SD-MB-01

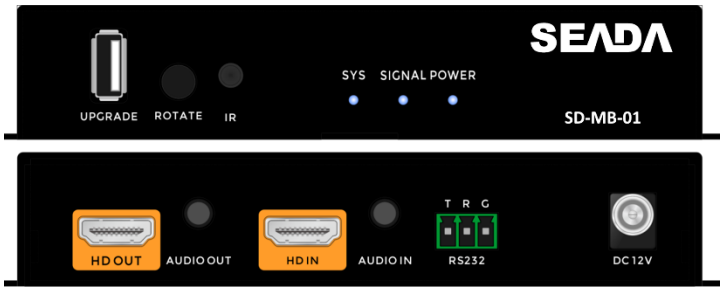
Magic Box

SEADA

Showing the World

User Manual

VER 1.0



Important Safety Information

Document No. SD-EN-028

1. Read, follow, and keep these instructions.
2. Heed all warnings.
3. Do not use this product near water. Keep away from wet places, such as spas, pools, sinks, laundries, wet basements, etc.
4. When cleaning, unplug the switcher and wipe with dry cloth. Do not use damp clothes, cleaning fluids, or aerosols which may result in electric shock, fire, or switcher damage.
5. Operate this product using only the included power supply and/or power cable. Use of an unapproved power implement may impair performance, damage the product, or cause fires.
6. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
7. Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatuses (including amplifiers) that produce heat.
8. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the product.
9. Only use attachments/accessories specified by BC to avoid fire, shock, or other hazards.
10. To reduce the risk of electric shock and/or damage to this product, never handle or touch this switcher or power cord if your hands are wet or damp. Do not expose this product to rain or moisture.
11. Unplug this product during lightning storms or when unused for long periods of time.
12. Never open, remove switcher panels, or make any adjustments not described in this manual. Attempting to do so could result in electric shock, damage to the switcher, or other hazards.

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

The exclamation point 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.

CAUTION

TO REDUCT THE RISK OF ELECTRIC SHOCK
DO NOT OPEN ENCLOSURE OR EXPOSE
TO RAIN OR MOISTURE.
NO USER-SERVICEABLE PARTS
INSIDE REFER SERVICING TO
QUALIFIED SERVICE PERSONNEL.

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1. Introduction

SD-MB-01 Magic Box is a multifunctional, advanced audio and video processor. It can operate as a signal generator, delivering up to 30 distinct test pattern signals — ideal for video calibration and troubleshooting.

Equipped with a built-in scaler, the SD-MB-01 supports both upscaling and downscaling to custom resolutions, enabling output at virtually any resolution or frame rate within the 4K range. The scaler also supports video source rotation at 0°, 90°, 180°, or 270° angles.

For video input management, the SD-MB-01 allows customized EDID configuration via DIP switches or RS232 command lines, providing flexible compatibility with various display setups.

In addition, it features audio embedding at the HDMI input and de-embedding at the HDMI output, making it a powerful tool for integrated AV workflows.

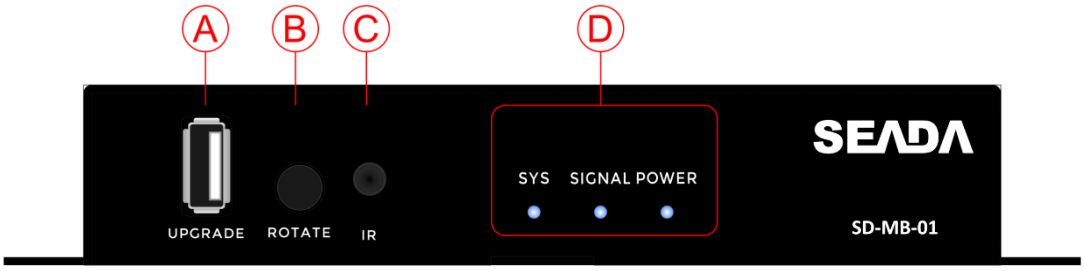
2. Feature

- Support signal generation
- Support output resolution customisation
- Support input EDID management
- Support up and downscale
- Support signal cropping
- Support customised output signal window size & position
- Support signal rotation of 90/180/270
- Support audio embedding & de-embedding
- Support customised preset layouts
- Support HDMI1.4、HDCP1.4、HDMI2.0、HDCP2.2
- Support up to 4K@60Hz for both input and output
- Support multiple control methods, including front panel buttons, IR remote and the RS232 control
- Support USB upgrading

3. Specification

Input resolution	Up to 3840*2160@60Hz
Output resolution	Up to 3840*2160@60Hz
Input port	1x HDMI, 1*3.5mm Analog
Input audio signal	RAW PCM, 16 bit, 32/44.1/48KHz sps; PCM 2.0
Output port	1* HDMI2.0, 1* Analog Audio(3.5mm audio)
Output audio signal	RAW PCM, 16 bit, 32/44.1/48KHz sps; PCM 2.0
Front control	Rotate
IR	IR remote controller (Not included in package)
RS232	3-pin Phoenix
Operating temperature	0 to +45 C (32 to + 113 F)
Storage temperature	-20 to +70 C (-4 to + 158 F)
Humidity	10% to 90%
Static Protection	Human body discharge mode: ±8kV (air gap discharge)/±4kV (contact discharge)
Power adapter	DC 12 V 1.5 A
Power consumption	10W(Max)
Product size(mm)	138*85*28
Net Weight	0.5kg

4. Panels



UPGRADE: for the USB-A firmware upgrading

ROTATE:

For the image rotation or long-press 3s to bring up/cancel OSD menu or long-press 10s to reboot the unit

- Press the button to rotate the output source from HDMI input when DIP switch D8 is set to '0'.
- Press the button to switch the test pattern signals when DIP switch D8 is set to '1'.

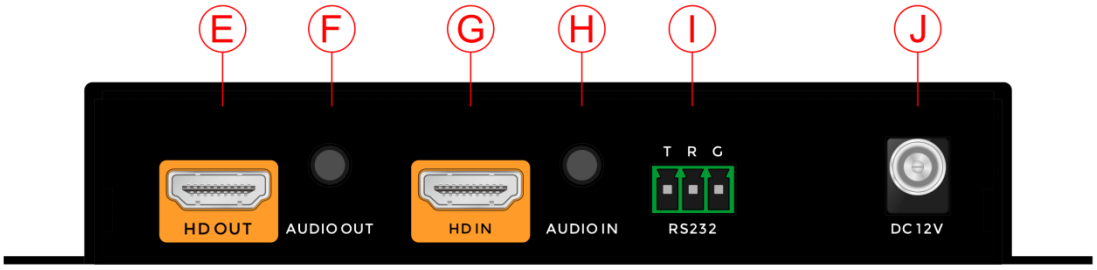
- OSD shows the current input resolution/frame rate/colour space
- OSD will show the status of DIP/firmware version

IR: for the IR remote control

SYS: for the power and system indicator

SIGNAL: For the signal connection

POWER: for power status



HD OUT: HDMI output up to 4K60 with scaling

AUDIO OUT: for the 3.5mm audio de-embedding

HD IN: HDMI input up to 4K60

AUDIO IN: for the 3.5mm audio embedding

RS232: support the RS232 commands control

DC12V: DC12V power adapter

5. 8-PIN DIP Switch setting table

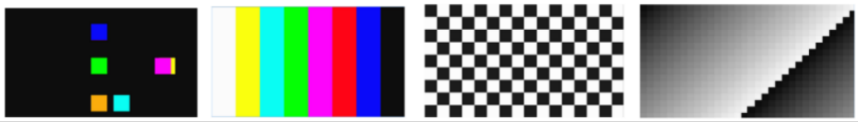
DIP	Position 0(ON)	Position 1(Numbers)
D1	RS232 EDID/resolution control enable	DIP switch EDID/resolution control enable
	When D1 on '0', any change on D3-D6 will not take effect	
D2	Reserved button, Default at "1"	
D3	D3/D4 both at 00: Output 4K60	D3/D4 each at 01: Output 4K30
D4	D3/D4 both at 11: Output 1080P60	D3/D4 each at 10: Output 1920*1200
D5	D5/D6 both at 00: 4k60 Input EDID	D5/D6 each at 01: 4K30 Input EDID
D6	D5/D6 both at 11: 1080P60 Input EDID	D5/D6 each at 10: 1920*1200 Input EDID
D7	Use 3.5mm audio input	Use HDMI audio
D8	Test pattern OFF	Test pattern ON

This 8-PIN DIP switch is at the bottom (ON is position 0)

Any change to the DIP settings requires a unit restart to take effect.

***Note: When Test Pattern is enabled, front button will be reserved for switching test patterns. Rotation and OSD display will be disabled on this button.**

DIP8 is used to enable test patterns, which overlay the HDMI input video when activated.



30 pre-built-in test patterns

6. IR Remote control (optional)

RESET: Press "RESET" buttons 6 times for factory rest

ROT1: For the output image rotation

RECALL: Press "RECALL" button 6 times to bring up OSD menu
(Only takes effect when DIP switch D8 is set to '0'.)

RES: for the output resolution settings 720P, 1080P, 4K30, 4k60
(Only takes effect when DIP switch D1 is set to '0'.)

SAVE: Press "SAVE" button 6 times to off the OSD menu
(Only takes effect when DIP switch D8 is set to '0'.)

7. RS232 Control Commands

Make sure D1 is in position of '0'

Communication protocol:

Baud rate: 115200

Data bit: 8

Stop bit: 1

Check bit: None

Commands in ASCII format and All commands start with 'GET' or 'SET', end with a '.' (dot).

----------**SYSTEM**----------

GET VERSION. //Get Software version

SET RESET. //Set to factory reset

SET REBOOT. //Set machine to reboot

GET IN STATUS. //Get input status

SET LOCK ON. //Lock Keypad and IR

SET LOCK OFF. //Unlock Keypad and IR

----------**RESOLUTION**----------

SET OUT RES _ _ _. //Set output resolution

e.g. SET OUT RES 1920 1080 60.

GET OUT RES. //Get current output resolution

SET INS RES RESET. //Set all input resolution to default

SET INS RES _ _ _. //Set all input resolution

e.g. SET INS RES 1920 1080 60.

----------**WINDOWS**----------

SET WIN1 CROP ON. //Enable win 1 current input crop

e.g. SET WIN1 CROP ON.

SET WIN1 CROP OFF. //Disable win 1 current input crop

e.g. SET WIN1 CROP OFF.

SET WIN1 CROP _ _ _ _. //Enable and set win 1 current input crop (Hstart,Vstart,Hsize,Vsize)

e.g. SET WIN1 CROP 0 0 960 540.

SET WIN1 POS SIZE _ _ _ _. //Set win 1 size and postion (Hstart,Vstart,Hsize,Vsize)

e.g. SET WIN1 POS SIZE 0 0 800 600.

SET WIN1 POS _ _. //Set win 1 position (Hstart,Vstart)

e.g. SET WIN1 POS 0 0.

SET WIN1 SIZE _ _. //Set win 1 size (Hsize,Vsize)

e.g. SET WIN1 SIZE 800 600.

SET WIN1 ROT _. //Set win 1 rotation y, y can be 0 90 180 270

e.g. SET WIN1 ROT 270. ->win1 rot 270

SET WIN1 FREEZE ON. //Freeze win 1

SET WIN1 FREEZE OFF. //Unfreeze win 1

----------**MOSAIC**----------

SET WIN1 MOSAIC _ _ _ _. //Enable and set winx mosaic (hUnits,vUnits,hPos,vPos)

e.g. SET WIN1 MOSAIC 2 2 1 1.

SET WIN1 MOSAIC ON. //Enable win 1 mosaic

SET WIN1 MOSAIC OFF. //Disable win 1 mosaic

----------**COLOUR**----------

SET BRIGHTNESS_. //Set brightness value 0~255, default: 128

e.g. SET BRIGHTNESS 200.

SET BRIGHTNESS RGB _ _ _. //Set brightness R/G/B value 0~255, default: 128

e.g. SET BRIGHTNESS RGB 200. ->Set brightness R to 200

e.g. SET BRIGHTNESS RGB 200 100. ->Set brightness RG to 200 100

e.g. SET BRIGHTNESS RGB 200 100 50. ->Set brightness RGB to 200 100 50

SET CONTRAST _. //Set contrast value 0~100, default: 50

e.g. SET CONTRAST 80.

----------**MODE**----------

SET LOAD MODE_. // Load preset layout 1 ~ 10

e.g. SET LOAD MODE1.

SET SAVE MODE_. // Save layout 1 ~ 10

e.g. SET SAVE MODE1.

8. Upgrade Firmware

1. Copy the firmware file 'MERGE.bin' onto a blank flash drive
2. Plug the flash drive into the USB-A port of the unit
3. Power up the unit and front 3 LED lights will be flashing simultaneously
4. Once the LEDs stop flashing, it indicates the upgrade is done
5. Take the flash drive out and reboot the unit