

## *Twisted Pair Matrix Switcher*

Professional Matrix Switchers



**Installation and Operation Manual**

**V 1.0**

**Remark:**

- All rights reserved for translation, reprint or reproduction
- Contents may change without prior announcement
- All technical specifications are guideline data and not guaranteed features
- Taiden Co., Ltd. is not responsible for any damage caused by improper use of this manual
- The equipment must be connected to earth!
- This product conforms to the rules of the European directive 2004/108/EC.
- If any detailed information needed, please contact your local agent or TAIDEN service center in your region.  
Any feedback, advice and suggestion about the products is appreciated
- TAIDEN is the registered trademark of TAIDEN Co., Ltd.

# Important Safety Instruction

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade and the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Do not place the equipment on any uneven or unstable stand; original product package or appropriate package should be used to avoid damage caused by strong impacts during transportation.
16. Power supply cords: AC 100 V-240 V, 50 Hz/60 Hz
17. For service, please contact the nearest TAIDEN Service Center.
18. All TAIDEN products are guaranteed for definite time (see the WARRANTY CARD for details) excluding the following cases:
  - A. All damage or malfunction caused by human negligence;
  - B. Damage or malfunction caused by improper operating by operator;
  - C. Parts damage or loss caused by disassembling the product by non-authorized personnel.
19. Use ONLY specified connection cable to connect the system equipment.
20. Upon receipt of the product, please fill out the Warranty Card enclosed and post it to TAIDEN Service Center.



TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

**CAUTION:** To reduce the risk of electric shock, DO NOT open covers, no user serviceable parts inside. Refer servicing to qualified service personnel only.

**CAUTION:** DO NOT use alcohol, ammonia or petroleum solvents or abrasive cleaners to clean the devices.



The lightning flash with an arrowhead symbol, with an equilateral triangle, is intended to alert the user to the presence of uninsulated 'dangerous voltage' within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation mark 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 appliance.

# Important Safety Instruction

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**WARNING:** To reduce the risk of fire or electric shock, DO NOT expose units to rain or moisture.



Attention: Installation should be performed by qualified service personnel only in accordance with the National Electrical or applicable local codes.



Power Disconnect: Units with or without ON – OFF switch have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON – OFF switch is in the ON position. The power cord is the main power disconnect for all units

**WARNING:** The apparatus should be connected to a mains socket outlet with a protective earthing connection.

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# Installation & User Guide

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## **About this manual:**

This manual is a comprehensive guide to the installation and operation of TAIDEN Twisted Pair Matrix Switchers. It includes: operation and setup, installation and connection, software and protocol, etc.

## **This manual is applicable to:**

**TMX-1209CAT5-A**

12\*9 Twisted Pair Matrix Switcher

## **The manual is divided into the following chapters:**

### **Chapter 1: Twisted Pair Matrix Switchers**

Descriptions in detail of the functions and indications, installation and connection, configuration and operation of Twisted Pair Matrix Switchers.

### **Chapter 2: IR Remote Control**

Introduction into the operation of IR remote control.

### **Chapter 3: Communication protocol and control code**

Detailed description of codes and their function.

### **Chapter 4: Technical data**

Mechanical and electrical details of the Twisted Pair Matrix Switchers.

# Chapter 1. Twisted Pair Matrix Switchers

## 1.1 Functions and indications

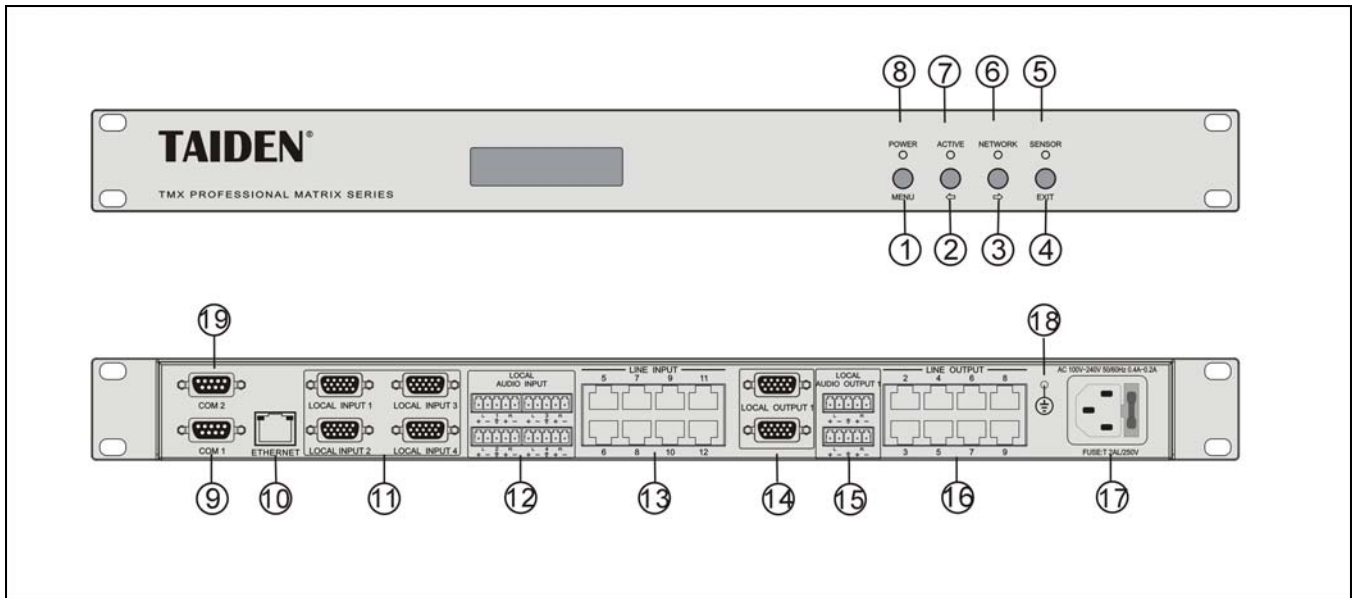


Figure 1.1 Panels of Twisted Pair Matrix Switcher

Front panel:

- 1. "MENU" button**
  - a) If in current state, press "MENU" go to main menu;
  - b) If in menu state, press "MENU" go to sub menu;
  - c) Select/Deselect in network configuration.
- 2. "←" (Left) button**
- 3. "→" (Right) button**
- 4. "Exit" button**
  - ◆ Return to previous directory or root.
- 5. "SENSOR" indicator**
  - ◆ Receives the IR signals from remote control; make sure the remote control aims at the window.
- 6. "NETWORK" indicator**
  - ◆ Indicator flashes if Matrix Switcher is connected with PC software.
- 7. "ACTIVE" indicator**
  - ◆ Indicator will be turned on if Matrix Switcher executes switch instructions.
- 8. "POWER" indicator**

Rear panel:

- 9. RS-232 communication interface COM1**
- 10. RJ45 interface**
- 11. Local Video inputs**
- 12. Local Audio inputs**
- 13. Line inputs**
- 14. Local Video outputs**
- 15. Local Audio outputs**
- 16. Line outputs**
- 17. Power cable interface**
- 18. Grounding point**
- 19. RS-232 communication interface COM2**

## 1.2 Installation and connection

### 1.2.1 Installation

1U Twisted Pair Matrix Switcher just needs to put it into the cabinet, and fix it by screws. As figure 1.2.

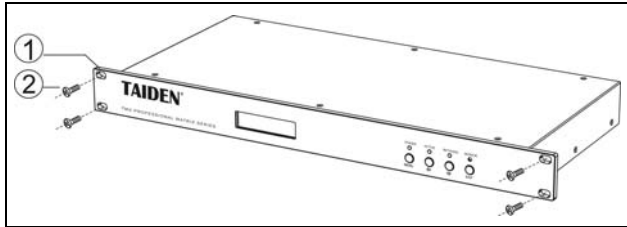


Figure 1.2 Installation

### 1.2.2 Audio Cable (-A series)

INPUTS from various audio source signals;  
OUTPUTS to PA or active loudspeaker.

The audio signal can be injected both balanced and unbalanced.

**Balanced Connection:** two differential signals, one of which is the inverse of the other, are operated via a cable with two

conductors of the same type and equal impedance to ground. Balanced connection minimizes unwanted interferences. Because audio signal tends to be disturbed in long distance transmission, balanced connection is commonly used in professional audio devices.

**Unbalanced Connection:** in unbalanced transmission the voltages on the two conductors are not equal to ground. Because non-balanced signal transmission tends to be disturbed, it is only used in non-professional audio devices.

The connection method should correspond to the requirements of the audio device interface. Whenever permitted balanced connection should be favored.

In case one device has a balanced interface and another device has an unbalanced interface, use balanced connection for balanced interface and unbalanced connection for unbalanced interface if there is no contradictory instruction.

If connection is strictly prescribed, please use balanced & unbalanced converter if required for appropriate connection.

As figure 1.3

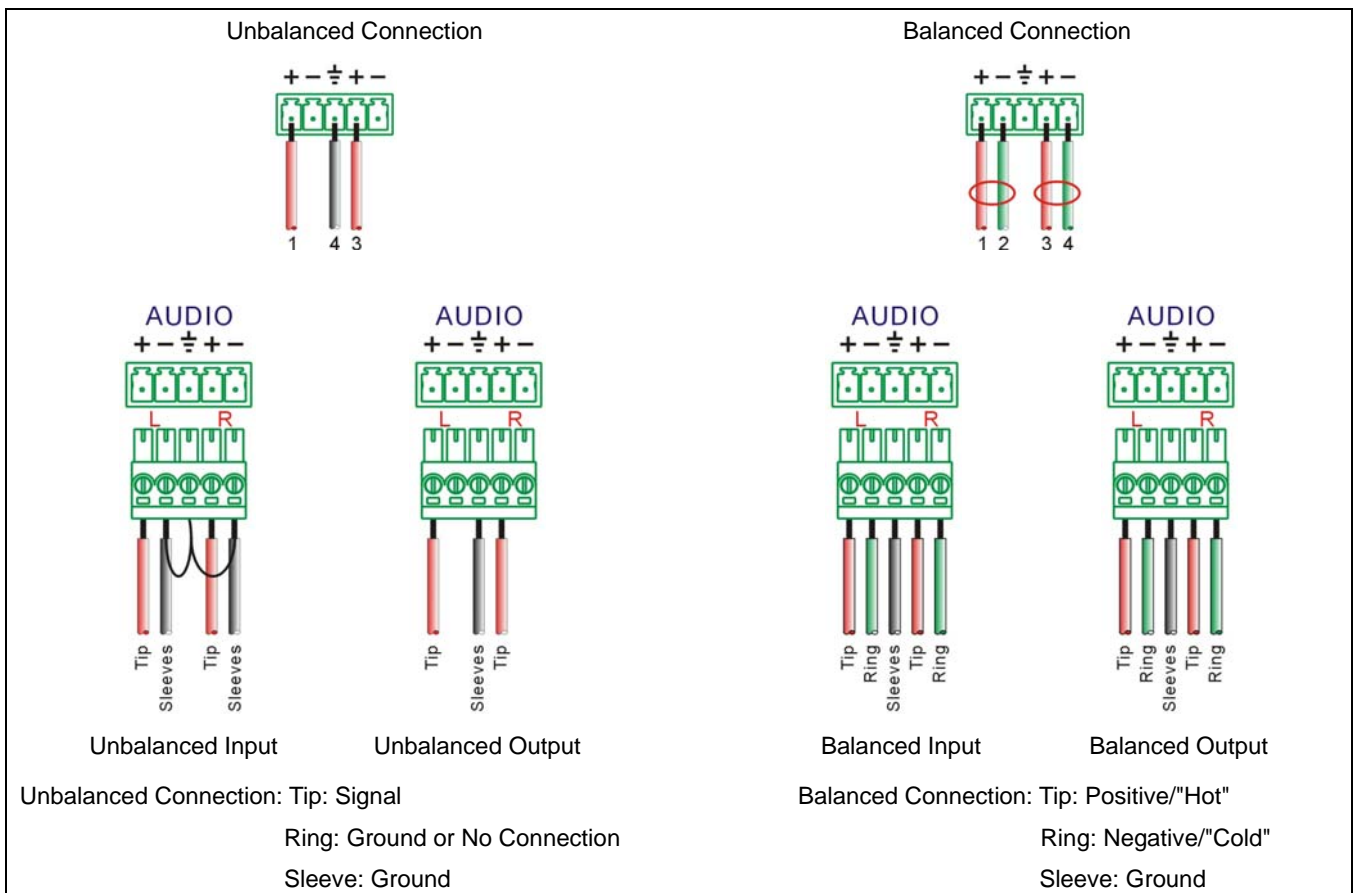


Figure 1.3 Balanced and Unbalanced connection



### 1.2.3 Connection between Mixed Switcher and PC

Twisted Pair Matrix Switchers can be controlled and setup by computer via TCP/IP or RS-232 interface COM2.

TCP/IP requires Cat.5 twisted pair cable.

Twisted Pair Matrix Switchers can be controlled by Central Control System via RS-232 interface COM1, this interface is also used for software upgrade.

As figure 1.4.

### 1.2.4 Connection with input, output devices

The number of input and output ports is differing, according to the type chosen. Every audio or video device with an AV port can be connected to the Twisted Pair Matrix Switcher. Output ports can be connected to recorder, video or audio monitor, PA, as shown in figure 1.4.

Control Interface:

Control	
COM (RS-232)	9 pin female D connector
COM1	Baudrate: 9600, data: 8 bits, stop: 1 bit, no parity
COM2	Variable baudrate, data: 8 bits, stop: 1 bit, no parity
Interface	9-pin female D connector, 2=TX, 3=RX, 5=GND
Ethernet	RJ-45 female connector, Cat.5 only cross-pair
Ethernet protocol	TCP/IP
Ethernet speed	10M/100M, full-duplex or half-duplex with autodetect
PC control	Matrix switcher

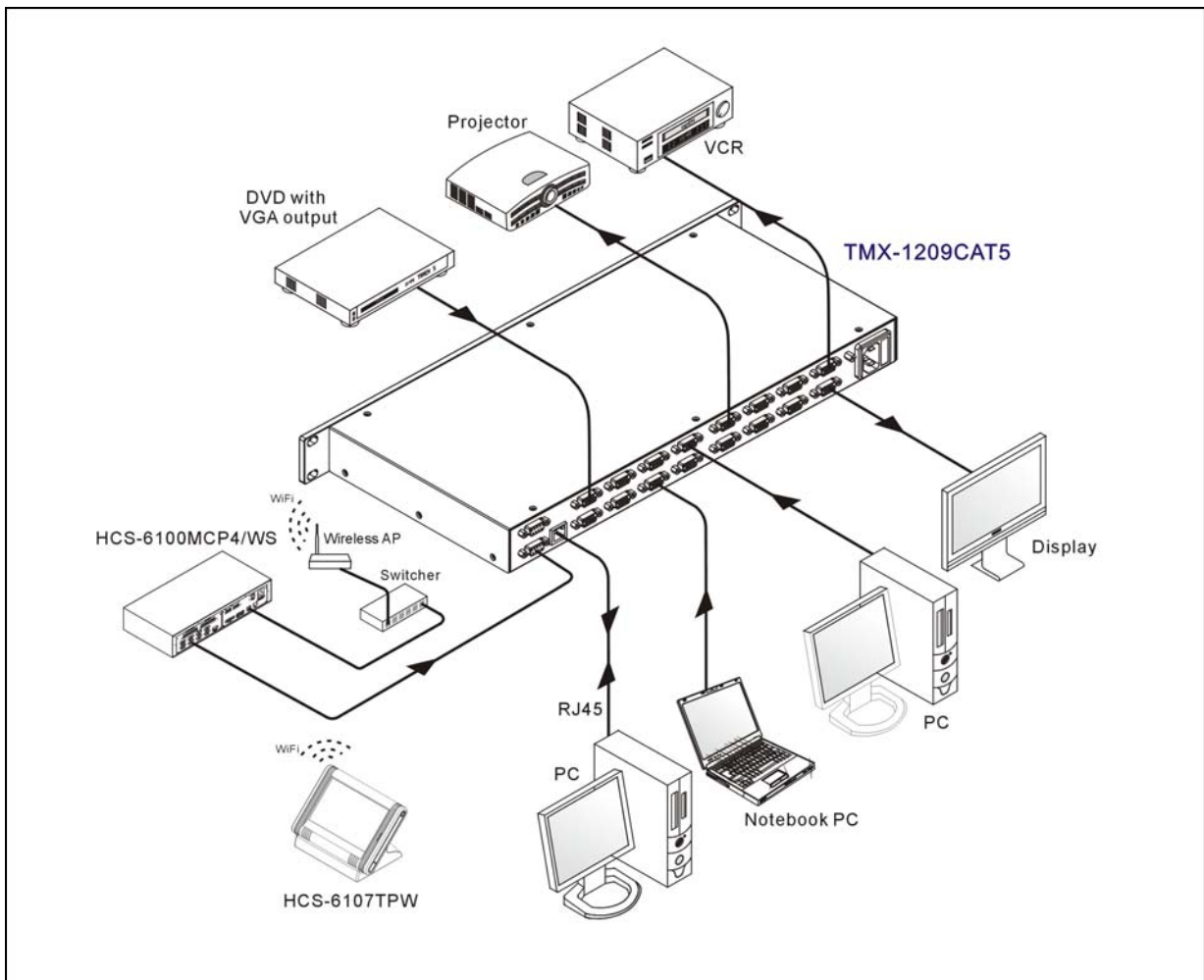


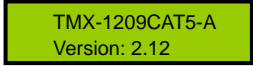
Figure 1.4 Connection example for input and output devices to 12\*9 Twisted Pair Matrix Switcher

## 1.3 Setup and Operation

### 1.3.1 Menu setup

#### 1.3.1.1 Menu setup

TMX-1209CAT5 main interface:



Press "MENU" to enter main menu and press "↔" until "Setting" prompts; Press "MENU" again to enter setup menu, including:

- 1. Ring
- 2. COM2 Baud rate
- 3. Demo Switch Delay
- 4. COM1 protocol
- 5. Sync Switch Delay
- 6. Test button
- 7. PC connect mode
- 8. IP address
- 9. Subnet mask
- 10. Gate way

Press "EXIT" to exit menu.

Press and hold "EXIT" about 4.5 seconds to enter local monitor output menu, including:

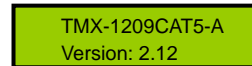
- 11. Gain
- 12. EQ
- 13. Red delay
- 14. Green delay
- 15. Blue delay

Menu 1 to menu 8 are explained explicitly:

#### 1. Ring

Buzzer ring on-off of this unit. If buzzer ring is setup "on", the buzzer will ring when front panel operation, PC software executing switch and receiving command from central control system. The buzzer ring can be setup "off".

- ON: open ;
- OFF: close.



- ↓ 1. Press "MENU" to enter setup menu and press "↔" until "Setting" prompts;



- ↓ 2. Press "MENU" and press "↔" until "Ring" prompts;



- ↓ 3. Press "MENU" to enter setup;



- ↓ 4. Press "↔" to select parameter;



- ↓ 5. Press "MENU" to confirm.



#### Note:

☞ The buzzer will ring when the unit is powered on.

#### 2. COM2 Baud rate

If PC connect mode RS-232 is selected, available COM2 baud rates are: 9600, 14400, 19200, 28800, 38400 and 57600.

#### Note:

☞ If connect mode TCP/IP is selected, the baud rate is fixed to 115200 bit/s and cannot be modified.

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1. Press "MENU" and press "↵" until "Setting" prompts;

Setting

2. Press "MENU" and press "↵" until "COM2 Baudrate" prompts;

COM2 Baudrate:  
14400

3. Press "MENU" to enter setup;

COM2 Baudrate:  
█ 14400

4. Press "↵" to select parameter;

COM2 Baudrate:  
█ 19200

5. Press "MENU" to confirm.

COM2 Baudrate:  
19200

### 3. Demo Switch Delay

The interval range is from 2 seconds to 60 seconds by steps of 2 seconds.

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1. Press "MENU" and press "↵" until "Setting" prompts;

Setting

2. Press "MENU" and press "↵" until "Demo Switch Delay" prompts;

DemoSwitchDelay:  
2 S

3. Press "MENU" to enter setup;

DemoSwitchDelay:  
█ 2 \*S

4. Press "↵" to adjust parameter;

DemoSwitchDelay:  
█ 4 \*S

5. Press "MENU" to confirm.

DemoSwitchDelay:  
4 S

### 4. COM1 protocol

Central control system can be selected from Taiden, Extron or Other, Please add correct protocol according to user request.

TMX-1209CAT5-A  
Version: 2.12

1. Press "MENU" and press "↵" until "Setting" prompts;

Setting

2. Press "MENU" and press "↵" until "COM1 protocol" prompts;

COM1 protocol:  
Taiden

3. Press "MENU" to enter setup;

COM1 protocol:  
█ Taiden

4. Press "↵" to select parameter;

COM1 protocol:  
█ Extron

5. Press "MENU" to confirm.

COM1 protocol:  
Extron

### 5. Sync Switch Delay

This item can't be adjustable.

### 6. Test button

Tested button is working if character changes when button is pressed.

### 7. PC connect mode

Select mode for PC connection:

- TCP/IP
- RS-232

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1. Press "MENU" and press "←/→" until "Setting" prompts;

Setting

2. Press "MENU" and press "←/→" until "PC connect mode" prompts;

PC connect mode  
TCP/IP

3. Press "MENU" to enter setup;

PC connect mode  
■ TCP/IP

4. Press "←/→" to adjust parameter;

PC connect mode  
■ RS232

5. Press "MENU" to confirm.

PC connect mode  
RS232

## 8. IP address

An IP address, Subnet mask and Gateway must be assigned to the matrix if connected to a TCP/IP Ethernet interface.

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1. Press "MENU" and press "←/→" until "Setting" prompts;

Setting

2. Press "MENU" and press "←/→" until "PC connect mode" prompts;

IP address:  
192.168.1 .203

3. Press "MENU" to enter setup;

IP address:  
■ 92.168.1 .203

4. Press "←/→" to adjust parameter; press "meun" to next parameter, and adjust others in file.

IP address:  
194.168.1 .203

5. Press "MENU" to confirm..

IP address:  
194.165.120.203

## 9. Subnet mask

For setup of "Subnet mask" proceed such as described in "IP address".

## 10. Gate way

For setup of "Gate way" proceed such as described in "IP address".

## 11. Gain

The gain range of local monitor output is 0 to 127.

TMX-1209CAT5-A  
Version: 2.12

1. Press and hold "EXIT" about 4.5 seconds and press "←/→" until "Gain" prompts;

Gain  
17

2. Press "MENU" to enter setup;

Gain  
■ 17

3. Press "←/→" to adjust parameter;

Gain  
■ 25

4. Press "MENU" to confirm

Gain  
25

## 12. EQ

The EQ range of local monitor output is 0 to 127.

TMX-1209CAT5-A  
Version: 2.12

1. Press and hold "EXIT" about 4.5 seconds and press "←/→" until "EQ" prompts;

EQ  
17

2. Press "MENU" to enter setup

EQ  
■ 17

3. Press "←/→" to adjust parameter

EQ  
■ 25

4. Press "MENU" to confirm

EQ  
25

### 13. Red delay

The red delay range of local monitor output is 0 nS to 63 nS.

TMX-1209CAT5-A  
Version: 2.12

1. Press and hold "EXIT" about 4.5 seconds and press " $\leftarrow/\rightarrow$ " until "Red delay" prompts

Red delay  
17

2. Press "MENU" to enter setup

Red delay  
█ 17

3. Press " $\leftarrow/\rightarrow$ " to adjust parameter

Red delay  
█ 25

4. Press "MENU" to confirm

Red delay  
25

TMX-1209CAT5-A  
Version: 2.12

1. Press and hold "EXIT" about 4.5 seconds and press " $\leftarrow/\rightarrow$ " until "Blue delay" prompts

Blue delay  
17

2. Press "MENU" to enter setup

Blue delay  
█ 17

3. Press " $\leftarrow/\rightarrow$ " to adjust parameter

Blue delay  
█ 25

4. Press "MENU" to confirm

Blue delay  
25

### 14. Green delay

The green delay range of local monitor output is 0 nS to 63 nS.

TMX-1209CAT5-A  
Version: 2.12

1. Press and hold "EXIT" about 4.5 seconds and press " $\leftarrow/\rightarrow$ " until "Green delay" prompts

Green delay  
17

2. Press "MENU" to enter setup

Green delay  
█ 17

3. Press " $\leftarrow/\rightarrow$ " to adjust parameter

Green delay  
█ 25

4. Press "MENU" to confirm

Green delay  
25

### 15. Blue delay

The blue delay range of local monitor output is 0 nS to 63 nS.

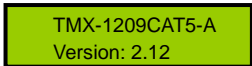
### 1.3.2 Switch operation

To explain menu operation of 12\*9 Twisted Pair Matrix Switcher,

#### Note:

- ☞ If any menu item is edited, except setup menu, a key must be pressed within 15 seconds otherwise the system will return to main menu item automatically and erase the previous channel setup.
- ☞ To return to main menu press any key if currently editing user interface is switch finish interface, display input, output status interface or DEMO interface. To return to main menu if editing other user interface press "EXIT" or "←".

TMX-1209CAT5 main interface:



Press "MENU" to enter switch menu, including:

#### 1. Switch Video

#### 2. Switch through

- \* Switch through one channel or all channels.

#### 3. Close

- \* Close one output or all outputs.

#### 4. Save scene

#### 5. Recall scene

#### 6. Undo

- \* Undo last switch.

#### 7. Demo Switch

- \* Switch one by one.

#### 8. Setting

- \* Setup menu.

#### 9. Status

- \* Request channel state.

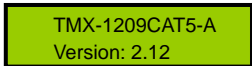
#### 10. Switch Audio

Menu 1 to menu 10 are explained explicitly:

#### 1. Switch Video

Video switch key, switch one input video signal to any or all output channels.

**Example:** Switch Video signal of input channel 1 to output channel 8



- ↓ 1. Press "MENU" to enter menu;



- ↓ 2. Press "MENU" to enter "Switch Video";



- ↓ 3. Press "MENU" to select input channel;
- 4. Press "←/⇒" to adjust input channel as "1";



- ↓ 5. Press "MENU" to select output channel;

- 6. Press "←/⇒" to adjust output channel as "8";



- ↓ 7. Press "MENU" to confirm and press "EXIT" twice.



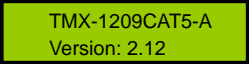
#### Note:

- ☞ If input channel displays "0", output channel is closed.
- ☞ If output channel displays "ALL", input channel is switched to all output channels.

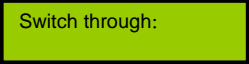
## 2. Switch through

Switch through one input channel or all input channels to corresponding output channel(s).

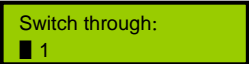
**Example:** Switch through channel 2.



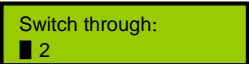
1. Press "MENU" and press "↔" until "Switch through" prompts;




2. Press "MENU" to enter "Switch through";



3. Press "↔" to select channel "2";



4. Press "MENU" to confirm.



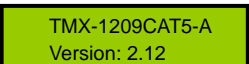
### Note:

Select "All" standing for switch through all channels.


## 3. Close

Close one output channel or all output channels.


**Example:** Close output channel 2.




1. Press "MENU" and press "↔" until "Close" prompts;




2. Press "MENU" to enter "Close" menu;



3. Press "↔" to select channel "2";



4. Press "MENU" to confirm.



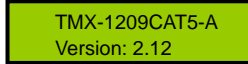
### Note:

Select "ALL" stands for closing all channels.

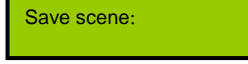
## 4. Save scene

Save current video signal to appointed scene. 10 scenes can be saved at most, each scene has a number, from 0 to 9.

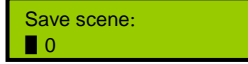
**Example:** Save scene 3



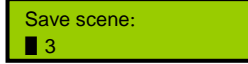
1. Press "MENU" and press "↔" until "Save scene" prompts;



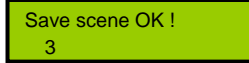
2. Press "MENU" to enter "Save scene";



3. Press "↔" to select scene number "3";



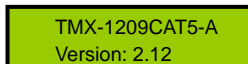
4. Press "MENU" to confirm.



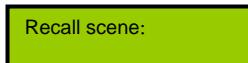
## 5. Recall scene

Recall video signal from selected scene.

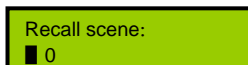
**Example:** Recall scene 3



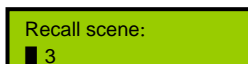
1. Press "MENU", and press "↔" until "Recall scene" prompts;




2. Press "MENU" to enter "Recall scene";



3. Press "↔" select scene number "3";



4. Press "MENU" to confirm.



## 6. Undo

Undo last switch operation.

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1. Press "MENU", and press "←/→" until "Undo" prompts;

Undo

2. Press "MENU" to execute.

Switch OK !

## 7. Demo Switch

Switches one by one all possible combinations from 1 → 1, 1 → 2, ..., 1 → 8, 2 → 1, 2 → 2, ..., 2 → 8, ..., 8 → 1, 8 → 2, ...to 8 → 8. The interval can be setup via setup menu (Refer to section 1.3.1).

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1. Press "MENU" and press "←/→" until "Demo switch" prompts;

Demo switch:

2. Press "MENU" to execute.

Demo switch:

## 8. Setting

Setup menu.

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1. Press "MENU" and press "←/→" until "Setting" prompts;

Setting

2. Press "MENU" to enter setup status. Refer to section 1.3.1 for details.

SyncSwitchDelay:  
0 \*ms

## 9. Status

Request corresponding state of input and output channels.

TMX-0808SDI  
Version: 2.10

1. Press "MENU" and press "←/→" until "Status" prompts;

Status

2. Press "MENU" to request corresponding status;

Video: 3 → :1

3. Press "←/→" to request next status.

Video: 5 → :2

## 10. Switch Audio

Audio switch key, switch one input audio signal to any or all output channels.

**Example:** Switch Audio signal of input channel 1 to output channel 8

TMX-1209CAT5-A  
Version: 2.12

1. Press "MENU" to enter menu;

Switch Audio:

2. Press "MENU" to enter "Switch Audio";

Switch Audio:  
0 —>: 1

3. Press "MENU" to select input channel;
4. Press "←/→" to adjust input channel as "1";

Switch Audio:  
■ 1 —>: 1

5. Press "MENU" to select output channel;
6. Press "←/→" to adjust output channel as "8";

Switch Audio:  
1 —>: ■ 8

7. Press "MENU" to confirm and press "EXIT" twice.

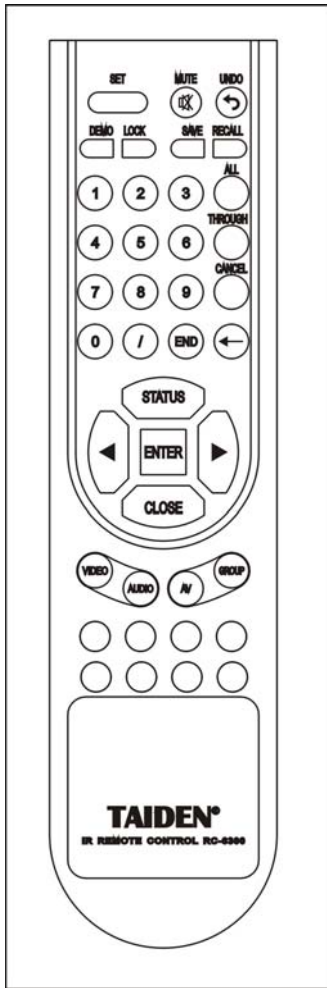
Switch OK !

### Note:

- ☞ If input channel displays "0", output channel is closed.
- ☞ If output channel displays "ALL", input channel is switched to all output channels.



## Chapter 2. IR Remote Control



Users can use remote control to operate matrixes, the function of remote control key is the same as matrix front panel key (Please refer to chapter 1 for detailed instructions).

Please refer to sections of menu operation for detailed operation method of remote control key.

The remote control can be used for all TAIDEN matrix main units with IR receipt function.

## Chapter 3. Communication protocol and control code

This code system is used for controlling and operating TAIDEN professional Matrix Switchers by central control system or user programming software.

Protocol: Baud Rate: 9600; Data: 8 bits; Stop: 1 bit;  
Parity Check Bit: No

Type	Code	Description
System Code	Lock;	Lock keyboard
	Unlock;	Unlock keyboard
	BeepOff;	Beep off
	BeepOn;	Beep on
	TAIDEN;	Select COM1 protocol to be TAIDEN;
	EXTRON;	Select COM1 protocol to be EXTRON;
	OTHER;	Select COM1 protocol to be OTHER;
Operation Code (TAIDEN)	If central control system does not execute switch within 15 s after input channel, TMX main unit cleans up channel automatically.	
	0xd9 0xe1 [x1] [x2]	Video of input channel [x1] switch to output channel [x2]. If input channel [x1] is 0, output channel [x2] will be closed.
	0xd9 0xe2 [x1] [x2]	Audio of input channel[x1] switch to output channel [x2]. If input channel [x1] is 0, the output channel [x2] will be closed.
	0xd9 0xe3 [x1] [x2]	Video and audio of input channel [x1] switch to output channel [x2]. If input channel is 0, the output channel [x2] will be closed.
	0xd9 0xe4 [x1] e9	Video of input channel [x1] switch to all output channels
	0xd9 0xe5 [x1] e9	Audio of input channel [x1] switch to all output channels
	0xd9 0xe6 [x1] e9	Video and audio of input channel [x1] switch to all output channels
	0xd9 0xec 0x01 0x00	Close all output channels
	0xd9 0xeb 0x03 0x00	Go through from all input channels to corresponding output channels
	0xd9 0xed 0x02 0x00	Execute switch
	0xd9 0xe7 0xe7 scene	Save corresponding relation to scene 0,1,2...9
	0xd9 0xe8 0xe8 scene	Recall scene XX
	0xd9 0xe9 0xe9 scene	Clear scene XX
	0xd9 0xc1 0xc1 0x00	Query the matrix type
	0xd9 0xc2 0xc2 0x00	Query the input status of all output channels
	0xd9 0xc4 [x1] 0x00	Query the input status of the output channel [x1]
Operation Code (OTHER)	[x1]All.	Input channel [x1] switch to all output channels
	All#.	Setup all channels one-to-one correspondence: 1->1, 2->2, 3->3...
	All\$.	Close all channels
	[x1]#.	Input channel [x1] switch to output channel [x1]
	[x1]\$.	Close output channel [x1]
	[x1]V[x2].	Video of input channel [x1] switch to output channel [x2]
	[x1]V[x2],[x3],[x4].	Video of input channel [x1] switch to output channel [x2], [x3], [x4]
	[x1]A[x2].	Audio of input channel [x1] switch to output channel [x2]
	[x1]A[x2],[x3],[x4].	Audio of input channel [x1] switch to output channel [x2],[x3],[x4]
	[x1]B[x2].	Video and audio of input channel [x1] switch to output channel [x2]
	[x1]B[x2],[x3],[x4].	Video and audio of input channel [x1] switch to output channel [x2],[x3],[x4]

	Save[X].	Save current status to scene [X]
	Recall[X].	Recall scene X]
	Clear[X].	Clear scene [X], status of all output channel are closed
	Type*.	Query the matrix type
	Status[x1].	Query the input status of the output channel [x1]
	Status.	Query the input status of all output channels
EXTRON;	[X1]*[X2]!	Video and audio of input channel [x1] switch to output channel [x2]
	[X1]*[X2]\$	Audio of input channel [x1] switch to output channel [x2]
	[X1]*[X2]%	Video of input channel [x1] switch to output channel [x2]
	[X1]*[X2]&	Input channel [x1] switch to output channel [x2]

**Note:**

- ☞ [x1], [x2], [x3], [x4] is channel number of input or output; only 1~8 available, otherwise regarded as error.
- ☞ “[“ and ”]” do not send code;
- ☞ End each command by code such as “.”, “,”.

**Command examples:**

**1. System code: TAIDEN; EXTRON; OTHER;**

For example: convert a TAIDEN code system unit to a EXTRON code system unit, run “EXTRON;”, then the unit will only support code ends with “!\$%&”.

**2. [x1]All.**

For example: Input channel 3 switch to all output channels, code is “3All.”.

**3. All#.**

Setup all channels one-to-one correspondence:  
1->1, 2->2, 3->3...8->8.

**4. All\$.**

Close all output channels.

**5. [x]#.**

For example: Input channel 5 switch to output channel 5, code is “5#.”.

**6. [x]\$.**

For example: Close output channel 5, code is “5\$.”.

**7. [x1]V[x2].**

For example: Video of input channel 3 switch to output channel 5, code is “3V5.”. Video of input channel 3 switch to output channel 8, 9, 12, code is “3V8,9,12.”.

**8. [x1]A[x2].**

For example: Audio of input channel 10 switch to output channel 2, code is “10A2.”. Audio of input channel 10 switch to output channel 2, 5, 6, code is “10A2,5,6.”.

**9. [x1]B[x2].**

For example: Video and audio of input channel 1 switch to output channel 2, 3, 5, code is “1B2,3,5.”.

**10. Save[x].**

For example: Save current status to scene 7, code is “Save7.”.

**11. Recall[x].**

For example: Recall scene 5, code is “Recall5.”.

## Chapter 4. Technical data

Spec. \ Type	TMX-1209CAT5
<b>Video</b>	
Gain	0 dB
Crosstalk	-80 dB @ 10 MHz, -55 dB @ 100 MHz, -41 dB @ 500 MHz
Switching speed	100 ns(max.)
<b>Video input (local)</b>	
Signal type	RGBHV, RGBs, RGsB, RsGsBs, component video, S-video and composite video
Connectors	4*15-pin HDF connector
Nominal level	0.7 V p-p for RGB
Min./Max. levels	0.3 V to 1.2 Vp-p
Impedance	75 Ohm
Vertical frequency response	30 Hz to 150 Hz
DC offset	± 20 mV
<b>Video Input (line in)</b>	
Signal type	8 * proprietary analog signal
Connectors	8 * RJ-45 connector
<b>Video output (local)</b>	
Signal type	RGBHV, RGBs, RGsB, RsGsBs, component video, S-video and composite video
Connectors	2*15-pin HDF connectors
Nominal level	0.7 Vp-p for RGB
Impedance	75 Ohm
Return loss	-30 dB @ 5 MHz
DC offset	± 20 mV
<b>Video output (line out)</b>	
Signal type	8 * proprietary analog signal
Connectors	8 * RJ-45 connector
<b>Sync (local input/output)</b>	
Input signal type	RGBHV, RGBs, RGsB, and RsGsBs
Output signal type	follows input
Output level	4.5 V to 5.0 Vp-p
Input impedance	1 kOhm ± 5%
Output impedance	75 Ohm
Max. input voltage	5.0 Vp-p
Max. propagation delay	20 nS

Type Spec.	TMX-1209CAT5
Max. rising/falling time	4 nS
Polarity	Positive or negative (follows input)
<b>Audio</b>	
Gain (local input/output)	Unbalanced output: 0 dB, balanced output: +6 dB
Frequency response	20 Hz to 22 kHz, $\pm 1$ dB
THD + Noise	0.15% @ 1 kHz at normal level
S/N	>70 dB, at maximum output, unweighted
Stereo channel separation	>60dB @ 1 kHz
CMRR	>80 dB @ 20 Hz to 20 kHz
<b>Audio input (local)</b>	
Signal type	4 stereo, balanced/unbalanced
Connectors	4*5-pin 3.81 mm Phoenix
Impedance	>10 kOhm (unbalanced)
Nominal level	+4 dBu ( 1.23 Vms ) , -10 dBV (316 mVrms)
Max. level	+18 dBu (balanced or unbalanced) at 1% THD+ N
<b>Audio output (local)</b>	
Signal type	2 stereo, balanced/unbalanced
Connectors	2*5-pin 3.81 mm Phoenix
Impedance	100 Ohm (balanced), 50 Ohm (unbalanced)
Gain error	$\pm 1$ dB
Max.level	+18 dBu (balanced or unbalanced) at 1% THD + N
<b>Control</b>	
COM (RS-232)	RS-232, 9-pin female D connector
COM1	Baudrate: 9600, data: 8 bits, stop: 1 bits, no parity
COM2	Variable baudrate, data: 8 bits, stop: 1 bit, no parity
Interface	9-pin female D connector, 2=TX, 3=RX, 5=GND
Ethernet	RJ-45 female connector, Cat.5 only cross-pair
Ethernet protocol	TCP/IP
Ethernet speed	10 M/100 M, full-duplex or half-duplex with autodetect
PC control	Matrix switcher
<b>General specs</b>	
Power supply	100 V AC to 240 V AC, 50/60 Hz
Temperature	Operating: 0 °C to +50 °C; storage: -20 °C to +70 °C
Humidity	Storage and operating: 10% to 90%
Dimensions h * w * d (mm)	43*483*208 (1U high, full rack width)
Weight	2.7 kg
Mean time between failures	30,000 houus

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