TAIDEN®

TMX Series Professional Matrix Switchers

Professional Matrix Switchers

TMX-0804HTK 8×4 High Definition Video Tracking Matrix Switcher

Installation and Operation Manual

V 1.2

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 and keep these instructions.

2. Heed all warnings and follow all instructions.

3. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

4. The MAINS plug serving as a disconnection device, should be easy to operate.

5. The apparatus should be connected to the MAINS socket-outlet with protective earth.

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-120 V 60 Hz or AC 220 V-240 V 50 Hz

17. The quantity of connected units in one system should not exceed prescribed quantity. For service, please contact the nearest TAIDEN Service Center.

18. Use ONLY specified connection cable to connect the system equipment.

19. 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.

20. Upon receipt of the product, please fill out the Warranty Card enclosed and post it to TAIDEN Service Center nearby in your region.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

TO REDUCE THE RISK OF 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.

Important Safety Instruction

⚠ 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.

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.

Contents

Installation & User Guide

About this manual

This manual is a comprehensive guide to the installation and operation of **TAIDEN** TMX-0804HTK 8×4 High Definition Video Tracking Matrix Switcher It includes: operation and setup, installation and connection, software and protocol, etc.

The manual is divided into the following chapters:

Chapter 1: High Definition Video Tracking Matrix Switcher

Descriptions in detail of the functions and indications, installation and connection, configuration and operation of TMX-0804HTK 8×4 High Definition Video Tracking Matrix Switcher

Chapter 2: IR Remote Control

Introduction into the operation of IR remote control.

Chapter 3: Software

Comprehensive and detailed user's guide of the application software for matrix switchers.

Chapter 4: Communication protocol and control code

Detailed description of codes and their function.

Chapter 5: Technical data

Mechanical and electrical details of TMX-0804HTK 8×4 High Definition Video Tracking Matrix Switcher.

This manual is applicable to:

TMX-0804HTK   8×4 High Definition Video Tracking Matrix Switcher

Chapter 1. High Definition Video Tracking Matrix Switcher

1.1 Functions and indications

1.1.1 Front panel
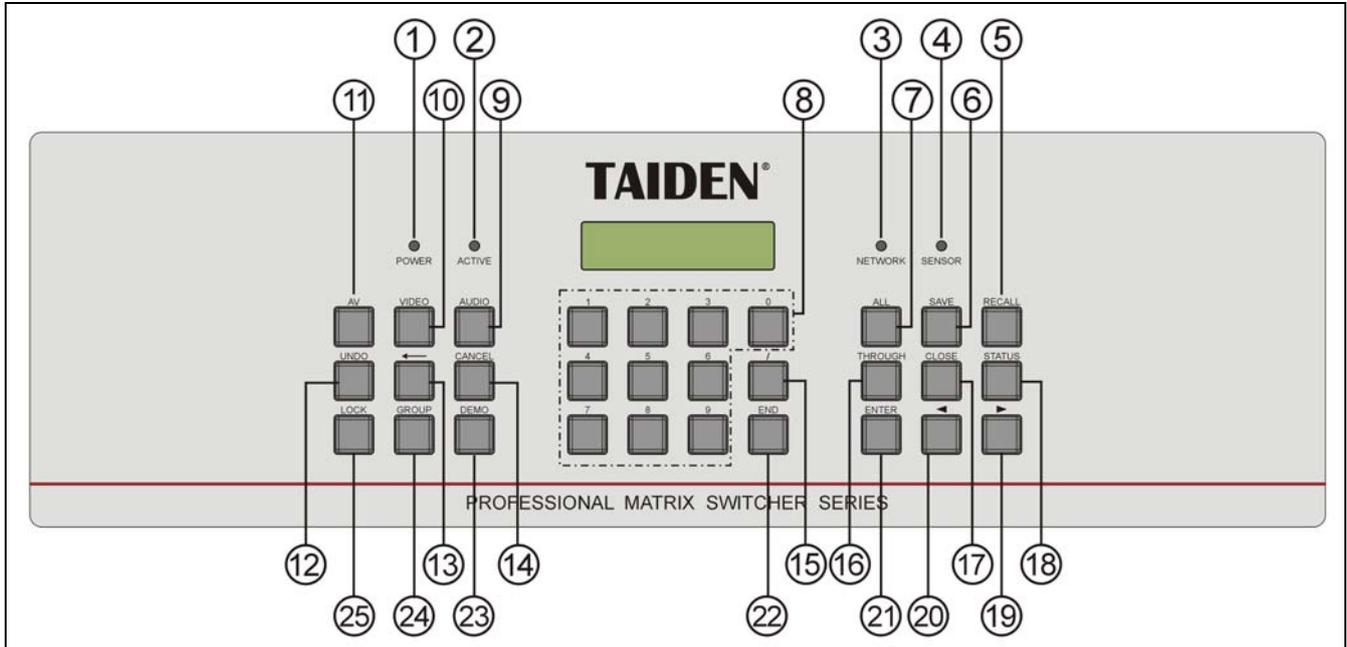
Figure 1.1   Front panel of TMX-0804HTK

Figure 1.1:

1. "POWER" indicator

2. "ACTIVE" indicator

♦ Indicator will be turned on if Matrix Switcher executes switch instructions.

3. "NETWORK" indicator

♦ Indicator flashes if Matrix Switcher is connected with PC software.

4. IR receiving window

♦ Receives the IR signals from remote control; make sure the remote control aims at the window.

5. "RECALL" button

♦ Recall the stored scene.

6. "SAVE" button

♦ Save current channel status as appointed scene.

7. "ALL" button

♦ Switch one input channel to all output channels.

8. "1, 2, 9…0" button

♦ Number keys, used to select input or output channel, save scene number, recall scene number.

9. "AUDIO" button

♦ Switch audio signal separately.

10. "VIDEO" button

♦ Switch video signal separately.

11. "AV" button

♦ Composite audio and video switch key.

12. "UNDO" button

♦ Undo last switch operation.

13. "←" button

♦ Backspace key, delete last input number or command.

14. "CANCEL" button

♦ Back to root directory, when in setup menu, back to previous directory.

15. "/" button

♦ Separator, displayed as "," on LCD. Used to space output channels if more than one channel is operated.

16. "THROUGH" button

♦ Audio or video switch through from input channel to corresponding output channel.

17. "CLOSE" button

♦ Close one or all output channels.

18. "STATUS" button

- ♦ Query channel status.

19. "►" button

- ♦ For right, forward and plus.

20. "◄" button

- ♦ For left, backward and subtract.

21. "ENTER" button

- ♦ Confirm or execute command.

22. "END" button

- ♦ End for a switch command.

23. "DEMO" button

- ♦ In DEMO status, channels are switched one by one.

24. "GROUP" button

- ♦ Maximum 5 groups and maximum 5 channels per group can be configured.

25. "LOCK" button

- ♦ Keyboard lock.

1.1.2 Rear panel
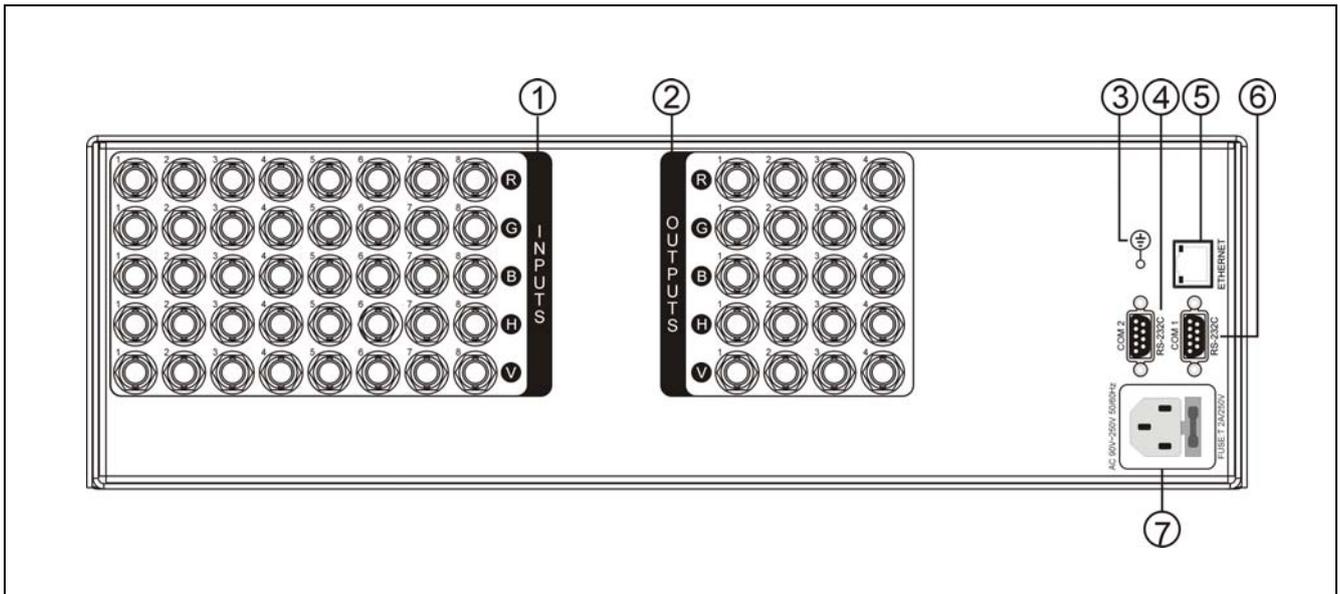
Figure 1.2   Rear panel of TMX-0804HTK

Figure 1.2:

1. Video inputs

2. Video outputs

3. Grounding point

6. RS-232 communication interface COM2

5. RJ45 interface

6. RS-232 communication interface COM1

7. Power cable interface

1.2 Installation and connection

1.2.1 Installation

TMX-0804HTK Matrix Switchers can be fixed in an exactly fitting standard cabinet.

A couple of mounting brackets ① are attached to the product package. First release the screws ② from the lateral sides of the matrix. Bolt on the brackets to the housing by using the screws previously released. Now put the unit into the cabinet, and fix it by screws. As figure 1.3.
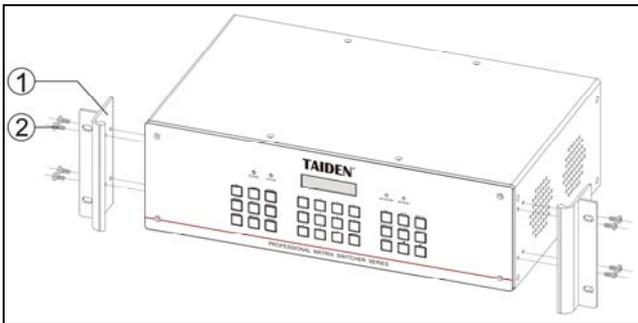

Figure 1.3   Installation

1.2.2 Connection between Matrix Switchers and PC

TMX-0804HTK Matrix Switchers can be controlled and setup by computer via RS-232 interface COM2. And it also can be controlled by Central Control System via RS-232 interface COM1, this interface is also used for software upgrade (Figure 1.4).

1.2.3 Connection with input, output devices

TMX-0804HTK Matrix Switchers support various AV and VGA signal sources. AV signal source equipment should have RGB or YC joints, VGA signal source equipment should have RGB joints. If VGA equipment does not have RGB joints, VGA-RGB converters or drivers provided by TAIDEN can be used.

Please use good quality 3-core RGB cable to connect input and output device.

Input connection example for PC, chosen INPUT = No.1: connect RGB cores 1 to 3 from PC to the corresponding RGB BNC INPUT joints 1 to 3, in each case marked No. 1 on the RGB Matrix Switchers (Figure 1.4).

Output connection example to Projector, chosen OUTPUT= No. 4: connect RGB cores 1 to 3 from Projector, to the corresponding RGB BNC OUTPUT joints 1 to 3, marked No. 4 on the TMX-0804HTK Matrix Switchers (Figure 1.4).

Note:

☞ Take care that both ends of a cable are correctly connected on both sides to the ports bearing the same name e.g. R to R, G to G etc. Otherwise there will be pseudocolors even if there is no signal output.

☞ If connected with camera by RS232 protocol, the matrix switcher and the camera must be common ground.

Control Interface:

| Control	
Video Track Off	
COM (RS-232)	9 pin female D connector
COM1	Baud rate: 9600, data: 8 bits, stop: 1 bit, no parity check bit
COM2	Variable baud rate, data: 8 bits, stop: 1 bit, no parity check bit
Video Track On	
COM (RS-232)	9 pin female D connector
COM1	Baud rate: 19200, To conference main unit TO VIDEO SWITCHER, 1=A(RX+), 4=B(RX-), 5=GND
COM2	-
RJ45	Baud rate: 9600, 1=TX+, 2=TX-, 3=RX+, 6=RX-, RS422/RS485 To doom camera

RJ45 Connector

Pin	Signal	Destination
1	TX+(A)	To SpeedDome RX+(A)
2	TX-(B)	To SpeedDome RX-(B)
3	RX+(A)	From SpeedDome TX+(A) if expected
4		
5		
6	RX-(B)	From SpeedDome TX-(B) if expected
7		
8		

COM1 Male Connector

Pin	Signal
1	RX+
6	
2	
7	
3	
8	
4	RX-
9	
5	GND

Master TAINET Connector
or TO VIDEO SWITCHER Connector

Signal	Pin
NC	1
A	2
B	3
GND	4

TMX-0804HTK

HCS-8300MA or HCS-4100MA

Figure 1.4   Connection example for input and output devices to TMX-0804HTK Matrix Switchers

1.3 Setup and Operation

1.3.1 Menu setup

TMX-0804HTK main interface:

```
TMX-0804HTK
Version: 2.00
```
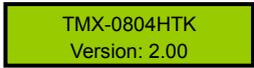
Press "0" for 5 seconds to enter setup menu, including:

1. Ring

2. COM2 Baud rate

3. Demo Switch Delay

4. COM1 protocol

5. Sync Switch Delay

6. Test button

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

7. Input password

8. Video Track

9. Video Track Type

10. Video Track Delay

> **Note:**
> ☞ RJ45 is just working as RS422/RS485 port to control doom camera and have no TCP/IP function.
> ☞ When Video Tracking Off, COM1 port can be connected to central control system and COM2 port can be connected to PC software; Video Track Type menu is not accessible.
> ☞ When Video Tracking On, COM1 port can only be connected to TO VIDEO SWITCHER interface of congress main unit and COM2 port is not accessible; Camera protocol can be selected from Video Track Type menu.
> ☞ The connection type between main unit and PC software is fixed as RS232 and have no other choice.

Menu 1 to menu 10 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.

```
TMX-0804HTK
Version: 2.00
```
⬇ 　1. Press "0" for 5 seconds to enter setup menu and press "◄/►" until "Ring"
```
Ring
OFF
```
⬇ 2. Press "ENTER" to enter setup;
```
Ring
▌ OFF
```
⬇ 3. Press "◄/►" to select parameter;
```
Ring
▌ ON
```
⬇ 4. Press "ENTER" to confirm.
```
Ring
ON
```

2. COM2 Baud rate

When Video Tracking Off, if PC connect mode RS-232 is selected, available COM2 baud rates are: 9600, 14400, 19200, 28800, 38400 and 57600.
COM1 is invariable and fixed to 9600 bit/s.

```
TMX-0804HTK
Version: 2.00
```

1. Press "0" for 5 seconds to enter setup menu and press "◄/►" until "COM2 Baudrate" prompts;

```
COM2 Baudrate:
38400
```

⇩ 2. Press "ENTER" to enter setup;

```
COM2 Baudrate:
▮ 9600
```

⇩ 3. Press "◄/►" to select parameter;

```
COM2 Baudrate:
▮ 14400
```

⇩ 4. Press "ENTER" to confirm.

```
COM2 Baudrate:
14400
```

3. Demo Switch Delay

The interval between two switching operations can range from 2 seconds to 60 seconds by step of 2 s.

```
TMX-0804HTK
Version: 2.00
```

1. Press "0" for 5 seconds to enter setup menu and press "◄/►" until "DemoSwitchDelay" prompts;

```
DemoSwitchDelay:
4      S
```

⇩ 2. Press "ENTER" to enter setup;

```
DemoSwitchDelay:
▮ 4      *S
```

⇩ 3. Press "◄/ ►" to select parameter;

```
DemoSwitchDelay:
▮ 6      *S
```

⇩ 4. Press "ENTER" to confirm.

```
DemoSwitchDelay:
6      S
```

4. COM1 protocol

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

```
TMX-0804HTK
Version: 2.00
```

⇩ 1. Press "0" for 5 seconds to enter setup menu and press "◄/►"until"COM1 protocol" prompts;

```
COM1 protocol:
Taiden
```

⇩ 2. Press "ENTER" to enter setup;

```
COM1 protocol:
▮ Taiden
```

⇩ 3. Press "◄/►" to select parameter;

```
COM1 protocol:
▮ Extron
```

⇩ 4. Press "ENTER" to confirm.

```
COM1 protocol:
Extron
```

5. Sync Switch Delay

When switching from one video input source to another, a brief time delay is required to adjust to sync data of the new source before a new undisturbed RGB signal is sent. Range: 0 to 5000 ms with pace of 50 ms.

```
TMX-0804HTK
Version: 2.00
```

1. Press "0" for 5 seconds to enter setup menu and press "◄/►" until "SyncSwitchDelay" prompts;

```
SyncSwitchDelay:
50      *ms
```

⇩ 2. Press "ENTER" to enter setup;

```
SyncSwitchDelay:
▮ 0550 *ms
```

⇩ 3. Press "◄/►" to adjust parameter;

```
SyncSwitchDelay:
▮ 100   *ms
```

⇩ 4. Press "ENTER" to confirm.

```
SyncSwitchDelay:
100     *ms
```

6. Test button

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

7. Input password

Set unlock password, password must be 5 bits. Original password is 11111.

```
TMX-0804HTK
Version: 2.00
```
⇩
    1. Press "0" for 5 seconds to enter setup menu and press "◄/►"until "Input password" prompts;

```
Input password:
```
⇩ 2. Press "ENTER" to enter setup;

```
Input password:
█
```
⇩ 3. Input password;

```
Input password:
    ****█
```
⇩ 4. Press "ENTER" to confirm.

```
Input password:
```

8. Video Track

Select the function of video track on or off.

```
TMX-0804HTK
Version: 2.00
```
⇩
    1. Press "0" for 5 seconds to enter setup menu and press "◄/►"until "Video Track" prompts;

```
Video Track
OFF
```
⇩ 2. Press "ENTER" to enter setup;

```
Video Track
█ OFF
```
⇩ 3. Press "◄/►" to adjust parameter;

```
Video Track
█ ON
```
⇩ 4. Press "ENTER" to confirm.

```
Video Track
ON
```

Note:

☞ The function of video track on will be enabled after rebooting the matrix switcher.

9. Vidoe Track Type

When Video Track On, camera protocol can be selected from HCS-3316RS-232/ HCS-3316RS-485/ HCS-3313C/ Sony D70/ Sony D100/ Sony BRC-Z300/ Sony BRC300/ Sony BRC700/ Sony HD1/ Pelco D/ Pelco DC/ Pelco P1/ Pelco P2/ Panasonic CS950/ SAMSUNG C6407P. Please select correct protocol according to actual device type.

```
TMX-0804HTK
Version: 2.00
```
⇩
    1. Press "0" for 5 seconds to enter setup menu and press "◄/►"until "Video Track Type" prompts;

```
Video Track Type
PELCO P2
```
⇩ 2. Press "ENTER" to enter setup;

```
Video Track Type
█ PELCO P2
```
⇩ 3. Press "◄/►" to adjust parameter;

```
Video Track Type
█ HCS-3313C
```
⇩ 4. Press "ENTER" to confirm.

```
Video Track Type
HCS-3313C
```

10. Video Track Delay

The interval ranges from 0 second to 8000 seconds by steps of 500 seconds.

```
TMX-0804HTK
Version: 2.00
```
⇩
    1. Press "0" for 5 seconds to enter setup menu and press "◄/►" until "VideoTrackDelay" prompts;

```
VidoTrackDelay:
    4000    ms
```
⇩ 2. Press "ENTER" to enter setup;

```
VidoTrackDelay:
   █ 4000    *ms
```
⇩ 3. Press "◄/ ►" to select parameter;

```
VidoTrackDelay:
   █ 6000    *ms
```
⇩ 4. Press "ENTER" to confirm.

```
VidoTrackDelay:
    6000     ms
```

1.3.2 Switch operation

Note:

☞ The functions of buttons in this section have been introduced in section 1.1; "V" stands for video.

☞ "Input channel" and "output channel" number must be less than matrix type.

☞ 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 "CANCEL" or "←".

☞ If new input source signal is switched, please wait until previous source is switched off. Wait according to <u>Sync switch Delay</u> (refer to section 1.3.1).

1. VIDEO

Switch video signal separately, switch one input video signal to any output channel.

Example: Switch video signal of input channel 7 to all output channels synchronously.

```
TMX-0804HTK
Version: 2.00
```
⇩ 1. Press number key "7";
```
Switch
7
```
⇩ 2. Press "VIDEO";
```
Switch
7  V
```
⇩ 3. Press "ALL" to execute switch.
```
Switch OK!
7  V  ALL
```

Note:

☞ If there are more than one output channels, use "/" key to separate them, and it will be shown as "," on LCD.

2. THROUGH

Video signals switch through from input channel to corresponding output channel.

Example 1: Switch video signals from input channel 1, 2, 3 to corresponding output channel 1, 2, 3 respectively.

```
TMX-0804HTK
Version: 2.00
```
⇩ 1. Press "THROUGH";
```
Switch through
```
⇩ 2. Press "VIDEO";
```
Switch through
V
```
⇩ 3. Press number key "1";
```
Switch through
V 1
```
⇩ 4. Press "/";
```
Switch through
V 1,
```
⇩ 5. Press number key "2";
```
Switch through
V 1, 2
```
⇩ 6. Press "/";
```
Switch through
V 1, 2,
```
⇩ 7. Press number key "3";
```
Switch through
V 1, 2, 3
```
⇩ 8. Press "ENTER" to execute switch.
```
Switch OK!
```

Example 2: Switch video signal from all input channels to all corresponding output channels respectively, i.e. 1→1, 2→2, 3→3, 4→4…

```
TMX-0804HTK
Version: 2.00
```

⇩ 1. Press "THROUGH";

```
Switch through
```

⇩ 2. Press "VIDEO";

```
Switch through
V
```

⇩ 3. Press "ALL" to execute switch.

```
Switch OK!
V   ALL
```

3. CLOSE

Close one output channel or all output channels.

Example: Close video of output channel 4.

```
TMX-0804HTK
Version: 2.00
```

⇩ 1. Press "CLOSE";

```
Close
```

⇩ 2. Press "VIDEO";

```
Close
V
```

⇩ 3. Press number key "4";

```
Close
V   4
```

⇧ 4. Press "ENTER" to execute switch.

```
Switch OK!
```

Note:

☞ If "ALL" is pressed instead of "4", all output channels are closed in this case.

4. UNDO

Undo last completely terminated and validated switch operation, and come back to the status before executing the last switch.

```
TMX-0804HTK
Version: 2.00
```

⇧ Press "UNDO" to execute.

```
Switch OK!
```

5. GROUP

Group key: to compose not more than 5 groups, each group with not more than 5 output channels.

Example 1: take output channel 1, 2, 3 as group 1.

```
TMX-0804HTK
Version: 2.00
```

⇧ 1. Press "GROUP";

```
Group Define
```

⇧ 2. Press number key "1";

```
Group Define 1:
```

⇧ 3. Press number key "1";

```
Group Define 1:
1
```

⇧ 4. Press "/";

```
Group Define 1:
1,
```

⇩ 5. Press number key "2";

```
Group Define 1:
1，2
```

⇧ 6. Press "/";

```
Group Define 1:
1，2,
```

⇩ 7. Press number key "3";

```
Group Define 1:
1，2，3
```

⇧ 8. Press "ENTER" to confirm.

```
TMX-0804HTK
Version: 2.00
```

Example 2: switch video signal of input channel 2 to all output channels of group 1.

```
TMX-0804HTK
Version: 2.00
```
⇩ 1. Press number key "2";
```
Switch
2
```
⇩ 2. Press "VIDEO";
```
Switch
2   V
```
⇩ 3. Press "GROUP";
```
Switch
2   V Group
```
⇩ 4. Press number key "1";
```
Switch
2   V Group 1
```
⇩ 5. Press "ENTER" to confirm.
```
Switch OK!
2   V Group 1
```

6. SAVE

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 current input and output channel status in scene 1

```
TMX-0804HTK
Version: 2.00
```
⇩ 1. Press "SAVE";
```
Save scene:
```
⇩ 2. Press number key "1" to execute.
```
Save scene: 1
```
⇩
```
Save scene OK!
```

7. RECALL

Recall AV signal from selected scene.

Example: Recall scene 3 and execute it.

```
TMX-0804HTK
Version: 2.00
```
⇩ 1. Press "RECALL";
```
Recall scene:
```
⇩ 2. Press number key "3" to execute.
```
Recall scene: 3
```
⇩
```
Switch OK!
```

8. LOCK

Keyboard lock: if "LOCK" is hold for 3 seconds, keyboard will be locked. Thereafter password is needed to unlock keyboard. Ethernet and RS-232 control are not locked. Original password is: 11111.

```
TMX-0804HTK
Version: 2.00
```
⇩ 1. Hold "LOCK" for 3 seconds, keyboard will be locked, Then password is needed to unlock keyboard;
```
Enter password:
■
```
⇩ 2. Input password;
```
Enter password:
 ****■
```
⇩ 3. Press "ENTER" to confirm.
```
Switch OK!
```

9. END

End for a switch command.

Example: Switch video signal of input channel 3 to output channel 4, and switch video signal of input channel 2 to output channel 1 synchronously.

```
TMX-0804HTK
Version: 2.00
```
⏬ 1. Press number key "3";
```
Switch
3
```
⏬ 2. Press "VIDEO";
```
Switch
3   V
```
⏬ 3. Press number key "4";
```
Switch
3   V 4
```
⏬ 4. Press "END";
```
Switch
```
⏬ 5. Press number key "2";
```
Switch
2
```
⏬ 6. Press "VIDEO";
```
Switch
2   V
```
⏬ 7. Press number key "1";
```
Switch
2   V 1
```
⏬ 8. Press "ENTER" to confirm.
```
Switch OK!
```

10. DEMO

Switches one by one all possible combinations from 1→1, 1→2, …, 1→4, 2→1, 2→2, …, 2→4, …, 8→1, 8→2, …to 8→4. The interval can be setup via setup menu (Refer to section 1.3.1).

```
TMX-0804HTK
Version: 2.00
```
⏬ Press "DEMO" key, switch circularly.
```
Demo switch:
1    ---> : 1
```

11. STATUS

Query channel status, used to query corresponding state of input and output channels.

Example: Query channel 8 status.

```
TMX-0804HTK
Version: 2.00
```
⏬ 1. Press number key "8";
```
Switch
8
```
⏬ 2. Press "STATUS" to execute.
```
Video: 8    ---> :4
```

Note:
- ☞ Pressing "STATUS" key permanently will display all channel status one by one.
- ☞ Pressing "◄/►" key permanently will display previous/next channel status one by one.

Chapter 2. IR Remote Control
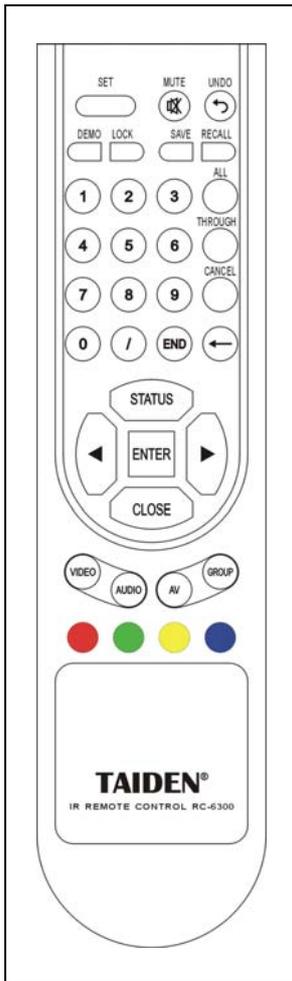
1. Basic function

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.

2. Camera function

For the matrix with and has opened the video tracking function, users can use remote control to operate the cameras which connected to the matrix. The functions of camera operate as below:

1) Camera control

a. press the yellow button to enter the menu:

Camera Control
0

b. select a camera ID (1 to 8 buttons);

c. use the following buttons to adjust the camera;

Button	Function	Button	Function	Button	Function
◄	Left	STATUS	Up	Green	Magnify
►	Right	CLOSE	Down	Red	Lessen

d. press the "CANCEL" button to exit.

2) Camera scan

a. press the blue button to enter the menu:

Camera Scan
0

b. select a camera ID (1 to 8 buttons);

c. use the following buttons to control the direction of the camera;

Button	Function	Button	Function
1	Frame scan (between preset 30 and 31)	2	Auto cruise
3	scan 300°	4	scan 180°

d. press the "CANCEL" button to exit.

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

Chapter 3. Software

This chapter is a comprehensive and detailed user's guide of the application software of Matrix Switchers. It consists of several sectors such as:

- Installation and Running;
- Operation: Through All, Close All, Scene Manage, Switch, All, Undo;
- Sub module: Connect Mode, Channel Check, User Group, Input signal, Parameter, System Status.

3.1 Installation and Running

3.1.1 Running Environment

- Windows2000/XP/Vista
- Memory: 256M or higher
- Cross-pair (TCP/IP communication)
- COM port (COM communication)

3.1.2 Installation

- CD content:
  Matrix-switch matrix control system software.
- Installation guide:
  Double click and run "Install.exe" on CD.

3.1.3 Software Running

Once installation is completed, a shortcut icon named "Matrix switch" will appear on Windows desktop. Double click it to run application, and the primary window of matrix switch software shows as figure 3.1.
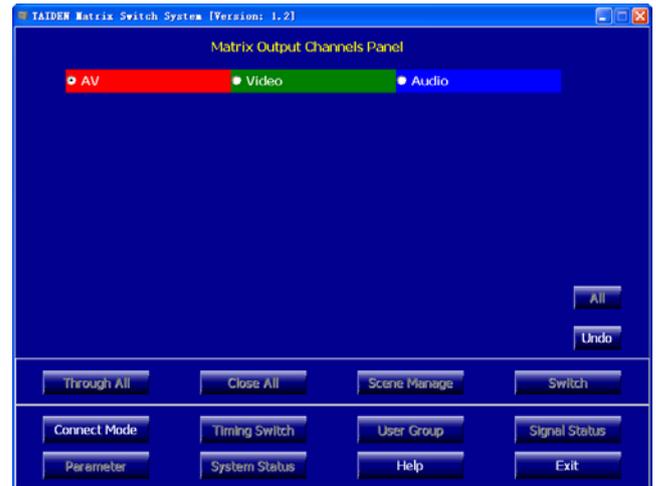
Figure 3.1   Primary window of Matrix Switchers

- Operation: Through All, Close All, Scene Manage, Switch, All, Undo.
- Sub modules: Connect Mode, Timing Switch, User Group, Signal Status, Parameter, System Status.

3.2 Connect Mode

Connect mode includes TCP/IP Connection and COM Connection.

3.2.1 TCP/IP Connection

Connect computer and Matrix Switcher via Ethernet, as figure 3.2:
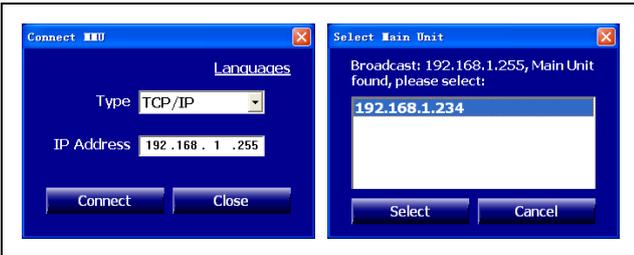
Figure 3.2   TCP/IP connection

■ **Languages:**

   Click "Languages", and choose proper language in the pop-up dialog box.

■ **Connect Type:**

   Select TCP/IP.

■ **IP Address:**

   Input IP address of Matrix Switchers.

■ **Connect:**

   Connection mode of Matrix Switcher must be setup to TCP/IP by front panel operation before connection, and IP address of Matrix Switcher should be manually setup before connection.

   If IP address of Matrix Switcher is unknown, you should look for IP address via broadcast by setting broadcast IP address as 255.255.255.255 (or just setting the last three-digit as 255). Click "Connect" and all available Matrix Switcher(s) IP addresses will be displayed. Select an IP address and click "Connect". If connection succeeded, a tick will be displayed at the right side of the IP address; if connection failed, a dialog "Connection failed" will be prompted. When connection succeeded, the button "Connect" will change to "Disconnect". Click it to disconnect.

3.2.2 COM Connection

Connect computer and Matrix Switcher via RS-232, as figure 3.3:
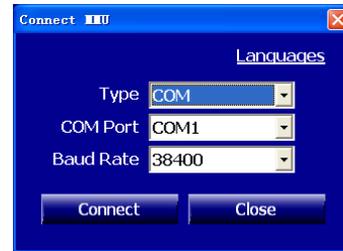
Figure 3.3   COM connection mode

■ **Languages:**

   Click "Languages", and choose proper language in the pop-up dialog box.

■ **Connect Type:**

   Select COM.

■ **COM Port:**

   Select COM1.

■ **Baud Rate:**

   Default baud rate is 38400.

■ **Connect:**

   Connection mode of Matrix Switcher must be setup to COM by front panel operation before connection. Click "Connect". If connection succeeded, a tick will be displayed at the right side of the COM port; if connection failed, a dialog "Connection failed" will be prompted. When connection succeeded, the button "Connect" will change to "Disconnect". Click it to disconnect.

3.3 Primary Window Operation

TAIDEN matrixes switch software can support many Matrix Switcher types including 04*01, 8*8, 16*16, 32*32 and so on. Except Mixed Switcher, the software interface of all Matrix Switchers is the same. This manual takes 8*8 RGB Matrix Switcher and 04*01 Mixed Switcher as example to explain.

■ **TMX-0808RGB-A software interface**

After Matrix Switcher is connected, Matrix Switcher type of 0808RGB-A will be displayed, as figure 3.4:
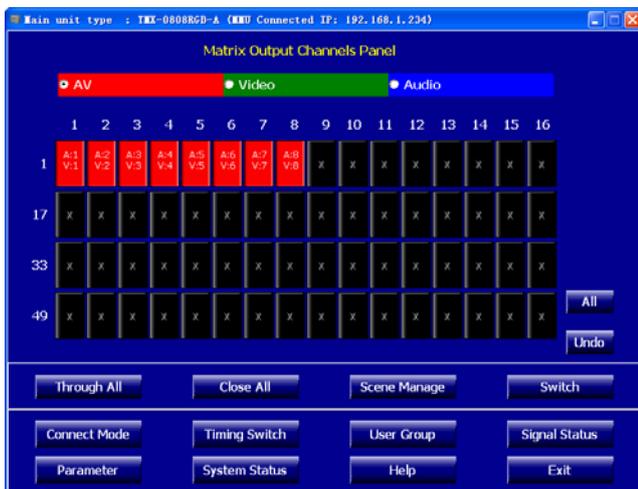
Figure 3.4   Primary window (TMX-0808RGB-A)

The primary window lists 64 AV output channels, the blank quadrate button stands for current enabled output channels, the quadrate with a mark "X" stands for current unusable output channels.

For output types, red stands for AV signal, green stands for video signal, blue stands for audio signal.

■ **Output Type**

Operation to select output channel type.

■ **Through All**

Execute switch from input channel 1 to output channel 1, from input channel 2 to output channel 2, and so on.

■ **Close All:**

Close all output channels.

■ **Scene Management:**

Refer to section 3.3.2 for details.

■ **Switch**

Change Matrix Switcher audio and video status when audio and video channel are already setup. Input and output channel setup refers to section 3.3.1 for details.

■ **All**

Switch from one selected input channel to all output channels. Click button "All", and select an input channel from prompt input channel list, and click "OK" to execute switching.

■ **Undo**

Undo last completely terminated and validated switch operation, and come back to the status before executing the last switch.

■ **TMX-0401MA software interface**

If connected to Matrix Switcher, the type of Matrix Switcher "TMX-0401MA" will be displayed on title panel, as the following figure:
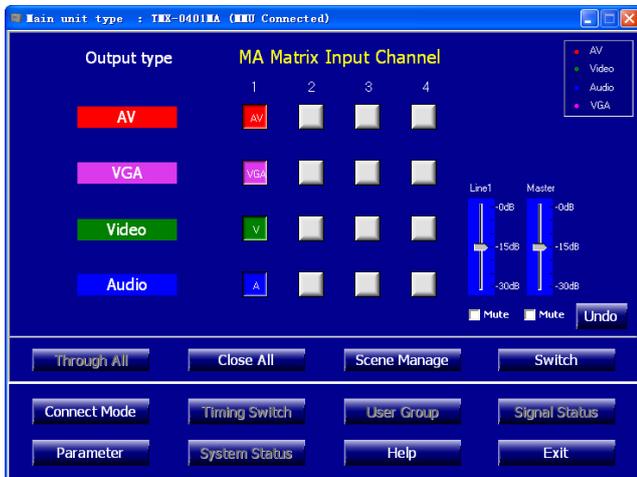
Figure 3.5　Primary window (TMX-0401MA)

In this interface, four input channels of AV, VGA, video and audio are displayed, and only one output channel is present.

‧ Four AV input channels are listed in the first row; AV signals are presented as "Red";

‧ Four VGA input channels are listed in the second row; VGA signals are presented as "Pink";

‧ Four video input channels are listed in the third row; Video signals are presented as "Green";

‧ Four audio input channels are listed in the fourth row; Audio signals are presented as "Blue".

■ **Close All:** Close all output channels.

■ **Volume control:** Adjust main unit volume.

■ **Switch:**

Execute switch for all input and output channels, refer to section 3.3.1.

■ **Scene:** Refer to section 3.3.2.

■ **Undo**

Undo last switching operation and restore the input and output status before switching.

3.3.1 Channel Setup

■ **TMX-0808RGB-A channel setup**

Setup one input channel to one output channel. As figure 3.6:
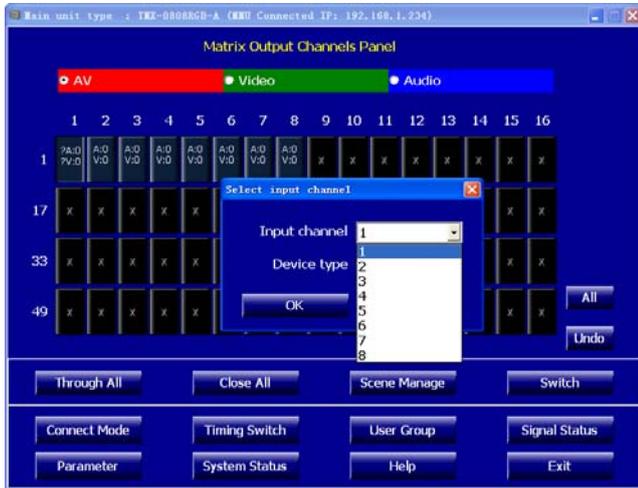
Figure 3.6   Channel setup

We will introduce an instance that switches AV signal from input channel 1 to output channel 1:

1. Choose output type: "AV";
2. Click output channel 1. Then select input channel 1 from pop-up dialog. The output channel 1 button on the display will turn to "red"(red for AV, green for video, blue for audio) (and display "?A:1/?V:1");
3. Select device type (None/PC/TV/DVD/HDMI), and click "OK";
4. Click "Switch" and click "Yes" in pop-up dialog to execute switch. "A:1/V:1" will be shown on the output channel button if successfully switched.

Note:

☞ Input channel "0" stands for no input. For example, "A:0/V:1" stands for current output channel has video signal from input channel 1 and no audio signal.

☞ "V" means video switch successful, "A" means audio switch successful.

☞ If user changes the audio/video status of the input channels/output channels and does not execute switching, the original audio/video status of the input channels/output channels will be invisible. Just right click on the selected channel and click "Refresh" to get its original status.

■ **TMX-0401MA channel setup**

➢ Select one AV input channel, and click "Switch" to switch video and audio of selected input channel.

➢ Select a) one VGA, b) one video and c) one audio input channel and click "Switch" to switch selected a) VGA, b) video and c) audio to VGA, video and audio output.

➢ Click on pressed down button and make it popped up to close current input channel.

Example: Switch VGA input channel 3, video input channel 2 and audio input channel 4 to output channel

a) Click VGA input channel 3 button, it will turn to pink;
b) Click video input channel 2 button, it will turn to green;
c) Click audio input channel 4 button, it will turn to blue;
d) Click "Switch". If switching was successful, term "VGA" will be displayed on VGA input channel 3 button, letter "V" will be displayed on video input channel 2 button and letter "A" will be displayed on audio input channel 4 button.

Note:

☞ TMX-0401MA connection to PC only by RS-232;

☞ If user changes the audio/video status of the input/output channels and does not execute switching, the original audio/video status of the input/output channels will be invisible. Just right click on the selected channel and click "Refresh" to get its original status.

3.3.2 Scene Management
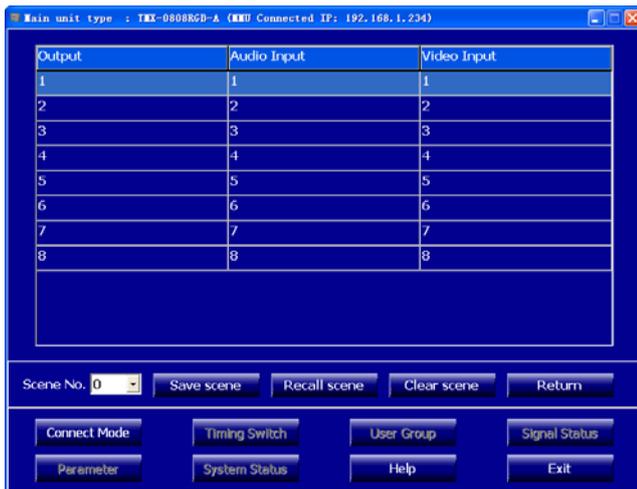
Figure 3.7   Scene management

- **Scene Number:**

  The Matrix Switcher can save 10 scenes. Each scene has a number and saves a mapping of input channels and output channels. When a scene number has been selected in the dialog box, the corresponding saved mapping of input channels and output channels will be shown. As shown in figure 3.7 for scene number 0: audio output channel 1 corresponds to audio input channel 1, video output channel 1 corresponds to video input channel 1 and so on.

- **Save Scene:**

  Select a scene number and click "Save Scene" button, the mapping of current input channels and output channels will be saved in the selected scene and original mapping will be overwritten.

- **Recall Scene:**

  Select a scene number and click "Recall Scene" button, the mapping of input channels and output channels in current scene will be recalled.

- **Clear Scene:**

  Select a scene number and click "Clear Scene" button, the mapping of input channels and output channels in current scene will be cleared.

- **Exit:** Exit scene management.

3.4 Timing Switch

Timing switch includes custom switch , auto switch and input to all.

3.4.1 Custom switch

User can define switching type and input channels and corresponding output channels.
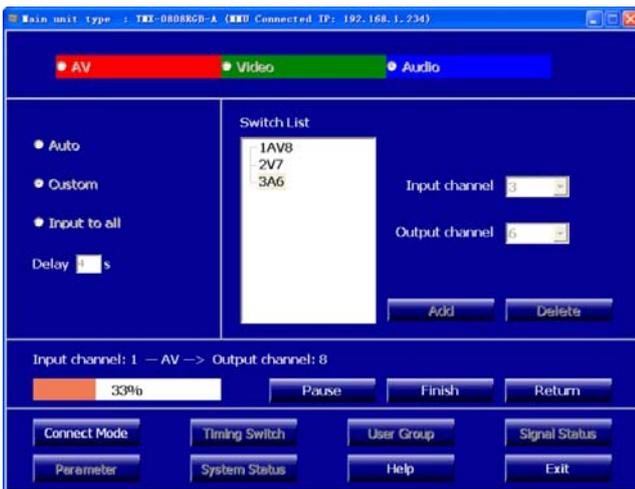
Figure 3.8　User-defined switch

■ **Type:**

Select type of channel signal: audio, video or AV.

■ **Delay:**

Interval between one channel switching completed and the next channel ready to start. For DVI and HDMI, minimum delay is 5 seconds; for other Matrix Switchers, minimum delay is 4 seconds.

■ **Add:**

Add one or more pairs to left side list. Each pair is consisting of one input channel and one output channel (example of a pair: input channel 1 and output channel 8 above, selected type AV)

■ **Delete:**

Delete one or more pairs from left side list.

■ **Start/Pause/Continue:**

Start/Pause/Continue switching pair by pair according to the input channels and output channels in the switching list.

■ **Finish:**

Finish current switching.

■ **Drag and drop:**

Drag and drop an input/output pair to adjust its position.

■ **Sort:**

Right click on switch list, and switch list can be sorted by input/output channel number in ascending or descending order.

3.4.2 Auto switch

Give a range of input channels and output channels, it will automatically switch pair by pair from the first to the last.

Figure 3.9　Auto switch

3.4.3 Input to all

Switch the signal of the selected input channels to all output channels one by one.

Figure 3.10　Input to all

■ **Type:**

Select type of channel signal: audio, video or AV.

■ **Delay:**

Interval between one channel switching completed and the next channel switching ready to start. For DVI and HDMI, minimum delay is 5 seconds; for other Matrix Switchers, minimum delay is 4 seconds.

■ **Start/Pause/Continue:**

Start/Pause/Continue switching.

■ **Finish:**

Finish current switching.

Example: Auto checking audio and video signal from input channel 1 to input channel 3, and from output channel 1 to output channel 5.

‧ Select "Checking type" as "AV";
‧ Select "Auto";
‧ Select "Input channel from" 1 to 3;
‧ Select "output channel from" 1 to 5;
‧ Setup "delay" as 4 s;
‧ Click "start" to start checking.

We can judge checking status by observing switching status of screen. In the period of checking, user can pause or stop checking at any moment.

3.5 User Group

User group module is designed for users to switch one or more input channels to one or more output channels in different modes. As figure 3.11:
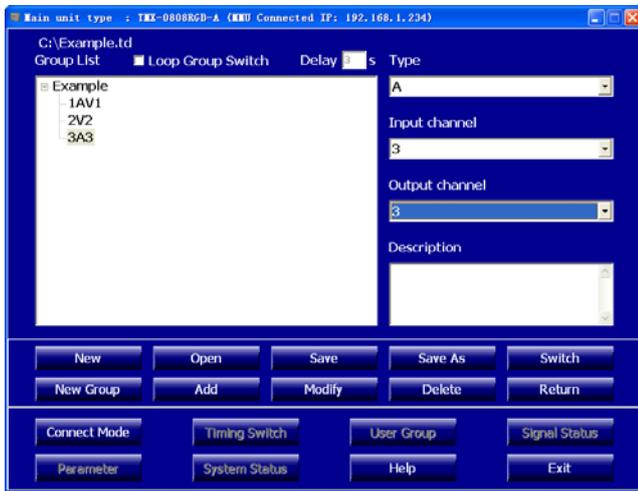
Figure 3.11   User group

As shown in this figure, current user group contains such information: audio and video signal from input channel 1 to output channel 1; video signal from input channel 2 to output channel 2; audio signal from input channel 3 to output channel 3. Click "Switch" to execute corresponding switching.

■ **Type:**

Including three types: "AV", "V" and "A".

■ **Input Channel:**

One group code includes more than one input channels.

■ **Output Channel:**

One group code can have only one output channel.

■ **Drag and drop:**

Drag and drop a user group to move backward or forward; or drag and drop an input/output pair to adjust its position in the same user group.

■ **Sort:**

Right click on an input/output pair in one group, the input/output pairs in this group can be sorted by input/output channel number in ascending or descending order.

■ **Loop group switch**:

Repeatly switch from on group to the other, until "Stop switch" pressed.

■ **Delay:**

When loop group switch, delay between one group and next group. For DVI and HDMI, minimum delay is 5 seconds; for other Matrix Switchers, minimum delay is 4 seconds.

Key operation as below:

• **New:** create a new file.
• **Open:** Open an existing file of switch code.
• **Save:** Save user group code to a file. As shown in figure 3.11, the file is saved as "C:\Example.td".
• **Save as:** save user group to hard disk or other storage device.
• **New Group:** create a new group.
• **Add:** add a switch command to left side list.
• **Delete:** Delete a selected user group code or a user group.
• **Modify:** select a switch command from left side list, and change switch mode, input channel or output channel, and click "Modify" to save. You can also modify the group name by right click on the group name.
• **Switch/Stop Switch**: send all switch command from left side list to Matrix Switcher and execute switching. Click "Stop Switch" to stop.

Note:
☞   File format "td" is defined by **TAIDEN**.

3.6 Signal status

Signal status of all channels will be displayed according to current Matrix Switcher type (except HCS-0401MA Mixed Switcher).

■ For RGB and VGA Matrix Switchers, horizontal synchronizing signal of input channel will be displayed.
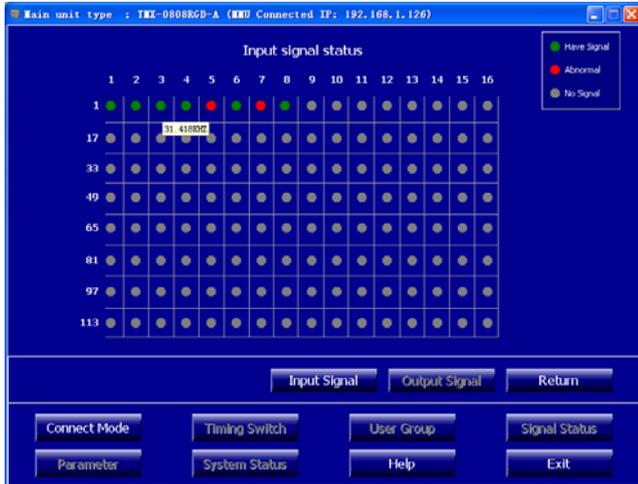
Figure 3.12   Signal status (RGB, VGA Matrix Switchers)

"Gray" indicates that video signal is not available; "Green" indicates that video signal is available; "Red" indicates that video signal is abnormal. It will display corresponding video horizontal synchronization signal frequency when the mouse is moved to a green dot.

■ For DVI Matrix Switcher, input signal and output load will be displayed.
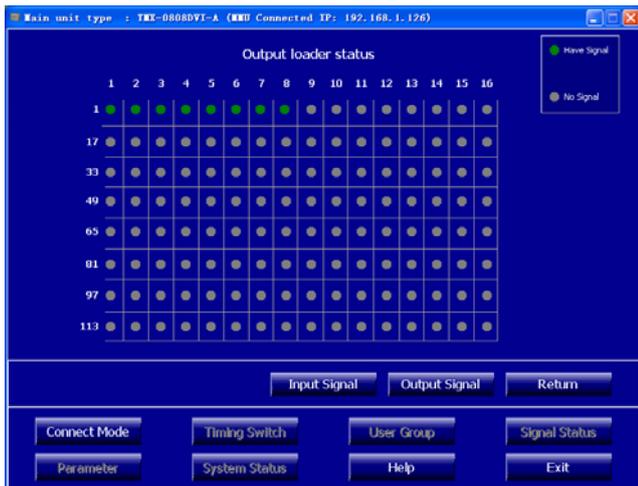
Figure 3.13   Signal status (DVI Matrix Switcher)

"Gray" indicates that video signal is not available; "Green" indicates that video signal is available; "Red" indicates that video signal is abnormal (DVI or HDMI matrix do not have this status). In figure 3.13, current connected output channels are channel 1 to 8.

3.7 Parameter

Setup Matrix Switcher parameters, as figure 3.14:

Figure 3.14   Parameter

■ **Whether have ring while switch**

Ring or not when Matrix Switcher receives switch code.

■ **Syn. Switch Delay**

Interval between switching.

■ **Password**

Set password. Original password is 11111.

■ **Save and Send to MMU**:

Save parameters and send to Matrix Switcher.

> **Note:**
> ☞ Synchronous switch delay is valid only for RGB and VGA signal matrixs.

3.8 System Status

Show current Matrix Switcher status, as figure 3.15:
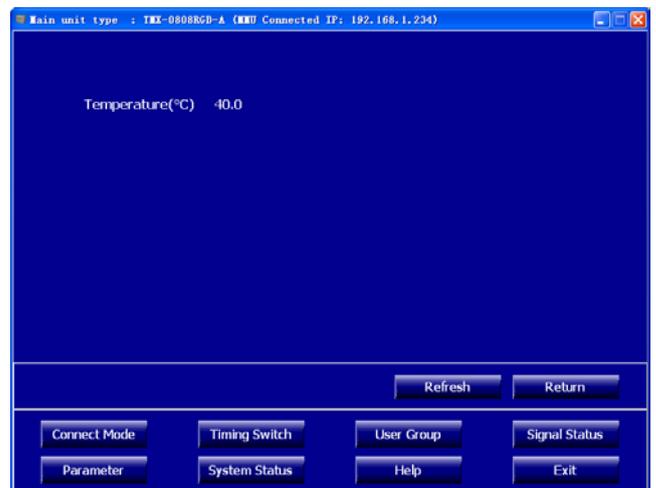
Figure 3.15   System status

> **Note:**
> ☞ This function is valid only for TCP/IP connection.

Chapter 4. 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
	Bell Off;	Bell off
	Bell On;	Bell 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 [x] 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
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

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 1~8/16/24/32/64 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 5. Technical data

Type Spec.	TMX-0804HTK
Video	
Gain	0 dB
Bandwidth	450 MHz (-3 dB), fully loaded 0 ~ 10 MHz: ≤±0.1 dB 0 ~ 100 MHz: ≤±0.8 dB
Crosstalk of channel	-53 dB @ 10 MHz，-45dB @ 30 MHz，-37 dB @ 100 MHz
Crosstalk of luma and chroma	<-80 dB @1 kHz, fully loaded
Differential phase error	Max. 0.05 Degrees, @ RL=150 Ohm
Differential gain error	Max. 0.05%, @ RL=150 Ohm
Typical propagation delay	5 ns @ 2 Vp-p, RL=150 Ω
Typical switching time	25 ns
Signal type	RGBHV, RGBs, RGsB, RsGsBs, HDTV, Component Video, S-Video and Composite Video
Video input	
Interface	8 X 5 BNC Connectors
Min./Max. level	Analog Signal: 0.5 V ~ 2.0 Vp-p (no bias)
Normal input level	RGB: 0.7 Vp-p Y Signal of Component Video, S-Video and Composite Video: 1.0 Vp-p R-Y/B-Y Signal of Component Video and C Signal of S-Video: 0.3 Vp-p
Impedance	75 Ω
Return loss	-30 dB @ 5 MHz
Max. DC offset	1.5 V
Video output	
Interface	4 X 5 BNC Connectors
Normal output level	RGB: 0.7 Vp-p Y Signal of Component Video, S-Video and Composite Video: 1.0 Vp-p R-Y/B-Y Signal of Component Video and C Signal of S-Video: 0.3 Vp-p
Min./Max. level	Analog Signal: 0 V ~ 2.0 Vp-p (related to input)
Impedance	75 Ω
Return loss	-30 dB @ 5 MHz
DC bias	±5 mV @ no bias at input
Switching type	RGB synchronization

Spec. \ Type	TMX-0804HTK
Sync.	
Input level	1.1 V ~ 5.0 Vp-p, 4.0 Vp-p,normal
Output level	AGC to TTL: 4.5 V ~ 5.0 Vp-p
Input impedance	510 Ω
Output impedance	75 Ω
Max. input level	5.0 Vp-p
Max. propagation delay	20 ns
Control	
Video Track Off	
COM (RS-232)	9 pin female D connector
COM1	Baud rate: 9600, data: 8 bits, stop: 1 bit, no parity check bit
COM2	Variable baud rate, data: 8 bits, stop: 1 bit, no parity check bit
Video Track On	
COM (RS-232)	9 pin female D connector
COM1	Baud rate: 19200, To conference main unit TO VIDEO SWITCHER; 1=A(RX+), 4=B(RX-), 5=GND
COM2	-
RJ45	Baud rate: 9600; 1=TX+, 2=TX-, 3=RX+, 6=RX-, RS422/RS485 To doom camera
General spec.	
Power supply	100 V AC ~ 240 V AC，50/60 Hz
Temperature	Operating: 0 °C to + 50 °C; storage: -20 °C to + 70 °C
Humidity	Storage and Operating:10%-90%
Dimensions w × d × h (mm)	478×310×132 (3U high)
Weight	5.1 kg
Mean time between failures	30,000 hours