OMX-07MXMX0001

Mixed Input Type-C VGA HDMI 2.0 HDBaseT Switch

OPERATION MANUAL

Description:

The Ocean Matrix OMX-07MXMX0001 is a 4-port HDBaseT switch that allows switching between four sources (1x Type-C, 1x VGA, 2x HDMI) to both HDMI and HDBaseT outputs simultaneously. The switch supports HDMI resolutions up to 4K@60Hz YUV4:4:4, and will transmit 1080p up to 70m, and 4K up to 40m via the HDBaseT output. The OMX-07MXMX0001 also supports audio extraction and audio mixing.

Note: The OMX-07MXMX0001 does not allow for simultaneous HDMI and HDBaseT output.

Features:

- HDBaseT 2.0
- HDMI 2.0
- Supports 4K@60Hz YUV 4:4:4, 18G, HDR10
- VGA x 1, USB Type-C x 1, and HDMI x 2 Inputs
- Transmits 1080p@60Hz up to 70m and 4K@60Hz up to 40m
- HDCP 2.2 & 1.4 Compliant
- Audio Sampling Rate up to 192 KHz, supports Max 7.1CH
- Supports Embedded Analog Audio & External Mic Input
- Supports Analog/SPDIF Audio Extraction, Analog Output Support PCM2.0, SPDIF Output Supports Dolby, DTS, Max 5.1CH
- Wide-band Bi-Directional IR Routed Control (38-56KHz), IR Extender to Control Device
- Supports RS232 Pass Through
- LCD Panel to Indicate IR Routing, RS232, TCP/IP, PC Tool Control
- Supports POC (Receiver Powered by HDBaseT Switch)

Item Includes:

- IR Blaster Cable
- IR Receiver Cable
- Mounting Ears x 4
- Machine Screws (KM3*4) x 8
- 3PIN-3.81mm Phoenix Connector x 2
- 24V/1A Locking Power Adapter

Specifications:

- Operating Temperature Range: 23 to +104°F (-5 to +40°C)
- Storage Temperature Range: 14 to +140°F (-10 to +60°C)
- Operating Humidity Range: 5 to 90 % RH (No Condensation)
- Input Video Signal: 0.5-1.0 volts p-p
- Input DDC Signal: 5 volts p-p (TTL)
- Bandwidth: 18Gbit/s
- Video Formats Supported: 4K@60Hz, YUV4:4:4 / 4k@30Hz/1080P/1080i/720P
- HDCP Compliance: HDCP 2.2 & HDCP 1.4
- Output Video: HDMI 2.0 and HDMI 1.4 (HDBaseT and HDMI)
- Audio Formats Supported: PCM 2.0, Dolby 5.1, DTS 5.1 Digital Audio
- Maximum Transmission Distance: 1080P @ 70m, 4K @ 40m (HDBT output) | 4K@ 6M / 1080p @ 15m (HDMI Output)
- Power Consumption: 16.5wtts (Max)
- Dimensions (LxWxH): 9.25 x 5.38 x 1.5in (235 x 137 x 39mm)
- Weight: 2.61lbs (1.175kg)

Operation Controls and Functions:

Switcher:
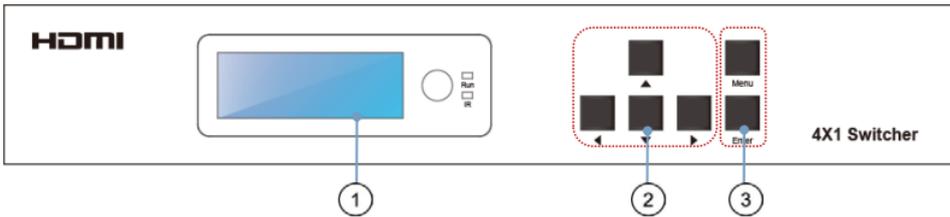
1. **LCD Screen** - Displays switch information
2. **Function Buttons** - Up, Down, Left, and Right
3. **Function Button** - Menu, and Enter
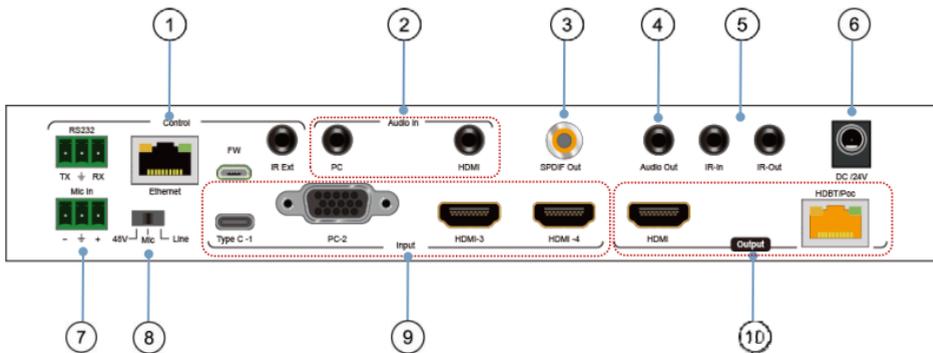
1. **Control** - **RS232** pass through for PC tool control / **Ethernet** for IP / web control / **IR Extender** for switch control

2. **Audio In** - **PC** audio in for VGA input only / **HDMI** analog PCM2.0 audio embedded

3. **Audio SPDIF Out** - Dolby, DTS, Max 5.1CH

4. **Analog PCM2.0 Audio Out**

5. **IR-In / IR-Out** - for remote controlling

6. **DC 24V / 1A** - power supply input

7. **Mic In** - microphone input

8. **Mic Switch** - left switch for 48V mode, middle for Mic mode, and right for line mode (analog PCM2.0 audio embedded)

9. **Video Input** - **Type C-1** usb c in / **PC-2** VGA in / **HDMI-3 & HDMI-4**

10. **Video Output** - **HDMI** / **HDBT/POC** HDBT out (connects HDBaseT receiver / other HDBaseT prodcuts)

Note: When you need to use MIC in / embedded analog audio function, please set the audio input mode for "analog" then switch the MIC switch to choose the audio format (48V / Mic / Line)

Connection Diagram

RS-232 Panel

3rd Party Equipment requiring RS232 Control

RS232 cable
Cat5e/6 cable

Microphone

Amplifier

IR Extender **IR Blaster**

3m 7m 3m 1.5m

40° 60°

TV remote

Audio in

SPDIF out

Audio out

RS232 — TX · RX
Control
Ethernet
FW
IR Ext   PC
Audio In
HDMI   SPDIF Out   Audio Out   IR-In   IR-Out   DC /24V

Mic In
48V — Mic · Line
Type C -1   PC-2
Input
HDMI-3   HDMI-4   HDMI
Output

HDBT/Poc

Power Supply

Mic in
Type in
VGA in   Audio in
HDMI in
HDMI in
HDMI out

Cat5e/6 cable

Receiver

Microphone   **Type notebook**   **PC**   **DVD**   **DC camera**   **TV**

HDMI Out   HDMI Out2   IR Out   IR In   DC/12-24V

HDMI out

IR Blaster   IR Extender   DVD remote
1.5m   60°   40°
3m 7m 3m

TV   **Projector**

① Standby Mode
② Mute
③ Video input: "1" for TypeC-1;
      "2" for PC-2(VGA);
      "3" for HDMI-3;
      "4"for HDMI-4;
④ MIC in (ON/OFF)/VOL control;
⑤ Analog audio out (ON/OFF)/VOL control;

Operation Controls and Functions:
Receiver:
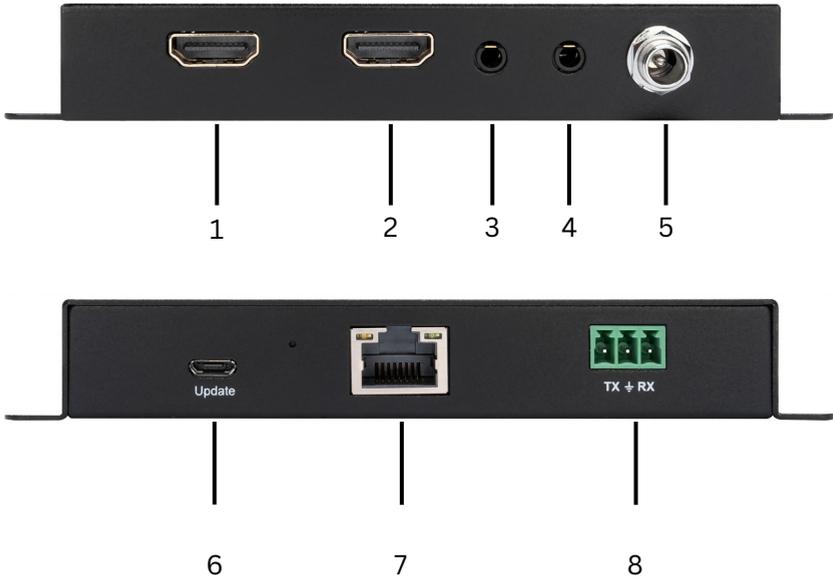
1. **HDMI Out 1**

2. **HDMI Out 2**

3. **IR Out**

4. **IR In**

5. **DC/12-24V Input**

6. **Factory Use Only**

7. **CAT5e/6**

8. **RS232**

Menu Display

When pressing the menu button, options include "VIDEO SET", "AUDIO SET", "EDID SET", "MIC IN VOL SET", "ANAL OUT VOL SET", "IP QUERY", "UART QUERY", "REST SET".

>>VIDEO   SET
>>AUDIO   SET
>>EDID   SET
>>MIC IN VOL SET
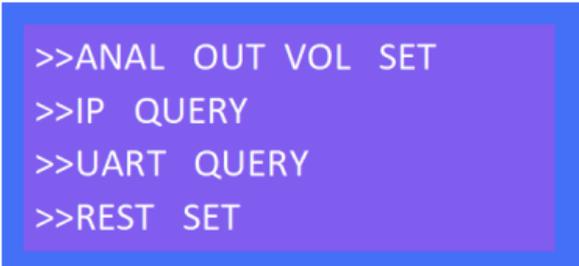
>>ANAL OUT VOL SET
>>IP QUERY
>>UART QUERY
>>REST SET

1) VIDEO SET: For input switch, select VIDEO SET, press enter, use the left & right buttons to select current input signal and hit enter again to finish setting.
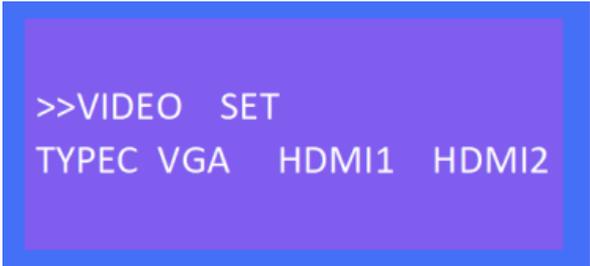
>>VIDEO   SET
TYPEC VGA   HDMI1   HDMI2

2) AUDIO SET: 3 audio input modes are supported, HDMI (audio input from signal), analog (audio embedded), Mute (silent mode), select AUDIO SET press the enter button, then use the left & right buttons to select audio input. Press enter again to finish setting.
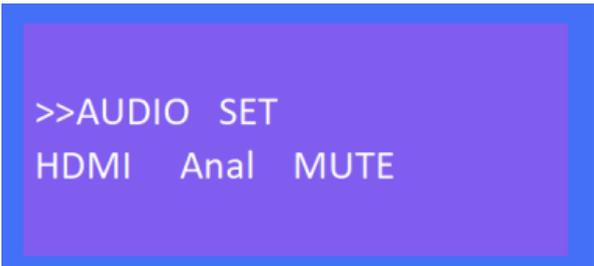
>>AUDIO SET
HDMI   Anal   MUTE

3) EDID SET: 4 EDID modes are supported, 4K60 (default), 1080P (default), COPY HDMI, COPY HDBT. Select EDID SET press the enter button, then use the left & right buttons to select desired EDID setting. Press enter again to finish setting.

```
>>EDID  SET
4K60    1080P
COPY  HDMI    COPY  HDBT
```

4) MIC IN VOl SET: MIC input volume adjustment from 0-10 (max). Select MIC IN VOL SET press the enter button, then use the left & right buttons to select desired volume setting. Press enter again to finish setting.

```
>>MIC IN  VOL  SET
VOL :     -  5  +
```

5) ANAL OUT VOL SET: Analog audio out volume adjustment from 0-10 (max). Select ANAL OUT VOL SET press the enter button, then use the left & right buttons to select desired volume setting. Press enter again to finish setting.

```
>>ANAL  OUT  VOL  SET
VOL :     -  5  +
```

6) IP QUERY: Default IP address 192.168.1.168. DHCP: off, use the left & right buttons to select desired DHCP status setting and press enter to finish setting.

```
>>IP  QUERY
192 . 168 . 1 .    168
DHCP :    OFF       ON
```

7) UART QUERY: The device supports the following baudrates, 9600, 19200, 38400, 57600, and 115200 (default). To check current baudrate, select UART QUERY and press enter.

```
>>UART  QUERY
UART1  BUAD : 115200
```

8) SYSTEM RESET: To factory reset, press enter on SYSTEM RESET.

```
>>SYSTEM   RESET
Please   press   enter   key...
```

IR System

The OMX-07MXMX0001 can pass the IR signal through the IR system to the HDMI source or pass the IR signal from the HDMI source to the HDMI sink.

Dual way IR use:

1) "IR IN" is for HDBT output, "IR OUT" is for input channel.

2) OMX-07MXMX0001 receiver supports connections with IR-RX cables to control the OMX-07MXMX0001 switch by remote.

3) The OMX-07MXMX0001 switch supports connection with IR-RX cable (IR in) to control TV by remote.

4) The OMX-07MXMX0001 "IR Ext" supports connection with IR-RX cables to control the OMX-07MXMX0001 by remote.
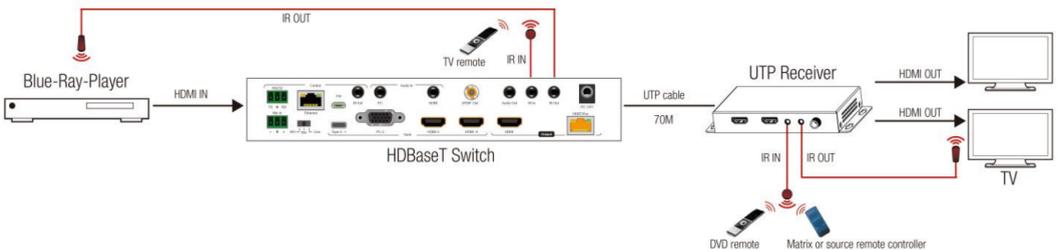
PC Tool Control

1) Download the "swe01b_4-Input HDMI Switcher.exe"software to your computer from

included disk, then open it.

2) Using USB to RS232 cable connect to the RS232 port of the OMX-07MXMX0001 switch.

3) Press "Search" button to find out the right port then click "Open Port".

Port Setup
1) Communication port setting: in PC windows system run the "swe01b_4-Input HDMI Switcher.exe"software,in RS232 INFO. ,select correct port (communication port) and baud (should be same to baudrate in UART QUERY for connection)

2) Click "Search" to refresh communication port.
3) "Open Port": in disconnect status,"Close Port": connected to device.
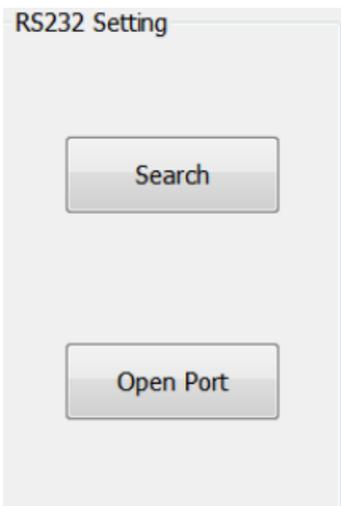
4) If you are receiving "ERROR" the COM port is invalid and is not connected correctly, press "OK" to refresh again.
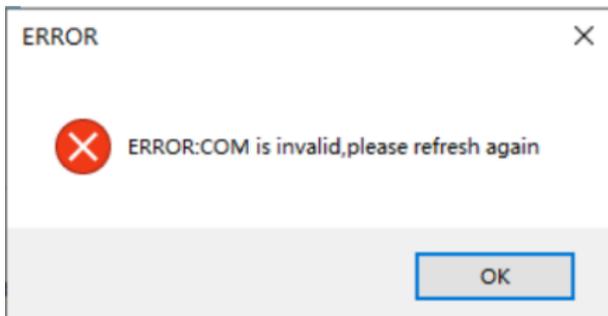
5) Below will show current COM port info. and baudrate when connected to device:

Control Interface
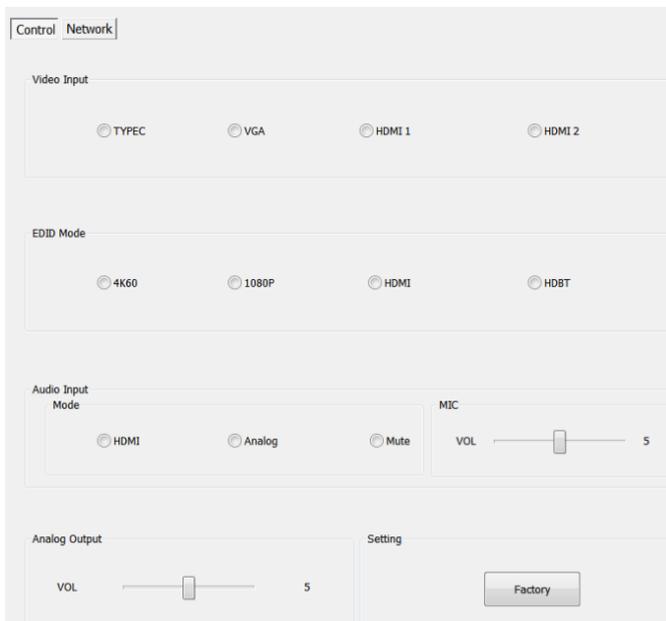
1). Video Input: Switch Type C, VGA, HDMI input.

2). EDID Mode:

4K60: Default EDID 4K@60Hz

1080P: Default EDID 1080P@60Hz

HDMI: Copy HDMI out EDID for input (Copy mode)

HDBT: Copy HDBT out EDID for input (Copy mode)

3) Audio Input Mode: Click to choose input option, HDMI, Analog, Mute, (HDMI: audio of Type C/VGA/HDMI, Analog: audio embedded/MIC in)

4) MIC: VOL control, the number "5" shows the current volume. (Please note:you can only set the MIC VOL when choosing "Analog" for audio input)

5) Analog Output: VOL control,the number "5" shows the current volume. (Please note:you can not set VOL when audio input is "Mute")

6) Setting: Factory reset.
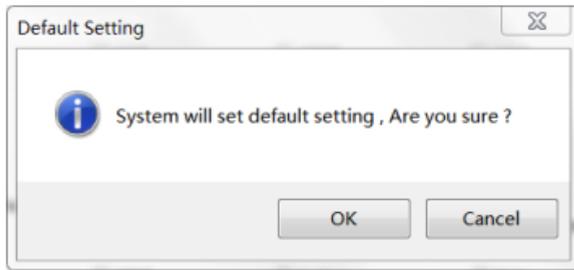
Note: Please set the audio input mode for "Analog" first by panel/PC tool/Web GUI when you need to use MIC in/Analog audio embedded function.

① **Mac Address: Can not modify**
② **IP Address: supports modify**
③ **Net Mask Address: supports modifying**
④ **Gate Way Address: supports modifying**
⑤ **DHCP ON/OFF**
⑥ **Apply: Click to confirm modified static IP**

Note: When you click for DHCP ON, then IP Address, Net Mask Address, Gate Way Address frames all become grey and can not be modified.

MAC Address	
IP Address :	192. 168. 1. 168
Net Mask Address	255. 255. 255. 0
Gate Way Address :	192. 168. 1. 1
DHCP :	DHCP ON
	Apply

WEB Control
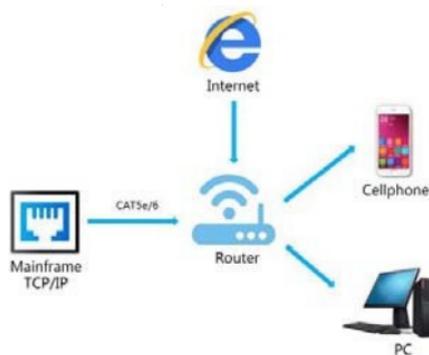
Change the IP address of your PC

1) Connect the Ethernet port of HDBaseT switch to the Ethernet port on PC by a straight pin to pin cable with RJ45 connectors.

2) Configure your PC as follows:

① Click Start > Control Panel > Network and Sharing Center.

② Click Change Adapter Settings.

③ Highlight the network adapter you want to use to connect to the device and click

Change the settings of this connection:

3). The local Area commotion properties window for Network selection appears as below.

4). Click the Highlight Internet Protocol Version 4 (TCP/IPv4).

5). Click Properties.

6). Select Use the following IP Address for static IP addressing and fill in the details. For TCP/IPv4 you can use any IP address in the range 192.168.1.1 to 192.168.1.255 (excluding 192.168.1.168).

7). Click OK.

8). Click Close.
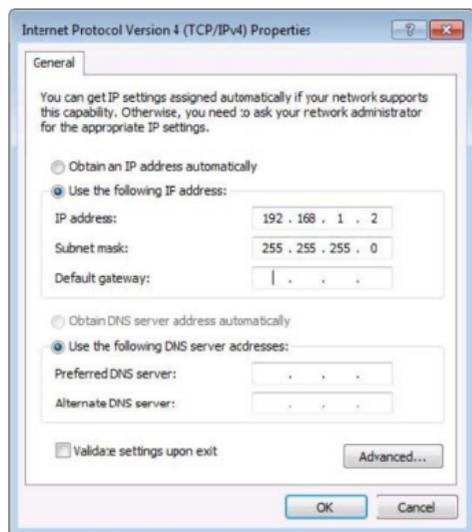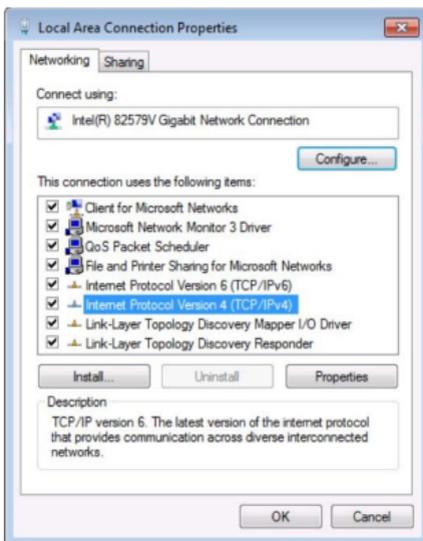
(Default IP Address: 192.168.1.168; MASK: 255.255.255.0; Gateway:192.168.1.1)

Enter WEB and Control

1) Enter the default IP address of the matrix: 192.168.1.168. 2). You will see following picture and control:
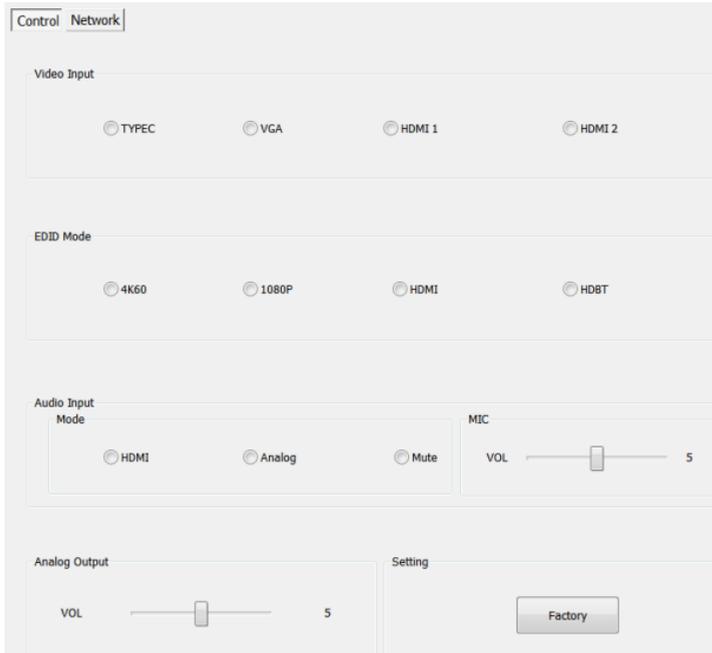
Command Control

Control software operation:
The serial control software is illustrated with SSCOM32 as an example. Basic Settings:

Double-click the software in the installation package to run specifically (as shown in figure 1) and install the RS232 software on the computer.

Enter the main interface of the software, as shown in the figure below.

Please use USB to RS232 cable to connect PC and device,open RS232 software. In the parameter configuration area of the RS232 program, select the serial number that the serial port connects with PC, and set the baud rate of the communication protocol: 115200 (default), data bits: 8. Stop bits: 1, Parity: None, you can input the instruction in the command input area and control the machine or remote receiver.

Instructions:
1). All commands start from "#", "%d" parameters
2). The "_" in the commands cannot omit

The following table is only an example. Please refer to the list of instructions.

Instruction description	Command format , (%d: parameter number)	parameter 1	parameter 2
Command Query	#cmd		
Video Input Channel Switch	#video_d in%d	1:TYPEC 2:VGA 3:HDMI1 4:HDMI2	
Audio embedded in	#audio_d enc=%d value=%d	0:HDMI 1:IIS,MIC 2:Mute	MIC VOL adjust numerical range(0~10)
Audio IIS out VOL Set	#audio_d iis=%d	VOL adjust numerical range(0~10)	
EDID Mode Set	#edid_d mode=%d	0:(4K60),1:(1080p) 2:(HDMI),3:(HDBT)	
Factory Reset	#factory		
Baudrate Set	#uart baud=%d		0:9600 1:19200 2:38400 3:57600 4:115200
IP Query	#ip help?		
DHCP Set	#ip dhcp=%d	0:Close ,1:Open	

Please refer to above "Command list" for details.
For example:
Operation format
Video Input Channel Switch:
#video_d in1 (Switch to Type C input) Audio embedded in: #audio_d enc=1 value=7 (MIC VOL adjust to 7) Audio IIS out VOL Set: #audio_d iis=7 (Analog audio VOL adjust to 7) EDID Mode Set: #edid_d mode=2 (Copy EDID of HDMI out for input) Baudrate Set: #uart baud=0 (Current baudrate set is 9600) DHCP Set: #ip dhcp=1 (DHCP open)

Power Off and Reboot Input Priority Mode
When the OMX-07MXMX0001 switch reboots and it inspects the current input signal in "None" status, device will auto switch to a higher priority input signal (If there is no higher priority input than the current one, it will switch to a lower priority input). Priority table for input:

Signal for Input	Priority	Switch Condition
HDMI 1	The highest	Reboot and inspect HDMI1,if none signal,device switch to next lower priority input
HDMI 2	Second	Reboot and inspect HDMI 2,if none signal,device auto switch to higher priority input,if not,it switch to next lower priority input of signal
Type C in	Third	Reboot and inspect Type C,if none signal,device auto switch to higher priority input,if not it switch to next lower priority input of signal(VGA)
VGA in	Fourth(the lowest)	Reboot and inspect VGA,if none signal,device auto switch to higher priority input,if not,it will keep current input of signal(VGA)

Note:

1) If the current input has signal, the device will not auto switch to other input when rebooting, it will keep the current input.

2) When all inputs have no signal, device saves last switch port when rebooting.

3) The priority mode is only valid when the device has signal input.

RS232 Pass through

By RS232 Command, the OMX-07MXMX0001 switch can send RS232 data to control the receivers, also the receiver can send RS232 data to control the OMX-07MXMX0001 switch.

Please refer to the command list which is included in the manual

Micro USB for Firmware Upgrade
MCU application layer upgrade

1) The user should use the CD in colorbox, read and install software "UART_ISP.exe" on PC;

2) Connect unit to PC with USB cable from micro USB port,click "UART_ISP.exe" software, REFRESH and choose correct COM port that connect to product,and baudrate 115200(default).The baud rate setting is consistent with the host baud rate.

3) Type in "A1" in PORT and choose update program file in PATH,then click UPDATA wait for update until it prompt "Succeed" informations and upgrade completed:
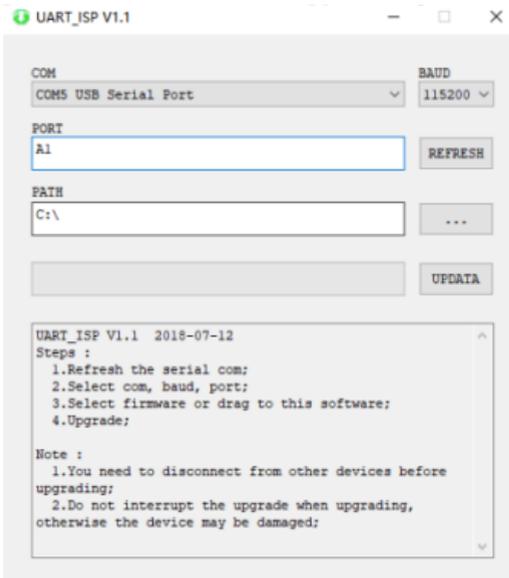
GUI Application Layer Upgrade

1). Connect unit to PC with USB cable from micro USB port,click "UART_ISP.exe" software, REFRESH and choose correct COM port that connect to product,and baudrate 115200(default).The baud rate setting is consistent with the host baud rate.

2). Type in "A1 01" in PORT and choose update program file in PATH,then click UPDATA wait for update until it prompt "Succeed" informations and upgrade completed:
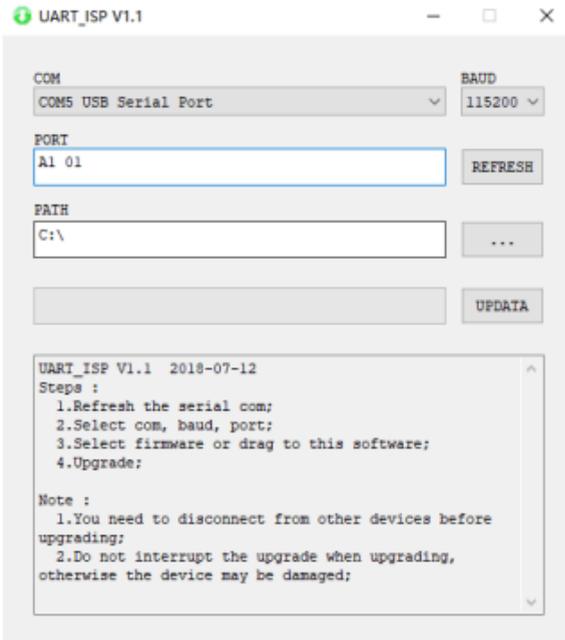
GUI Web Upgrade

1) Connect unit to PC with USB cable from micro USB port,click "UART_ISP.exe" software, REFRESH and choose correct COM port that connect to product,and baudrate 115200(default).The baud rate setting is consistent with the host baud rate.

2)Type in "F0 01" in PORT and choose update program in PATH,then click UPDATA wait for update until it prompt "Succeed" informations and upgrade completed:
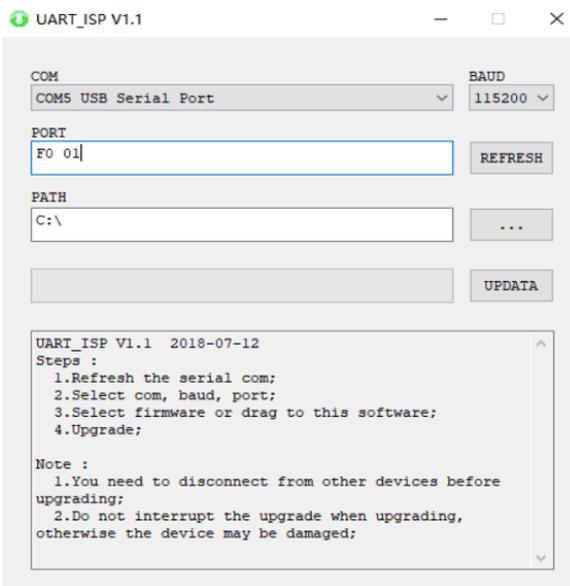
Note:If the upgrade progress bar is stopped in the middle of the upgrade, then the host will need to be rebooted, then the serial port will be upgraded.

PRODUCT SERVICE

Damage requiring service:

- The unit should be serviced by qualified service personnel if:
-
- (a) The DC power supply cord or AC adaptor has been damaged
-
- (b) Objects or liquids have gotten into the unit
-
- (c) The unit has been exposed to rain
-
- (d) The unit does not operate normally or exhibits a marked change in performance; The unit has been dropped or the cabinet is damaged.
-
- (2) Servicing Personnel: Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorized servicing personnel.
-
- (3) Replacement parts: When parts need replacing ensure the servicer uses parts specified by the manufacturer. Unauthorized substitutes may result in fire, electric shock, or other hazards.
-
- (4) Safety check: After repairs or service, ask the servicer to perform safety checks to confirm that the unit is in proper working condition.

SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install the unit:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.

- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.

- Never spill liquid of any kind on or into this product.

- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.

- Do not attach the power supply cabling to building surfaces.

- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.

- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.

- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit

WARRANTY

1 Year