TESmert TESmart

User Manual

16x16 HDMI Matrix

4K IR

HMA1616A20

To Enjoy Smart

HMA1616A20

English

English

Preface

It's our great honor that y ou have chosen the HDMI Matrix pr oduced by our compan y, Tesla Elec Technology Co.,Ltd. In this user manual, you will learn how to operate and use this product. Please read this user manual comprehensively before use. If you have any questions, comments or suggestions, please contact us via the following email:

support@tesmart.com.

Copyright Notice

The user manual, compiled by Tesla Elec Technology Co.,Ltd, shall not be duplicated or translated by any person or organizations without written permission. This user manual shall not be used for commodity transaction in any form or by any means (electronically, mechanicall y, photocop ying or recording, etc.) be used for any business practices or profitable activities. The ownership of the trade names and brand names adopted in this user manual belongs to their companies.

Address of Manufacture

Tesla Elec Technology Co.,Ltd
2F, Building C, Xingzhisheng Industrial P ark, No.12,
Xiawei Industrial Zone , Zhangkengjing Road,
Guanlan Street,
Longhua District, Shenzhen City , Guangdong
Province, China

Contents

1. Safety Tips and Warnings

Tips: Please read the safety tips and warnings for HDMI Matrix comprehensively before use. Use this produce in accordance with its instructions, safety tips and warnings to prevent unnecessary damage to the product and potential dangers to users.

⚠ Keep the product away from water.

⚠ Clean the product with dry cloth.

⚠ Use the product in accor dance with its instructions and do not block its v ents.

⚠ Keep the product away from ignition   sources, such as heat sinks, heat accumulators,   stovepipe and other heat pr oduction settings (including audio amplifiers).

⚠ Do not touch the product and the power cord with wet hands so as to lower the risk of electric shock and damage to the pr oduct. Do not let the pr oduct get wet or become damp .

⚠ Unplug the power supply of this product in thunderstorm   days or when it has been not used for a long time.

⚠ Do not expose this product and its battery to open fire or overheating   environment. Dispose the waste battery in accor dance with instructions.

⚠ Users shall not remove and repair the pr oduct without authorization.

2. Battery Description
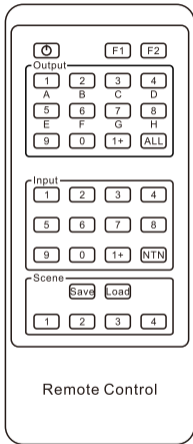
Remote Control

Tips: By default, the remote control is not equipped with batteries, due to the safety requirements of some express companies. Install CR2025 cell before use.

Caution: Improper disposal of the lithium battery may cause an explosion. Do not throw the battery into fire. Keep the battery away from children. Dispose the waste battery in accordance with local r egulations.

3. Warranty Information

We warrant this product as free of defects in material and workmanship for a period of one (1) year from the date of shipment. If during the period of warranty this product proves defective under normal use, we will repair or replace this product, provided that this product has not been subjected to mechanical, electrical, or other abuse or modifications. If it fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for six (6) months from the day of reshipment to the buyer.

4. Preface

Dear Users,

HDMI Matrix can greatly facilitate your management of audio and video devices. If you have multiple sources and display devices like game consoles, streaming boxes, projectors and monitors, our HDMI Matrix can help you match your devices at will. You can choose which output device to display which input device you want, and you can also display one input device on multiple output devices at the same time, eliminating the troublesome of unplugging cables and switching devices, and greatly simplifying the device management.

You can switch input ports with front panel buttons, IR signals, LAN port and RS232 port.

Tips: If you need to control more devices or conduct more complex and professional switching,   you can also choose other products of our company. For more details,   please visit our official   website: www.tesmart.com.

5. Features

- All the HDMI outputs can share same input or select standalone input
- Support resolution up to 3840x2160@ 30Hz
- HDMI 1.4 compliant
- HDCP 1.4 compliant
- Support PCM, Dolby AC3, DTS 5.1 and DSD audio format
- Matrix status could be memorized after power down, automaticall y restore previous matrix status after next power on
- Smart EDID management, mak e it compatible with most displa y devices
- Support 8 configurable user preset connections
- Easy to control matrix via IR receiver, front panel k ey and PC (via RS232 port or LAN port)

6. Packing List

- 1 * 16x16 HDMI Matrix
- 1 * IR Remote Control
- 1 * IR Extension Cable
- 1 * DC 24V Power Adapter
- 2 * Rack-ears
- 1 * 3 Pins Connector (For RS232)
- 1 * User Manual

Tips: After receipt of the product, please check the packing list carefully to make sure that no components have been lost and no damage to the product has been caused during transportation. If you have any problems, please contact us at any time.

7. Panel Description
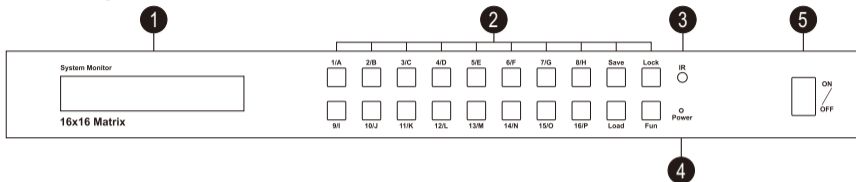
ID	Name	Description
1	LCD display	Display current status and function settings.
2	Keypad	Press to control the Matrix. Please refer to Chapter 9.1 for the detail.
3	IR receiver	Receive IR remote signal.
4	Power status indicator	The LED will be lit (red) if power is on.
5	Power switch	Turn on or turn off power supply.
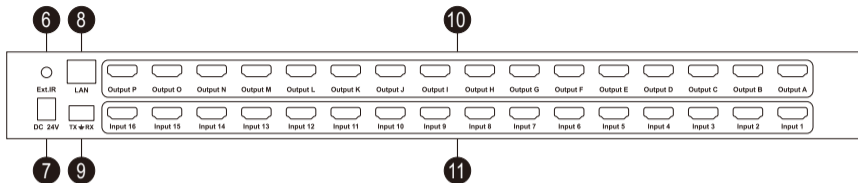
ID	Name	Description
6	IR extension in	Connect IR extension cable to this port to receive IR signal even the Matrix is installed in a rack.
7	DC 24V	DC 24V power suppl y.
8	LAN port	Connect to control termination to u se TCP/IP commands to control the Matrix.
9	RS232 port	Connect to control termination to use RS232 commands to control the Matrix.
10	HDMI output ports	Connect to HDMI display devices.
11	HDMI input ports	Connect to HDMI source devices.

8. Connection Description

8.1 Connection Diagram
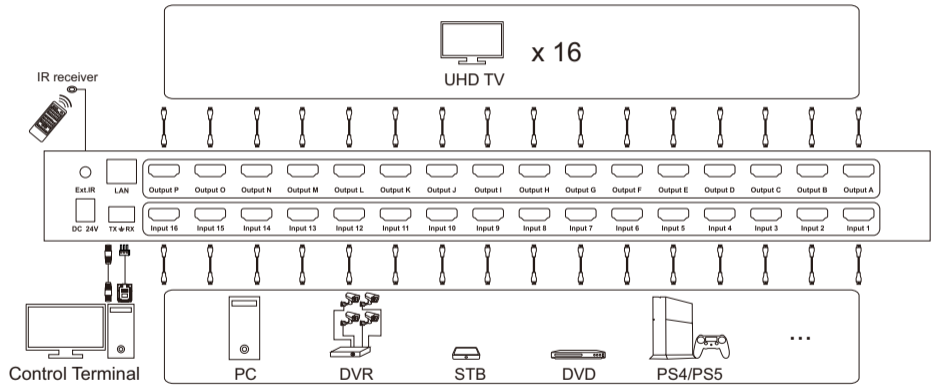
Tips: 1. Please refer to Chapter 9.3 for the detail about LAN port and RS232 port.

8.2 Connection　Steps

1. Connect 16 input devices to the HDMI input ports above each "Input" logo of the Matrix using 16 HDMI cables.

2. Connect 16 display devices to the HDMI output ports above each "Output" logo of the Matrix using 16 HDMI cables.

3. Connect the power　cable to the HDMI Matrix's DC 24V port and plug　it into a power socket.
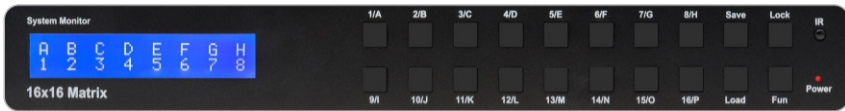
5. By now, the connection   has been completed.   Turn on the power supply and the HDMI Matrix will begin to work.

Tips: 1. Please refer to Chapter 9 for detailed inf   ormation about how to use the HDMI Matrix.
       2. By default, the HDMI cables   are not include d in the package.

9. Operation Method

9.1 Front Panel Button Switching Method

When you use the front panel button or IR remote control to control the Matrix, the LCD screen will inquiry your target action, then execute the command according to your operation. On the main menu as shown above, the letters stand for output ports, the numbers stand for input ports.

1/A~16/P buttons:
1. Press once according to the letter to choose the corresponding output port , then press again according to the number to choose the desired input port.
2. If you press the other setting buttons, press the corresponding number button according to LCD prompt to choose the desired option.

Save

Save button:
Press [Save] button then press any one of [1/A~8/H] button according to LCD prompt to save current routing status to user preset memory 1~8.

Load

Load button:
Press [Load] button then press any one of [1/A~8/H] button according to LCD prompt to load routing status from user preset memory 1~8 and apply to current routing.

Lock

Lock button:
Press [Lock] button to lock or unlock the keypad. If the keypad was locked, all the operations using the keypad or IR remote control would not take effect. Press it again to unlock the keypad when it is locked.

Fun

Function settings button:
1. 1 to all switch: Press [Fun] button once to select desired input to be displayed on all outputs. Press any one of [1/A~16/P] button according to the number to confirm according to LCD prompt.
2. Mirror connection: After pressing [Fun] button twice, the routing status will be changed to Input 1-Output A, Input 2-Output B, Input 3-Output C, and so on. Press [Lock] button to confirm.

FUN

3. Beep state setting: Press [FUN] button three times to turn off/on the buzzer. Press any one of [1/A~2/B] button to confirm according to LCD prompt.
4. LCD screen timeout setting: Press [Fun] button four times to set the LCD screen time out. Press any one of [1/A~3/C] button to confirm according to LCD prompt.
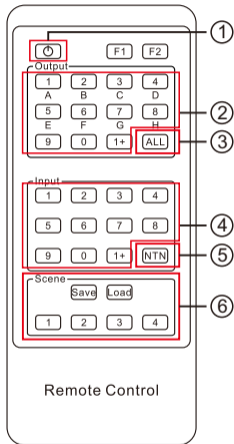5. Air fan state setting: Press[Fun] button five times to turn off/on the air fan. Press any one of [1/A~2/B] button to confirm according to LCD prompt.
6. IP address query: Press [Fun] button six times to query current IP address.

Tips: The LCD screen will display the current routing state on loop about every 10 seconds.

9.2 IR Remote Control

Remote Control

Lock the keypad:

Press the key ① to lock or unlock the keypad. If the keypad was locked, all the operations using the keypad or IR remote control would not take effect. Press it again to unlock the keypad when it is locked.

1 to 1 switch:
Step 1: Press any key in ② to select the output port.
Step 2: Press any key in ④ to select the source which you want to be displayed on selected output.

1 to all switch:
Step 1: Press the key ③ to select all the output ports.
Step 2: Press any key in ④ to select the source which you want to be displayed on all display devices.

Tips: If you need to press 10~16 on the remote control, please press the button '1+' first, then press '0'~'6'. Both input and output also follow this pattern.

Remote Control
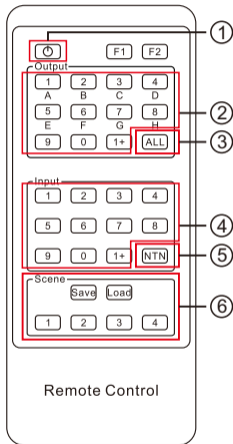
Switch to mirr ored connection:

Press the key ⑤, then the routing status will be changed to Input 1 - Output A, Input 2 - Output B, Input 3 - Output C,   and so on.

Preset routing f or scenes:

Save preset:

Step 1: Press the key Save in ⑥.

Step 2: Press any number key in ⑥ to save current routing status to user preset memory 1~4.

Load preset:

Step 1: Press the Load key in ⑥.

Step 2: Press any number key in ⑥ to load routing status fr   om user preset memory 1~4 and appl   y to current routing.

Tips: 1. Unspecified buttons at abo   ve are non-functional.
      2. Preset routing for scenes function on the remote control only has 4 storage.

9.3 RS232 and LAN Port Control

A. Connect RS232 port
Follow the diagram on the right to connect the standard 9 pin RS232 port to the 3 pins connector which is included in package, then plug the connector to the ' TX ⇌ RX' port of the Matrix.

B. Connect LAN port
Follow the diagram on the right to connect the LAN port to local area network router or directly to PC with Cat5e/6 UTP/ FTP cable.

Control Terminal

Cat 5e/6 Cable

RS232

DCD RXD TXD DTR GND

Female RS232 connector pin assignment

DSR RTS CTS RI

C. Communication protocol

RS232 port configuration:
Baud rate: 9600 bps
Stop bit: 1 bit
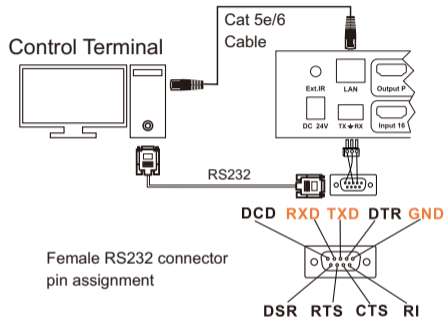Data lenth: 8 bits
Parity bit: None

LAN port default configuration:
IP address: 192.168.1.10
Port: 5000
Gate way: 192.168.1.1
Mask address: 255.255.255.0

The commends ar e are the following f orm:

Index	Commend strings	Parameter description	Remark	Direction
1	MT00SW0000NT		Mirrored output 1→1, 2→2, 3→3…	PC→ Matrix
2	MT00SWXX00NT	XX: input por t number（01~16）	1 input to all outputs	PC→ Matrix
3	MT00SWXXYYNT	XX: input por t number（01~16）YY: output por t number（01~16）	Connect input XX to output YY	PC→ Matrix
4	MT00RD0000NT		Request Matrix return current connection status.	PC→ Matrix
5	MT00SV000XNT	X: preset scene number（1~8）	Save current routing status to preset scene number X	PC→ Matrix
6	MT00RD010XNT	X: preset scene number（1~8）	Load status from preset scene number X and apply.	PC→ Matrix

Based on the above commends, we provide a controller on the Windows OS. You can visit our official website to download it: www .tesmart.com

You can also develop dedicated controllers for each platform by referring to the control protocol above.

D. Matrix Contr oller Connection steps:
RS232 port usage
Step 1: Use RS232 cable connect PC to the
HDMI Matrix.
Step 2: Running the HDMI Matrix Contr oller.
Select page 'General' and click
'Serial contr ol'.
Step 3: Select the serial communication por t
number which is connected to the
HDMI Matrix.
Step 4: Click 'Connect' to connect to the
HDMI Matrix. Then wait until the r ed
indicator beside the button turns
green.
Step 5: Select page 'Matrix Contr ol' , and
click the button to Contr ol the Matrix.
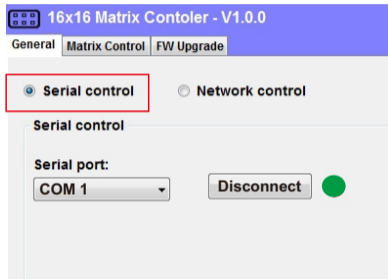
（RS232 serial port
connection successful)

LAN port usage

Step 1: Use Network cable connect PC to the Matrix. Please mak   e sure the PC and the
          Matrix both o n the same network   segment.

Step 2: Set the IP address of the network adapter on the PC which is running this softw   are,
          make sure the IP address is between 192.168.1.2~192.168.1.254 except for
          192.168.1.10. Please follow the pictur e on the next page to set.
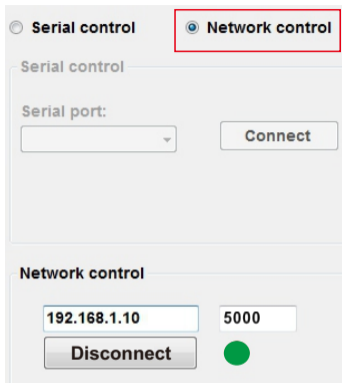
Step 3: Running the Matrix Contr oller. Select page 'General' and click 'Network contr   ol'.

Step 4: Click button   'Connect' in network contr   ol section, then w ait until the r ed indicator
          beside the button turns gr   een.

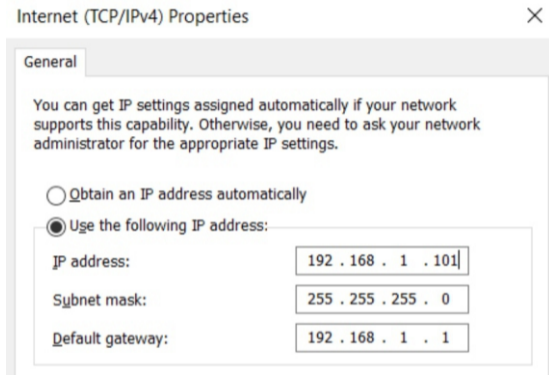Step 5: After connecting,   Select page 'Matrix Contr   ol' , and click buttons to Contr   ol the
          Matrix.

Tips: 1. The default IP address is 192.168.1.10. The default port number is 5000.
         2. If the connection   fails, please   check if the Cat cable   is connected   to the PC, the Matrix is
            powered on and the IP addr   ess setting of the PC is corr ect.

○ **Serial control**	◉ **Network control**

Serial control

Serial port:

[_____ ▼]   [**Connect**]

Network control

[192.168.1.10]   [5000]

[**Disconnect**]   🟢

（LAN port connection successful)

Internet (TCP/IPv4) Properties   ✕

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

◉ Use the following IP address:

IP address: [192 . 168 . 1 . 101]

Subnet mask: [255 . 255 . 255 . 0]
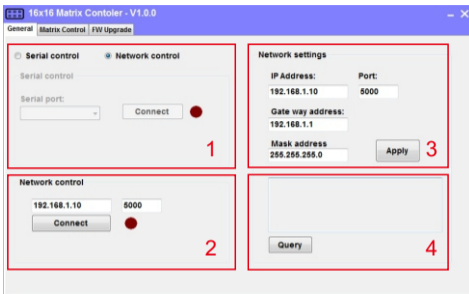
Default gateway: [192 . 168 . 1 . 1]

（IP address configuration)

E. Matrix Contr oller Page Description

Page 'General' :
This page is used to set the parameters to use RS232 commends   and   the   LAN port   to   connect   matrix.   Also   you   can change IP address of the Matrix with the block 3.

1-Serial connect
2-Network connect
3-Matrix's LAN port settings
4-Query current IP configuration

Page 'Matrix Contr ol' :

This page is used for switching   and simple   system setup. You can conveniently match input and output devices accor   ding to your needs.

Select output por t

Current routing state

Select input por t

1-Matrix control panel

2-System settings

Tips: Input 10~16 are denoted b   y A~G in this controller.

System Settings:
1) Save: Click 'Save' button then an y one of 1-8 button to sa ve current routing status to
user preset memory 1~8.
   Return: Click 'Load' button then an y one of 1-8 button to load r outing status fr om user
preset memory 1-8 and appl y to current routing.
2) Mute buzzer: Click to turn o ffthe buzzer , the buzzer on the Matrix will not beep when
you press any button.
   Unmute buzzer: Click to turn on the buzzer , the buzzer on the Matrix will beep when y ou
press any button.

Configuration

Save	1	2	3	4	Mute buzzer
Load	5	6	7	8	Unmute buzzer
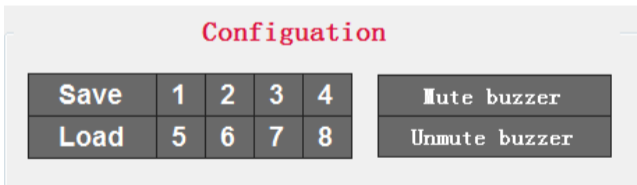
TESmert TESmart

To Enjoy Smart

HMA1616A20