Remote control keyboard for TVMX4xxx multiplexer series

USER'S MANUAL

READ WITH CARE BEFORE USING THE DEVICE. KEEP FOR FUTURE REFERENCE.

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CHAPTER 1
INTRODUCTION

In This Manual

Overview This manual covers day-to-day operation of the Remote control keyboard.

This Remote Keyboard

This Remote control keyboard is an accessory for multiplexers and color quads. It allows the user to control up to 31 units including multiplexers, color quad units, and video switchers that have 8 camera inputs, 4 monitor outputs and keyboards. A maximum of four Keyboards can be installed in one system.

Features Following are some of the features of the Remote control keyboard:

- RS-485 communication.
- Controls from one to 31 units.
- Controls stand-alone color quad units and many types of multiplexer units.
- Designed for desktop use.
- Controls video switchers. (e.g.; 8 camera inputs x 4 monitor outputs)
- Use front buttons to select the desired transmission speed (1200bps, 2400bps, 4800bps, 9600bps).

Note: All multiplexers and quad units should be set to the RS-485 communication mode and the same baud rate.

Note: Controls all sorts of our brand units including the following:
Color 16-channel duplex/simplex multiplexer
Color 9-channel duplex/simplex multiplexer
Color 4-channel duplex multiplexer
B & W 16-channel duplex/simplex multiplexer
B & W 9-channel duplex/simplex multiplexer
B & W 4-channel duplex multiplexer
Stand-alone Color Quad
8 x 4 Video Switcher

Hardware Overview

Hardware Components

This Remote control keyboard contains easy-to-use control keys on the front and simple input and output connectors on the back.

Control Buttons

The unit provides the primary operator interface. Most operations are one or two button presses. The following table contains a description for each buttons on the keyboard.
Use **Figure 1** as a reference.

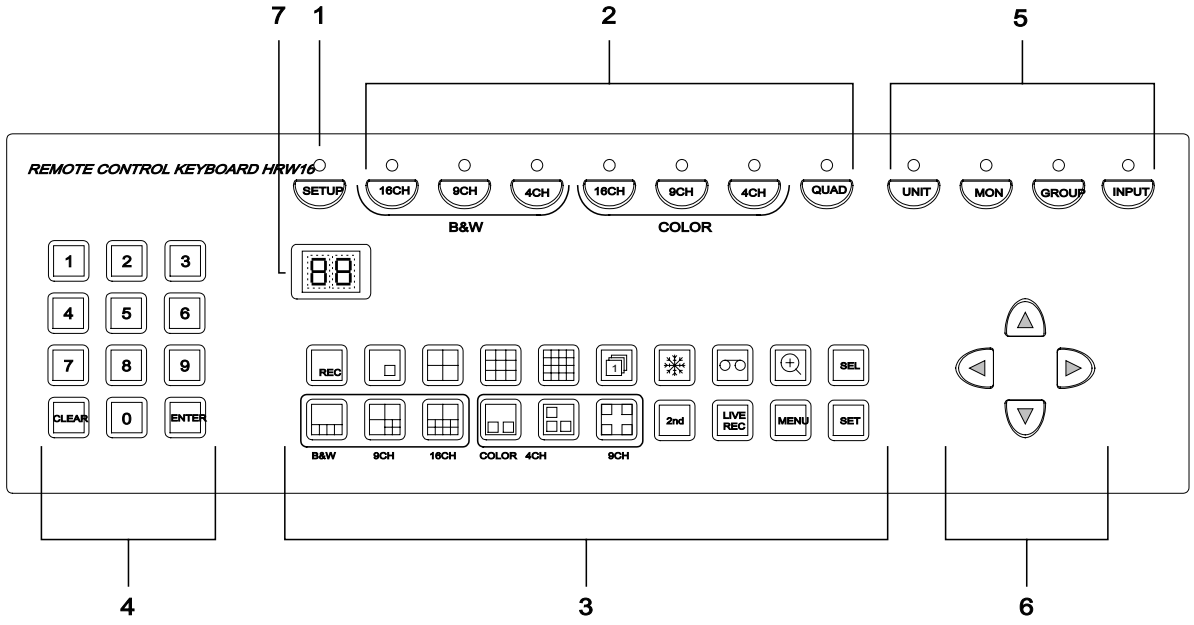

Figure 1. Front

Number	Button	Description
1	SETUP	Pressing the SETUP button enters the setup mode, and the LED indicator above this button turns ON. Pressing it again exits the setup mode.
2	B&W 16CH	Setup mode operation (unit status button): This button is available only in the setup mode. If the controlled unit is a 16-channel B&W multiplexer, press this key in the setup mode, and the LED indicator above this button turns ON.
	B&W 9CH	Setup mode operation (unit status button): This button is available only in the setup mode. If the controlled unit is a 9-channel B&W multiplexer, press this key in the setup mode, and the LED indicator above this button turns ON.
	B&W 4CH	Setup mode operation (unit status button): This button is available only in the setup mode. If the controlled unit is a 4-channel B&W multiplexer, press this key in the setup mode, and the LED indicator above this button turns ON.
	Color 16CH	Setup mode operation (unit status button): This button is available only in the setup mode. If the controlled unit is a 16-channel color multiplexer, press this key in the setup mode, and the LED indicator above this button turns ON.

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Hardware Overview, continued

Control buttons (continued)

Number	Button	Description
2	Color 9CH	Setup mode operation (unit status button): This button is available only in the setup mode. If the controlled unit is a 9-channel color multiplexer, press this key in the setup mode, and the LED indicator above this button turns ON.
	Color 4CH	Setup mode operation (unit status button): This button is available only in the setup mode. If the controlled unit is a 4-channel color multiplexer, press this key in the setup mode, and the LED indicator above this button turns ON.
	Quad	Setup mode operation (unit status button): This button is available only in the setup mode. If the controlled unit is a stand-alone color quad, press this key in the setup mode, and the LED indicator above this button turns ON.
3	FULL& REC 	Displays the currently selected camera in the full-screen format or enters the record mode for simplex multiplexer units. This button is used for all types of multiplexer units.
	PIP I 	Displays the currently selected camera in the full-screen format with one camera as an insert picture. This button is used for all types of multiplexers and quad units.
	2 x 2 	Displays four cameras (two by two). This button is used for all types of multiplexers and quad units.
	3 x 3 	Displays nine cameras (three by three). This button is used for 16-channel and 9-channel multiplexer units.
	4 x 4 	Displays 16 cameras (four by four). This button is used only for 16-channel multiplexer units.
	Sequence 	This button is the first button pressed for the automatic sequential switching mode. This button is used for all types of multiplexers and quad units.
	Freeze 	This button freezes the current screen display until this button is pressed again. This button is used for all types of multiplexers and quad units.
	VCR 	Changes the video source from live cameras to the VCR input (playback). This button is used for all types of multiplexers and quad units.
	Zoom 	Pressing Zoom displays a 2x zoom picture of the current camera in full-screen mode or of the camera in the first window of the multi-screen mode. Pressing it again exits the zoom mode. This button is used for all types of multiplexers and quad units.
	SEL (select) 	The SEL button resets the alarm action or enables the secondary functions of particular buttons. Recording preview: Pressing the VCR button after pressing SEL displays video from the VCR. Camera assign: Pressing a camera number after pressing SEL assigns that camera to a picture in the PIP and multi-screen modes. This button is used for all types of multiplexer units. Quad menu setup mode: This button functions as a set control in the quad menu setup mode.

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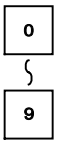
Control buttons (continued)

Number	Button	Description
3	PIP**II** 	Displays up to five cameras in the full screen with four 1/16-size pictures inset. Cameras can be displayed in any inset picture. This button is used B&W 16- and 9-channel multiplexer units.
	3 + 4 	Displays seven cameras, with three 1/4-size pictures and four 1/16-size pictures. This button is used for B&W 16- and 9-channel multiplexer units.
	2 + 8 	Displays ten cameras, with two 1/4-size pictures and eight 1/16-size pictures. This button is used only for B&W 16-channel multiplexer units.
	PIP**III** 	Displays the currently selected camera in full-screen format with two inset pictures. This button is used only for color 4-channel multiplexer units.
	PIP**IV** 	Displays the currently selected camera in the full-screen format with three inset pictures. This button is used only for color 4-channel multiplexer units.
	Overlay 4 	Displays the currently selected camera in the full-screen format with four inset pictures. This button is used only for color 9-channel multiplexer units.
	2nd(secondary) 	Pressing this button changes the Primary display buttons to secondary display buttons. This button is used for color multiplexer units.
	LIVE REC 	The output to the VCR is changed to record only the selected camera instead of multiplexed video output. This button is used for all types of multiplexer units.
	MENU 	The menu button is used to enter and exit the menu setup mode. This button is used for color multiplexers and quad units.
	SET 	This button functions as a set control in the menu setup mode. This button is used for all types of multiplexer units.
4	Numbers 	<u>Setup mode operation</u>: Used to select units 01 through 98 during the setup mode. <u>Unit and video switcher selection mode operation</u>: Used to select the controlled unit with the UNIT button, and input and output with MON, GROUP and INPUT buttons in the video switcher. <u>Unit control mode operation</u>: Used with the ENTER button to transmit a function to the selected unit. Used with the SEL button to position cameras on the screen in the PIP and multi-screen modes. These buttons are also used to select cameras to view full-screen mode and to setup the activity detection grids in the menu setup mode.
	CLEAR 	Used to clear a numeric entry.
	ENTER 	<u>Transmit command</u>: Press the number buttons and then press this button.

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Hardware Overview, continued

Control buttons (continued)

5	UNIT	The UNIT button enters this remote keyboard to the multiplexer & quad control mode and unit number selection mode.
	MON	The MON button switches the remote keyboard into the monitor selection mode of the video switcher.
	GROUP	In the monitor selection mode, this button is used to go out the group of the input video signals from G1(video in 1+5) to G4(video in 4+8) to the associated monitors with the current selected monitor
	INPUT	In the monitor selection mode, this button is used to go out an input video signal (video in 1~8) to the current selected monitor.
6	Arrows	The arrow buttons act as the DOWN, UP, LEFT and RIGHT arrow buttons in the MENU setup mode and Zoom mode.
7	Dual digit display	Displays the unit number of the multiplexer, quad or the monitor output number of the video switcher. Also displays the keyboard ten-key processing.

Back The table below contains a description for each connector on the back of the Remote control keyboard.
Use *Figure 2* as a reference.

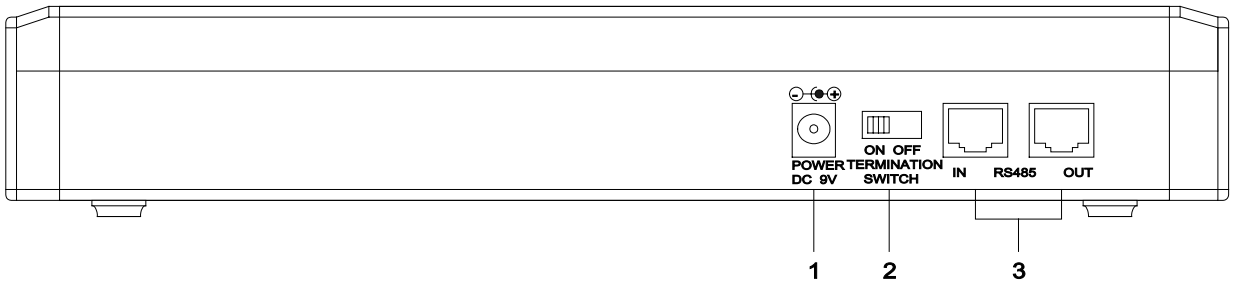

Figure 2. Back

Part	Label	Function
1	Power	This 2.1mm pin jack accepts 9VDC, 0.6Amps. The center pin is positive.
2	Termination Switch	If this is the first or last device on the network, terminate the device with a 100Ωterminative resistor.
3	RS-485 (IN / OUT)	This RJ-45 connector provides RS-485 communications. Pin assignment: Pin 1,2,3,5,7,8 – no connections Pin 4 – RXB (for RS-485) Pin 6 – RXA (for RS-485)

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RS-485 cable Specifications

The length of supplied cable is 6 meters (19.7 feet).

Note: The RS-485 network is a multi-drop, wiring configuration, maximum length 3000 Feet (1000meters). RJ45 connectors are used for most hookups. If you are making your own cable, it must meet the following specification:
#24 AWG, twisted one-pair with shield (2-wire).
Less than 16pF per foot, nominal.
Less than 25 ohms per 100 ft, nominal.

RS-485 Cable pin Assignments	Pin 1,2,3,5,7,8 : No connections Pin 4 : RXB (for RS-485) Pin 6 : RXA (for RS-485) Length : 6m (19.70ft)

RJ45 Modular Cable (6m)

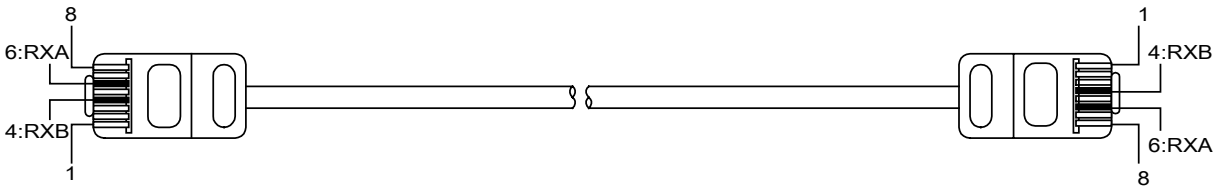


Figure 3. RJ45 Modular cable & Pin assign

Termination cable

This termination cable should be connected to the last unit controlled by this Remote control keyboard.

Termination Cable pin assignments	Pin 3, 4 short. RXS, RXB short.

Termination Cable (30mm)

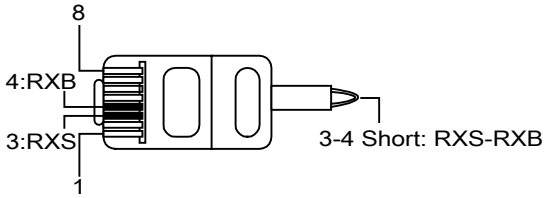


Figure 4. RJ45 Modular cable & Pin assign

CHAPTER 2
SYSTEM INSTALLATION & TYPICAL APPLICATIONS

System Installation

Keyboard Installation

Before you start connecting the keyboard equipment to your system, make sure the units to be controlled (multiplexers, quads, etc.) are completely installed and everything is working correctly.
You must be set the communication protocol and unit number of the controlled units. The Remote control keyboard's only method of communication is RS-485. Select the desired baud rate (1200bps, 2400bps, 4800bps, 9600bps) in unit option setup mode. 1200bps is default setting. Select the desired unit number, from 01 to 98.
Use the following steps to set the communication protocol and unit number.

Color Multiplexer unit setting

The main menu of the color multiplexer provides access to all programming options. In this mode, select "9. Unit option."
The UNIT OPTION setup screen allows you to make changes to the unit's options. In this mode, you can set up the unit number and communication method.

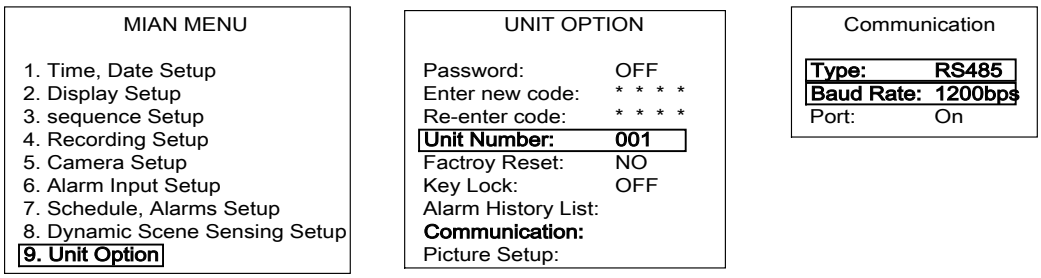
Unit Number setting

Select the desired number from 001 to 098.

Communication setting

Select the RS485 option and the desired baud rate option. 1200bps is the keyboard default setting.

Note: The baud rate must be the same between the controlled unit and the keyboard.



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System Installations, continued

B&W Multiplxer unit setting

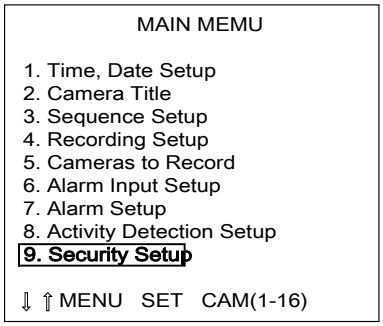
The main menu of the B&W multiplexer provides access to all programming options.
In this mode, select “9. Security Setup”.
The SECURITY OPTION setup screen allows you to make changes to the unit’s options.
In this mode, you can set up the unit number.

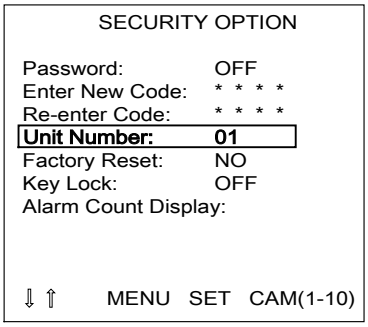
Unit Number setting

Select the desired number from 01 to 98.

Communication setting

There is no way to change communication setting. The baud rate is 1200bps.





Color Quad unit setting

The main menu of the color quad provides access to all programming options.
In this mode, select “7. Configuration”.
The CONFIGURATION setup screen allows you to make changes to the unit’s options. In this mode, you can set up the unit number and communication method.

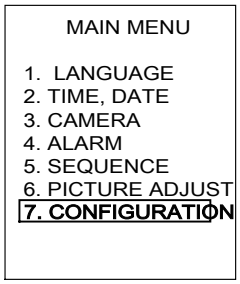
Unit Number setting

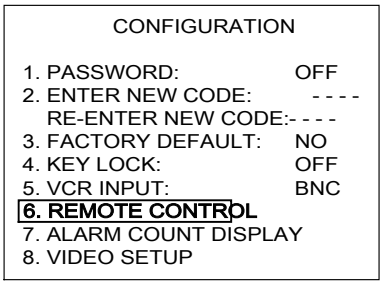
Select the desired number from 01 to 98.

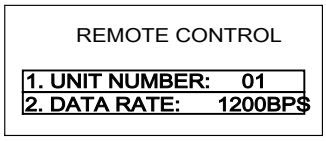
Note: Make certain the number is not used for any other controlled unit.

Communication setting

Select the RS485 option, and set the desired baud rate. The default setting for the keyboard is 1200bps.







System Configuration and Wiring

System Configuration

This Remote keyboard system must be installed by qualified service and installation personnel. The installation must be in accordance with all local and federal electrical and building codes.
There are two methods of installation depending on the number of Remote keyboard used. When using one Remote keyboard controlled system, use the Single Keyboard Configuration method. When installing two to four keyboards, use the Multi Keyboard Configuration method.
Perform the following steps to install the Remote keyboard system.

A. Unpack all components.

B. Place the Remote keyboard in a convenient location.

Note: Carefully and completely read the manuals for each piece of equipment before attempting to install and connect the equipment.
Note: The main power jack on the rear of the keyboard must be disconnected before the RJ45 modular cable is plugged into the RS-485 connector, The other end of the cable plugged into RJ45 modular connectors on the rear of the controlled units (multiplexers, quads, etc.).

C. Decide on the configuration method.

D. Rout the RJ45 cable from the Remote keyboard to the Controlled units according to the Single or Multi Keyboard Configration.

CAUTION: If the provided RJ45 modular cable is not long enough, do not substitute a telephone cable. Using a telephone cable could damage the Remote keyboard and /or the controlled unit.

F. Use one of the following sections to configure the wiring.

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Single Keyboard Configuration

Use the Single Keyboard Configuration when only one keyboard is connected to the controlled units. Connect the RS-485 output port of Remote keyboard to RS-485 input port of the first controlled unit using the RJ45 modular cable. Turn on the termination switch of Remote keyboard. The controlled units can be daisy-chained by connecting the output RS-485 modular connector of the first controlled unit to the input RS-485 modular connector on the next unit. Plug the termination cable into output port of the last controlled unit. One Remote keyboard can control up to 31 units.

Use Figure 5a. as a reference.

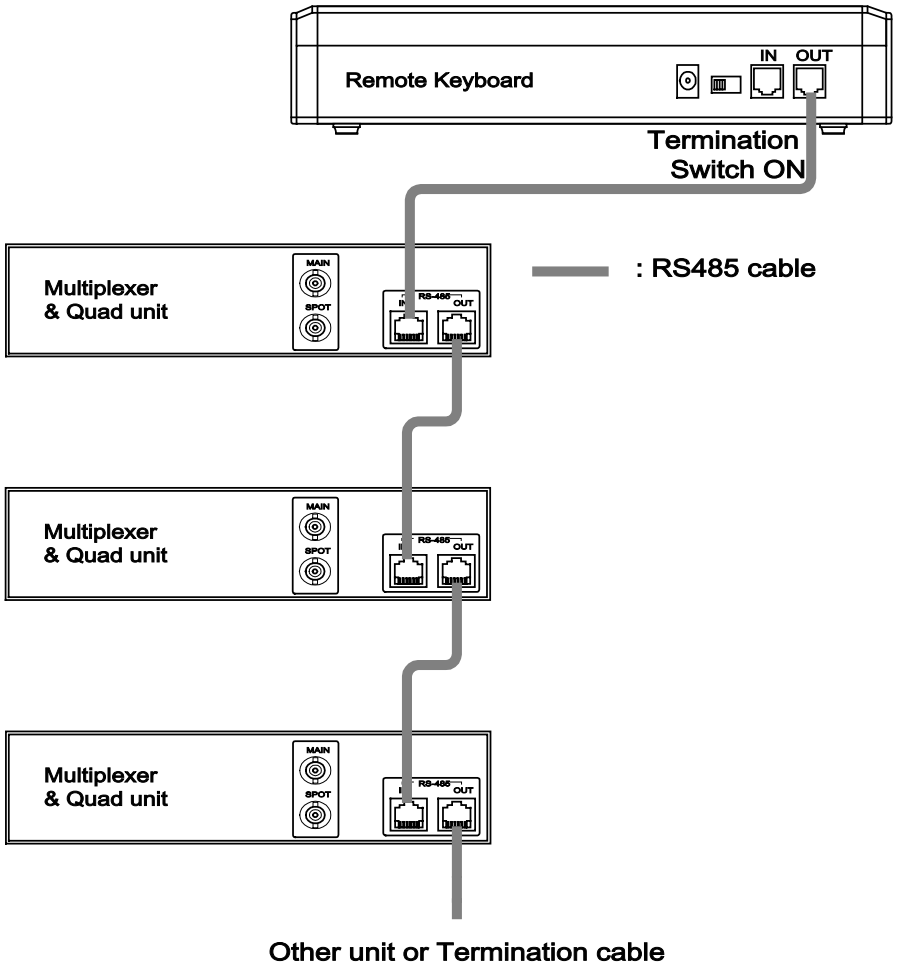

Figure 5a. System wiring single keyboard

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Multi Keyboard Configuration

The Multi Keyboard Configuration method is used when connecting two to four Remote keyboards with controlled units. Connect the RS-485 output port of the first Remote keyboard to RS-485 input port of the first controlled unit using the RJ45 modular cable.
The controlled units can be daisy-chained by connecting the output RS-485 modular connector of the first controlled unit to the input RS-485 modular connector on the next unit. Plug the termination cable into output port of the last controlled unit.
The remaining Remote keyboards and, controlled units are wired the same way. Connect the output modular connector of each Remote keyboard to the input modular connector of the next Remote keyboard. Turn ON the termination switch of the last Remote keyboard. Make certain to turn OFF the termination switches on the rest of the Remote keyboards.
Up to 31 controlled units can be connected to a maximum of four Remote control keyboards.

Use Figure 5b. as a reference.

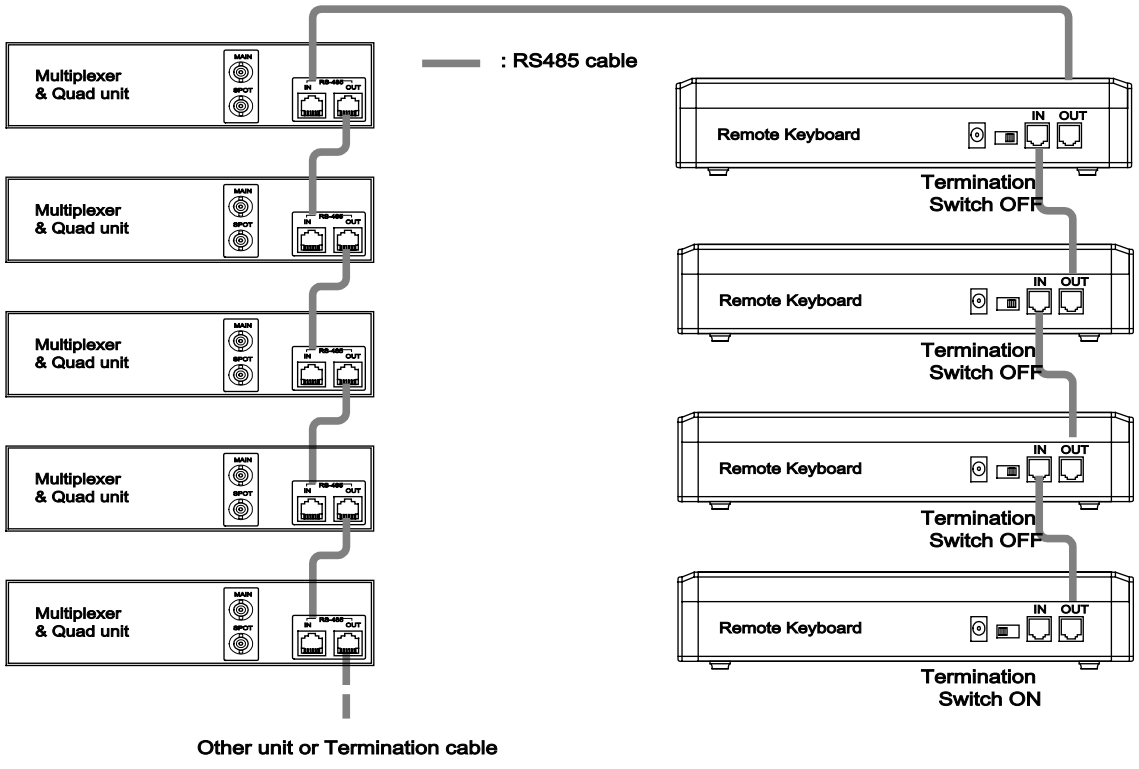

Figure 5b. System wiring multi-keyboards

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System configuration with Video Switcher

8 x 4 Video Switcher

The video switcher is only controlled by the Remote control keyboard. This unit has eight video-inputs and four monitor-outputs. Video input sources come from controlled units main and spot video outputs. Video outputs are connected to standard video monitors.
Refer to the 8x4 Video Switcher manual for the detailed operation.

Use Figure 6 as a reference.

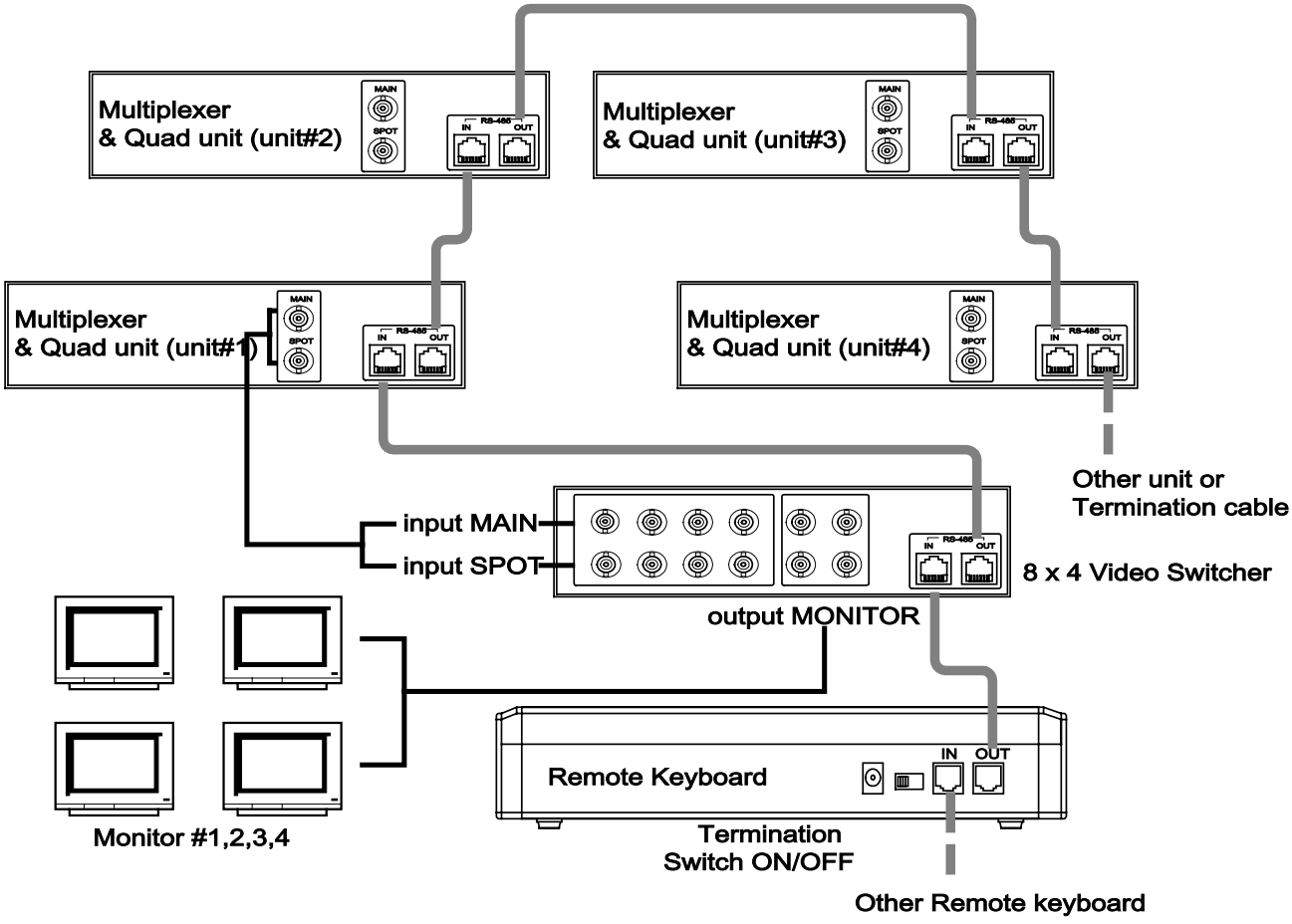

Figure6. System wiring with Video Switcher

CHAPTER 3
CONTROL FUNCTIONS, SETUP OPERATING PROCEDURES

Setup Procedures

Overview

This Remote control keyboard transmits commands to multiplexers, quads and video switchers via RS-485 modular cables

Power up Action

When the power is applied to the Remote keyboard, all LED indicators and the dual digit display of the unit will light for two seconds during the self-test. After self-test, the dual digit display show the default unit number (01). The UNIT LED indicator and the LEDs above the unit status buttons turn ON.

Note: The Remote keyboard must be turned on after all controlled units (multiplexers, quads, etc.) are activated.
Note: The default unit status is the color 16-channel multiplexer.

Unit Setup

The seven unit statuses are as follows:

Status	Button process
Color 16-channel duplex/simplex multiplexer	COLOR 16CH
Color 9-channel duplex/simplex multiplexer	COLOR 9CH
Color 4-channel duplex multiplexer	COLOR 4CH
B&W 16-channel duplex/simplex multiplexer	B&W 16CH
B&W 9-channel duplex/simplex multiplexer	B&W 9CH
B&W 4-channel duplex multiplexer	B&W 4CH
Stand-alone color quad	Quad

Select the setup mode depending on the type of controlled unit. If all the controlled units are the same type, select the all units setup mode. However, if the controlled units are various types, perform the individual unit setup operation. Use the following section to perform the unit setup operation.

All units setup mode

Button(s)	Action
SETUP	Press the SETUP button to enter unit status setup mode. Then SETUP LED indicator is ON and UNIT LED indicator is OFF. Press SETUP again to exit the unit setup mode and return to the unit control mode.
CLEAR	Press the CLEAR button. The auto setup message “AS” displays on the dual digit display, and the unit status LED indicator turns off. To cancel press CLEAR again to exit the auto setup mode and return to the unit control mode.
Unit Status	Press the unit status button for the appropriate unit type (e.g.; B&W 16CH, Color 9CH). To cancel press the CLEAR button to exit the all units setup mode and return to the unit control mode.
ENTER	Press the ENTER button. The remote keyboard performs the all unit setup and then returns to the unit control mode.

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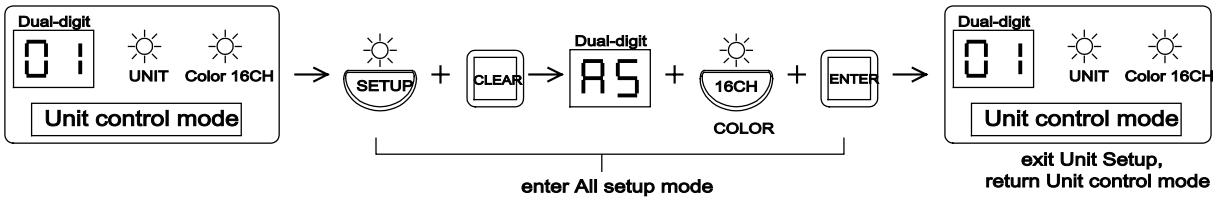
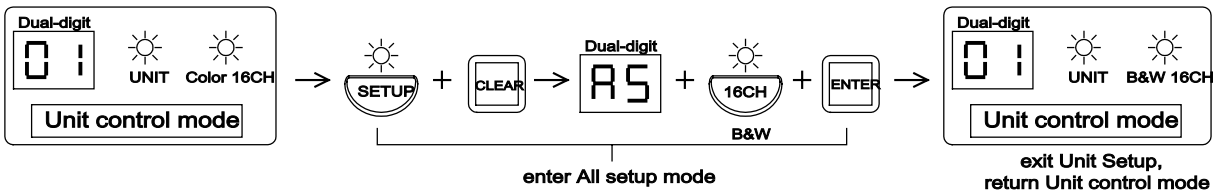
Unit Setup (continued)

All unit setup mode (example)
Example 1: When all units are Color 16-channel multiplexers.



Example 2: When all units are B&W 16-channel multiplexers.



Individual unit setup mode

This mode is used to assign the status of each unit. The unit status is made up of all multiplexer types and stand-alone color quads. The SETUP button enters the setup mode. Pressing it again exits the setup mode. When you exit the setup mode, you are immediately returned to the unit control mode.

Use the following steps to assign unit address numbers for the multiplexers and quas.

STEP 1. Assign the unit numbers and list of the unit address numbers.
The user must assign the unit numbers to the multiplexers and quads in use. Next, make a list of the unit address numbers.

STEP 2. Set up the unit number in at the unit option setup menu.
Using the list made in STEP1, set up the unit number of the multiplexers and quads in the unit option setup of menu.

STEP 3. Assign the unit status for remote keyboard.

The user must program the unit status for each unit into the remote keyboard. Use the following steps to assign unit status for each unit. Below is an example for assigned unit status. In this example, unit number 05 is assigned to a color 16-channel multiplexer.

Note: None of the status programming changes made are saved until you press ENTER.

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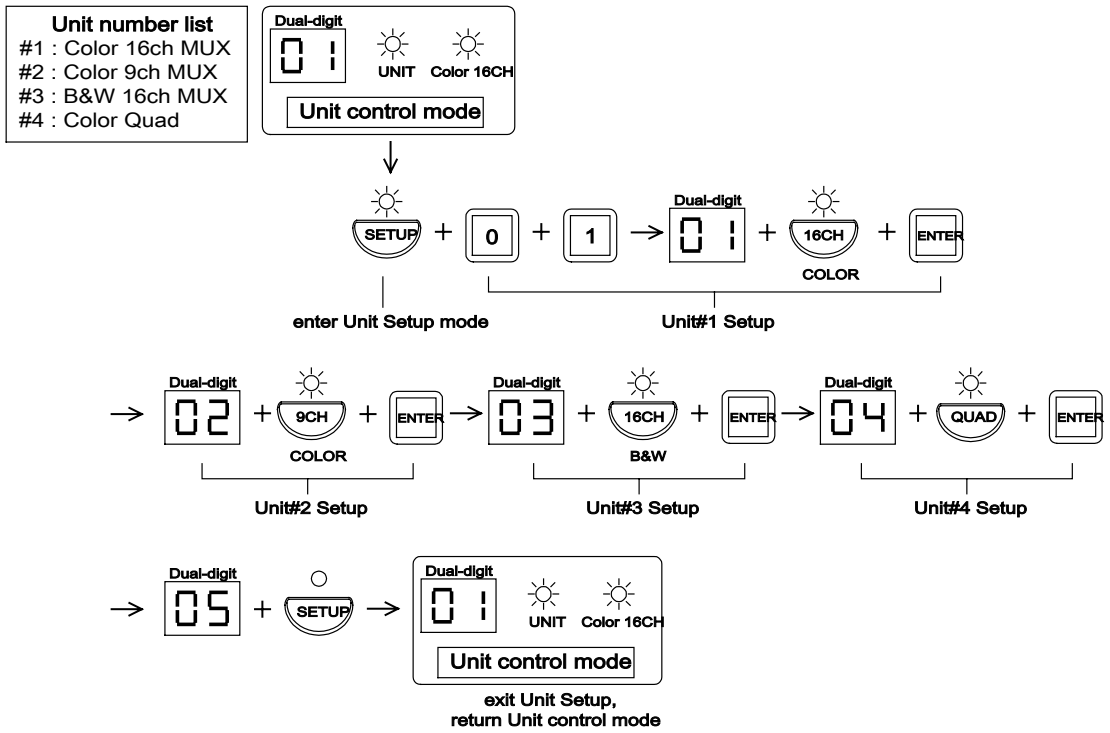
Setup Procedures, continued

Unit Setup (continued)

Individual unit setup mode (continued)

Button(s)	Action
SETUP	Press the SETUP button to enter the unit status setup mode. The SETUP LED indicator turns ON and UNIT LED indicator is OFF. Pressing SETUP again to exit the unit status setup mode and return to the unit control mode.
Numbers or UP(↑) / DOWN(↓)	Press the Number buttons to assign the desired unit number (05). The selected unit number is displayed on the dual digit display. Pressing the UP or DOWN buttons will move to the next or previous unit number.
COLOR 16CH	Press the COLOR 16CH button (unit status button) to assign a 16-channel multiplexer for the configuration of unit number 05. The COLOR 16CH LED indicator turns On.
ENTER	Press the ENTER button to save the status of unit number 05. The dual-digit displays the next unit number (06). **Note:** If you want to assign another unit configuration, repeat above the procedures.
SETUP	Pressing the SETUP button turns off the unit setup mode. The SETUP LED indicator turns OFF. The Keyboard is immediately returned to the unit control mode. The UNIT LED indicator turns On.

Individual unit setup mode (example)
Example 1: Unit number list (#1-C16, #2-C9, #3-B&W16, #4-Quad continuou setup)



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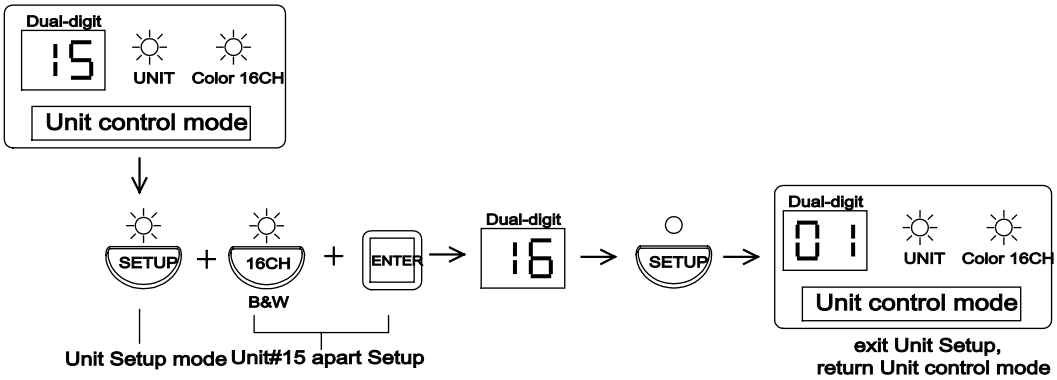
Setup Procedures, continued

Unit Setup (continued)

Individual unit setup mode (example continued)
Example 2: Unit number list (#15-Color 16CH MUX →B&W 16CH MUX setup)



Operating Procedures

This mode is used to control the unit as a multiplexer or quad. This mode is made up of two parts: one is the unit selection and the other is unit control.

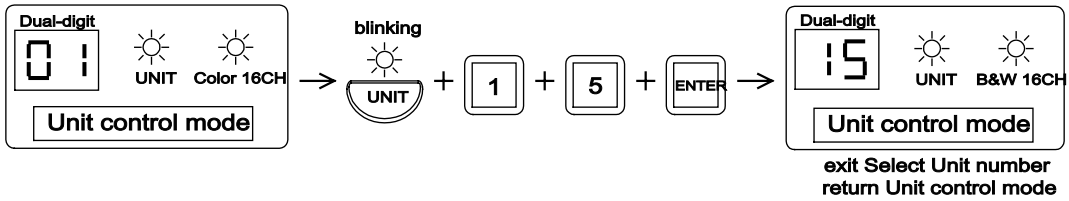
Note: The UNIT LED indicator turns ON. This indicator the keyboard is in unit control mode. If the UNIT LED indicator blinks, it indicates the keyboard is in unit selection mode.

Unit Selection

. Use the following steps to select the unit number.

Button(s)	Action
UNIT	Press UNIT while in the unit control mode. The UNIT LED indicator blinks. Pressing it again to exit unit selection and return to the unit control mode.
Numbers or UP(↑) / DOWN(↓)	Press the Number buttons to assign the desired unit number. The selected unit number is displayed on the dual digit display. Pressing the UP or DOWN buttons will move to the next or previous unit number.
ENTER	Press the ENTER button to save the selected unit number. The UNIT LED indicator stops blinking and turns ON.

Example: Unit Selection (#1-Color 16CH MUX →#15 B&W 16CH MUX selection)



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Unit Control

Unit Control is related to the configuration of unit. There are seven types of unit control. The Keyboard has keys for all possible types of controlled units. Configuring the keyboard determines which keys will be enabled for each unit. Use the following information as a guide for the enabled buttons for various unit configurations.

Unit Control Function Buttons

Color 16-Channel Duplex & Simplex Multiplexer Functions

The enabled buttons for a color 16-channel multiplexer displayed below with thick lines. The remaining buttons are disabled while in the color 16-channel multiplexer control mode.
Refer to the Color 16-channel duplex & simplex multiplexer manual for detailed operations.
Note: In the multi keyboard system, the repeat operation of arrow button is disabled.

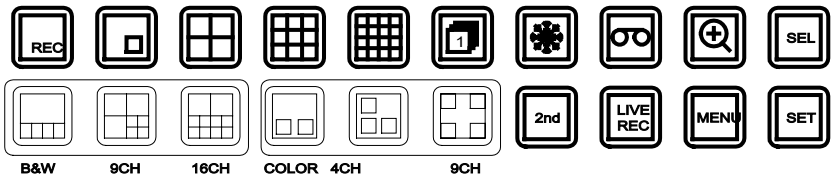

Figure 7. Color 16-channel multiplexer control buttons

Color 9-Channel Duplex & Simplex Multiplexer Functions

The enabled buttons for a color 9-channel multiplexer are displayed below with thick lines. The remaining buttons are disabled while in the color 9-channel multiplexer control mode.
Refer to the Color 9-channel duplex & simplex multiplexer manual for detailed operations.
Note: In the multi keyboard system, the repeat operation of arrow button is disabled.

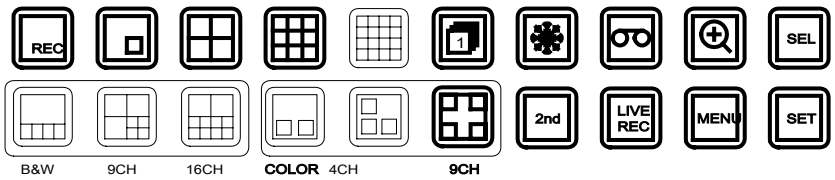

Figure 8. Color 9dchannel multiplexer control buttons

Continued on next page

Unit Control Function Buttons, continued

Color 4-channel Duplex Multiplexer Functions

The enabled buttons for a color 4-channel multiplexer are displayed below with thick lines. The remaining buttons are disabled while in the color 4-channel multiplexer control mode.
Refer to of the Color 4-channel duplex & simplex multiplexer manual for detailed operations.
Note: In the multi keyboard system, the repeat operation of arrow button is disabled.

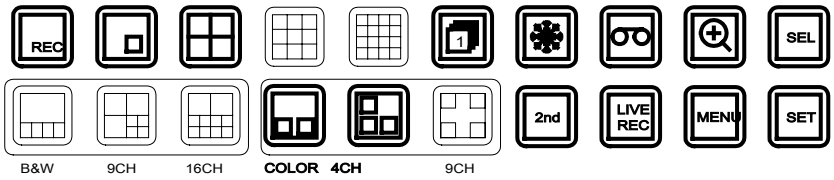

Figure 9. Color 4-channel multiplexer control buttons

B&W 16-channel Duplex & Simplex Multiplexer Functions

The enabled buttons for a B&W 16-channel multiplexer are displayed below with thick lines. The remaining buttons are disabled while in the B&W 16-channel multiplexer control mode.
Refer to the B&W 16-channel duplex & simplex multiplexer manual for operations.
Note: In the multi keyboard system, the repeat operation of arrow button is disabled.

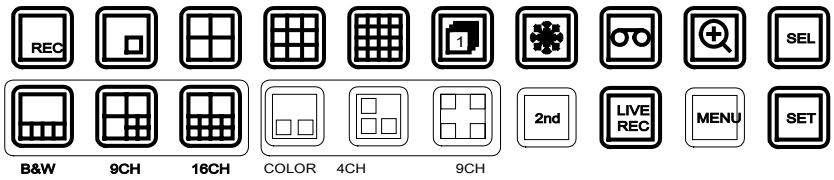

Figure 10. B&W 16-channel multiplexer control button

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B&W 9-channel Duplex & Simplex Multiplexer Functions

The enabled buttons for a B&W 9-channel multiplexer are displayed below with thick lines. The remaining buttons are disabled while in the B&W 9-channel multiplexer control mode.
Refer to the B&W 9-channel duplex & simplex multiplexer manual for detailed operations.
Note: In the multi keyboard system, the repeat operation of arrow button is disabled.

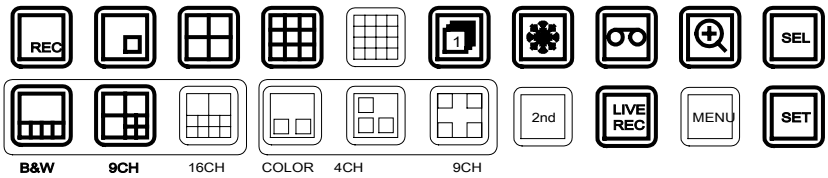

Figure 11. B&W 9-channel Multiplexer control buttons

B&W 4-Channel Multiplexer Functions

The enabled buttons for a B&W 4-channel multiplexer are displayed below with thick lines. The remaining buttons are disabled while in the B&W 4-channel multiplexer control mode.
Refer to the B&W 4-channel duplex & simplex multiplexer for detailed operations.
Note: In the multi keyboard system, the repeat operation of arrow button is disabled.

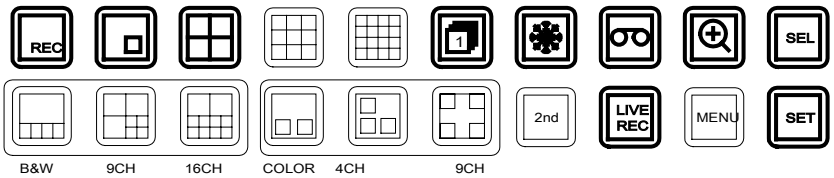

Figure 12. B&W 4-channel Multiplexer control buttons

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Unit Control Function Buttons, continued

Stand-alone Color Quad Functions

The enabled buttons for a stand-alone color are displayed below with thick lines. The remaining buttons are disabled while in the stand-alone color quad control mode.
Refer to of the stand-alone Color Quad manual for detailed operations.
Note: In the multi keyboard system, the repeat operation of arrow button is disabled.

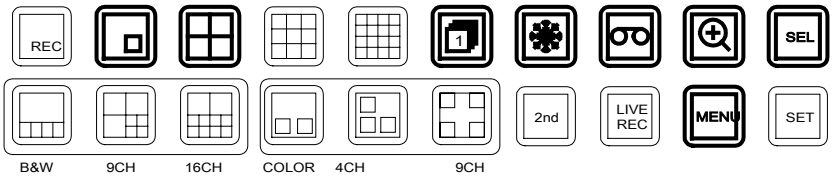


Figure 13. Stand-alone Color Quad control buttons

ENTER button operations

This button not exists in the multiplexer and quad units. This button should be pressed after pressing the camera number buttons. Use the following section to perform the ENTER button operations.

Full operation
This operation is applied to for all type of multiplexer and quad units.
Example: When you want to display the screen of camera 2 in the full-screen mode, press as below.

Sequence operation of the color multiplexer
This operation is applied to for only color multiplexer units.
Example: When you want to sequence in order of the sequence 1 mode, press as below.

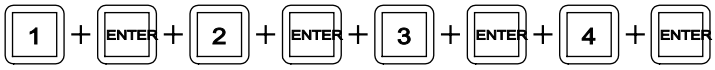
Camera assign operation
This operation is applied to for all type of multiplexer units.
Example: When you want to assign cameras (background is camera #1 and inset picture is camera #2), press as below. This operation is applied to for all multi screen modes.

Continued on next page

Unit Control Function Buttons, continued

Live Record operation
This operation is applied to for all type of multiplexer units.
Example: When you want to record only the selected camera (#2), press as below.

Menu setup mode operation
At the setup mode, entering the password or changing the password, This button should be pressed after pressing the camera number buttons. This operation is applied to for all types of multiplexers and quad units.
Example: If you wanted password is “1 2 3 4”, press as below.



Video Switcher Control Function Buttons

Video Switcher Control Mode

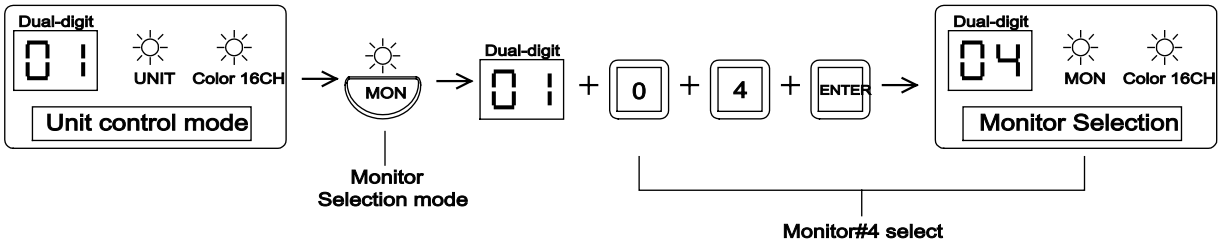
This mode is used to control the 8x4 Video switcher. The Video switcher mode is made up of the monitor output, single video input and group video input controls. Refer to of the 8x4 Video Switcher manual for the detailed operations.

Monitor Output Control

This mode is used to control the monitor output video on the video switcher.
Use the following steps to select the output monitor of the video switcher.
The default monitor number is 01.

Button(s)	Action
MON	Press the MON button. The MON LED indicator turns ON and the UNIT LED indicator turns OFF. Then the previously selected monitor number is displayed on the dual digit display.
Numbers or UP(↑) / DOWN(↓)	Press the Number buttons to assign the desired monitor output number. The selected monitor output number is displayed on the dual digit display. Pressing the UP or DOWN buttons will move to the next or previous monitor output number.
ENTER	Press the ENTER button to save and transmit the selected monitor output number.

Example: Monitor number Selection (MON#01 →MON#04)



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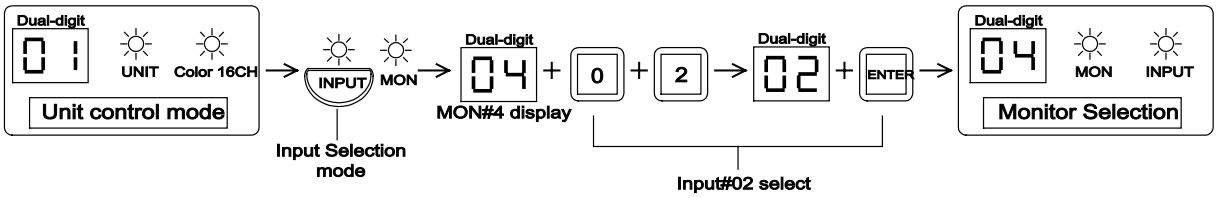
Video Switcher Control Function Buttons, continued

Individual video Input Selection Mode

This mode is used to control the individual video input on the video switcher. Use the following steps to select the input video.
The default input video number is 01.

Button(s)	Action
INPUT	Press the INPUT button. The INPUT and MON LED indicators turn ON, and the UNIT LED indicator turns OFF. Then the previously selected monitor number is displayed on the dual digit display.
Numbers or UP(↑) / DOWN(↓)	Press the Number buttons to assign the desired input video. The currently selected video input number is displayed on the dual digit display. Pressing the UP or DOWN buttons will move to the selected video input number.
ENTER	Press the ENTER button to save and transmit the selected video input number. The previously monitor output number returns to the dual digit display.
EXAMPLE	The operating procedure is as follows: 1.The video switcher has a unit ID 01. 2.The main output of the multiplexer with unit number 01 is connected to input 1 on this switcher. 3.The main output of the multiplexer with unit number 02 is connected to input 2 on this switcher. 4.The output number 1 of the switcher is connected to monitor 1. 5.The output number 2 of the switcher is connected to monitor 2. 6.The switcher was set to monitor 1. Pressing the INPUT button and the monitor output number 01 display on the dual digit display. Enter the input video number 01 using the Number buttons. Continuously press the ENTER button. You should see the main output of the multiplexer 01 on monitor 1. The selected monitor output number 01 displays on the dual digit display. Enter the input video number 02 using the Number buttons. The input video number 02 displays on the dual digit display. Continuously press the ENTER button. You should see the main output of the multiplexer 02 on monitor 1. The dual digit display returns to the previous monitor output number 01.

Example: Input number selection (at MON#04, display INPUT#02)



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Video Switcher Control Function Buttons, continued

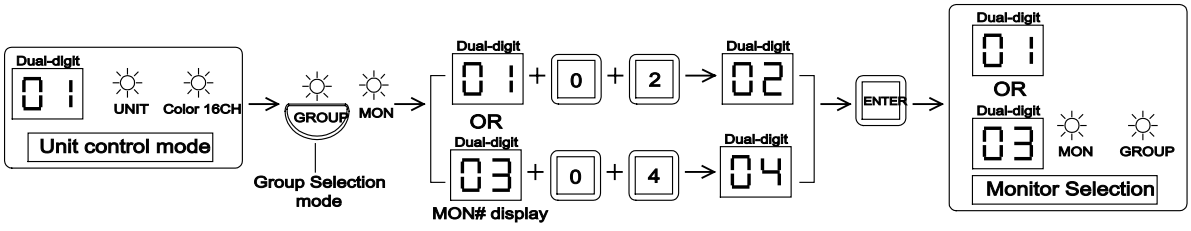
Input video Selection In a group Mode

This mode is used to select the input video from a group on the video switcher. Use the following steps to select the grouped input video. The default input video number is 01.

Button(s)	Action
GROUP	Press the GROUP button. The GROUP and MON LED indicators turn ON and the UNIT LED indicator turns OFF. Then the previously selected monitor number displays on the dual digit display.
Number or UP(↑) / DOWN(↓)	Press the Number buttons to assign the desired group video. The currently selected group video number displays on the dual digit display. Pressing the UP or DOWN buttons will move to select group video number.
ENTER	Press the ENTER button to save and transmit the selected group video number. The selected monitor output number returns to the dual digit display.
EXAMPLE	The operating procedure is as follows: 1.The video switcher unit ID is 01. 2.The main output of the multiplexer 01 is connected to input 1 on the switcher. 3.The spot output of the multiplexer 01 is connected to input 5 on the switcher. 4.The main output of the multiplexer 02 is connected to input 2 on the switcher. 5.The spot output of the multiplexer with unit number 02 is connected to input 6 on the switcher. 6.The output number 1 of the switcher is connected to monitor 1. 7.The output number 3 of the switcher is connected to monitor 3. 8.The switcher was set to monitor 1 or 3. Press the GROUP button. The monitor output number 01 will be displayed on the dual digit display. Enter the group video number 01 using the Number buttons. Continuously press the ENTER button. You should see the main and spot outputs of the multiplexer 01 on monitors 1 and 3. Press the GROUP button. The selected monitor output number 01 displays on the dual digit display. Enter the group video number 02 using the Number buttons. Group video number 02 displays on the dual digit display. Continuously press the ENTER button. You should see the main and spot outputs of multiplexer 02 on the monitors 1 and 3. The dual digit display returns to the previous monitor output number 01.

Example: Group number selection (at MON#01 & 03, display GROUP#02 & 06)

Note: In the Group input mode, the input or output is a pair of ports. Refer to the 8x4 Video Switcher manual for the detailed operations.



Multi Keyboard Procedures

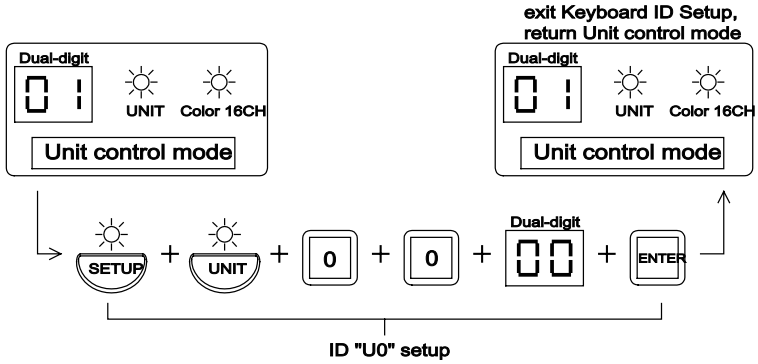
Keyboard ID setting

Multiple keyboards can be used. Two to four Remote keyboards can be connected and configured. You must assign each keyboard an ID number. The default keyboard ID number is U0.

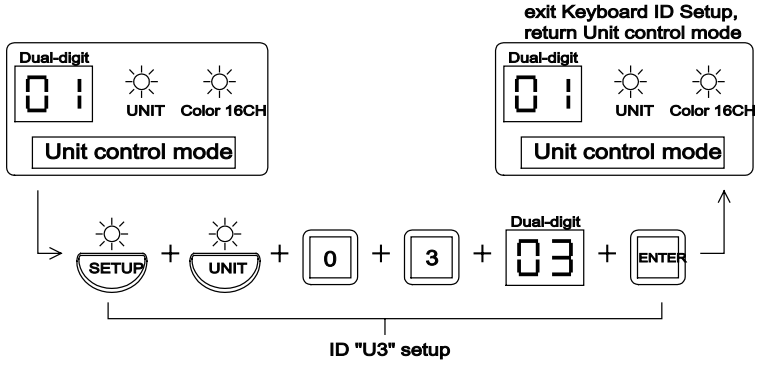
Note: The keyboard ID numbers are U0, U1, U2 and U3 in order. The user must set the ID number to avoid duplicated numbers.
Use the following steps to set the keyboard ID number.

Button(s)	Action
SETUP	Press the SETUP button. The SETUP LED indicator turns ON and UNIT LED indicator turn OFF.
UNIT	Press the UNIT button to enter the keyboard ID setup mode. The SETUP LED and UNIT LED indicators turn ON.
Number	Use the Number buttons to assign the desired the keyboard ID. **Note:** The first keyboard ID displays 00 on the dual digit display, the second displays as 01, the third displays as 02 and the last displays as 03.
ENTER	Press the ENTER button to save the keyboard ID. The selected keyboard ID code displays on the dual digit display. **Note:** The first keyboard ID displays as U0, the second displays as U1, the third displays as U2 and the last keyboard ID displays as U3.
CLEAR	Press the CLEAR button to confirm the keyboard ID. The keyboard ID number displays on the dual digit display for a short time. Then, the dual digit display returns the previous the controlled unit number.

Example 1: Keyboard ID setting (ID “U0”)



Example 2: Keyboard ID setting (ID “U3”)



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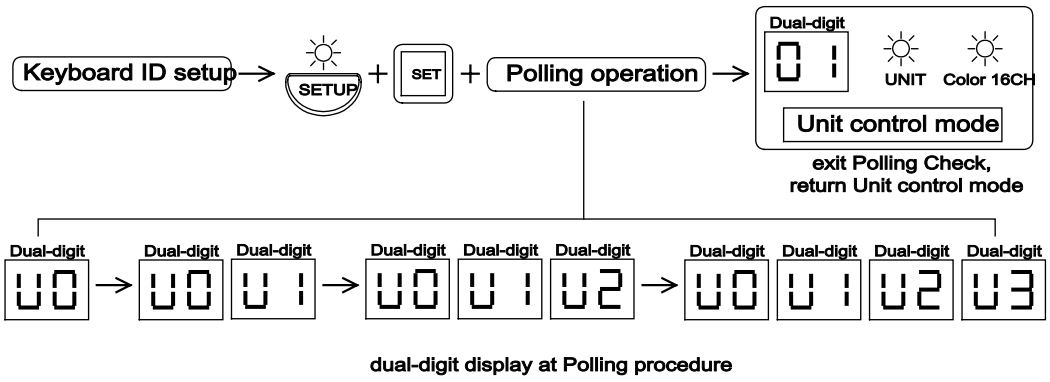
Multi Keyboard Procedures, continued

Polling check

After power up, the Polling check mode starts polling the network. If the Remote keyboard system detects that remote keyboards have been added or deleted while polling the network, it will automatically change the highest available keyboard ID.
Use the following steps to check the keyboard polling procedure.
Note: The polling check mode will be performed by the first keyboard ID U0.

Button(s)	Action
SETUP	Press the SETUP button. The SETUP LED indicator turns ON and UNIT LED indicator turns OFF.
SET	Press the SET button. The SETUP LED indicator turns OFF and the Polling Check mode Starts. The dual digit displays the Polling Check results. It displays U0, U1, U2 andcU3 in order at regular intervals. After the Polling Check procedure, the multi keyboard polling process starts.

Example: Polling Check (Keyboard ID U0, U1, U2, U3)



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Multi Keyboard Procedures, continued

Baud Rate setting

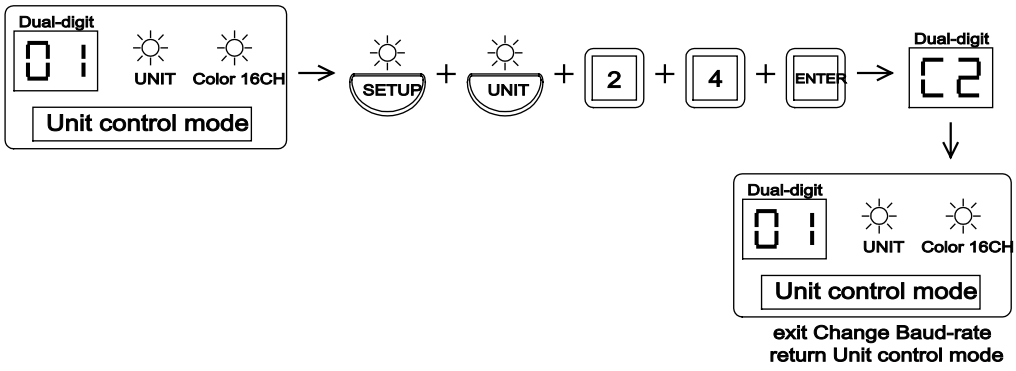
Select the desired operating speed (1200bps, 2400bps, 4800bps, 9600bps) using the front buttons.
1200bps is the default setting. If you want to check the baud rate during operation, press the CLEAR button. The dual-digit displays the baud rate.

Note: All multiplexers and quad units should be set up gor RS-485 communications and all must be set at the same baud rate.

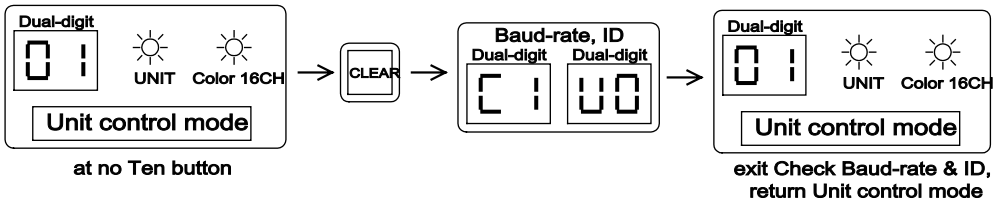
Use the following steps to select the baud rate.

Button(s)	Action
SETUP	Press the SETUP button. The SETUP LED indicator turns ON and the UNIT LED indicator turns OFF.
UNIT	Press the UNIT button to enter the baud rate setup mode. The SETUP LED and UNIT LED indicators turn ON.
Numbers	Press the Number buttons to assign the desired baud rate. **Note:** 1200bps is displayed as “12” on the dual digit display. 2400bps is displayed as “24,” 4800bps is displayed as “48” and 9600bps is displayed as “96.”
ENTER	Press the ENTER button to save the selected baud rate. The selected baud rate code is displayed on the dual digit display. **Note:** 1200bps is displayed as C1. 2400bps is displayed as C2, 4800bps is displayed as C3 and 9600bps is displayed as C4.
CLEAR	Press the CLEAR button to confirm the baud rate. The baud rate displays the dual digit display for a short while. Then the dual digit display returns to the previous controlled unit number.

Example: Baud-rate setting (Keyboard ID U0, U1, U2, U3)



Example: Check Baud-rate and Keyboard ID (1200bps and U0)



Remote Command Set

Remote Command Set

Each remote commands consists of three ASCII characters. The command sets are as follows:

1. Color 16-channel duplex and simplex multiplexer
2. Color 9-channel duplex and simplex multiplexer
3. Color 4-channel duplex multiplexer
4. B&W 16-channel duplex and simplex multiplexer
5. B&W 9-channel duplex and simplex multiplexer
6. B&W 4-channel duplex multiplexer
7. Stand-alone color quad
8. 8 x 4 Video Switcher

Remote Keyboard Command Set list

Color 16-Channel Duplex and Simplex Multiplexer

Equivalent Button Press	Command	Equivalent Button Press	Command
MENU	@ME	FREEZE	@FR
SELECT	@SL	ZOOM	@ZO
VCR (REVIEW)	@VR	2^{ND}	@SN
LIVE RECORD	@LR	SET	@SE
FULL	@FL	CAM 1 – 16(Numbers)	@01 - @16
PIPI	@PP	Unit number (Numbers)	#000 - #255
2 x 2	@22	DOWN	@PP
3 x 3	@33	UP	@22
4 x 4	@44	LEFT	@33
SEQUENCE	@SQ	RIGHT	@44

Color 9-Channel Duplex and Simplex Multiplexer

Equivalent Button Press	Command	Equivalent button press	Command
MENU	@ME	FREEZE	@FR
SELECT	@SL	ZOOM	@ZO
VCR (REVIEW)	@VR	2^{ND}	@SN
LIVE RECORD	@LR	SET	@SE
FULL	@FL	CAM 1 – 9(Numbers)	@01 - @09
PIPI	@PP	Unit number (Numbers)	#000 - #255
2 x 2	@22	DOWN	@PP
3 x 3	@33	UP	@22
Overlay 4	@O4	LEFT	@O4
SEQUENCE	@SQ	RIGHT	@33

Color 4Channel Duplex and Simplex Multiplexer

Equivalent Button Press	Command	Equivalent Button Press	Command
MENU	@ME	FREEZE	@FR
SELECT	@SL	ZOOM	@ZO
VCR (REVIEW)	@VR	2^{ND}	@SN
LIVE RECORD	@LR	SET	@SE
FULL	@FL	CAM 1 – 4(Numbers)	@01 - @04
PIPI	@P1	Unit number (Numbers)	#000 - #255
PIPIII	@P2	DOWN	@P1
PIPIV	@P3	UP	@P2
2 x 2	@22	LEFT	@P3
SEQUENCE	@SQ	RIGHT	@22

Continued on next page

Remote Command Set, continued

Remote Keyboard Command Set list (continued)

B&W 16-Channel Duplex and Simplex Multiplexer

Equivalent Button Press	Command	Equivalent Button Press	Command
FULL	/FL	SEQUENCE	/SQ
PIP**I**	/P1	SELECT	/SL
PIP**II**	/P2	LIVE RECORD (SET)	/LR
2 x 2	/22	SET	/ST
3 x 3	/33	CAM 1 – 16 (Numbers)	/01 - /16
3 + 4	/34	Unit number (Numbers)	U00 – U99
2 + 8	/28	DOWN	/P1
4 x 4	/44	UP	/P2
FREEZE (MENU)	/FR	LEFT	/22
VCR	/VR	RIGHT	/33
ZOOM	/ZO		

B&W 9-Channel Duplex and Simplex Multiplexer

Equivalent Button Press	Command	Equivalent Button Press	Command
FULL	/FL	SELECT	/SL
PIP**I**	/P1	LIVE RECORD (SET)	/LR
PIP**II**	/P2	SET	/ST
2 x 2	/22	CAM 1 – 16 (Numbers)	/01 - /16
3 x 3	/33	Unit number (Numbers)	U00 – U99
3 + 4	/34	DOWN	/P1
ZOOM	/ZO	UP	/P2
FREEZE (MENU)	/FR	LEFT	/22
VCR	/VR	RIGHT	/33
SEQUENCE	/SQ		

B&W 4-Channel Duplex and Simplex Multiplexer

Equivalent Button Press	Command	Equivalent Button Press	Command
FULL	/FL	LIVE RECORD (SET)	/LR
PIP**I**	/P1	SET	/ST
2 x 2	/22	CAM 1 – 4 (Numbers)	/01 - /04
ZOOM	/ZO	Unit number (Numbers)	U00 – U99
FREEZE (MENU)	/FR	DOWN	/Z1
VCR	/VR	UP	/Z2
SEQUENCE	/SQ	LEFT	/Z3
SELECT	/SL	RIGHT	/Z4

Stand-alone Color Quad

Equivalent Button Press	Command	Equivalent Button Press	Command
MENU	/MU	CAM 1 – 4 (Numbers)	/01 - /04
SELECT	/SL	Unit number (Numbers)	#00 - #99
VCR (REVIEW)	/VR	DOWN	/DN
FREEZE	/FR	UP	/UP
QUAD	/QU	LEFT	/LT
PIP	/P1	RIGHT	/RT
SEQUENCE	/SQ	PIP2	/P2

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Remote Command Set, continued

Remote Keyboard Command Set list (continued)

8 x 4 Video switcher

Command	Video Switcher control mode (8 x 4)
&00 – &03	MON 1 to 4
G00 – G03	GROUP 1 to 4
$00 – $07	CAM 1 to 8

Connector Pin Assignment

Pin assignments

The table below lists the assignments for the RS-485 IN/OUT ports on the multiplexers, remote keyboard and the video switcher.

PIN Number	RS-485
1	No connection
2	No connection
3	RXS
4	RXB
5	No connection
6	RXA
7	No connection
8	No connection

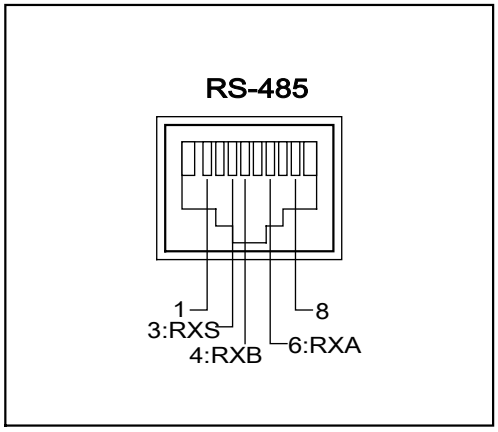

Figure 14. In/Output Connections & Pin assignment

APPENDIX PAGE

Cable Connection

Modular to DB25 Cable

You should make use of from the Modular to DB25 cable, in order to control the Black and White multiplexer or Color Quad unit. The Black and White multiplexer and Color Quad supply the DB25 connector and hood case for accessory parts.

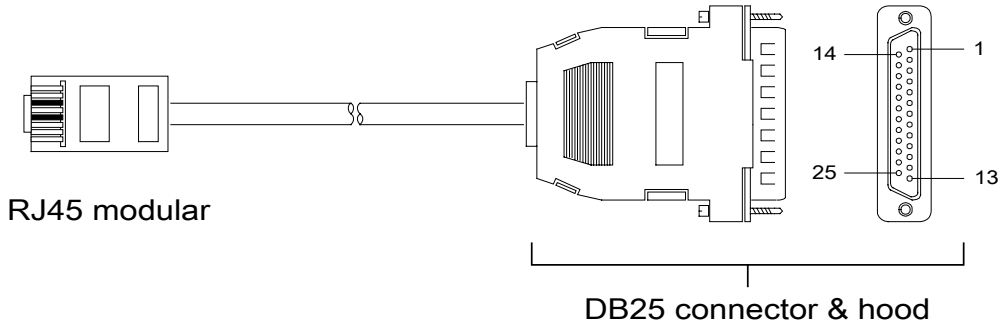

Figure 1 App. Modular to DB25 connector cable

Cable connection for the Black and White Multiplexer unit

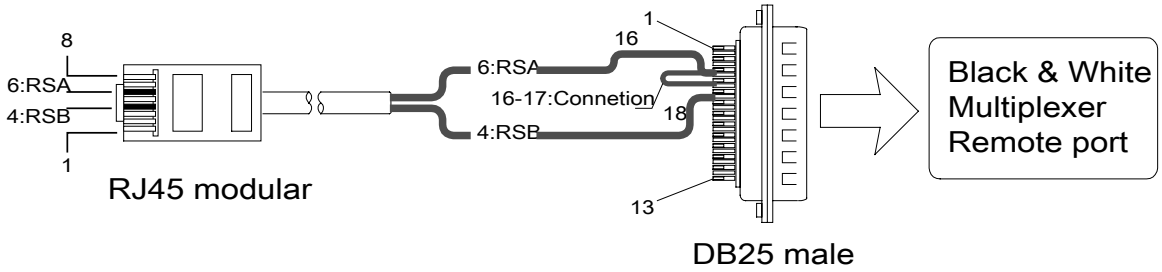

Figure 2 App. Cable connection for the Black and White Multiplexer unit

Cable connection for the Color Quad unit

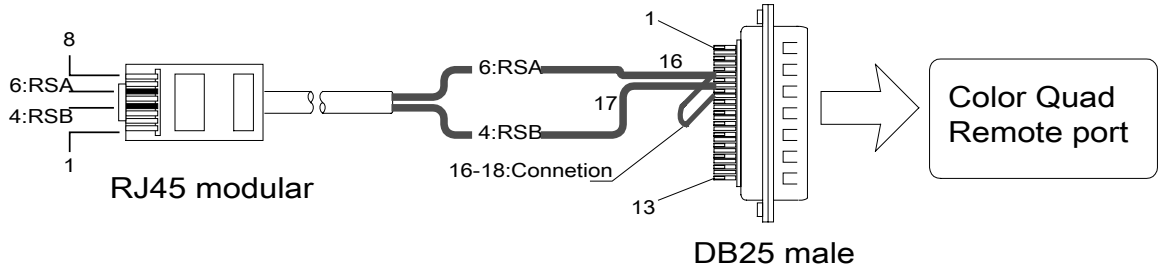

Figure 3 App. Cable connection for the Color Quad unit

EQUIPMENT SPECIFICATIONS

Operating Defaults	Control mode	Unit control mode
	Control status	Color 16-Channel duplex/simplex multiplexer
	Unit number	01
	Monitor output number	01
	Individual input video number	01
	Group input video number	01
	Keyboard ID number	U00
	Baud rate	1200bps
Connections	Power	2.1mm pin-type female
	RS485 IN/OUTPUT	RJ-45 8-pin Modular connector
	Transmission cable	RJ-45 modular cable 6m÷(19.7')
	Termination cable	RJ-45 termination cable 30mm ÷(1.2')
Power requirement	9V DC, 600mA	
Physical characteristics	Dimensions (W x H x D)	406mm x 70 mm x 151.5mm x (16 x 2.76 x 5.96 in.)
	Weight	1.9 kg (4.19 lbs.)
Operating environment	Ambient temperature	32º F to 95º F (0º to 35º C)
	Ambient humidity	10% - 90% (non-condensing)

Remote Control Keyboard