CREATOR®

Professional Audio-Visual Manufacturer

Professional SDI/DVI/HDMI Switch Scaler
User's Manual

V1.1

CREATOR Corporation (China)

Meaning of Symbols

■ Safety Instruction

Symbols are used in the Manual and devices, referring to the possible risk to users or others, as well as the damage to property, for helping you to safely and properly use the devices. The instruction and the implications are as follows. Please make sure your correct understanding of these instructions before using the Manual.

⚠	To remind user to conduct according to the attached operation and maintenance commands. If ignore these information, death or injury could possibly happen.
⚡	To remind the user that the risky uninsulated voltage in the device could caused electric shock to human.
CE	CE authentication indicates the product is in line with the EU safety regulation, and for assurance of safety use.
SGS	SGS Authentication indicates the product has reached the QC standard of the global-biggest Swiss universe surveyor.
TÜV CERT ISO9001:2000	This product has acquired the ISO9001 International Quality Authentication (Authentication authority: Germany Rheinland TUV)
⚠CAUTION⚠ DO NOT OPEN RISK OF ELECTRIC SHOCK	Caution: To avoid electric shock, please don't open the case, nor put the useless parts in it. Please contact with qualified service staff.

■ General information instruction

💡	List the situation could cause unsuccessful operation or setup, and relevant information needed to notice.

Important Notices

⚠ Caution

To ensure the device in reliable use and personal safety, please abide by the following items when in installation, use and maintenance:

Notice in installation

◆ Please DO NOT use the product in following places: the places with dust, oily smoke, electrical conductive dust, corrosive gas, inflammable gas; the places with high temperature, due, rain and wind exposures; the places endangered by shock and vibration. Electric shock, fire and incorrect operation could also cause damage and deterioration to the product.

◆ When conducting screw drilling and wiring process, DO NOT let metal irons and wire lead drop into the controller and air vent, which could possibly cause fire, failure and accidental operation.

◆ After finishing the installation, it is necessary to ensure there is no foreign matter including the packing material like contact paper on the ventilation surface, otherwise, it could cause poor heat dissipation while running, as well as fire, failure and accidental operation.

◆ Avoid conducting wiring and plugging in/out cable socket with electricity, otherwise, electric shock, circuit damage could easily happen.

◆ Installation and wiring should be firm and reliable. Poor contact could cause malfunction.

◆ With regard to the application situations with strong interference, shielded cable should be used for the input and output of HF signal, to improve the anti-interference performance of the system.

Note in Wiring

◆ Installation and wiring shouldn't be conducted until external electric power is cut off, otherwise, electric shock or device damage could happen.

◆ The product is grounded by the earth lead of the power cable. To avoid electric shock, the earth lead is necessary to be connected with the ground. Before making connection with the output end or input end of the product, please ensure it is correctly grounding.

◆ Upon finish wiring, remove the sundries. Please cover up the terminal plate for avoiding electric shock.

Note for Operation and Maintenance

◆ Please DO NOT touch the terminal when with electricity, otherwise, electric shock could happen.

◆ Don't clean up and screw the terminal tight before power is off. Such operation could cause electric shock when with electricity.

◆ Please turn off the power before connecting or disconnecting the communication signal cable, peripheral modules or control units, otherwise, device could be damaged and accidental operation could happen.

◆ Please DO NOT disassemble the device, so as to avoid internal electric components damage.

◆ It is necessary to read through the Manual and fully ensure the safety, before altering the program, trial running, starting and stopping operation.

◆ Button battery shouldn't be replaced before the power is off. If it has to be replaced when the

device is running, it should be conducted by professional electric technician wearing insulated gloves.

Note for declaration of worthless.
When declaring of worthless, please note
◆ Explosion of electrolytic capacitor on the circuit board could happen when burning it.

◆ Please classify and dispose it. Don't dispose it into household garbage.

◆ Please deal it as industrial waste, or in accordance with local environmental protection regulation.

Foreword

Professional SDI/DVI/HDMI Switch Scaler User's Manual primarily introduces the exterior structure and key functions and parameters of CR-SC-390, as well as its application in LED display systems.

The Manual serves as an instruction for user's operation, rather than for maintenance service purpose. Since the date of release, any function or relevant parameter alteration will be in supplement command. Please refer to the manufacturer or dealers for inquiry.

CREATOR Electronics own the copyright of the Manual. Without permission, any unit or person shall not take part or total of the Manual for business purpose.

The copyright of the Manual is protected by Copyright Law of People's Republic of China and other Intellectual Property Law. Without written permission, any copy or distribution is prohibited.

Index

Chapter 1 Overview

Professional SDI/DVI/HDMI switch scaler SC-390 is a highly-integrated audio/video converter and switcher for both video input of YUV, YC, CV, VGA, DVI, HDMI and 3G-SDI formats and video output of DVI, HDMI and SDI formats. It is designed with CREATOR's unique audio/video switching technology to meet with today's need for use of display equipments of high quality and high definition video, compatible with multiple input/output resolutions, and offering synchronous operation by panel keys and PC software.

1.1 Functions and Features

◆ Compatible with YUV, YC, CV, VGA, DVI, HDMI and 3G-SDI multiple signal source input, supporting high definition display under DVI, HDMI and 3G-SDI signal modes;

◆ Compatible with 4-way audio stereo input and 1-way audio stereo output, either balance or non-balance;

◆ Audio input with video, namely, combined conversion and switch of audio/video signal;

◆ Processing 1-way audio/video input or output only at one time;

◆ Compatible with multiple input resolutions:
CV：480i, 480P, 576i, 576P;

YC：480i, 480P, 576i, 576P;

YUV：480i, 480P, 576i, 576P, 720P, 1080i, 1080P;

VGA：800X600@60Hz, 1024X768@60Hz, 1280X1024@60Hz, 1600X1200@60Hz;

DVI：800X600@60Hz, 1024X768@60Hz, 1152X864@75Hz, 1280X768@60Hz, 1280X960@60Hz, 1280X1024@60Hz, 1360X768@60Hz, 1366X768@60Hz, 1440X900@60Hz, 1600X1200@60Hz, 1920X1080@60Hz;

HDMI：480i, 480P, 576i, 576P, 720P, 1080i, 1080P, 800x600@60HZ, 1024x768@60HZ, 1280x960@60HZ, 1280x1024@60HZ, 1440x900@60HZ, 1680x1050@60HZ, 1600x1200@60HZ;

SDI：720X480P29.97, 720X480P59.94, 720X576P25, 720X576P50, 1280X720P60, 1280X720P59.94, 1280X720P50, 1280X720P30, 1280X720P29.97, 1280X720P25, 1280X720P24, 1280X720P23.97, 1920X1080P30, 1920X1080P29.97, 1920X1080P25, 1920X1080P24, 1920X1080P23.98, 1920X1080P60, 1920X1080P59.94, 1920X1080P50, 1920X1035I60, 1920X1035I59.94, 1920X1080I50, 1920X1080I60, 1920X1080I59.94;

◆Compatible with multiple output resolutions:
DVI/HDMI：800X600@60Hz, 1024X768@60Hz, 1152X864@75Hz, 1280X720@60Hz, 1280X768@60Hz, 1280X960@60Hz, 1280X1024@60Hz, 1360X768@60Hz, 1366X768@60Hz, 1440X900@60Hz, 1600X1200@60Hz, 1920X1080@60Hz;

SDI：1280X720P60, 1280X720P59.94, 1280X720P50, 1920X1080P30, 1920X1080P29.97, 1920X1080P25, 1920X1080P24, 1920X1080P23.98, 1920X1080P60, 1920X1080P59.94, 1920X1080P50, 1920X1080I50,

1920X1080I60, 1920X1080I59.94;

◆ Compatible with multiple ways of control, such as CREATOR keyboard control, dual serial interface control and Ethernet remote control, and with operation information displayed on the front panel LCD screen synchronously, for more direct, convenient and flexible operation;

◆ Compatible with output on two separate screens (DVI/HDMI, 3G-SDI), and enabling parameter setting of the output format of either way separately;

◆ Compatible with color enhancement, contrast adjustment and isoparametric adjustment, satisying your needs for different image and screen visual effects;

◆ Featuring operation memory function, with which function the system automatically saves the current status when there is no other operation in 10 seconds after setting is done;

◆ Featuring temperature self-detecting function, with which function the system reads the temperature every 3 seconds and displays on the LCD screen, to ensure safety in use;

◆ Featuring automatic fan on function, with which function the fan will be automatically on when the equipment temperature reaches 30°C for cooling the equipment, and the fan will be automatically off when the equipment temperature drops to 28°C;

◆ Featuring factory default value restoring function;

◆ Adopting 1U standard 19" housing design to fit with a standard 19" housing.

1.2 Installation of Main Unit

CR-SC-390's main unit may be installed on a standard 19" housing. The accessories of each main unit include a pair of brackets and a bag of screws for mounting on the housing, in the way as shown below.
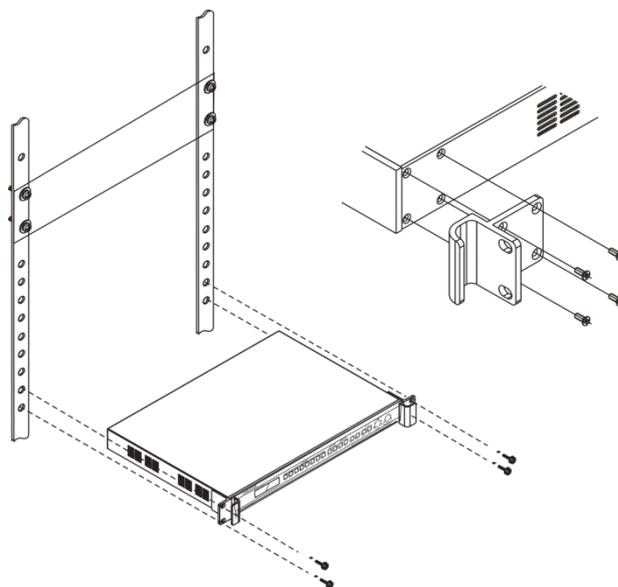
Chapter 2 Main Unit Hardware

2.1 Panel functions

Front panel:
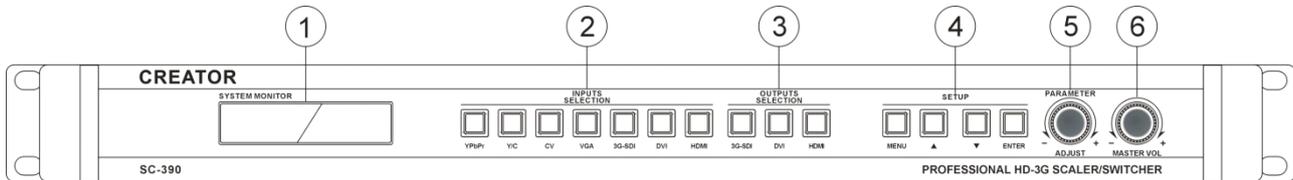
Rear panel:
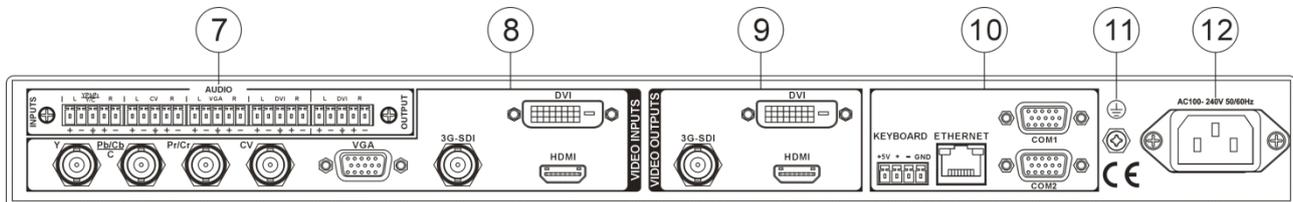
1) LCD DISPLAY

For display of the current status of the output screen and operation information.

2) INPUTS SELECTION

Input signal selection, including YPbPr, Y/C, CV, VGA, 3G-SDI, DVI and HDMI total 7-way signals for selection.

3) OUTPUTS SELECTION

Output signal selection, including 3G-SDI, DVI and HDMI total 3-way signals for selection, corresponding to the output ports on the rear panel.

4) MENU

Menu setting selection key is configured on the front panel. Press this key to enter menu setting, and the menu key on the front panel will be shown on the LCD display, and at the same time the key lights will be on.

▲ ▼

Direction key. Use this key to move up/down

to select the required parameters for the item to be set.

ENTER

Press Enter and move to the menu in the next level from the menu on the front panel keys.

5) PARAMETER/ADJUST

In the menu setting with front panel keys, this knob is used as the direction key for selecting parameters for the required items between left and right.

6) MASTER VOL

Volume adjust knob, for adjusting the input audio volume (not adjustable under HDMI and 3G-SDI signal input).

7) AUDIO INPUTS/ AUDIO OUTPUTS

Audio input and output port, offering 4-way audio signal input (YPbPr/Y/C, CV, VGA, DVI) and 1-way DVI audio signal output.

8) VIDEO INPUTS

Video input port, available to 7-way video input (YPbPr, Y/C, CV, VGA, 3G-SDI, DVI and HDMI), for connection with peripheral video signal source equipment such as DVD, PC, high-definition player, etc.

9) VIDEO OUTPUTS

Video output port, offering 3-way video output (3G-SDI, DVI, HDMI), for connection with 3G-SDI, DVI, HDMI interface video displayers, such as high-definition display and player, or for connection with such equipment as video player.

The input/output of audio of 3G-SDI and HDMI signal formats is transmitted and switched together with its video signal input/output.

10) KEYBOARD—Extension keyboard interface

Offering 1-way extension keyboard interface, for use together with CREATOR CR-MCP100 control keyboard.

ETHERNET--RJ45 network interface

Providing 1-way Ethernet connection port, for connection with LAN and Ethernet. Green light when on indicates connection is proper, while flashing orange light indicates data are being received or sent.

RS-232

Serial interface, offering 2-way RS-232 port, for connection with PC or a third party control equipment (such as CREATOR, CRESTRON, AMX control main unit, etc.).

11) Grounding post.

12) System power input port

System power input is AC 100V-240V 50/60Hz.

Difference between ▲ ▼ direction key and PARAMETER/ADJUST knob:

▲ ▼ direction key can only be used when inquiring about and selecting parameters of resolution and current status;

PARAMETER/ADJUST knob can not only be used when performing the above functions, but also be used when selecting and setting such parameters as gamma, contrast, detail strong and image color.

2.2 Interface

2.2.1 COM Port

Professional SDI/DVI/HDMI switch scaler may be used to control various types of control systems. LED screen controller may be controlled through RS-232 serial interface or the optional Ethernet control port.

Male
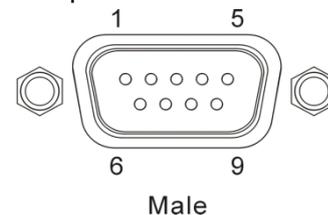
COM port pins are described as follows:

Pin	Signal	Description
1	-	Empty
2	TXD	Transmitting data
3	RXD	Receiving data
4	-	Empty
5	GND	Signal Ground
6	-	Empty
7	-	Empty
8	-	Empty
9	-	Empty

2.2.2 RJ45 Internet Cable Production Method

CAT-5 (Category-5 Cable) is used as the wiring material in this system, and is connected with internet equipment through RJ45 connector

(commonly known as the crystal head) on both ends. The standard way for connection of the twisted pair is not a casual rule, but provided for the purpose of ensuring symmetric layout of wire and cable connectors, so as to offset the possible interruption between wires and cables between connectors. Generally, CAT-5e cables have four pairs of stranded wires inside, which are marked by different colors.

There are two ways of connection: EIA/TIA 568B standard and EIA/TIA 568A standard.

	T568A									T568B						
1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8
Green White	Green	Orange White	Blue	Blue White	Orange	Brown White	Brown		Orange White	Orange	Green White	Blue	Blue White	Green	Brown White	Brown
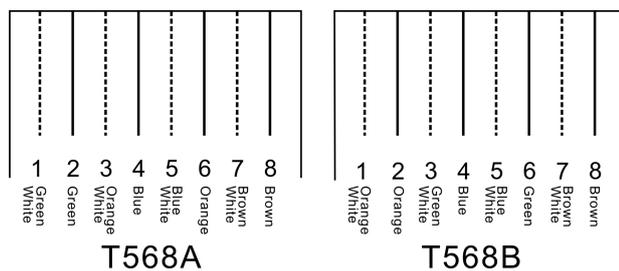
T568A Wiring Sequence	
1	White Green
2	Green
3	White Orange
4	Blue
5	White Blue
6	Orange
7	White Brown
8	Brown

T568B Wiring Sequence	
1	White Orange
2	Orange
3	White Green
4	Blue
5	White Blue
6	Green
7	White Brown
8	Brown

Straight through wiring: both ends are connected subject to the standard T568B wiring sequence.

Crossover wiring: with one end connected subject to the T568A wiring sequence, and with the other connected subject to the T568B wiring sequence.

In connection with a network router, straight through wiring method will be used; in connection with a PC computer, crossover wiring method will be used.

2.2.5 KEYBOARD Interface

1-way KEYBOARD interface is provided, through which connection with CR-MCP100 extension keyboard is enabled to conduct channel switch operation on the switch scaler. KEYBOARD has a 4-digit 3.8mm phoenix interface, and its pins are described as follows:

+5V + − GND
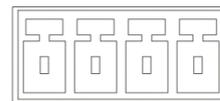
Pin	Signal	Description
1	+5V	Output DC5V/0.5A Able to provide power to the operation of MCP100
2	+	For use of RS-485 protocol, DATA+
3	-	For use of RS-485 protocol, DATA-
4	GND	Signal Ground

2.3 System Connection Diagram
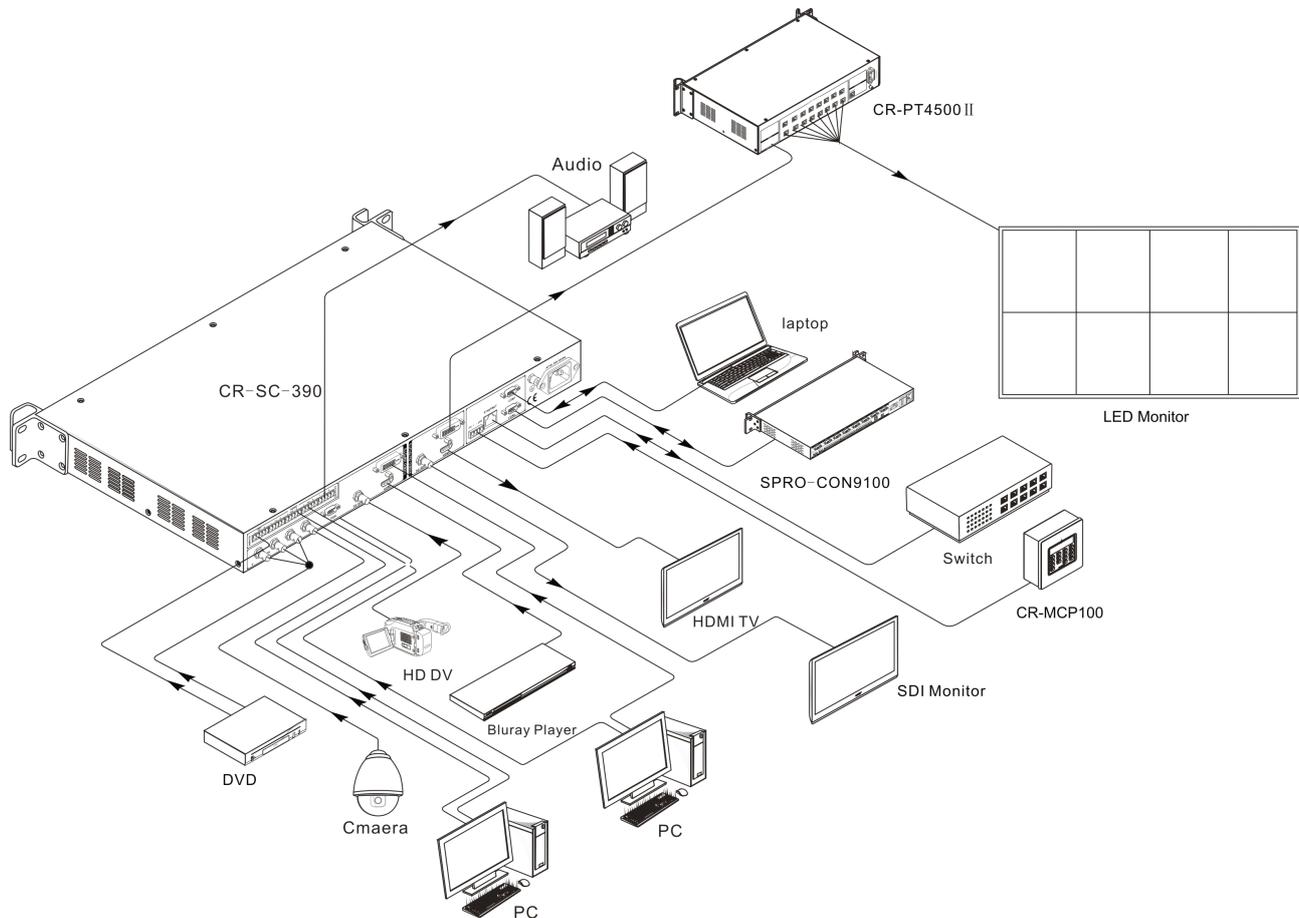
2.4 Operation with Panel Keys

2.4.1 LCD Display

When there is no operation in 10 seconds, the LCD background light will be off. Press any key to turn it on.

2.4.2 Key Light

The keys on the front panel have operating indication lights flashing in red color. When a key is pressed down, the indication light in the key will be flashing.

2.4.3 Menu Setting

After power connection is properly done, the background light of the LCD display will be on at the same time, and the system status "Loading…" will be shown on the display. After the system is

started, the main screen

```
CREATOR
CR-SC-390
```

will be displayed.

Menu operation steps may be summarized as follows:

Enter menu setting ⟶ Select the item to be set ⟶ Select parameter for the item to be set ⟶ Confirm setting

After setting is done, if there is no operation in 10 seconds, the system will automatically save the set parameters.

Operating steps in details:

Step 1, press any key to turn on the LCD display, and press "MENU" to enter menu setting;

Step 2, press "▲ and ▼" key or PARAMETER knob to move up/down or left/right to select the

item to be set, and then press "ENTER" key to confirm enter;

Step 3, press "▲ and ▼" key or PARAMETER knob to move up/down or left/right to select the parameter for the item to be set, and corresponding parameter information will be shown by turns on the LCD display upon every pressing;

After entering the parameter setting menu, the current status of the item to be set in the system will be shown as the first parameter information;

Step 4, after selecting the needed parameter, press "ENTER" key to confirm selection;

Step 5, if it is necessary to set multiple parameters, then after confirming each parameter, press "MENU" key to return to the menu of the upper level, and simply repeat the operations in Step 2, 3 and 4.

2.4.4 Example of Operations

E.g.: Set the output resolution as 1280X1024@60Hz, and set contrast to 5.0.

1、Press "MENU" key to enter menu setting, and on the LCD display it is shown as follows;

CREATOR
CR-SC-390
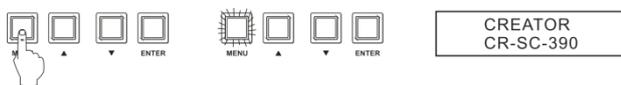
2、Press "MENU" key to enter menu setting, and use the "▲▼" key to select the parameter for the "OUTPUT Format";

OUTPUT Format
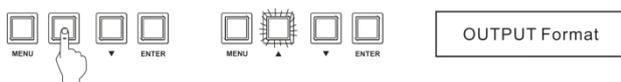
3、Press "ENTER" to confirm setting, and enter parameters setting. At this moment, on the LCD display shows the current status of the item to be set. Use the "▲▼" key to search for the parameter 1280X1024@60Hz;

1024X768X60Hz

1280X1024X60Hz
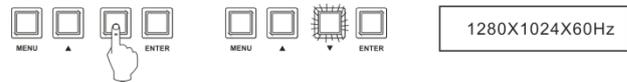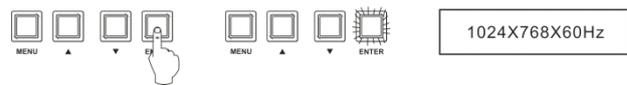
4、Press "ENTER" to confirm change, and the

parameter information is shown on the LCD screen after successful setting;

ENTERN OK:
1024X768X60Hz

5、Press "MENU" key to return to the upper menu, and use the "▲▼" key to search for the item "Adaptive Contrast" to be set;

OUTPUT Format

Adaptive Contrast
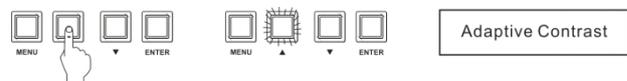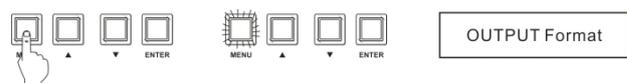
6、Press "ENTER" to confirm setting, and enter parameters setting. At the moment, the LCD display should show the current status of the item to be set. Use "PARAMETER" knob to roll left/right to set to the required parameter "5.0" and finish setting.

ACE Strength 00

ACE Strength 05
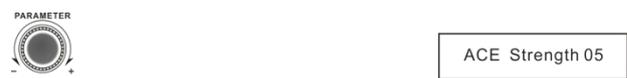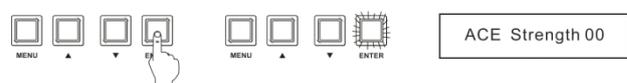
2.5 Menu Structure Diagram

OUT PUT Format

- DVI/HDMI
  - 1024 × 768 × 60Hz
  - 1152 × 864 × 75Hz
  - 1280 × 720 × 60Hz
  - 1280 × 768 × 60Hz
  - 1280 × 960 × 60Hz
  - 1280 × 1024 × 60Hz
  - 1360 × 768 × 60Hz
  - 1366 × 768 × 60Hz
  - 1440× 900 × 60Hz
  - 1600 × 1200 × 60Hz
  - 1920 × 1080 × 60Hz
  - 800 × 600 × 60Hz
- 3G-SDI
  - 1280 × 720P60
  - 1280 × 720P59.94
  - 1280 × 720P50
  - 1920 × 1080P30
  - 1920 × 1080P29.97
  - 1920 × 1080P25
  - 1920 × 1080P24
  - 1920 × 1080P23.98
  - 1920 × 1080P60
  - 1920× 1080P59.94
  - 1920 × 1080P50
  - 1920 × 1080I60
  - 1920 × 1080I59.97
  - 1920 × 1080I50

Information
- VGA Input :1920 × 1080P23.98
- Temperature:25.5
- Software Edition Ver 1.001

Systerm settings —— Reset Serength
- Cancel
- Reset

Gamma Correction —— Gamma LUT 0. 4~1. 6

Adaptive Contrast —— ACE Strength 00~15

Detail Strong —— Detail Level 000~255

Image Colour
- Red Offset -1023~+1023
- Green Offset -1023~+1023
- Blue Offset -1023~+1023

Chapter 3 Control Keyboard Operations

CREATOR's CR-MCP100 matrix control keyboard may be used together with its professional SDI/DVI/HDMI switch scaler through KEYBOARD interface under RS-485 communication protocol, for conducting remote audio/video switch control operation with the switch scaler.

3.1 Control Keyboard Panel

Front panel:
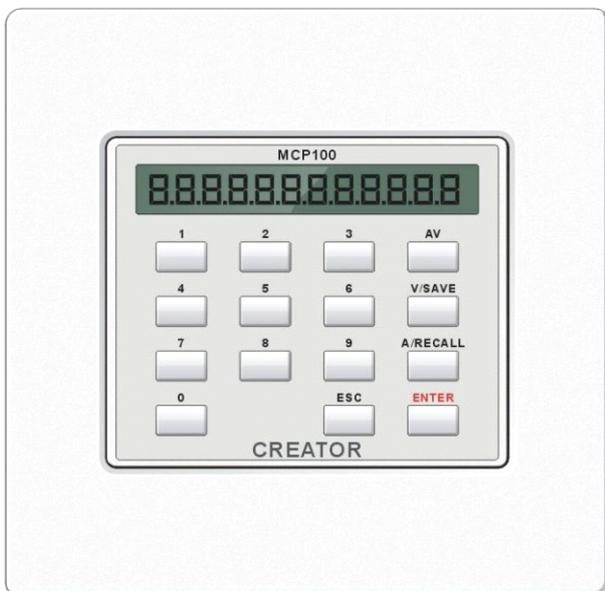
0, 1...7—Output/input channel selection key

Used for setting audio/video signal output and input channel, corresponding to the 7-way input channel selection keys and the 3-way output channel selection keys on the front panel of the professional SDI/DVI/HDMI switch scaler, as follows:

Input channel selection key:
key 1 stands for YpbPr input
key 2 stands for YC input
key 3 stands for CV input
key 4 stands for VGA input
key 5 stands for 3G-SDI input

key 6 stands for DVI input
key 7 stands for HDMI input

Output channel selection key:
key 1 stands for 3G-SDI output
key 2 stands for DVI output
key 3 stands for HDMI output

AV--Audio/video synchronous switch selection key

For synchronously switching the audio/video signal in the same channel onto the same output channel.
E.g.: Press "1", "AV", "2", "ENTER" in turn, to synchronously switch the YpbPr input signal in the channel 1 to the DVI output channel 2.

ENTER—Order execution key

Confirm switch selection, and perform switch action.

Other keys are inoperable for operation of the professional SDI/DVI/HDMI switch scaler.

Rear panel:
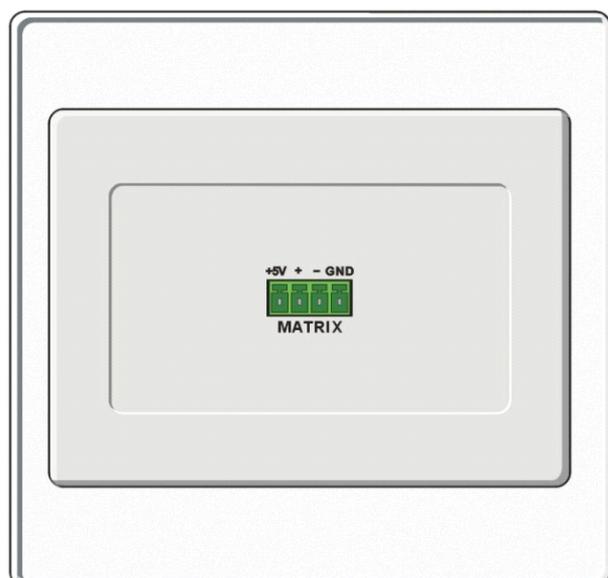
MATRIX—is the RS-485 communication interface, used for connection with the KEYBOARD interface of the professional SDI/DVI/HDMI switch scaler, from which power is supplied to the CR-MCP100 matrix control keyboard. For its pin description, please refer to Section 2.2.5: KEYBOARD Interface Description, of this Manual.

3.2 Control Keyboard Operations

In operation, the operating status will be shown in real time on the LCD screen of the control keyboard panel and the front panel key of the professional SDI/DVI/HDMI switch scaler.

Input/output switch operation method is as follows:
"input channel"+"AV"+"output channel "+"ENTER"

Input/output switch operation steps are as follows:

Step 1, press numeric key to select input channel. A maximum of 7 input channels may be selected, and other numeric keys inoperable;

Step 2, select the switch mode AV;

Step 3, press the numeric key to select the output channel. A maximum of 3 output channels may be selected, and other numeric keys are inoperable;

Step 4, press ENTER key to confirm switch operation and perform switch action. The buzzer will produce a short "beep".

Example:

If the YpbPr signal in channel 1 is synchronously switched to the DVI output channel 2, the operation is as follows:

1、Select the input channel. Press numeric key 1 quickly, and at this moment the LCD display shows the following:

2、Press the AV key quickly and select the audio/video synchronous switch mode, and the LCD display shows the following:
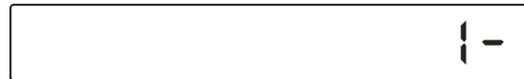
3、Select the output channel, quickly press numeric key 1, and the LCD display shows the following:

4、Lastly, quickly press ENTER key to perform the switch operation. A "beep" will be heard, and the switch operation is done.

Chapter 4 Command Set

Serial interface baud rate: 9600   Data bit: 8   Stop bit: 1   Parity check: No

Network: This machine operates in the TCP server mode

Input num 1 stands for YpbPr

Input num 2 stands for YC

Input num 3 stands for CV

Input num 4 stands for VGA

Input num 5 stands for 3G-SDI

Input num 6 stands for DVI

Input num 7 stands for HDMI

Output num 1 stands for 3G-SDI

Output num 2 stands for DVI

Output num 3 stands for HDMI

4.1 Audio/video Switch Command

format: *X->Y!   X: Input num Y: Output num

Command	Function Description
*1->1!	YpbPr input 3G-SDI output
*1->2!	YpbPr input DVI output
*1->3!	YpbPr input HDMI output
*2->1!	Y/C input 3G-SDI output
*2->2!	Y/C input DVI output
*2->3!	Y/C input HDMI output
*3->1!	CV input 3G-SDI output
*3->2!	CV input DVI output
*3->3!	CV input HDMI output
*4->1!	VGA input 3G-SDI output
*4->2!	VGA input DVI output
*4->3!	VGA input HDMI output
*5->1!	3G-SDI input 3G-SDI output
*5->2!	3G-SDI input DVI output
*5->3!	3G-SDI input HDMI output
*6->1!	DVI input 3G-SDI output
*6->2!	DVI input DVI output
*6->3!	DVI input HDMI output
*7->1!	HDMI input 3G-SDI output
*7->2!	HDMI input DVI output
*7->3!	HDMI input HDMI output

4.1.1 Audio/video Switch Return Command

The audio/video switch return command in the panel key operation is similar with the command for audio/video switch, except that "key operate:" is added before the command, and both share the same function description. E.g.:

format: key operate: *X->Y! X: Input num Y: Output num	
Command	Function Description
key operate: *1->1!	YpbPr input 3G-SDI output
key operate: *1->2!	YpbPr input DVI output
key operate: *1->3!	YpbPr input HDMI output
key operate:......	......

4.2 Audio Tuning Command

Audio tuning commands

Volume range -60.00dB ~ +8.00dB

Tuning step is 00.5dB

format: #X->YdB!   X: Input num Y: Volume value

YpbPr and YC share the same audio way. Set #1->+00.0dB! and get the same result as the #2->+00.0dB! command, both meaning YpbPr YC input volume set as +00.0dB.

3G-SDI and HDMI input audio volume is not adjustable.

Example:

Command	Function description
#1->+00.0dB!	YpbPr YC input volume set as +00.0dB
#2->-01.0dB!	YpbPr YC input volume set as -01.0dB
#3->+05.0dB!	CV input volume set as +05.0dB
#4->-20.0dB!	VGA input volume set as -20.0dB
#6->+08.0dB!	DVI input volume set as +08.0dB

4.2.1 Audio Tuning Return Command

The audio tuning return command in the panel key operation is similar with the command for audio tuning, except that "key operate:" is added before the command, and both share the same function description. E.g.:

format: key operate: #X->YdB! X: Input num Y: Volume value	
Command	Function description
key operate: #1->+00.0dB!	YpbPr YC input volume set as +00.0dB
key operate: #2->-01.0dB!	YpbPr YC input volume set as -01.0dB
key operate: #3->+05.0dB!	CV input volume set as +05.0dB
key operate:......	......

4.3 Output Resolution Commands

format: $X->Y!   X: Output num Y: output format

Command	Function description
$1->720p60!	3G-SDI output 720p60
$1->720p59.94!	3G-SDI output 720p59.94
$1->720p50!	3G-SDI output 720p50
$1->720p60!	3G-SDI output 720p60
$1->1080i50!	3G-SDI output 1080i50
$1->1080i60!	3G-SDI output 1080i60
$1->1080i59.94!	3G-SDI output 1080i59.94
$1->1080p30!	3G-SDI output 1080p30
$1->1080p29.97!	3G-SDI output 1080p29.97
$1->1080p25!	3G-SDI output 1080p25
$1->1080p24!	3G-SDI output 1080p24
$1->1080p23.98!	3G-SDI output 1080p23.98
$1->1080p60!	3G-SDI output 1080p60
$1->1080p59.94!	3G-SDI output 1080p59.94
$1->1080p50!	3G-SDI output 1080p50
$2->800x600x60HZ!	DVI HDMI output 800x600x60HZ
$2->1024x768x60HZ!	DVI HDMI output 1024x768x60HZ
$2->1152x864x75HZ!	DVI HDMI output 1152x864x75HZ
$2->1280x720x60HZ!	DVI HDMI output 1280x720x60HZ
$2->1280x768x60HZ!	DVI HDMI output 1280x768x60HZ
$2->1280x960x60HZ!	DVI HDMI output 1280x960x60HZ
$2->1280x1024x60HZ!	DVI HDMI output 1280x1024x60HZ
$2->1360x768x60HZ!	DVI HDMI output 1360x768x60HZ
$2->1366x768x60HZ!	DVI HDMI output 1366x768x60HZ
$2->1440x900x60HZ!	DVI HDMI output 1440x900x60HZ
$2->1600x1200x60HZ!	DVI HDMI output 1600x1200x60HZ
$2->1920x1080x60HZ!	DVI HDMI output 1920x1080x60HZ

4.3.1 Output Resolution Return Commands

The output resolution return command in the panel key operation is similar with the command for output resolution setting, except that "key operate:" added before the command, and both share the same function description. E.g.:

format: key operate: $X->Y! X: Output num Y: output format	
Command	Function description
key operate: $1->1080p59.94!	3G-SDI output 1080p59.94
key operate: $2->800x600x60HZ!	DVI HDMI output 800x600x60HZ
key operate: $2->1024x768x60HZ!	DVI HDMI output 1024x768x60HZ
key operate:......	......

4.4 Gamma Value Setting Command

format: @gamma->X!   X: gamma value   range 0.4~1.6   stepping as 0.2

Command	Function description
@gamma->0.6!	Set the output gamma value as 0.6
@gamma->0.8!	Set the output gamma value as 0.8
@gamma->1.0!	Set the output gamma value as 1.0
@gamma->1.2!	Set the output gamma value as 1.2
@gamma->1.4!	Set the output gamma value as 1.4

4.4.1 Gamma Value Setting Return Command

The gamma value setting return command in the panel key operation is similar with the command for gamma value setting, except that "key operate:" is added before the command. Both share the same function description, e.g.

format: key operate: @gamma->X!   X: gamma value   range 0.4~1.6   stepping as 0.2

Command	Function description
key operate: @gamma->0.6!	Set the output gamma value as 0.6
key operate: @gamma->0.8!	Set the output gamma value as 0.8
key operate: @gamma->1.0!	Set the output gamma value as 1.0
key operate:......	......

4.5 Contrast Setting Command

format: &ACE->X!   X: ACE Strength value range 00~15 stepping as 01

Command	Function description
&ACE->00!	Set ACE Strength value as 00
&ACE->01!	Set ACE Strength value as 01
&ACE->02!	Set ACE Strength value as 02
&ACE->03!	Set ACE Strength value as 03
&ACE->04!	Set ACE Strength value as 04
&ACE->05!	Set ACE Strength value as 05
&ACE->06!	Set ACE Strength value as 06
&ACE->07!	Set ACE Strength value as 07
&ACE->08!	Set ACE Strength value as 08
&ACE->09!	Set ACE Strength value as 09
&ACE->10!	Set ACE Strength value as 10
&ACE->11!	Set ACE Strength value as 11
&ACE->12!	Set ACE Strength value as 12
&ACE->13!	Set ACE Strength value as 13
&ACE->14!	Set ACE Strength value as 14
&ACE->15!	Set ACE Strength value as 15

4.5.1 Contrast Setting Return Command

The contrast setting return command in the panel key operation is similar with the command for contrast setting, except that "key operate:" is added before the command, and both share the same function description. E.g.:

format: key operate: &ACE->X! X: ACE Strength value range 00~15 stepping as 01	
Command	Function description
key operate: &ACE->02!	Set ACE Strength value as 02
key operate: &ACE->03!	Set ACE Strength value as 03
key operate:......	......

4.6 Detail Enhancement Setting Command

format: %DetailLevel->X!   X: Detail Level range 000~255 stepping as 001.Example:

Command	Function description
%DetailLevel->000!	Set Detail Level value as 000
%DetailLevel->123!	Set Detail Level value as 123
%DetailLevel->222!	Set Detail Level value as 222
%DetailLevel->255!	Set Detail Level value as 255

4.6.1 Detail Enhancement Setting Return Command

The detail enhancement setting return command in the panel key operation is similar with the detail enhancement setting command, except that "key operate:" is added before the command, and both share the same function description. E.g.:

format: key operate: %DetailLevel->X! X: Detail Level range 000~255 stepping is 001	
Command	Function description
key operate: %DetailLevel->123!	Set Detail Level value as 123
key operate: %DetailLevel->222!	Set Detail Level value as 222
key operate: %DetailLevel->255!	Set Detail Level value as 255
key operate:......	......

4.7 Image Color Offset Setting command

format: ^offset->X,Y,Z!   X: Red offset range -1023~+1023   stepping is 0001
              Y: Blue offset range -1023~+1023   stepping is 0001
              Z: Green Offset range -1023~+1023   stepping is 0001
Example:

Command	Function description
^offset->+0000,+0000,+0000!	Set red Offset +0000, blue Offset +0000, green Offset +0000
^offset->+0010,+0020,+0030!	Set red Offset +0010, blue Offset +0020, green Offset +0030
^offset->+0400,+0500,+0600!	Set red Offset +0400, blue Offset +0500, green Offset +0600
^offset->+1000,+1000,+1000!	Set red Offset +1000, blue Offset +1000, green Offset +1000
^offset->+1023,+1023,+1023!	Set red Offset +1023, blue Offset +1023, green Offset +1023

4.7.1 Image Offset Setting Return Command

The image offset setting return command in the panel key operation is similar with the image offset setting command, except that "key operate:" is added before the command, and both share the same function description. E.g.:

format: key operate: ^offset->X,Y,Z!   X: Red offset range -1023~+1023   stepping is 0001

Y: Blue offset range -1023~+1023   stepping is 0001

Z: Green Offset range -1023~+1023   stepping is 0001

Command	Function description
key operate: ^offset->+0000,+0000,+0000!	Set red Offset +0000, blue Offset +0000, green Offset +0000
key operate: ^offset->+0010,+0020,+0030!	Set red Offset +0010, blue Offset +0020, green Offset +0030
key operate: ^offset->+0400,+0500,+0600!	Set red Offset +0400, blue Offset +0500, green Offset +0600
key operate:......	......

4.8 Network Setting Command

ASCII command (computer to switch scaler)	Command function	return (switch scaler to computer)	Example
<#SPORT[5000]>	Set network port number	SPORT: [5000]	<#SPORT5000>
<#SIPR[192]. [168]. [0]. [2]>	Set network IP	SIPR:[192].[168].[0].[2]	<#SIPR192. 168. 0. 2>
<#GAR [192]. [168]. [0]. [1]>	Set gateway	GAR:[192].[168].[0].[1]	<# GAR 192. 168. 0. 1>
<#SUBR [255]. [255]. [255]. [0]>	Set subnet mask	SUBR:[255].[255].[255].[0]	<# SUBR255. 255.255. 0>
<# SHAR 0x[00]. 0x[11]. 0x[22]. [0x33]. [0x44]. [0x55]>	Set MAC address (MAC address is in the hexadecimal system)	0x[00]. 0x[11]. 0x[22]. [0x33]. [0x44]. [0x55]>	<#SHAR0x00.0x11.0x22.0x33.0x44.0x55>
<#NETDEFAULT>	Restore the default value of the network factory configuration	NETDEFAULT: [OK]	<#NETDEFAULT>

	Set network parameters value wrongly	Out of range!	
	Set network successfully	NETSET:OK	

Remarks: When network parameters value is wrongly set, the system will return as "Out of range!"; when the network is set successfully, the system will return as "NETSET:OK".

4.9 Network Inquiry Command

ASCII command (computer to switch scaler)	Command function	Return (switch scaler to computer)	Example
<^SPORT>	Inquire working port	SPORT:[X12]	<^SPORT>
<^SIPR>	Inquire IP	SIPR:[X12].[X13].[X14].[X15]	<^SIPR>
<^SUBR>	Inquire current network subnet mask number	SUBR:[X12].[X13].[X14].[X15]	<^SUBR>
<^GAR>	Inquire current network gateway number	GAR:[X12].[X13].[X14].[X15]	<^GAR>
<^SHAR>	Inquire current network MAC address number	SHAR:[X12].[X13].[X14].[X15].[X16].[X17]	<^SHAR>

4.10 Network Interface Default Parameters

Switch scaler's network port number: 5000

Switch scaler's network IP: 192.168.0.2

Switch scaler's network gateway number: 192.168.0.1

Switch scaler's network subnet mask: 255.255.255.0

Switch scaler's network MAC address: 0x00.0x11.0x22.0x33.0x44.0x55;

Note: you need to restart the switch scaler to enable all the set network parameters.

4.11 Equipment Status Reading

Command

command: ~read stauts!
Reply format as follows:
Input: VGA
Input Format: NO INPUT
Output: DVI
DVI Output Format: 1024x768x60HZ

HDMI Output Format: 1024x768x60HZ

3G-SDI Output Format: 720p60

YPbPr YC Input Volume: +00.0dB

CV Input Volume: +00.0dB

VGA Input Volume: +00.0dB

DVI Input Volume: +00.0dB

Gamma LUT: 1.0

Adaptive Contrast: 00

Detail Level: 000

ImageColor Red Offset: +0000

ImageColor Blue Offset: +0000

ImageColor Green Offset: +0000

Machine Temperature: +36.5℃

Software Edition: Ver 1.001

4.12 Factory Default Setting

Restoring Command

Restore factory default setting command (but not restoring network parameters):
format:/Reset Settings!

Factory default setting value:
Input: DVI
Input Format: NO INPUT
Output: DVI

DVI Output Format: 1024x768x60HZ
HDMI Output Format: 1024x768x60HZ
3G-SDI Output Format: 720p60
YPbPr YC Input Volume: +00.0dB
CV Input Volume: +00.0dB
VGA Input Volume: +00.0dB
DVI Input Volume: +00.0dB
Gamma LUT: 1.0
Adaptive Contrast: 00
Detail Level: 000
ImageColor Red Offset: +0000
ImageColor Blue Offset: +0000
ImageColor Green Offset: +0000

Chapter 5 Technical Parameters

Model no.Technical Specs	CR-SC-390						
Video							
Gain	0 dB						
Pixel bandwidth	Video, S-video, YPbPr/YCbCr: 6MHz, VGA video: 250 MHz, DVI video: 165MHz, HDMI: 165MHz 3G-SDI:2.970Gb/s						
Differential phase I/OS	‹1.28°, 3.58 MHz						
Differential phase error	0.1°, 3.58-4.43 MHz						
Differential gain error time	0.1%, 3.58-4.43 MHz						
Signal type	VGA, S-video, COMP separate video (YPbPr/YCbCr), complex video (CVBS), DVI, HDMI.						
Video input	CV	S-Video	VGA	COMP	DVI	HDMI	3G-SDI
Interface	BNC connector	BNC connector	15-pin HD female interface	BNC connector	DVI-D	HDMI-A Female connector	BNC connector
Signal strength	1V p-p: Y component video, S-video, complex video; 0.7V p-p: VGA (computer signal); 0.3V p-p: separate video, S-video C, HDMI/DVI video.						
Min./max. level	analog signal: -2V/+2V						
Impedance	analog signal: 75 Ω HDMI/DV I signal: 50Ω						
Echo loss	‹-30dB@5MHz						
Horizontal frequency response	30-200KHZ						
Vertical frequency response	20Hz-240Hz						
VGA video input							
Interface	DB-15						
Min./max. level	-2.0V/ +2.0V						
Impedance	75 Ω						
Echo loss	‹-40dB@5MHz						
DC compensation	max. ±5mV						
VGA Synchronous signal							
Input/output signal type	RGBHV, RGBS, RGsB, RsGsBs, complex video, component video, separate video.						
Video system	NTSC 3.58, NTSC 4.43, PAL, SECAM						
Input level	0.5V- 5.0V p-p,: 4.0V p-p normal						
Output level	AGC-TTL: 5Vp-p, unterminated						
Input impedance	510 Ω						
Output impedance	75 Ω						
Max. transmission delay	horizontal:90ns vertical:160ns						
Max. up/down time	4ns						
Polarity	Positive or negative (completely the same as input						

DVI Video Signal Output	
Interface	DVI-D interface
Min./max. level	T.M.D.S+/-0.4Vpp
impedance	50Ω
Recommended max. transmission distance	Less than 7 meters, when at 1920X1080@60 (Recommend to use the certified DVI professional cables, such as Molex TM cables)
3G-SDI Output	
Interface	BNC mother connector
Impedance	75Ω
Echo loss	＜-15dB,DC@1MHz to 1.5GHz
Max. DC compensation	±5Mv
Output impedance	75Ω
HDMI output	
Interface	HDMI-A mother interface
Min./max. level	T.M.D.S. 2.9V/3.3V
Impedance	50Ω
Recommended max. output distance	Less than 10 meters, when at 1920X1080@60 (Recommend to use the certified HDMI professional cables, such as Molex TM cables)
Audio Signal	
Input/output interface	4-way 3.8mm phoenix interface stereo audio input, 1-way 3.8mm phoenix interface stereo audio output
Gain	0 dB
Frequency response	20 Hz ~ 20 kHz,
Total Harmonic Distortion + Noise	0.05% @ 1 kHz (under the rated voltage)
Signal/Noise Ratio (S/N)	＞58dB
Stereo Crosstalk	＞80dB @ 1 kHz
Common Mode Rejection Ratio (CMRR)	＞75dB @: 20 Hz ~ 20 kHz
Signal type	Stereo (Non-end-to-end audio)
Impedance	input: >10 kΩ(balance or/ non-balance way of connection) output: 50 Ω (non-balance way of connection), 100 Ω(balance way of connection)
Max. input level	+19.5dBu, (balance or/ non-balance way of connection)
Gain error	±0.1dB @20 Hz ~ 20 kHz
Max. output level	+19.5dBu, (balance or/ non-balance way of connection)
Control Type	**Network Control**
Serial control interface	RS-232, 9-pin mother D-type interface RS-485
Baud rate and protocol	Baud rate: 9600, data bit: 8 bit, stop bit: 1, no parity check bit
Serial control port structure	2 = TX, 3 = RX, 5 = GND
Specification	
Power	100VAC-240VAC 50/60 Hz, automatically adaptable to international power
Storage temperature	-40° C～ +80°C

Storage humidity	10%～90%
Operating temperature	-20°C～ +70°C
Operating humidity	10%～70%
Housing Dimension	1U
Product Weight	1.9kg

CREATOR CORPORATION (CHINA)
Copyright by CREATOR