



# CMSDI-164/124/84/44

16 by 4 / 12 by 4 / 8 by 4 / 4 by 4 3G-SDI Matrix



Operation Manual



## **DISCLAIMERS**

The information in this manual has been carefully checked and is believed to be accurate. Cypress Technology assumes no responsibility for any infringements of patents or other rights of third parties which may result from its use.

Cypress Technology assumes no responsibility for any inaccuracies that may be contained in this document. Cypress also makes no commitment to update or to keep current the information contained in this document.

Cypress Technology reserves the right to make improvements to this document and/or product at any time and without notice.

## **COPYRIGHT NOTICE**

No part of this document may be reproduced, transmitted, transcribed, stored in a retrieval system, or any of its part translated into any language or computer file, in any form or by any means—electronic, mechanical, magnetic, optical, chemical, manual, or otherwise—without express written permission and consent from Cypress Technology.

© Copyright 2011 by Cypress Technology.

All Rights Reserved.

Version 1.1 August 2011

## **TRADEMARK ACKNOWLEDGMENTS**

All products or service names mentioned in this document may be trademarks of the companies with which they are associated.





## 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 this equipment:

- 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.

## REVISION HISTORY

VERSION NO.	DATE DD/MM/YY	SUMMARY OF CHANGE
VS1	23/02/12	First release
VS2	17/07/12	SDI standards updated
VR3	08/08/12	RS-232 command



# CONTENTS

<b>1. Introduction</b> .....	<b>1</b>
<b>2. Applications</b> .....	<b>1</b>
<b>3. Package Contents</b> .....	<b>1</b>
<b>4. System Requirements</b> .....	<b>1</b>
<b>5. Features</b> .....	<b>2</b>
<b>6. Operation Controls and Functions</b> .....	<b>3</b>
6.1 Front Panel .....	3
6.2 Rear Panel.....	4
6.3 Remote Control.....	5
6.4 RS-232 Pin Assignment .....	6
6.5 RS-232 Commands.....	6
<b>7. Connection Diagram</b> .....	<b>7</b>
<b>8. Specifications</b> .....	<b>8</b>
<b>9. Acronyms</b> .....	<b>9</b>





## 1. INTRODUCTION

The 3G-SDI Matrix series allows SD-SDI, HD-SDI and 3G-SDI signals to be shown on SDI displays while ensuring high bit-rates of 2.970 Gbps to give you fast signal transmission without signal loss. For professionals, this means that it is now easier to switch multiple 3G-SDI signals and split display of them on up to four SDI-equipped displays simultaneously. Additionally, these units can be controlled with the supplied IR remote, the front panel keys or RS-232 control functions.

## 2. APPLICATIONS

- Video broadcasting switching display
- Professional video program display
- Film studios program monitoring
- Video program switching display

## 3. PACKAGE CONTENTS

- 16 by 4/12 by 4/8 by 4/4 by 4 3G-SDI Matrix
- Remote Control (CR-101)
- 5 V/2.6 A DC Power Adaptor
- Operation Manual

## 4. SYSTEM REQUIREMENTS

Source devices with SDI (SD/HD/3G) output, display devices with SDI Input and connected with SDI cables.

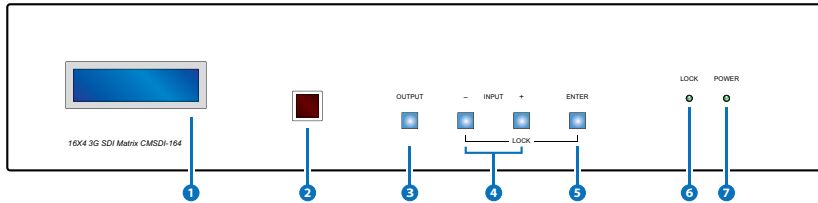
## 5. FEATURES

- 3G-SDI input sources can be selected and split or switched to four 3G-SDI displays simultaneously
- Operation at 2.970 Gbps, 2.970/1.001 Gbps, 1.485 Gbps, 1.485/1.001 Gbps and 270 Mbps
- Supports SMPTE 425M (Level A and Level B), SMPTE 424M, SMPTE 292M, SMPTE 259M-C
- Connect using other units to extend your signal over long distances
- Signal is equalized and re-clocked
- Supports signal input and output distances of up to 300 meters for SD signals, 200 meters for HD signals and 100 meters for 3G signals

**Note:** *Tested with Belden 1694A cable. Operating distances may vary if used with another type of cable.*

## 6. OPERATION CONTROLS AND FUNCTIONS

### 6.1 Front Panel

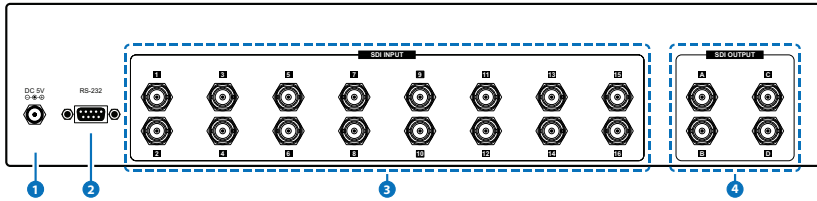


- 1 LCD Monitor:** This LCD monitor displays the configuration of the input and output selections. The upper line displays the outputs A, B, C, & D. The lower line displays each output's selected input.
- 2 IR Receiver:** Receives the IR signal from the remote control included in the package.
- 3 OUTPUT Button:** Press this button to select the output A~D the cursor will skip to the lower line of the LCD monitor then, select an input for highlighted output.
- 4 INPUT -/+ Button:** Press - or + button to select the input sources from 1~16, press ENTER to confirm the selection.
 

*Note: Depending on different models, the selectable input will be displayed on the LCD monitor.*
- 5 Lock Button:** Press both the '-' and 'ENTER' buttons together to lock all the function keys on the panel. To unlock, press both buttons again.
- 6 ENTER Button:** Press this button to confirm the selection. Press both the 'ENTER' key and '-' key together to lock all the keys on panel. To unlock, press both the 'ENTER' key and '-' key together again to release the locking system.
- 7 LOCK LED:** This LED will illuminate in green when the key lock is active.
- 8 POWER LED:** This LED will illuminate green when the device is switched ON. When in standby mode (Press the power key on the remote control) the LED will turn red.



## 6.2 Rear Panel

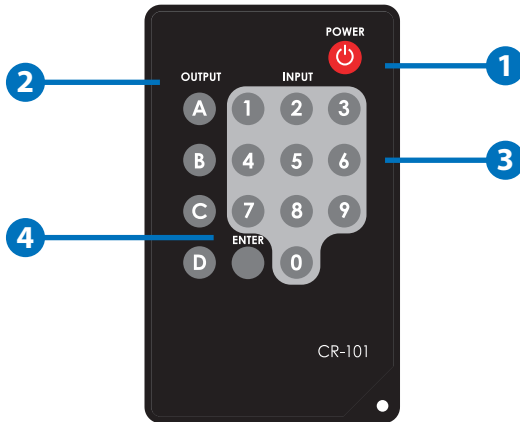


- 1 **DC 5V:** Plug the 5V DC power supply into the unit and connect the adaptor to AC wall outlet.
- 2 **RS-232:** Connect to a PC or laptop (with D-Sub 9 pin female cable) to control the device via RS-232 commands..
- 3 **SDI INPUT:** Connect to the SDI source equipment such as video camera or SDI player. The amount of input slots will depend on the model.

MODEL	INPUTS	OUTPUTS
CMSDI-164	16	4
CMSDI-124	12	4
CMSDI-84	8	4
CMSDI-44	4	4

- 4 **SDI OUTPUT:** Connect to the SDI displays with an SDI cables for displaying the output. It can also be connected to another SDI converter/extender to extend the signal.

## 6.3 Remote Control



- 1 POWER:** Press the button to power the unit on/off.
- 2 OUTPUT:** Press an output port from A~D first then select an input number and press enter to confirm the selection.
- 3 INPUT:** Press the number keys to select the desired input source from 01~16 after selecting the output then press enter to confirm the selection.

*Note: selectable inputs are dependant on the controlling device.*

- 4 ENTER:** Press this button to confirm each input/output selection.

## 6.4 RS-232 Pin Assignment

Pins definition of modem cable

CMSDI-44/84/124/164			Remote Controller	
PIN	Definition		PIN	Definition
1	NC		1	NC
2	TxD		2	RxD
3	RxD		3	TxD
4	NC	→	4	NC
5	GND	←	5	GND
6	NC		6	NC
7	NC		7	NC
8	NC		8	NC
9	NC		9	NC

Baud Rate: 19200bps

Data bit: 8-bit

Parity: None

Stop bit: 1-bit

Flow Control: None

## 6.5 RS-232 Commands

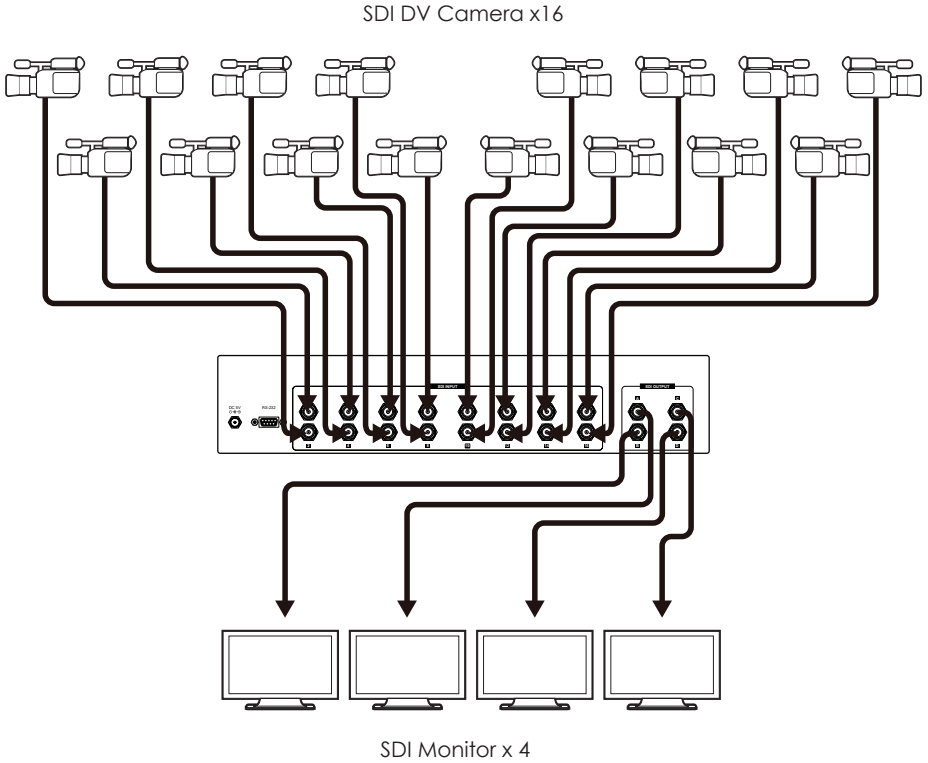
Command	Description
poweron	Power ON
poweroff	Power OFF
portx xx	x= a~d output, xx=01~16 input

For example, when SDI output A needs to be SDI input 2, the command would be porta 02.

**Note:** All the RS-232 command will be not executed unless followed with a carriage return.

Commands are not case-sensitive.

## 7. CONNECTION DIAGRAM



**Note:** The above diagram shows the 16 by 4 SDI matrix (CMSDI-164).

## 8. SPECIFICATIONS

<b>SMPT E Standard</b>	425M Level A & B, 424M, 292M, 259M-C
<b>SDI Transmission Rates</b>	2.970 Gbps and 2.970/1.001 Gbps, 1.485Gbps, 1.485/1.001 Gbps and 270 Mbps
<b>Input Ports</b>	16/8/4×BNC (SD/HD/3G-SDI)
<b>Output Ports</b>	4×BNC (SD/HD/3G-SDI)
<b>SDI Timing Support</b>	SD-SDI: SMPTE 259M-C, 270 Mbit/s HD-SDI: SMPTE 292M, 1.485 & 1.485/1.001 Gbit/s 3G-SDI: SMPTE 424M/425M-AB, 2.970 & 2.970/1.001 Gbit/s
<b>ESD Protection</b>	Human-body Model: ± 8 kV (air-gap discharge) ± 4 kV (contact discharge)
<b>SDI Cable Distance</b>	3G-SDI up to 100m (BELDEN 1694A) HD-SDI up to 200m (BELDEN 1694A) SD-SDI up to 300m (BELDEN 1694A)
<b>Power Supply</b>	5 V DC/2.6 A (US/EU standards, CE/FCC/ UL certified)
<b>Dimensions</b>	436 mm (W)×132 mm (D)×93mm (H)
<b>Weight</b>	2476g (164), 2380g (84), 2340g (44)
<b>Chassis Material</b>	Metal
<b>Silkscreen Color</b>	Black
<b>Operating Temperature</b>	0 °C~40 °C/32 °F~104 °F
<b>Storage Temperature</b>	-20 °C~60 °C/-4 °F~104 °F
<b>Relative Humidity</b>	20~90 % RH (non-condensing)
<b>Power Consumption</b>	8.5W (164), 6.5W(84), 5.5W (44)

## 9. ACRONYMS

ACRONYM	COMPLETE TERM
<b>3G</b>	Bandwidth 2.97Gbit/s $\approx$ 3G
<b>BNC</b>	Bayonet Neill-Concelman
<b>SDI</b>	Serial Digital Interface





**CYPRESS TECHNOLOGY CO., LTD**

Home page: <http://www.cypress.com.tw>