DXP H1010

User Manual

Content

Thank you for choosing our product!

This User Manual is designed to show you how to use this video processor quickly and make use of all the features. Please read all directions and instructions carefully before using this product.

Declarations

FCC/Warranty

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference.

Guarantee and Compensation

RGBlink provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. On receipt, the purchaser must immediately inspect all delivered goods for damage incurred during transport, as well as for material and manufacturing faults. RGBlink must be informed immediately in writing of any complains.

The period of guarantee begins on the date of transfer of risks, in the case of special systems and software on the date of commissioning, at latest 30 days after the transfer of risks. In the event of justified notice of compliant, RGBlink can repair the fault or provide a replacement at its own discretion within an appropriate period. If this measure proves to be impossible or unsuccessful, the purchaser can demand a reduction in the purchase price or cancellation of the contract. All other claims, in particular those relating to compensation for direct or indirect damage, and also damage attributed to the operation of software as well as to other service provided by RGBlink, being a component of the system or independent service, will be deemed invalid provided the damage is not proven to be attributed to the absence of properties guaranteed in writing or due to the intent or gross negligence or part of RGBlink.

If the purchaser or a third party carries out modifications or repairs on goods delivered by RGBlink, or if the goods are handled incorrectly, in particular if the systems are commissioned operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not included in the guarantee coverage are system failures which are attributed to programs or special electronic circuitry provided by the purchaser, e.g. interfaces. Normal wear as well as normal maintenance are not subject to the guarantee provided by RGBlink either.

The environmental conditions as well as the servicing and maintenance regulations specified in this manual must be complied with by the customer.

Operators Safety Summary

The general safety information in this summary is for operating personnel.

Do Not Remove Covers or Panels

There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

Power Source

This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

Grounding the Product

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Use the Proper Power Cord

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

Use the Proper Fuse

To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

Do Not Operate in Explosive Atmospheres

To avoid explosion, do not operate this product in an explosive atmosphere.

Installation Safety Summary

Safety Precautions

For all DXP H1010 processor installation procedures, please observe the following important safety and handling rules to avoid damage to yourself and the equipment.
To protect users from electric shock, ensure that the chassis connects to earth via the ground wire provided in the AC power Cord.
The AC Socket-outlet should be installed near the equipment and be easily accessible.

Unpacking and Inspection

Before opening DXP H1010 processor shipping box, inspect it for damage. If you find any damage, notify the shipping carrier immediately for all claims adjustments. As you open the box, compare its contents against the packing slip. If you find any shortages, contact your sales representative.

Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

Site Preparation

The environment in which you install your DXP H1010 should be clean, properly lit, free from static, and have adequate power, ventilation, and space for all components.

Chapter 1 Your Product

1.1 Product Overview

DXP H1010 is a true 4K HDMI Matrix Switcher which allows to route any of 4 HDMI sources to any 4 HDMI displays! The **10x10 HDMI Matrix switch** is a complete HDMI routing solution for True 4K HDMI systems. It supports resolution up to **4K 60Hz @ 4:4:4** and effortless control through Ethernet control, Android App Control, IR remote control, RS-232 and the front panel.
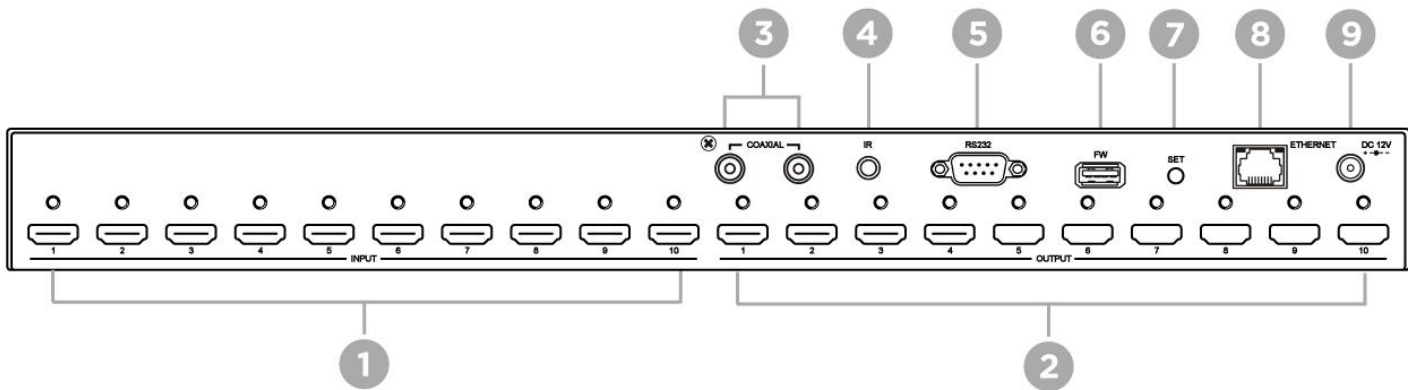

Key Feature

- Connects up to 10 HDMI sources to 10 HDMI display monitors

- HDMI 2.0 with 3D, HDCP 2.2 & DVI1.1 Compliant

- Ultra-high-definition video up to 4K 60Hz @ 4:4:4 18Gbps (6Gbps per color)

- Support HDR10, Dolby Vision, HLG

- Supports up to, Dolby TrueHD, Dolby ATMOS, DTS-HD MA, DTS:X, LPCM 7.1 @ 192KHz

- Supports ARC (Audio Return Channel) function

- Multiple control methods: Front panel buttons/ IR remote control/ WebGUI Control/ iOS/Android App Control and RS232 Control

- Built-in OLED screen & LED button at front panel provides quick view of all port connection

- Rack mountable(1U design)

- S/PDIF coaxial audio outputs allow audio to be de-embedded from HDMI outputs

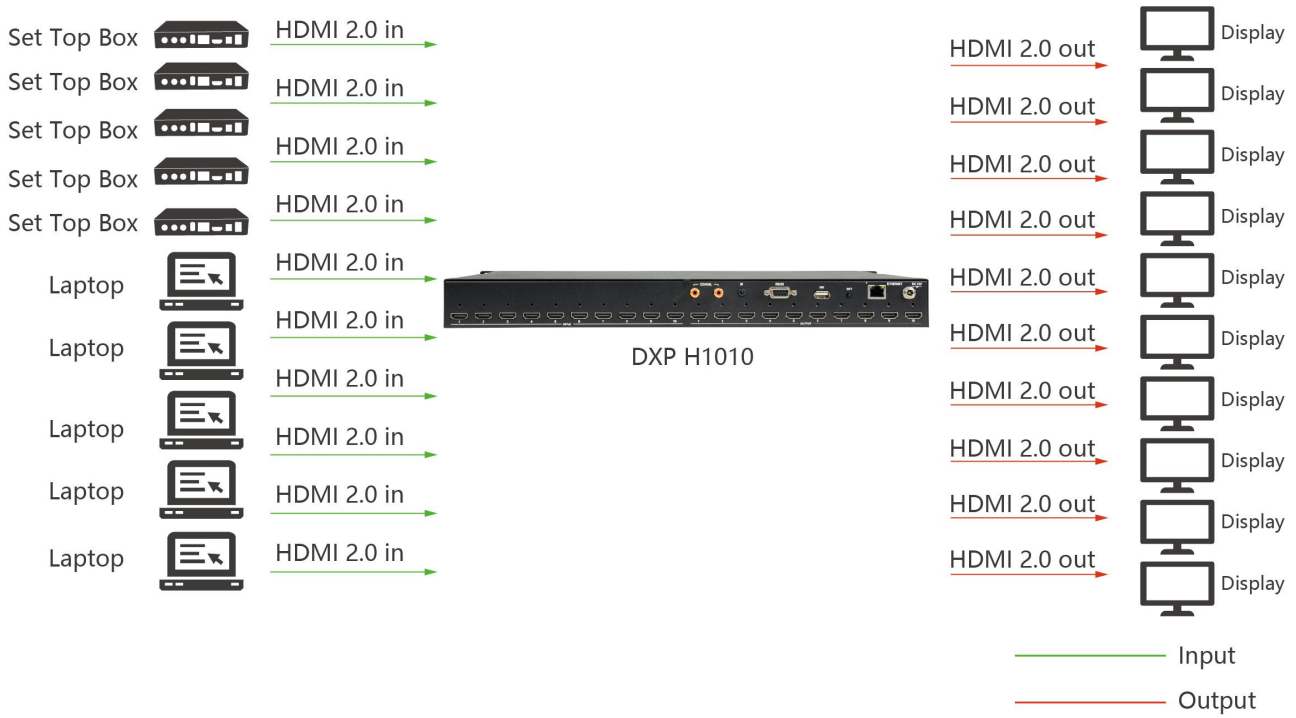- Support HDMI cable lock on each HDMI input/output port

1.2 Front Panel
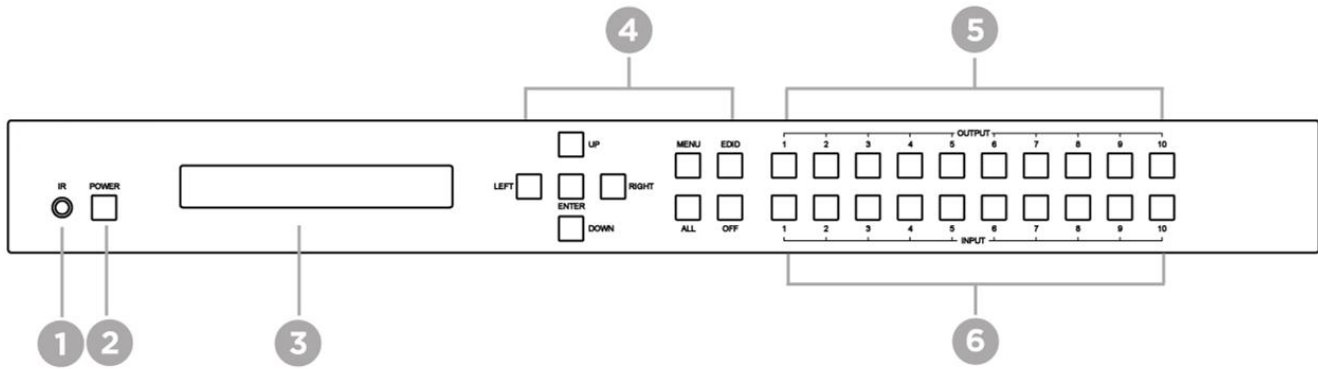
No.	Feature	LED Status	Description
1	IR Receiver	N/A	Receiving IR remote signal
2	POWER	Blue ON	Power ON
		Red ON	Standby
3	OLED Display	N/A	Display operating status or Menu.
4	UP Button	N/A	Go up direction in Menu.
	DOWN Button		Go down direction in Menu.
	LEFT Button		Go left direction in Menu.
	RIGHT Button		Go right direction in Menu.
	ENTER Button		Execute selected function
	MENU Button	Blue ON	Press to enter Menu or display current operating status Press and hold 3 seconds to enable/disable KEYLOCK
	SCENE Button		Save/Load scene
	ALL Button		Select all output
	OFF Button		Turn off select output
5	OUTPUT Buttons	Blue ON	Press these buttons to select the desired output Monitor connected
		OFF	No monitor connected
6	INPUT Buttons	Blue ON	Press these buttons to select the desired input Video input detected
		OFF	No video input

1.3 Rear Panel

1	INPUT HDMI	N/A	HDMI input port 1~10
2	OUTPUT HDMI	N/A	HDMI output port 1~10
3	Audio	N/A	SPDIF audio output port 1~2
4	IR	N/A	External IR receiver
5	CONSOLE	N/A	RS232 command control / Firmware update
6	FW	N/A	Firmware update
7	SET	N/A	Set
8	RJ45	N/A	WEB control interface
9	DC JACK	N/A	Power input
Notice	* In standby mode, IR remote cannot control matrix but power on matrix only * Please press ENTER to execution any change of menu settings		

1.4 Application Diagram

		DXP H1010		
Set Top Box	HDMI 2.0 in		HDMI 2.0 out	Display
Set Top Box	HDMI 2.0 in		HDMI 2.0 out	Display
Set Top Box	HDMI 2.0 in		HDMI 2.0 out	Display
Set Top Box	HDMI 2.0 in		HDMI 2.0 out	Display
Set Top Box	HDMI 2.0 in		HDMI 2.0 out	Display
Laptop	HDMI 2.0 in		HDMI 2.0 out	Display
Laptop	HDMI 2.0 in		HDMI 2.0 out	Display
Laptop	HDMI 2.0 in		HDMI 2.0 out	Display
Laptop	HDMI 2.0 in		HDMI 2.0 out	Display
Laptop	HDMI 2.0 in		HDMI 2.0 out	Display
Laptop	HDMI 2.0 in		HDMI 2.0 out	Display

——————— Input

——————— Output

Chapter 2 Install Your Product

2.1 Plug in Signals

Connect input signals and output display to the product before all devices are powered on. Tighten connector screws/locks where provided.

2.2 Plug in Main Power

Connect IEC cable to device and plug into wall socket. Turn on power at wall socket.

2.3 Turn on Your DXP H1010

The device will enter to the boot interface, and OLED display will show as below.

10 X 10 HDMI MATRIX
Version V1.00

Chapter 3 Use Your Product

3.1 OLED Panel Function:

Power on Main Screen

> **10 X 10 HDMI MATRIX**
> **Version V1.00**

After power on, the main screen will show matrix name and version information.
The matrix will back to main screen if no operations in 30 seconds

Channel Switching:

> **OUTPUT 1 2 3 4 5 6 7 8 9 10**
> **INPUT 1 2 3 4 5 6 7 8 9 10**

Press OUTPUT 1~10 to select HDMI output (multiple selections) then press INPUT 1~10 (single selection), press ENTER to execute.

Key Lock:

> **KEYLOCK!**

Press MENU button for 3 seconds to enable/disable key lock function.

3.2 Main MENU Option:

1. SWITCH
2. SCENE
3. EDID
4. ETHERNET
5. REMOTE ID
6. AUDIO SELECT
7. SYSTEM INFO
8. USB UPDATE

Operation:

● Press UP or DOWN key to move to select an item for setting and press ENTER key to enter into subpage.
● When the selected sub-page setting is completed, press the MENU button to return to the main page

3.2.1 SWITCH：(Default: 1 2 3 4 5 6 7 8 9 10)

```
OUTPUT   1 2 3 4 5 6 7 8 9 10
 INPUT   1 2 3 4 5 6 7 8 9 10
```

This function is used to switch the input/output port. Enter the SWITCH menu. Press the ENTER key, then the OLED second line INPUT will flash. Press LEFT or RIGHT button to select the output to be modified. Then press UP or Down button to select the input port. After that, press ENTER to confirm setting.

3.3.2 SCENE

```
OUTPUT →  SAVE
INPUT   →  LOAD
```

SCENE function provides 10 sets of channel setting to fast reload for different application.

SAVE

Save current channel setting, press UP or DOWN to select the number and ENTER to save.
It will show input number and status of audio selection.
At main screen you could use IR01 remote button **B** to enter SCENE function, button **7~* (output)** to select port number 1~4 to save, or use Up/Down button to select 5~10.

SAVE	1	2	3	4	5	6	7	8	9	10
SCENE#1	2H	3H	4A	XA	5H	7A	9X	10H	1A	6X

LOAD

Reload saved scenes, press UP or DOWN to select the number and ENTER to load.
It will show input number and status of audio selection.
At main screen you could use IR01 remote button **B** to enter SCENE function, button **1~4 (input)** to select port number 1~4 to load, or use Up/Down button to select 5~10.

LOAD	1	2	3	4	5	6	7	8	9	10
SCENE#1	2H	3H	4A	XA	5H	7A	9X	10H	1A	6X

3.3.3 EDID: (Default: LPCM-2CH)

Because the player output display resolution will be based on TV EDID, this Matrix provides two default EDID modes:" BUILD-IN MODE" and "COPY MODE".

```
BUILD-IN MODE
COPY MODE
```

BUILD-IN MODE:

This mode supports video resolution up to 4K 60Hz, audio format support LPCM-2CH、LPCM-7.1、AC3、DTS. After enter BUILD-IN MODE menu, press UP or DOWN key to select then press ENTER to confirm setting.

```
1.1080P 2CH
2.1080P MULTI
3.4K30   2CH
4.4K30   MULTI
5.4K60   2CH
6.4K60   MULTI
```
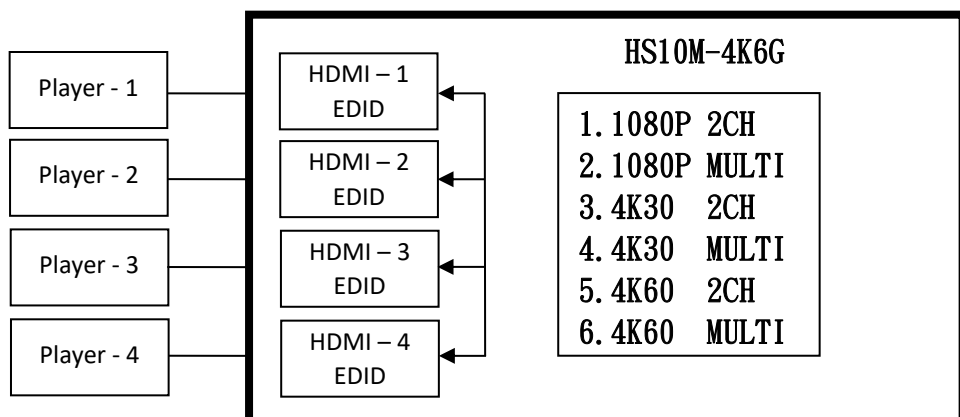
COPY MODE：

To fully support the TV resolution and audio mode, the matrix provides "copy mode" to copy TV EDID for input source reference. When use the copy mode, recommend copying the lowest resolution TV EDID. Otherwise it may cause no picture display if the TV resolution is not able to support higher resolution.

After entering COPY MODE menu, press UP or DOWN button to select the OUTPUT (1 to 4) and press ENTER, then press UP or DOWN button to select the INPUT (1 to 4 or ALL) and press ENTER to confirm. **If selected output not connected with monitor it will show "NO OUT X HPD" and return to upper menu when press ENTER.**
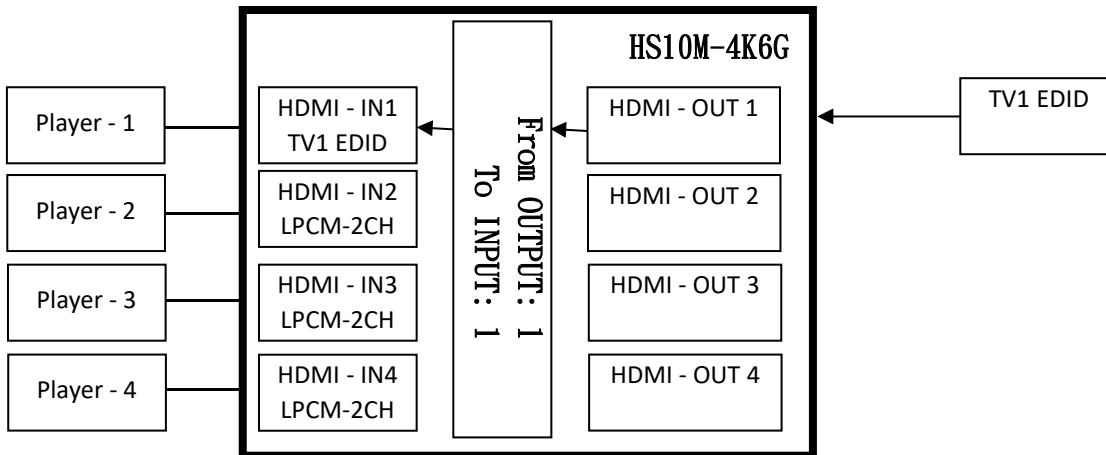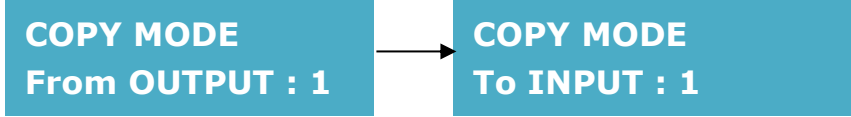
It will show EDID Write ERROR if update failed, or EDID WRITE OK if success.

3.3.4 Ethernet
    * 1. IP ADDRESS
       2. SUBNET MASK
       3. GATEWAY
       4. DHCP CLIENT
       5. MEDIA TYPE
       6. MAC FILTER

IP Address: (Default: 192.168.0.10)

```
IP Address
 192.168. 0.10
```

This function can be setup MATRIX host intranet "IP Address", press the ENTER, the left-most number of second row will flash, then press the UP or DOWN button to change the numbers, press LEFT or RIGHT to move to another location, the move to a position number will flash, press ENTER to complete the setting.

Subnet Mask: (Default 255.255.255.0)

```
Subnet Mask
 255.255.255.000
```

This function can be setup MATRIX host intranet "Subnet Mask", press the ENTER, the left-most number of second row will flash, then press the UP or DOWN button to change the numbers Press the ENTER, , press LEFT or RIGHT to move to another location, the move to a position number will flash, press ENTER to complete the setting.

Gateway: (Default 192.168.0.1)

> **Gateway**
> **192.168. 0. 1**

This function can be setup MATRIX host intranet "Gateway", press the ENTER, the left-most number of second row will flash, then press the UP or DOWN button to change the numbers Press the ENTER, press LEFT or RIGHT to move to another location, the move to a position number will flash, press ENTER to complete the setting.

DHCP Client: (Default Disable)

> **DHCP Client**
> **Disable**

When DHCP Clients setup at "Enable", the MATRIX host will automatically get IP Address, Subnet Mask, Gateway, if setup at "Disable", the MATRIX Host IP Address need go through " ETHERNET" menu to set IP Address, Subnet Mask, Gateway, to press the ENTER, the second row will flash, then press the UP or DOWN to select DISABLE, ENABLE, then press ENTER to complete the setting.

Media Type: (Default 100M)

> **Media Type**
> **100M**

This function can be setup MATRIX host intranet "Media Type, press the ENTER, the second row will flash, then press the UP or DOWN button to select 10M, 100M, AUTO, press ENTER to complete the setting.

MAC Filter: (Default Disable)

> **MAC FILTER**
> **DISABLE**

MAC Filter can be setup with registered MAC Address in order to connect the MATRIX host Web UI, MAC Address required by the Web page to fill in, this function can only be setup at "DISABLE", "ENABLE", then to press the ENTER, the second row will flash, then press the UP or DOWN to select DISABLE, ENABLE, then press ENTER to complete the setting.

3.3.5 REMOTE ID：(Default ID 4)

This function must be set to match the Matrix remote control IR01 with the matrix itself. A conflict with other devices remote control is avoided.

After entering REMOTE ID menu, press ENTER, the OLED LINE 1 number will flash. Then Press UP or DOWN button to select the number, and then press ENTER to confirm.

When finish REMOTE ID setting, MATRIX remote control IR01 must also set the same ID in order to operation in normal.

IR Remote setting: Press and hold the POWER button, then press the number button which can be set from 0 to 9, total 10 groups.

These settings on IR01 remote control have to be done the first time you use the IR01 or when you change the batteries.

> **REMOTE ID   4**
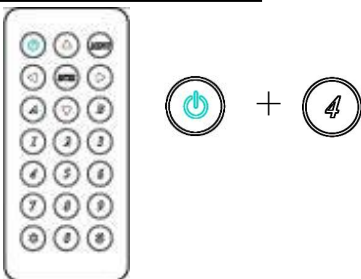
3.3.6 AUDIO SELECT: (Default H)

This function can set the output of SPDIF to HDMI (H) or ARC (A).

```
OUTPUT    1 2 3 4 5 6 7 8 9 10
AUDIO     H H H H H H H H H
```

3.3.7 SYSTEM INFO:

Display DXP H1010 firmware version

* 1.MAIN V1.00	8. IN5 V1.00	16.OUT3 V1.00
2.WEB V1.00	9. IN6 V1.00	17.OUT4 V1.00
3.CPLD V1.00	10.IN7 V1.00	18.OUT5 V1.00
4.IN1 V1.00	11.IN8 V1.00	19.OUT6 V1.00
5.IN2 V1.00	12.IN9 V1.00	20.OUT7 V1.00
6.IN3 V1.00	13.IN10 V1.00	21.OUT8 V1.00
7.IN4 V1.00	14.OUT1 V1.00	22.OUT9 V1.00
8.IN5 V1.00	15.OUT2 V1.00	23.OUT10 V1.00

3.4 Remote Control

3.4.1 IR01

1. To command the matrix locally, setup the remote control IR01 ID with the same code of the Matrix.The default code is 4. (Power+4)

2.Warning: These settings have to be done the first time you use the IR01 or when you change the batteries.

● IR ID setup : press and hold POWER button , then press Number key

Remote control button define:

Symbol		Function
⏻	Power	Power on/Standby
◁	LEFT	LEFT
▷	RIGHT	RIGHT
△	UP	UP
▽	DOWN	DOWN
ENTER	ENTER	ENTER
MENU	MENU	MENU
A	A	ALL
B	B	LOAD SCENE
1		Quick key 1
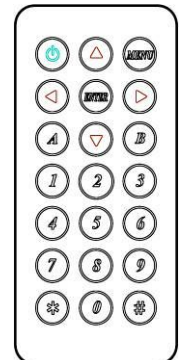
(2)   Quick key 2

(3)   Quick key 3

(4)   Quick key 4

(5)   Quick key 5

CONSOLE   (6)   Quick key 6

(7)   Quick key 7

(8)   Quick key 8

(9)   Quick key 9

(0)   OFF

(*)   Quick key 10

Quick key:
For example: to switch output port 1 to input port 4, press 1 (OUTPUT 1) and then press 4 (INPUT 4).

* Under using quick key operation, OLED screen will jump to the output / input setting page; it won't allow using the front panel button to operate the DXP H1010.

3.4.2 Console

DXP H1010 support RS232 and TCP/IP control by same command as below:
For RS232 CONSOLE:
Connect the RS232 CONSOLE port to the COM port of the host by a F/M RS232 straight cable (pin 2 to pin 2; pin 3 to pin 3, pin 5 to pin 5).
Communication format is 9600,8, N, 1 (9600 bps, 8 data bits, no parity check, 1 stop bit)

For Ethernet TCP/IP(Winsock)

Default IP address: 192.168.0.10, Port:47011

Operation Instruction format:

Command + △(Space) + Parameter + Enter

[Command]   [Description]
------------------------ ---

POWER△[d]   Power on/off

TX01△[b]   Set Input #n to output 1

TX02△[b]   Set Input #n to output 2

TX03△[b]   Set Input #n to output 3

TX04△[b]   Set Input #n to output 4

TX05△[b]   Set Input #n to output 5

TX06△[b]   Set Input #n to output 6

TX07△[b]   Set Input #n to output 7

TX08△[b]   Set Input #n to output 8

TX09△[b]   Set Input #n to output 9

TX10△[b]   Set Input #n to output 10

IR_ID△[i]   Set IR remote ID

SAVE△[a]   Save scene to #n

LOAD△[a]   Load scene from #n

LOCK△[d]   Panel button& IR remote control Lock/Unlock

SET_DHCP△[d]   DHCP client on/off

IPADDRESS△[n.n.n.n]   Set Matrix IP address

SUBNETMASK△[n.n.n.n]   Set Matrix subnet mask

GATEWAY△[n.n.n.n]   Set Matrix gateway

MEDIATYPE△[m]   Network speed select

MACFILTER△[d]   MAC filter on/off

STATUS   Show connection status

VERSION   Show firmware version

HELP   Help

[Symbol]   [Parameter]
------------------------ ---
a   00~10
b   00=off, 01~10
d   00=off, 01=on
i   00~09=0~9
m   00=auto, 01=10M, 02=100M
n   0~255

Example:
-To route input 4 to output 1, send the following string:
TX1△04[Enter]
(HEX code: 54 58 30 31 20 30 34 0D)

-To put in standby the matrix, send the following string:

POWER△00[Enter]
(HEX code: 50 4F 57 45 52 20 30 30 0D)

Commands are **case insensitive**.
The Matrix will reply **OK** once string is correct, **NG** in case of incorrect string

3.5 Ethernet Control

Initial IP Configuration
1. Setup MATRIX IP Address same as your PC with same domains.(Default 192.168.0.10)
   MATRIX IP Address method, please refer. to "ETHERNET" Chapter
2. Input IP Address on a web page, you could link to the Web UI of the MATRIX host.
3. Web UI Operation :

SWITCH SETTING:

- ● **Power**   :   Control MATRIX power on and standby.
- ● **Output**   :   Display output 1~10, it can change the display name by the Aliases page.
- ● **Input**   :   Display input 1~10, this field is a drop down menu, this field is a drop-down menu,
  a drop-down menu include Input 1 ~ 10 and OFF,   It can change the display name by   the
  Aliases page.
- ● **Reload**   :   Get MATRIX host message.
- ● **Advanced**   :   Enter into the "Advanced" page.
- ● **Apply**   :   Complete the setting
- ● **All Port**   :   Set all output from input 1~10 or off at once.

Advanced:

- **IP address** : Change **IP address**
- **Subnet mask** : Change **Subnet mask**
- **Gateway IP** : Change **Gateway IP**
- **Media Type** : Change **10 / 100 / Auto detect**
- **DHCP Client** : When setup at **Enable,** the MATRIX host will automatic get **IP Address 、Subnet Mask 、Gateway,** If setup at **Disable, the MATRIX** host **IP Address 、 Subnet Mask 、 Gateway** need to set from Advanced page.
- **Auto Reset** : The terminal connection people will be 4 users on line at same time, this function could setup the linking time to avoid long time linking and other user can not used. When over the setting link time, the terminal will automatically disconnect the link. . (0: no time setup, 1 ~ 255 Minute time range that can be setup)
- **Scene** : Click to enter **Scene** setup page
- **MAC Filter** : Enter to **MAC Filter to setup page**
- **Aliases** : Enter to **Aliases** to setup page
- **Device Name** : Can change device name
- **Back** : Jump back **SWITCH SETTING** page
- **Online** : Terminal connection users display, the max. 4 users on line.

Aliases:

- **Aliases** page can change input/output name, enter **Apply to finish the setting after change .The new name will update and correspond to SWITCH SETTING** page **Output / Input.**
- Press Back jump back to **advanced** page.

MAC Filter:

- **MAC Filter can be setup as registered MAC Address to link MATRIX host Web UI，the max. up to 10 groups MAC Address**
- **After MAC Address fill in, select Enable and press Apply to complete the setting.**
- Press **Back** jump to **advanced** page.

Scene:

- **Save** : Save 10 set of channel settings
- **Load** : Reload 1 of the channel settings
- **Update**: Refresh the status of Load
- **Back** : Back to **Advanced** page

Chapter 4 Ordering Codes

4.1 Product

552-1010-01-0   DXP H1010

Chapter 5 Support

5.1 Contact us

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Chapter 6 Appendix

6.1 Specification

Connectors	Input	HDMI	10×HDMI-A
	Output	HDMI	10×HDMI-A
		SPDIF	2×Coaxial
	Communication	IR	1×3.5mm mini jack
		TCP/IP	1×RJ45
		RS232	1×DB9
	Power		1×DC Jack
Performance	Input Resolutions	HDMI SMPTE	480i |576i | 720p@50/59.94/60　| 1080i@50/59.94/60 I 1080p@50/59.94/60 | 2160p@30/60
		VESA	800×600@60 | 1024×768@60 | 1280×768@60 | 1280×1024@60 | 1366×768@60 | 1600×1200@60 | 1920×1080@60 | 2048×1152@60 | 2560×1600@60 |3840×2160@60　| 4096×2160@60
	Output Resolutions	HDMI SMPTE	480i |576i | 720p@50/59.94/60　| 1080i@50/59.94/60 I 1080p@50/59.94/60 | 2160p@30/60
		VESA	800×600@60 | 1024×768@60 | 1280×768@60 | 1280×1024@60 | 1366×768@60 | 1600×1200@60 | 1920×1080@60 | 2048×1152@60 | 2560×1600@60 |3840×2160@60　| 4096×2160@60
	Audio	LPCM 7.1 @ 192KHz |Dolby TrueHD	
	Supported Standard	HDMI 2.0	
Power	Input Voltage	DC 12V 6.67A(via AC plug pack supplied)	
Environment	Temperature	0℃~ 55℃	
	Humidity	10%~95%	
Physical	Weight	Net (Device)	2.92kg
	Dimension	Net (Device)	483mm×225mm×44mm

6.2 Terms & Definitions

The following terms and definitions are used throughout this guide.

- **"ASCII":** American Standard for Information Interchange. The standard code consisting of 7-bit coded characters (8 bits including parity check) used to exchange information between data processing systems, data communication systems, and associated equipment. The ASCII set contains control characters and graphic characters.

- **"Aspect ratio":** The relationship of the horizontal dimension to the vertical dimension of an image. In viewing screens, standard TV is 4:3, or 1.33:1; HDTV is 16:9, or 1.78:1. Sometimes the ":1" is implicit, making TV = 1.33 and HDTV = 1.78.

- **"AV":** Audio visual, or audio video.

- A **"Background"** is an unscaled source, typically originating from a computer. A background source appears at the system's lowest priority — visually in back of all other sources.

- **"Baudrate":** Named of J.M.E. Baudot, the inventor of the Baudot telegraph code. The number of the electrical oscillations per second, called baud rate. Related to, but not the same as, transfer rate in bits per second (bps).

- **"Blackburst":** The video waveform without the video elements. It includes the vertical sync, horizontal sync, and the chroma burst information. Blackburst is used to synchronize video equipment to align the video output. One signal is normally used to set up an entire video system or facility. Sometimes it is called House sync.

- **"BNC":** Bayonet Neill-Concelman. A cable connector used extensively in television and named for its inventors. A cylindrical bayonet connector that operates with a twist-locking motion. To make the connection, align the two curved grooves in the collar of the male connector with the two projections on the outside of the female collar, push, and twist. This allows the connector to lock into place without tools.

- **"Brightness":** Usually refers to the amount or intensity of video light produced on a screen without regard to color. Sometimes called "black level.

- "**CAT 5**": Category 5. Describes the network cabling standard that consists of four unshielded twisted pairs of copper wire terminated by RJ-45 connectors. CAT 5 cabling supports data rates up to 100 Mbps. CAT 5 is based on the EIA/TIA 568 Commercial Building Telecommunications Wiring Standard.

- **"Color bars":** A standard test pattern of several basic colors (white, yellow, cyan, green, magenta, red, blue, and black) as a reference for system alignment and testing. In NTSC video, the most commonly used color bars are the SMPTE standard color bars. In PAL video, the most commonly used color bars are eight full field bars. In the computer, the most commonly used color bars are two rows of reversed color bars.

- **"Color burst":** In color TV systems, a burst of subcarrier frequency located on the back porch of the composite video signal. This serves as a color synchronizing signal to establish a frequency and phase reference for the chroma signal. Color burst is 3.58 MHz for NTSC and 4.43 MHz for PAL.

- **"Color temperature":** The color quality, expressed in degrees Kelvin(K), of a light source. The higher the color temperature, the bluer the light. The lower the temperature, the redder the light. Benchmark color temperature for the A/V industry include 5000°K, 6500°K, and 9000°K.

- **"Contrast ratio":** The radio of the high light output level divided by the low light output level. In theory, the contrast radio of the television system should be at least 100:1, if not 300:1. In reality, there are several limitations. In the CRT, light from adjacent elements contaminate the area of each element. Room ambient

light will contaminate the light emitted from the CRT. Well-controlled viewing conditions should yield a practical contrast ratio of 30:1 to 50:1.

- **"DVI":** Digital Visual Interface. The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video.

- **"EDID":** Extended Display Identification Data – EDID is a data structure used to communicate video display information, including native resolution and vertical interval refresh rate requirements, to a source device. The source device will then output the optimal video format for the display based on the provided EDID data, ensuring proper video image quality. This communication takes place over the DDC – Display Data Channel.

- **"Ethernet":** A Local Area Network (LAN) standard officially known as IEEE 802.3. Ethernet and other LAN technologies are used for interconnecting computers, printers, workstations, terminals, servers, etc. within the same building or campus. Ethernet operates over twisted pair and over coaxial cable at speeds starting at 10Mbps. For LAN interconnectivity, Ethernet is physical link and data link protocol reflecting the two lowest layers of the OSI Reference Model.

- **"Frame":** In interlaced video, a frame is one complete picture. A video frame is made up of two fields, or two sets of interlaced lines. In a film, a frame is one still picture of a series that makes up a motion picture.

- **"Gamma":** The light output of a CRT is not linear with respect to the voltage input. The difference between what you should have and what is actually output is known as gamma.

- **"HDMI" - High – Definition Multimedia Interface:** An interface used primarily in consumer electronics for the transmission of uncompressed high definition video, up to 8 channels of audio, and control signals, over a single cable. HDMI is the de facto standard for HDTV displays, Blu-ray Disc players, and other HDTV electronics. Introduced in 2003, the HDMI specification has gone through several revisions.

- **"HDSDI":** The high-definition version of SDI specified in SMPTE-292M. This signal standard transmits audio and video with 10 bit depth and 4:2:2 color quantization over a single coaxial cable with a data rate of 1.485 Gbit/second. Multiple video resolutions exists including progressive 1280x720 and interlaced 1920x1080 resolution. Up to 32 audio signals are carried in the ancillary data.

- **"JPEG" (Joint photographic Expects Group):** Commonly used method of lossy compression for photographic images using a discreet cosine transfer function. The degree of compression can be adjusted, allowing a selectable tradeoff between storage size and image quality. JPEG typically achieves 10:1 compression with little perceptible loss in image quality. Produces blocking artifacts.

- **"MPEG":** Motion Picture Expect Group. A standard committee under the auspices of the International Standards Organization working on algorithm standards that allow digital compression, storage and transmission of moving image information such as motion video, CD-quality audio, and control data at CD-ROM bandwidth. The MPEG algorithm provides inter-frame compression of video images and can have an effective compression rate of 100:1 to 200:1.

- **"NTSC":** The color video standard used in North America and some other parts of the world created by the National Television Standards Committee in the 1950s. A color signal must be compatible with black-and-white TV sets. NTSC utilizes an interlaced video signals, 525 lines of resolution with a refresh rate of 60 fields per second (60 Hz). Each frame is comprised of two fields of 262.5 lines each, running at an effective rate of 30 frames per second.

- **"Operator":** Refers to the person who uses the system.

- **"PAL":** Phase Alternate Line. A television standard in which the phase of the color carrier is alternated from

line to line. It takes four full pictures (8 fields) for the color-to-horizontal phase relationship to return to the reference point. This alternation helps cancel out phase errors. For this reason, the hue control is not needed on a PAL TV set. PAL, in many transmission forms, is widely used in Western Europe, Australia, Africa, the Middle East, and Micronesia. PAL uses 625-line, 50-filed (25 fps) composite color transmission system.

- **"PIP":** Picture-in-Picture. A small picture within a larger picture created by scaling down one of the images to make it smaller. Each picture requires a separate video source such as a camera, VCR, or computer. Other forms of PIP displays include Picture-by-Picture (PBP) and Picture-with-Picture (PWP), which are commonly used with 16:9 aspect display devices. PBP and PWP image formats require a separate scaler for each video window.

- **"Polarity":** The positive and negative orientation of a signal. Polarity usually refers to the direction or a level with respect to a reference (e.g. positive sync polarity means that sync occurs when the signal is going in the positive direction).

- **"RJ-45":** Registered Jack-45. A connector similar to a telephone connector that holds up to eight wires, used for connecting Ethernet devices.

- **"RS-232":** An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either DB-9 or DB-25 connectors. This standard is used for relatively short-range communication and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length, and type of connector to be used. The standard specifies component connection standards with regard to the computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard.

- **"Saturation":** Chroma, chroma gain. The intensity of the color, or the extent to which a given color in any image is free from white. The less white in a color, the truer the color or the greater its saturation. On a display device, the color control adjusts the saturation. Not to be confused with the brightness, saturation is the amount of pigment in a color, and not the intensity. Low saturation is like adding white to the color. For example, a low-saturated red looks pink.

- **"Scaling":** A conversion of a video or computer graphic signal from a starting resolution to a new resolution. Scaling from one resolution to another is typically done to optimize the signal for input to an image processor, transmission path or to improve its quality when presented on a particular display.

- **"SDI":** Serial Digital Interface. The standard based on a 270 Mbps transfer rate. This is a 10-bit, scrambled, polarity independent interface with common scrambling for both component ITU-R 601 and composite digital video and four channels of (embedded) digital audio.

- **"Seamless Switching":** A feature found on many video switchers. This feature causes the switcher to wait until the vertical interval to switch. This avoid a glitch (temporary scrambling) which normally is seen when switching between sources.

- **"SMPTE":** Society of Motion Picture and Television Engineers. A global organization, based in the United States, that sets standards for baseband visual communications. This includes film as well as video and television standards.

- **"S-Video":** A composite video signal separated into the luma ("Y" is for luma, or black and white information; brightness) and the chroma ("C" is an abbreviation for chroma, or color information).

- **"Sync":** Synchronization. In video, sync is a means of controlling the timing of an event with respect to other events. This is accomplished with timing pulses to insure that each step in a process occurs at the correct

time. For example, horizontal sync determines exactly when to begin each horizontal scan line. Vertical sync determines when the image is to be refreshed to start a new field or frame. There are many other types of sync in video system.(Also known as "sync signal" or "sync pulse.")

- **"TCP/IP":** Transmission Control Protocol/Internet Protocol. The communication protocol of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.
- **"USB":** Universal Serial Bus. USB was developed by seven PC and telecom industry leaders (Compaq, DEC, IBM, Intel, Microsoft, NEC, and Northern Telecom). The goal was easy plug-and-play expansion outside the box, requiring no additional circuit cards. Up to 127 external computer devices may be added through a USB hub, which may be conveniently located in a keyboard or monitor. USB devices can be attached or detached without removing computer power. The number of devices being designed for USB continues to grow, from keyboards, mice, and printers to scanners, digital cameras, and ZIP drives.
- **"VESA":** Video Electronics Standards Association. A nonprofit number organization dedicated to facilitating and promoting personal computer graphics through improved standards for the benefit of the end-user. www.vesa.org
- **"VGA":** Video Graphics Array. Introduced by IBM in 1987, VGA is an analog signal with TTL level separate horizontal and vertical sync. The video outputs to a 15-pin HD connector and has a horizontal scan frequency of 31.5 kHz and vertical frequency of 70 Hz (Mode 1, 2) and 60 Hz (Mode 3). The signal is non-interlaced in modes 1, 2, and 3 and interlaced when using the 8514/A card (35.5 kHz, 86 Hz) in mode 4. It has a pixel by line resolution of 640×480 with a color palette of 16 bits and 256,000 colors.
- **"YCrCb":** Used to describe the color space for interlaced component video.
- **"YPbPr":** Used to describe the color space for progressive-scan (non-interlaced) component video.

6.3 Revision History

The table below lists the changes to the Video Processor User Manual.

Format	Time	ECO#	Description	Principal
V1.0	2021-4-6	0000#	Release	Sylvia

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