# RED ROCKET™

## BREAKOUT BOX

## INSTALLATION GUIDE


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# RED ROCKET™ BREAKOUT BOX INSTALLATION GUIDE

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**RED Rocket Breakout Box Installation Guide**

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# 1 INTRODUCTION

## 1.1 OVERVIEW

This guide instructs you in the installation and usage of the RED Rocket Breakout Box. The RED Rocket Breakout Box is an accessory for the RED Rocket board.

The RED Rocket board is a PCIe-bus single board capable of decoding and debayering REDCODE R3D material in full quality up to 4.5K 12-bit RGB. With this, the RAW data generated by RED cameras can be decompressed, debayered, and color processed in real time.

The RED Rocket Breakout Box expands the standard connection capabilities of the RED Rocket board, providing four (4) HDMI and eight (8) serial digital interface connectors (SDI) in one 19" rack-mount panel.

| | |
|---|---|
| **1 INTRODUCTION** | Includes system requirements necessary to run RED Rocket Breakout Box, safety instructions, and important notes. |
| **2 OVERVIEW** | Provides an overview of the RED Rocket Breakout Box. |
| **3 INSTALLATION** | Describes connecting the RED Rocket Breakout Box. |
| **A APPENDIX** | Provides technical details about the RED Rocket Breakout Box. |

## INSTALLATION GUIDE DISCLAIMER

RED has made every effort to provide clear and accurate information in this Installation Guide, which is provided solely for the user's information. While thought to be accurate, the information in this document is provided strictly "as is" and RED will not be held responsible for issues arising from typographical errors or user's interpretation of the language used herein that is different from that intended by RED. All safety and general information is subject to change as a result of changes in local, federal or other applicable laws.

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# 1.2 SAFETY INSTRUCTIONS

To use the RED Rocket Breakout Box correctly please adhere to the following:

**CAUTION: Please read the following safety instructions very carefully before attempting any installation and/or performing any work on the RED Rocket Breakout Box.**

**If the RED Rocket Breakout Box is not used in compliance with the safety instructions, the warranty and all resulting liability claims will be void.**

## GENERAL

The RED Rocket Breakout Box has been built according to the applicable safety regulations. To minimize the possibility of faulty operation of the device, all manuals and guides should be available at the operation site. Before installing and/or using the RED Rocket Breakout Box the manual and guides must be read and observed.

- Use the RED Rocket Breakout Box only in good operating condition.
- The computer the RED Rocket Breakout Box will be connected to works with voltages that can be hazardous to your health. Never work on the computer or access its interior with the power cable(s) plugged in. Ensure the power supply is disconnected from the components you intend to work on.
- Computer hardware contains components that are sensitive to electrostatic discharge. If you touch them without precautionary measures, they can be destroyed. Use a wrist strap connected to ground when accessing electronic parts. Avoid touching the components of the computer system and the RED Rocket Breakout Box whenever possible.
- Use the RED Rocket Breakout Box only in compliance with technical data outlined in section A-1 TECHNICAL DATA.
- If fluid or foreign objects get inside the RED Rocket Breakout Box, disconnect from the power supply immediately. Before using the RED Rocket Breakout Box again, contact RED technical support.
- Only use a damp cloth without any cleaning agents to clean the RED Rocket Breakout Box casing.
- The RED Rocket Breakout Box must not be misused, abused, physically damaged, neglected, exposed to fire, water or excessive changes in the climate or temperature, or operated outside maximum rating. Refer to A.1 TECHNICAL DATA.
- Do not open, tamper with, attempt to dismantle or perform any changes or modifications to the RED Rocket Breakout Box whatsoever.

## TRANSPORTATION

During transportation of the RED Rocket Breakout Box please observe the following:

- Always use the original packing or a similar structured packing for transportation.
- Keep the RED Rocket Breakout Box as a dry good during transportation.



 

### ENVIRONMENTAL CONDITIONS

For proper operation and long service life of your RED Rocket Breakout Box, please adhere to these basic environmental condition requirements:

- DO NOT expose the RED Rocket Breakout Box to sources of heat, such as direct sunlight or a heating source.
- DO NOT cover or obstruct the ventilation holes of the RED Rocket Breakout Box.
- AVOID areas with high humidity or dust.
- DO NOT expose the RED Rocket Breakout Box to strong electric or magnetic fields.
- The RED Rocket Breakout Box will operate best in an air-conditioned environment.

## 1.3 IMPORTANT NOTES

The following provides information about the conformity of the product.

### DECLARATION OF CONFORMITY


This product has been tested according to applicable national and international directives and regulations. Further information about this can be found in section A.2 CONFORMITY DECLARATIONS.

## 1.4 SYSTEM REQUIREMENTS

### REQUIRED HARDWARE

This is the minimum hardware requirement that the computer system has to meet if you want to use the RED Rocket Breakout Box.

- Computer with RED Rocket board properly installed and operating.



 

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# 2 OVERVIEW

## 2.1 OVERVIEW OF THE FRONT

This section provides information detailing the connections located on the front of the RED Rocket Breakout Box.

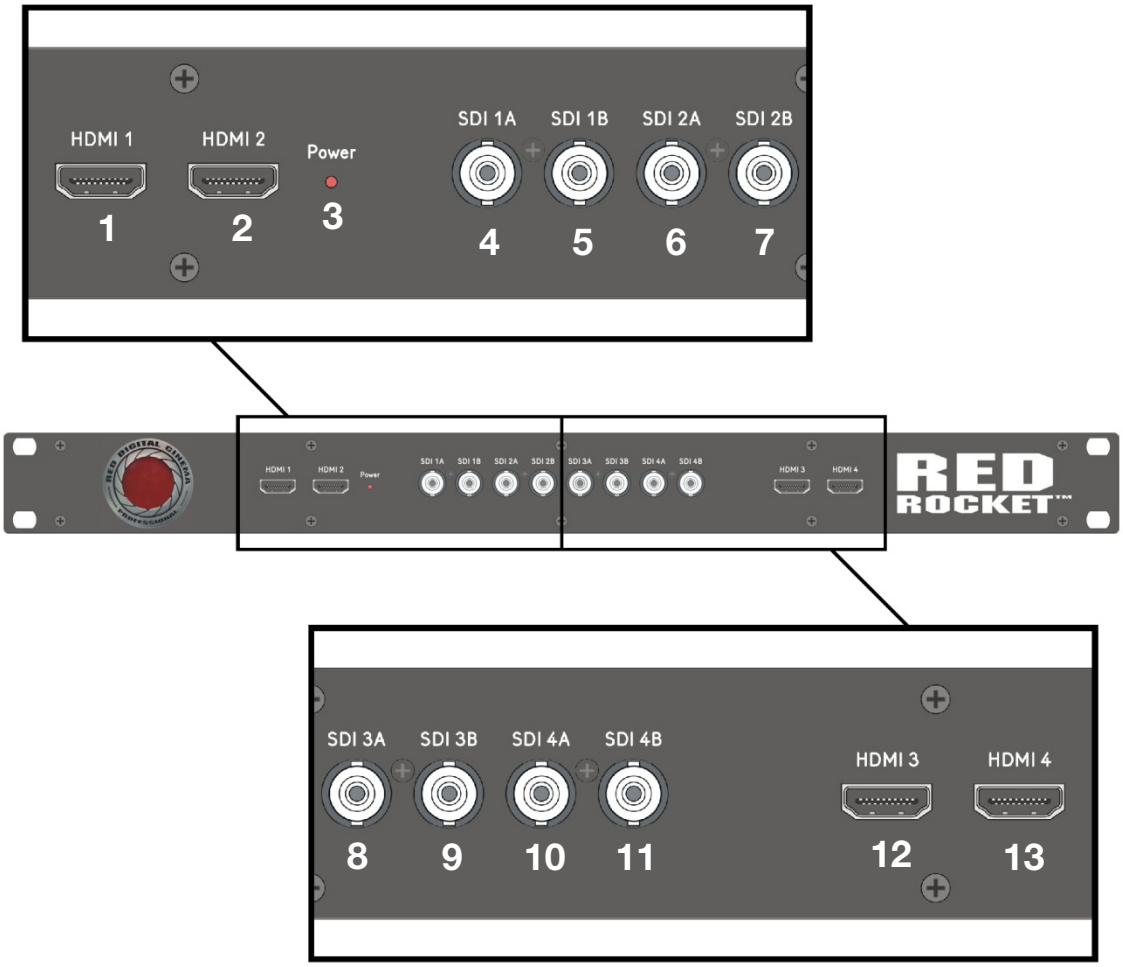


*Figure 2-1: RED Rocket Breakout Box - Front*



 

*Table 2-1: RED Rocket Breakout Box Connector Descriptions - Front*

| NO. | ITEM | DESCRIPTION |
|---|---|---|
| 1 | HDMI 1 | High-definition multimedia interface for output of digital video and audio signals; video signal is the same as given out via DVI output port A of RED Rocket Breakout Box; additionally, audio channels 1 to 4 will be output |
| 2 | HDMI 2 | Same as HDMI 1 but video signal is same as provided by DVI output port B of RED Rocket Breakout Box; used in quad display applications |
| 3 | POWER LED | The RED Rocket Breakout Box is an active component; it must be connected to a power source and will then provide information about its status via the power LED (section 2.3 POWER LED) |
| 4 | SDI 1A | BNC connector for output of digital video signals (serial digital interface with embedded audio); output of the first stream of RGB[A] in dual-link mode; the video signal is the same as given out via DVI output port A of RED Rocket Breakout Box |
| 5 | SDI 1B | BNC connector for output of digital video signals (serial digital interface); output of the second stream of RGB[A] in dual-link mode; the video signal is the same as given out via DVI output port A of RED Rocket Breakout Box |
| 6 | SDI 2A | Same as SDI 1A but video signal is same as provided by DVI output port B; used in quad display applications |
| 7 | SDI 2B | Same as SDI 1B but video signal is same as provided by DVI output port B; used in quad display applications |
| 8 | SDI 3A | Same as SDI 1A but video signal is same as provided by DVI output port C; used in quad display applications |
| 9 | SDI 3B | Same as SDI 1B but video signal is same as provided by DVI output port C; used in quad display applications |
| 10 | SDI 4A | Same as SDI 1A but video signal is same as provided by DVI output port D; used in quad display applications |
| 11 | SDI 4B | Same as SDI 1B but video signal is same as provided by DVI output port D; used in quad display applications |
| 12 | HDMI 3 | Same as HDMI 1 but video signal is same as provided by DVI output port C of RED Rocket Breakout Box; used in quad display applications |
| 13 | HDMI 4 | Same as HDMI 1 but video signal is same as provided by DVI output port D of RED Rocket Breakout Box; used in quad display applications |



 

## 2.2 OVERVIEW OF THE REAR

This section provides information pertaining to the connection located on the rear of the RED Rocket Breakout Box.

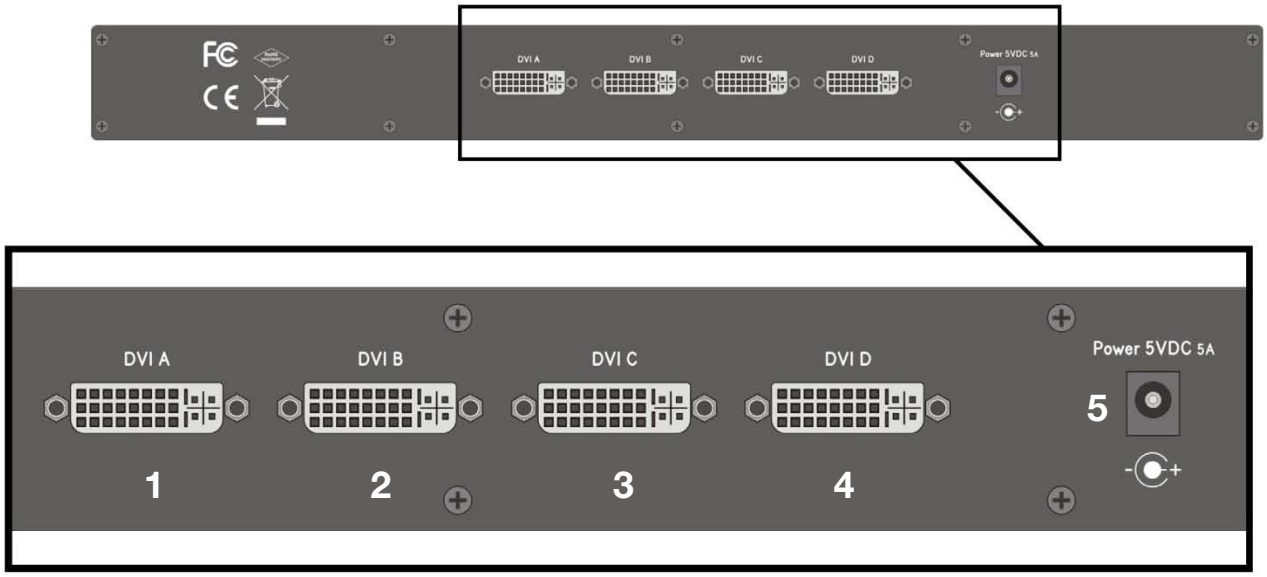


*Figure 2-2: RED Rocket Breakout Box – Rear*

*Table 2-2: RED Rocket Breakout Box Connector Descriptions - Rear*

| NO. | ITEM | DESCRIPTION |
|---|---|---|
| 1 | DVI A | DVI connector to be connected to DVI A/B connector of RED Rocket Breakout Box; the cable used for the connection is described in more detail in section 2.4 CONNECTION CABLES |
| 2 | DVI B | Same as DVI A; used in quad display applications |
| 3 | DVI C | Same as DVI A but it will be connected to DVI C/D connector of RED Rocket Breakout Box; used in quad display applications |
| 4 | DVI D | Same as DVI C; used in quad display applications |
| 5 | POWER | Power supply input for RED Rocket Breakout Box; for specifications see section A.1 TECHNICAL DATA |

## 2.3 POWER LED

When power is connected to the RED Rocket Breakout Box, the Power LED provides information about the status of the device (refer to 2.1 OVERVIEW OF THE FRONT):

*Table 2-3: RED Rocket Breakout Box Power LED Operation*

| Power LED Status | Explanation |
|---|---|
| Illuminated | RED Rocket Breakout Box is properly connected and operating properly |
| Blinking Slowly (1 sec. intervals) | The major cable (DVI A/B to DVI A) is not connected to the RED Rocket Breakout Box and/or the RED Rocket board. Refer to section 3.1 SETUP OF RED ROCKET BREAKOUT BOX. |
| Blinking Fast | An internal error has occurred. A firmware update may solve this issue. Please contact RED support at **http://www.RED.com/support**. |

## 2.4 CONNECTION CABLES

To connect the RED Rocket Breakout Box to the RED Rocket board, special cables are used (DMS-59-to-2×DVI-D). They must be plugged into the DMS-59 connectors located on the slot panel of the RED Rocket board. Each DMS-59 breaks out into two (2) DVI-D (DVI for digital data only), which are then connected to the rear of the RED Rocket Breakout Box (refer to 3.1 SETUP OF RED ROCKET BREAKOUT BOX).

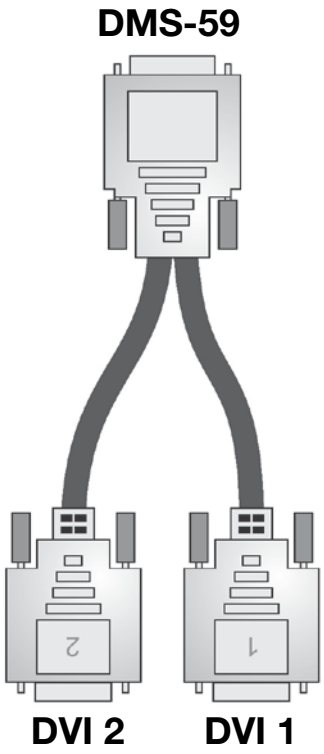


*Figure 2-3: DMS-59-to-2xDVI-D Cable*

To fully connect the RED Rocket Breakout Box to the RED Rocket board, two (2) of these cables are required. In environments where quad display applications or similar are not desired, the major connection 'DVI A/B' to 'DVI A' between the RED Rocket Breakout Box and the RED Rocket board will work sufficiently (refer to 3.1 SETUP OF RED ROCKET BREAKOUT BOX). Cable specifications are detailed in section A.1 TECHNICAL DATA.



 

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# 3 SETUP AND OPERATION

This chapter outlines connection of the RED Rocket Breakout Box to the RED Rocket board. The installation is performed in several steps:

1. Setting up and connecting the RED Rocket Breakout Box to the RED Rocket board.
2. Basic operation of the RED Rocket Breakout Box.

## 3.1 SETUP OF RED ROCKET BREAKOUT BOX

To set up the RED Rocket Breakout Box perform the following:

1. Place the RED Rocket Breakout Box on a firm, flat surface or install in a 19" rack-shelf near the computer with the RED Rocket board installed.
2. Connect the RED Rocket Breakout Box to the DVI A/B and DVI C/D outputs on the RED Rocket board using the DMS-59-to-2×DVI-D connection cables (refer to 2.4 CONNECTION CABLES):

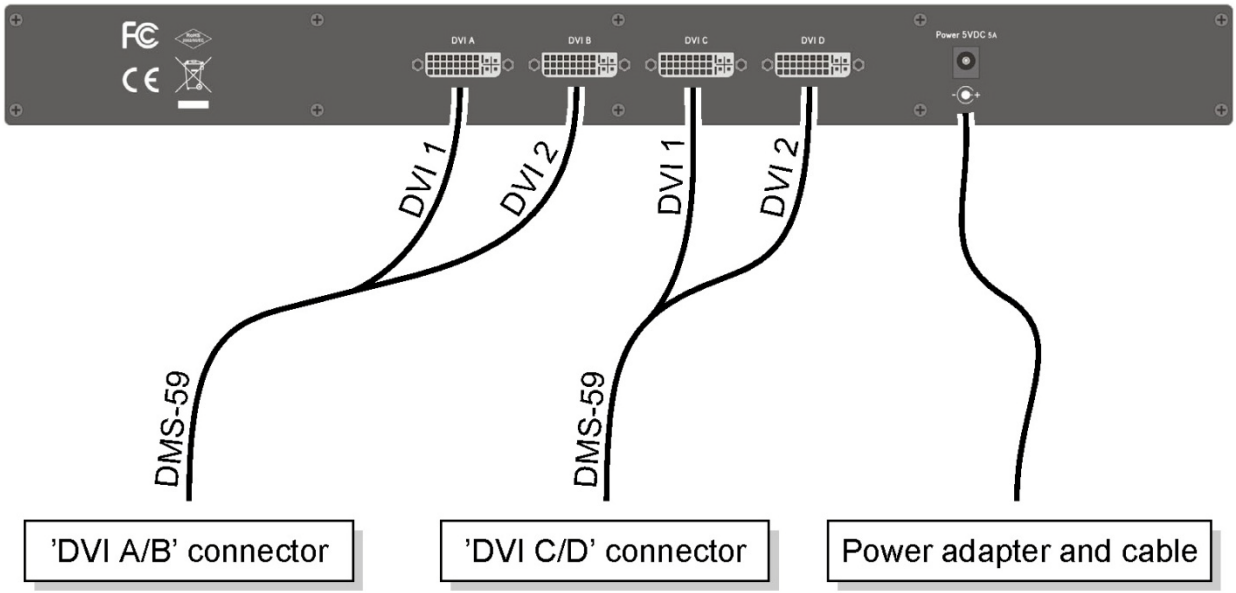


*Figure 3-1: Connections of the RED Rocket Breakout Box*

**NOTE: In environments where quad display applications or similar are not intended, the major connection 'DVI A/B' to 'DVI A' between board and breakout box will suffice. For specifications of the connection cables see section A.1 TECHNICAL DATA.**

3. Connect the 5V power adapter to the RED Rocket Breakout Box and plug it into a power outlet.

**NOTE: When the RED Rocket Breakout Box is ON, the SDI outputs of the RED Rocket board SDI panel, located on the rear of the RED Rocket board equipped computer, will become inoperative.**

4. Connect your equipment to the appropriate connectors on front of the RED Rocket Breakout Box.

**NOTE: Depending on the firmware version of the RED Rocket Breakout Box, a firmware update may be required. Please contact RED support at http://www.RED.com/support.**



 

# 3.2 OPERATION OF RED ROCKET BREAKOUT BOX

The following outlines basic operation of the RED Rocket Breakout Box.

## 3.2.1 TURNING ON/OFF

**NOTE: When the RED Rocket Breakout Box is ON and connected to the RED Rocket board, the SDI outputs of the RED Rocket board SDI panel, located on the rear of the RED Rocket board equipped computer, will become inoperative.**

**TURN ON:** To turn the RED Rocket Breakout Box on, connect the 5V power adapter to the RED Rocket Breakout Box and plug it into a power outlet.

**TURN OFF:** To turn the RED Rocket Breakout Box off, disconnect the 5V power adapter from the RED Rocket Breakout Box or from the power outlet.

## 3.2.2 HOT PLUGGING

The RED Rocket Breakout Box is hot-pluggable, meaning it can be safely connected to or disconnected from the RED Rocket board while both are on and operating.

## 3.2.3 STARTUP OF RED ROCKET BREAKOUT BOX

The RED Rocket Breakout Box does not require a special start-up procedure. When the RED Rocket Breakout Box is properly connected to the RED Rocket board and power, it will automatically be recognized by the RED Rocket board and can be used immediately.



 

# A APPENDIX

This chapter provides technical details about the RED Rocket Breakout Box.

## A.1 TECHNICAL DATA

The following shows the technical data for the RED Rocket Breakout Box.

| | |
|---|---|
| **Dimensions** | Height: 44 mm (1.7")<br>Width: 483 mm (19")<br>Depth: 147 mm (chassis, 5.8")<br>164 mm (max., 6.4") |
| **Weight** | Approx. 2.5 kg (5.5 lbs) |
| **Environment** | No exposure to heat<br>No exposure to strong electric or magnetic fields |
| **Operating Temperature** | Maximum:10 - 35 °C (50 - 95°F)<br>Optimum:15 - 25 °C (59 - 77 °F) |
| **Storage Temperature** | 5°C (40 - 50 °C (32 - 122 °F) |
| **Humidity** | 10 - 80 %, non-condensing at all times |
| **Air** | Dust-Free |
| **Power** | 5V (±5%) DC ⎓ 5 A |
| **Connection Cable(s)** | DMS-59(m) to 2×DVI-D(m)<br>length: <=2m (6.5'), uniform for all cables<br>No extension cables allowed |

**NOTE: Only use power supplies that conform to the technical data requirements.**

# A.2 CONFORMITY DECLARATIONS

The RED Rocket Breakout Box has been tested in accordance with applicable national and international directives and regulations. The following provides further information regarding compliance.

## A.2.1 RoHS Compliance

The EU directive 2002/95/EC 'Restriction of Hazardous Substances (RoHS)' prohibits the use of certain substances in electrical and electronic equipment.

## A.2.2 EC Declaration of Conformity (CE Marking)

RED herewith declares that the following product(s) according to the provisions of the mentioned EC Directives – including their relevant revisions at the time of this declaration – is (are) in conformity with the detailed standards or other normative documents:

| | |
|---|---|
| **RED Rocket Breakout Box** | **EC Directives:**<br>- EMC Directive 2004/108/EC<br>- Low-Voltage Directive 2006/95/EC |
| | **Applied Harmonized Standards:**<br>- EN55022<br>- EN55024<br>- IEC 61000-4-2<br>- IEC 61000-4-3<br>- IEC 61000-4-4<br>- IEC 61000-4-5<br>- IEC 61000-4-6<br>- IEC 61000-4-8<br>- IEC 61000-4-11 |

## A.2.3 FCC Compliance Statement

RED herewith declares that the following equipment has been tested in accordance with the applicable valid FCC regulations:

- RED Rocket Breakout Box

### FCC Notice

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 is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**NOTE: Connecting this device to peripheral devices that do not comply with Class A requirements or using an unshielded peripheral data cable could also result in harmful interference to radio or television reception. The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. To ensure that the use of this product does not contribute to interference, it is necessary to use shielded I/O cables.**



 


# RED DIGITAL CINEMA