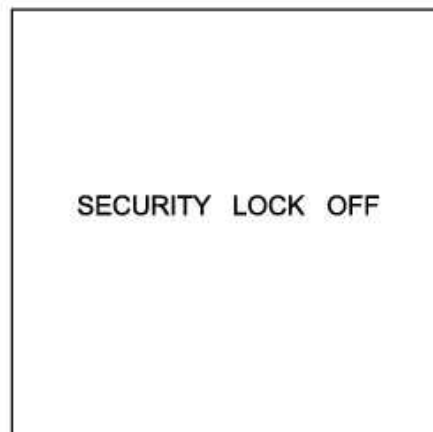
《 CHANGE PASSWORD 》

0 0 0 0

PRESS ENTER TO CHANGE PASSWORD

Use the ◀ 、 ▶ buttons to move the position and press the ▲ 、 ▼ buttons to change the digit and press the ENTER button after the number setup is done. At the time, a "Are you sure" dialogue will appear on the screen to be confirmed again. Choose YES and press ENTER to finish. Note. The factory defaults for the password is 0 0 0 0.

12. SECURITY LOCK:



When this menu is set to ON, the equipment will lock out all the front control buttons except the Menu button.

HOW TO ACKNOWLEDGE AN ALARM

1. VIDEO LOSS ALARM:

After powering up, the unit detects the video inputs automatically. If the video loss alarm is set to "ON", when the loss of the camera images occurs, the unit will enter into an alarm status.

- ①. While display with the live split picture in the monitor, if the loss of the camera images occurs, a "LOSS" and the camera titling will flash alternatively displaying on the alarmed channel.
- ②. While display with the playback split picture in the monitor, whichever channel the video loss alarm occurs, all is displaying only a "LOSS" on upper left side of the monitor with flash. Note: If want to know the exact channel that has a video loss alarm occurred, please switch to the picture of live monitoring.

- ③. If the alarmed channel does not appear in the current screen, no matter what the display mode is using for monitoring, all will jump to the live split pictures.
- ④. The alarmed channel indicator will illuminate and buzzer will sound (if selected).
- ⑤. If the alarm output is having connection with the external alarm device, it then will activate.
- ⑥. The unit will record automatically the time and date of the channel that has an alarm occurred.

Note. While the unit is in video loss alarm status, to release the alarm just press any button on the front panel and the word of "LOSS" will stop flashing automatically after 6 seconds.

2. SENSOR ALARM:

If the sensor switch in the menu is selected to "ON" and an alarm sensor is triggered the unit will enter into an alarm status.

- ①. While display with the live split picture in the monitor, if the sensor is triggered, an "ALARM" and the camera titling will flash alternatively displaying on the alarmed channel.
- ②. While display with the playback split picture in the monitor, whichever channel the sensor alarm occurs, all is displaying only an "ALARM" on upper left side of the monitor with flash. Note: If want to know the exact channel that has a sensor alarm occurred, please switch to the picture of live monitoring.
- ③. If the alarmed channel does not appear in the current screen, no matter what the display mode is using for monitoring, all will jump to the live split pictures.
- ④. The alarmed channel indicator will illuminate and buzzer will sound (if selected).
- ⑤. If the alarm output is having connection with the external alarm device, it then will activate.
- ⑥. The unit will record automatically the time and date of the channel that has an alarm occurred.

Note. There are two methods to release the sensor alarm : ❶. Set the time of AUTO-RESET in the Alarm Setup menu. ❷. Using an external controller (Please see the alarm sensor connection).

3. MOTION DETECTION ALARM:

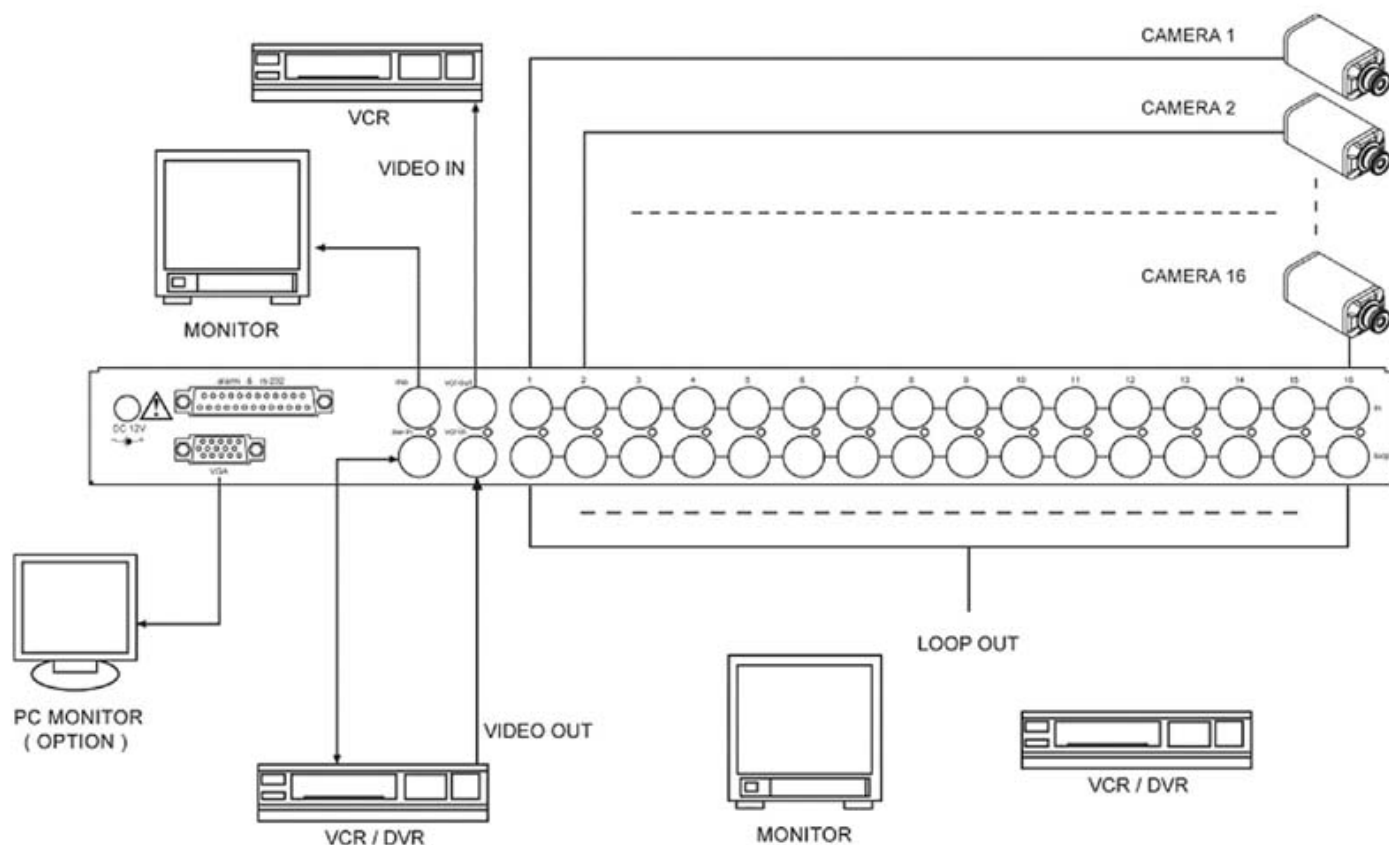
If function of motion detection in the menu is selected to "ON", when a moving object is detected the unit will enter into an alarm status.

- ①. While display with the live split picture in the monitor, if motion detection is activated, a "MOTION" and the camera titling will flash alternatively displaying on the alarmed channel.
- ②. While display with the playback split picture in the monitor, whichever channel has motion detected, all is displaying only a "MOTION" on upper left side of the monitor with flash.
Note: If want to know the exact channel that has motion detection alarm, please switch to the picture of live monitoring.
- ③. If the alarmed channel does not appear in the current screen, no matter what the display mode is using for monitoring, all will jump to the live split pictures.
- ④. The alarmed channel indicator will illuminate and buzzer will sound (if selected).
- ⑤. If the alarm output is having connection with the external alarm device, it then will activate.
- ⑥. The unit will record automatically the time and date of the channel that has an alarm occurred.

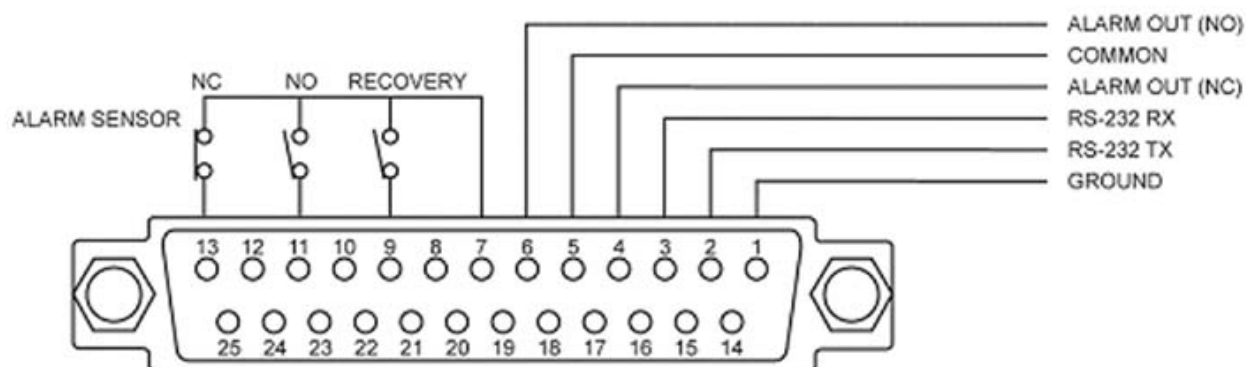
Note. There are two methods to release the motion alarm: ①. Press any button on the front panel and the word of "MOTION" will stop flashing automatically after 6 seconds. ②. Set the time of AUTO-RESET in the Motion Setup menu.

SYSTEM CONNECTIONS

1. BASIC CONNECTION



2. ALARM SENSOR & RS-232 CONNECTION :



3. ALARM & RS-232 CONNECTOR PIN ASSIGNMENTS :

Pin No.	Pin Assignment	Pin No	Pin Assignment
1	Ground	14	Camera 5 (Alarm Input 5)
2	RS-232 TX	15	Camera 6 (Alarm Input 6)
3	RS-232 RX	16	Camera 7 (Alarm Input 7)
4	Alarm Output NC	17	Camera 8 (Alarm Input 8)
5	Alarm Output Common	18	Camera 9 (Alarm Input 9)
6	Alarm Output NO	19	Camera 10 (Alarm Input 10)
7	Ground	20	Camera 11 (Alarm Input 11)
8	Reserve	21	Camera 12 (Alarm Input 12)
9	Recovery Input (RESET)	22	Camera 13 (Alarm Input 13)
10	Camera 1 (Alarm Input 1)	23	Camera 14 (Alarm Input 14)
11	Camera 2 (Alarm Input 2)	24	Camera 15 (Alarm Input 15)
12	Camera 3 (Alarm Input 3)	25	Camera 16 (Alarm Input 16)
13	Camera 4 (Alarm Input 4)		

RS-232 Transmission Protocol (Pin 1~3)

Baud Rate : 9600

Data Bits : 8

Start Bit : 1

Stop Bit : 1

Parity Bit : none

The ASCII command sets supplied is used for controlling all control buttons in the front panel by computer. Each command code consists of three ASCII characters, the first character goes with the forward slash '/' and the second \ third characters follow up the slash represent its function. Please refer to THE ASCII COMMAND SETS as listed below.

Note: This control software is not included.

MONITORING FUNCTION				
ASCII CODE	FUNCTION		ASCII CODE	FUNCTION
/ MT	MODE		/ 22	2x2
/ 33	3x3		/ 44	4x4
/ 01-/16	CAMERA1-16		/ PL	PLAYBACK
/ LV	LIVE		/ SQ	SEQUENCE
/ SL	SELECT		/ FZ	FREEZE
/ ME	MENU		/ ZO	ZOOM
/ AR	ALARM - RESET			

SETTING FUNCTION				
ASCII CODE	FUNCTION		ASCII CODE	FUNCTION
/ UA	UP ARROW		/ DA	DOWN ARROW
/ LA	LEFT ARROW		/ RA	RIGHT ARROW
/ EN	ENTER		/ ME	EXIT

SPECIFICATIONS :

Camera Inputs	BNC x (16 / 9 / 4), composite video 1.0V p-p, 75ohms.
Looping Camera Outputs	BNC x (16 / 9 / 4), composite video 1.0V p-p, 75ohms.
Monitor Output	BNC x 1, composite video 1.0V p-p, 75ohms.
VCR Output	BNC x 1, composite video 1.0V p-p, 75ohms.
VCR Input	BNC x 1, composite video 1.0V p-p, 75ohms.
Switch Input	BNC x 1, TTL Level
Refresh Rate	60/50 fields/second.
Alarm Inputs	(16 / 9 / 4), TTL Active Low.
Recovery Input	1, TTL Active Low.
Alarm Output	Normally open (N.O.) x 1(relay output)
	Normally closed (N.C.) x 1(relay output)
	(NO, NC contacts with shared common. 24V DC, 1A)
Power Source	DC12V, 1.2A
Power Consumption	Max 15 Watts
Weight	2.4kgs (5lbs 5oz)
Dimensions	430mm x 248mm x 50mm (17" W x 9 3/4" D x 2" H)
Motion Detection	Yes
Time / Date	Yes
Buzzer	Yes
Key Lock	Yes