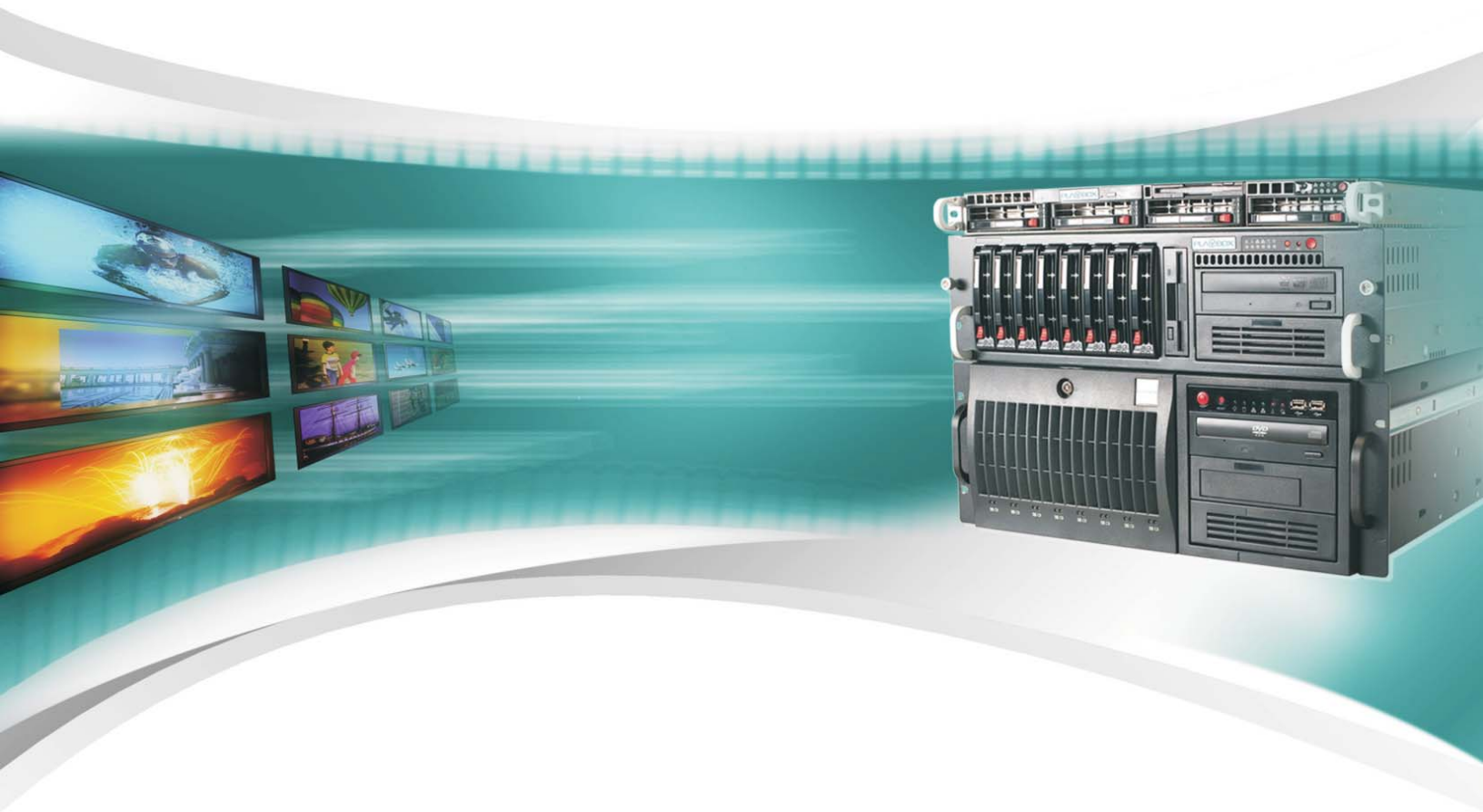# Hardware Maintenance Manual

IT'S ALL IN A PLAYBOX

Traffic • Automation • Subtitling • DVB • Streaming

Form Factor: 4U rackmount/tower

Hardware Maintenance Manual

Version 1.6

Table of Contents

Table of Contents

Technical Specifications

Technical Support

About this Manual

This manual describes the technical features and specifications of your PlayBox SD/HD server systems.

This manual is written for engineers and technicians reponsible for the system installation, setup and maintanence.
The information in this manual has been carefully reviewed and is believed to be accurate.

The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates.

This document and other PlayBox Technology Ltd. documents can be viewed or downloaded from the PlayBox Web site at http://www.playbox.tv

> *Please Note:* Changes to Equipment, Model, nomenclature and the mechanical and electrical design of Equipment described herein are subject to change without notice, provided that they do not affect the fit, form, or function of the Equipment.

Safety Standards and Compliances

Safety Terms and Symbols

This product manual uses the following safety terms and symbols to identify certain conditions or practices.

Table 1-1. Safety Terms and Symbols

⚡	**Warning** Identifies conditions or practices that can result in personal injury or loss of life-high voltage is present. Uninsulated dangerous voltage within the product's enclosure may be sufficient to constitute a risk of electric shock to persons..
⚠	**Caution** Identifies conditions or practices that can result in damage to the equipment or other property. Important operating and maintenance (servicing) instructions are included in the literature accompanying the product.

Restriction on Hazardous Substances (RoHS) Directive

PlayBox Technology Ltd. is fully committed to comply with all applicable laws and regulations, including the RoHS Directive which restricts the use of certain hazardous materials in electrical and electronic products.

PlayBox Technology Ltd. goal is to meet and exceed compliance obligations of the RoHS Directive on a global basis. RoHS substances will be virtually eliminated (to levels below legal limits) for all newly marketed PlayBox products subject to the RoHS Directive, except where it is widely recognized that there is no technically feasible alternative (unless otherwise exempted under the RoHS directives).

Directive 2002/95/EC—commonly known as the European Union (EU) Restriction on Hazardous Substances (RoHS)-sets limits on the use of certain substances found in electrical and electronic equipment. The intent of this legislation is to reduce the amount of hazardous chemicals that may leach out of landfill sites or otherwise contaminate the environment during end-of-life recycling. The Directive takes effect on July 1, 2006, and it refers to the following hazardous substances:

• Lead (Pb)
• Mercury (Hg)
• Cadmium (Cd)
• Hexavalent Chromium (Cr-V1)
• Polybrominated Biphenyls (PBB)
• Polybrominated Diphenyl Ethers (PBDE)

In accordance with this EU Directive, all PlayBox Technology products sold in the European Union will be RoHS-compliant. Spare parts supplied for the repair and upgrade of equipment sold before July 1, 2006 are exempt from the legislation. PlayBox Technology Ltd. equipment that complies with the EU directive will be marked with a RoHS-compliant symbol, as shown in **Figure 1-1**.

Figure 1-1. RoHS Compliance Symbols

Waste from Electrical and Electronic Equipment (WEEE) Directive

The European Union (EU) Directive 2002/96/EC on Waste from Electrical and Electronic Equipment (WEEE) deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products.

Effective August 13, 2005, producers or users will be required to recycle electrical and electronic equipment at end of its useful life, and must not dispose of the equipment in landfills or by using other unapproved
methods. (Some EU member state may have different deadlines.)

PlayBox Technology Ltd. equipment that complies with the EU directive will be marked with a WEEEcompliant symbol, as shown in **Figure 1-2**.

Figure 1-2. WEEE Compliance Symbol

Safety Guidelines

Electrical Safety Guidelines

Check the Power Cords

> ⚠ **Warning**
>
> To avoid electrical shock, check the power cords properly

- Use the exact type of power cords as required.
- Be sure to use power cord(s) that came with safety certifications.
- The power cord(s) must be compliant with the AC voltage requirements in your region.
- The power cord plug cap must have an electrical current rating that is at least 125% of the electrical current rating of this product.
- The power cord plug cap that plugs into the AC receptacle on the power supply must be an IEC 320, sheet C13, type female connector.
- Be sure to disconnect the power supply before accessing the chassis or its components
- Plug the Power cord(s) into a socket that is properly grounded before turning on the power.

General Electrical Safety Guidelines

> ⚠ **Warning**
>
> Adhere to the following Electrical Safety Guidelines to avoid possible damages to the system or injury to yourself.

- Be aware of the locations of the power switches on the chassis and in the room, so you can disconnect the power supply if an accident occurs.
- Take extra precautionary measures when working with high voltage components. It is not recommended to work alone.
- Before removing or installing main system components, be sue to disconnect the power first.
- Turn off the system before you disconnect the PS.
- Use only one hand when working with powered-on

Safety Guidelines

General Electrical Safety Guidelines

<table>
<tr>
<td>
⚠ **Warning**
</td>
<td>

- Use rubber mats specifically designed as electrical insulators when working with computer systems.
- The power supply or power cord mu st include a grounding plug and must be plugged into grounded outlets.
- CD/DVD-ROM Laser: CAUTION – Do not open the enclosures of power supplies or CD ROM to avoid injury.
</td>
</tr>
</table>

General Safety Guidelines

<table>
<tr>
<td>
⚠ **Warning**

Adhere to the following General Safety Guidelines to ensure your personal safety.
</td>
<td>

- Keep the area around the chassis clean and free of clutter.
- To avoid injuries to the back, be sure to use your leg muscles, keep your back straight, and bend your knees, when lifting the system.
- Avoid wearing loose clot hing to preventing it from coming into contact with power circuits.
- After removing the components or chassis covers from the system, place them on a table for safeguard
- Be sure to remove any jewelry or metal objects before working on the chassis to avoid short circuits should these objects come into contact with power circuits.
- After accessing the interior of the chassis, be sure to close the chassis with chassis covers and secure the chassis to the racks
- Use only one hand when working with powered-on
</td>
</tr>
</table>

Safety Guidelines

ESD Safety Guidelines

The following measures are generally sufficient to protect against Electric Statics Discharge (ESD)

⚠ **Caution**

Electric Static Discharge (ESD) can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully.

- Use a grounded wrist strap des igned to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their anti-static bags until ready for use.
- Touch a grounded metal object before removing the board from the anti-static bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

⚠ **Warning**

To avoid personal injury and property damage, please carefully follow all the Operation Safety Guidelines precisely.

---

1. Turn off all peripheral devices connected to the chassis.
2. Press the power button to power off the system.
3. Unplug all power cords from the system or the wall outlets.
4. Disconnect all the cables and label the cables for easy identification.
5. Use a grounded wrist strap designed to prevent static discharge when handling components.

Operation Safety Guidelines

Before installing the chassis into a rack:

⚠ **Caution**

For proper cooling, make sure to install all chassis covers before turning on the system. If this rule is not strictly followed, warranty may become void. Do not open the casing of a power supply. Power supplies can only be accessed and serviced by a qualified technician of the manufacturer.

1. Make sure that the rack is securely anchored onto a unmovable surface or structure before installing the chassis into the rack.

2. Unplug the power cord(s) of the rack before installing the chassis into the rack.

3. Make sure that the system is adequately supported. Make sure that all the components are securely fastened to the chassis to prevent components from falling off from the chassis.

4. Be sure to install an AC Power Disconnect for the entire rack assembly and this Power Disconnect must be clearly marked.

5. The rack assembly shall be properly grounded to avoid electric shock. The rack assembly must provide sufficient airflow to the chassis for proper cooling.

Please Note: Chapter 5: Chassis Installation and Setup contains specific information about installing PlayBox equipment in to the rack.

System Components

The information in this section describes the items included in your accessory kit, the front panel components, and the back panel components for PlayBox SD/HD server system.

Unpacking the system

Inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server speci

Accessory Kit

Your Accessory Kit includes the following items.

A. 4U Chassis rail kit, includes side handles
C. Screw kit for SCA Drives and DVD, FDD
D. One C13 Connector To Type F Male Power cables

Rail Screw

D. Flat head M3 x 4 mm [0.157]   F. Flat head M5 x12 mm [0.472]
E. Round head M4 x 4 mm [0.157]   G. Washe for M5

Please Note: Chapter 5: Chassis Installation and Setup contains specific information about installing PlayBox equipment in to the rack.

Front Panel: PlayBox System

Panel I/O Device Definitions

A. SCA Drive Trays (8)
B. LED Panel /see page 2.3/ (1)

C. 5.25" CD/DVD-RW (1)
D. Floppy Disk (1)

Figure 2-1. System Front Panel

LED Panel

D.1. Power Button
D.2. System Reset
D.3. Power Indicator
D.4. HDD Activity Indicator

D.5. LAN 1 Activity Indicator
D.6. LAN 2 Activity Indicator
D.7. Temerature/Fan Faulure Indicator
D.8. Power Failure Indicator

Figure 2-2. LED Panel

Control Panel

Control Panel Buttons

There are two push-buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.

Power: The main power switch is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug system.

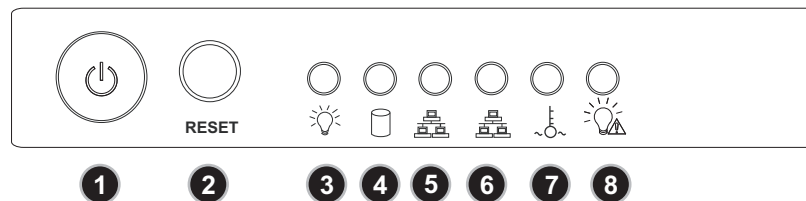**Reset:** The reset button is used to reboot the system.before servicing.

Control Panel Leds

The control panel located on the front of the SD/HD System has 6 LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Power: Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

HDD: Indicates SAS/SATA drive, and/or DVD-ROM drive activity when flashing.

NIC1: Indicates network activity on LAN1 when flashing.

NIC2: Indicates network activity on LAN2 when flashing.

Control Panel

Control Panel LEDs

Overheat/Fan Fail: When this LED flashes it indicates a fan failure. When continuously on (not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm.

Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the overheat condition exists. will remain flashing or on as long as the overheat condition exists.

Indicates a power failure to the system's power supply units.

Drive Carrier LEDs

Each SATA drive carrier has two LEDs.

Green: When illuminated, this green LED (on the front of the drive carrier) indicates drive activity. A connection to the SAS backplane enables this LED to blink on and off when that particular drive is being accessed.

Red: The red LED to indicate a drive failure. If one of the SAS/SATA drives fail, you should be refer to your system management software

Back Panel: PlayBox System

Back Panel Connectors

The following illustration displays the back panel devices.

> **Please Note:** Note that the exact palce and number for broadcast I/O may vary slightly from the different type of systems.

A. Power Supply Modules (1)
B. Back Panel PC Ports
(see Back Panel PC Ports see page 2-6)
C. Dual Head Video Card (1)
D. SD/HD SDI I/O card

E. SD/HD SDI I/O card [1]
F. RS-232 card (1)[2][3]
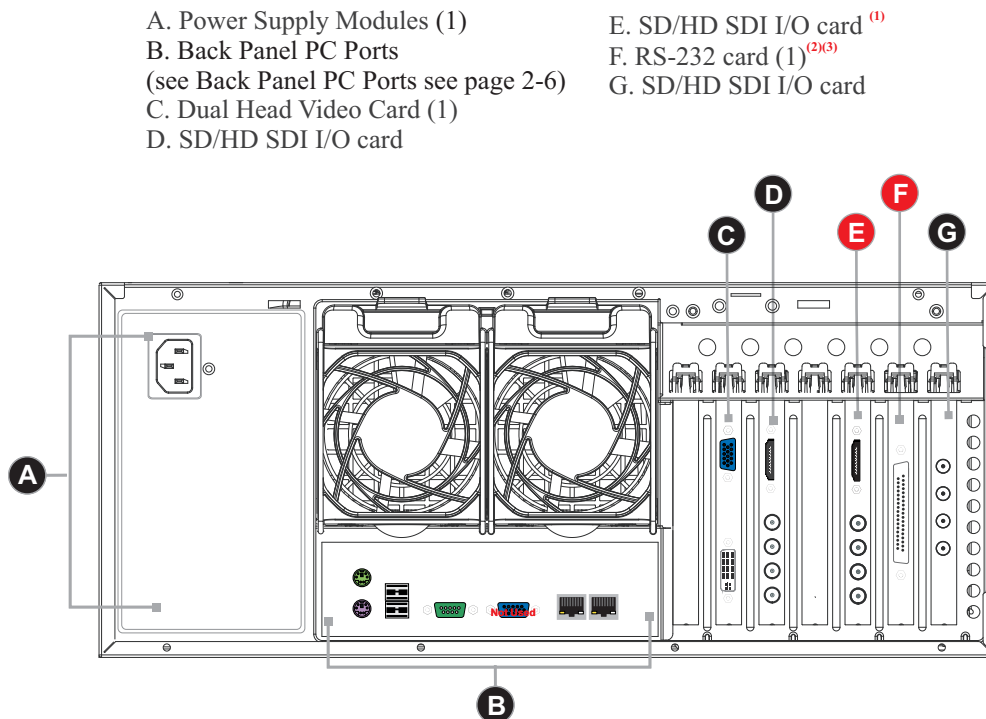G. SD/HD SDI I/O card

Figure 2- 3. Rear View

> **Please Note:** [1][2] **F** and **D** I/O cards are used in specific configuration refer to Chapter 5: Broadcast I/O Combinations.
> [3]RS-232 card is replaced by GPI Byapass Relay when this option is purchased

Back Panel: PlayBox Systems

A. Power Supply Modules

Table 2-1. Power Module LED Descriptions

Component	Color Condition	Description
A. Power Supply Modules LED	Green	Power supply DC On
	Amber	Power Supply Standbay
	Off	No AC Power to the System

B. Back panel PC Ports

1. Mouse (1)
2. Keyboard (1)
3. USB 1-2 ports (2)
4. RS-232 (1)

5. VGA Port (1) /*Not Used*/
6. LAN 1
7. LAN2

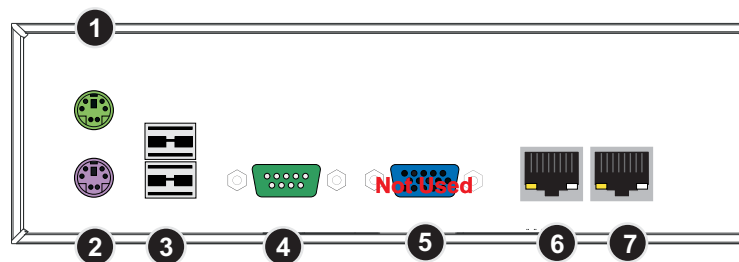**Figure 2-4.** Back Panel PC Ports: PlayBox System

Table 2-2. LAN LED's Activity Decription

LAN 1/2 Activity LED (Left) Status		
Color	Status	Definition
Yellow	Flashing	Active

LAN 1/2 Activity LED (Right) Status	
LED Color	Definition
Off	No connection or 10Mbs
Green	100Mbs
Amber	1Gbs

Broadcast I/O

Broadcast I/O Functions

The PlayBox system series operate with SD Definition audio and video.

The digital video interface is serial digital with embeded and AES/EBU audio.

A reference input is included in SD mode that uses analog blackburst and TriSync in HD mode. We recomended that you incorporate patch points in the input and output path so that the baypassed and removed from the path for maintenance.

Broadcast Audio/Video Connectors

Break Out Cable

2. Deck Control

3. R-Y In

4. Y In

5. B-Y In

6. Ref In

7. R-Y Out

8. Y Out

9. B-Y Out

10. AES/EBU Out

11. AES/EBU In

12. Audio Out Left

13. Audio Out Right

14. Audio In Left

15. Audio In Right

HD/SD Video Input/Output
Breakout Cable

SD/HD-SDI Out 1

SD/HD-SDI Out 2
Downconverted HD, external key out

SD/HD-SDI In 1

HD-SDI In 2

RS-422
Deck Control   Analog Audio In and Out   AES/EBU Audio In and Out   Analog Component, Composite In and Out   Ref In

Figure 3-2. Breakout cable connectors

Technical Specifications

Connections	
SDI Video Input	2 x 10-bit BNC female.
SDI Video Output	2 x 10-bit BNC female.
Analog Video Input	Component YUV/S-Video/ Composite
Analog Video Output	Component YUV/S-Video/ Composite
AES Audio Input	2 channels unbalanced AES/EBU digital audio.
AES Audio Output	2 channels unbalanced AES/EBU digital audio.
SDI Audio Input	16 channels in HD, 8 channels in standard definition.
Analog Audio Input	2 channels of professional balanced XLR analog audio.
Analog Audio Output	2 channels of professional balanced XLR analog audio.
Sync input	BlackBurst on SD or TriSync on HD

Standards and formats	
SDI Compilance	SDI (SMPTE-259M), HD SDI (SMPTE-292M)
Video Sampling	4:2:2
Color Space	4:2:2 YUV
Audio Sampling	24-bit, PCM, 48kHz

Table 2-3. Broadcast I/O specification

Broadcast I/O Combination

Chanel In a Box SD back panel

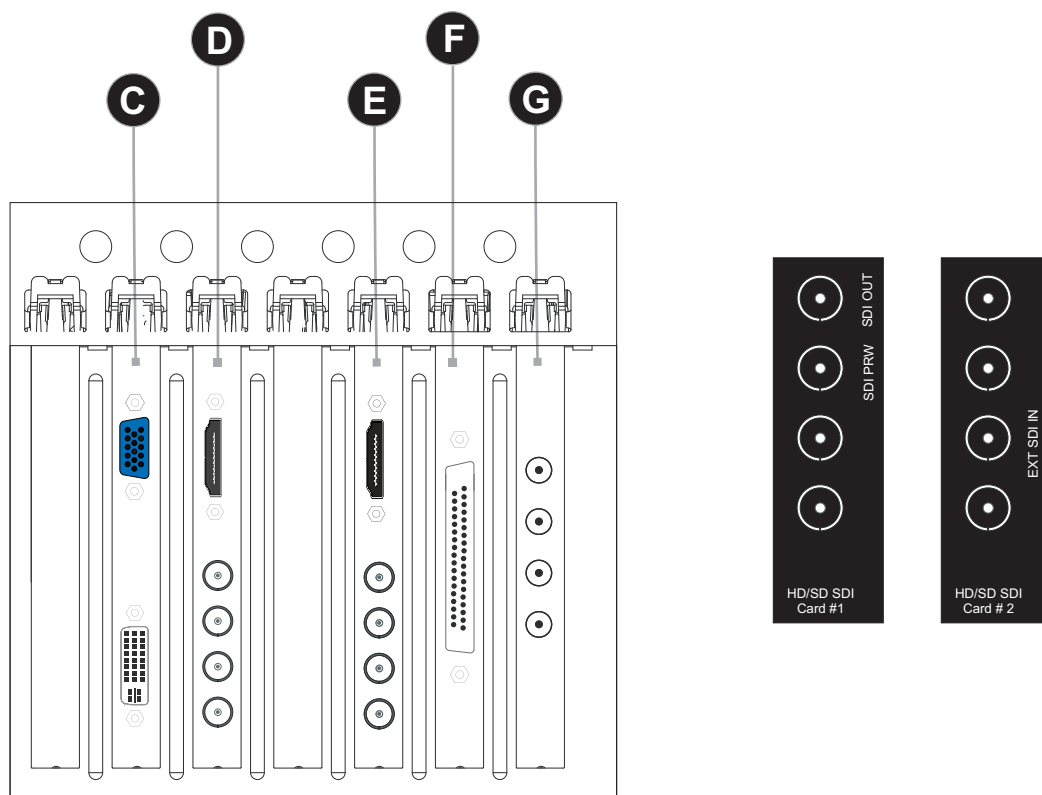The following information describes different I/O combinations depends of system type.

Figure 3-2. Chanel In a Box SD back panel

ChInBox SD/HD In/Out Card #1	
SDI Card I/O	
SD/HD-SDI Out 1	Playout Program SDI Output
SD/HD-SDI Out 2	Playout Preview SDI Output
SD/HD-SDI In 1	Not used
SD/HD-SDI In 2	Not used

ChInBox SD/HD In/Out Card #2	
SDI Card I/O	
SD/HD-SDI Out 1	External signal SDI Preview
SD/HD-SDI Out 2	Not Used
SD/HD-SDI In 1	External signal SDI Input
SD/HD-SDI In 2	Not Used

Broadcast I/O combination

Two (2) channel PlayBox SD back panel

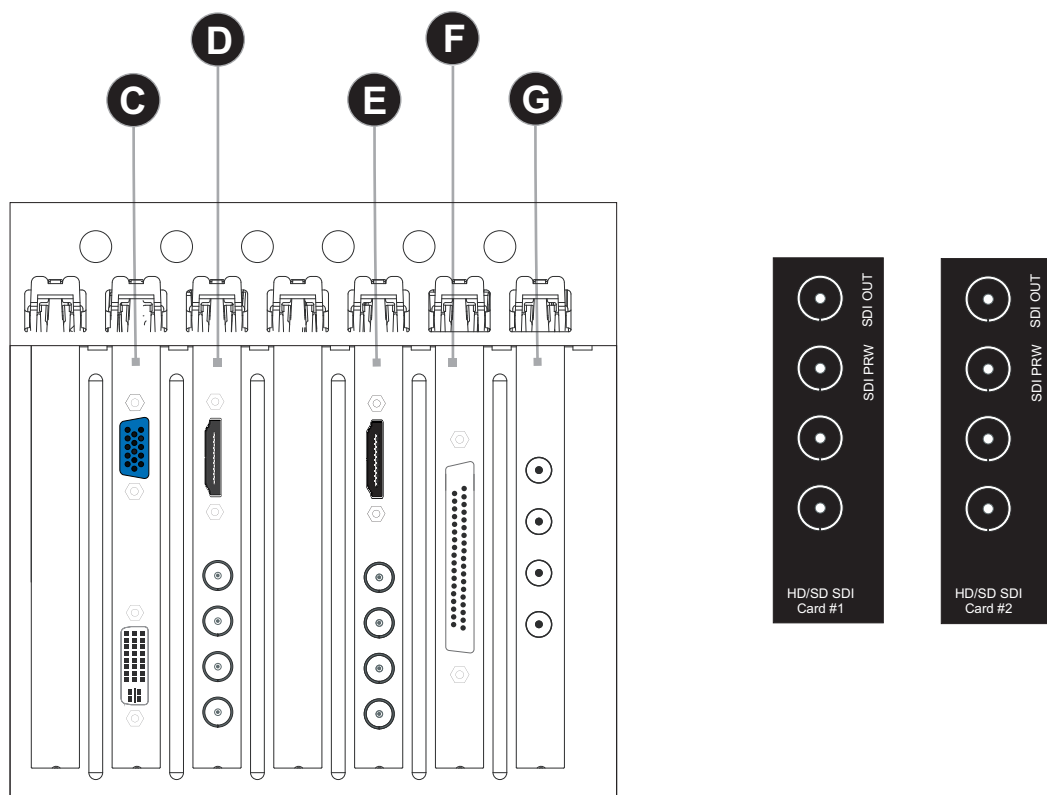The following information describes different I/O combinations depends of system type.

Figure 3-3. Two (2) PlayBox Channel SD System

SD/HD In/Out Card Channel #1	
SDI Card I/O	
SD/HD-SDI Out 1	Playout Program SDI Output
SD/HD-SDI Out 2	Playout Preview SDI Output
SD/HD-SDI In 1	Not used
SD/HD-SDI In 2	Not used

SD/HD In/Out Card Channel #2	
SDI Card I/O	
SD/HD-SDI Out 1	Playout Program SDI Output
SD/HD-SDI Out 2	Playout Preview SDI Output
SD/HD-SDI In 1	Not used
SD/HD-SDI In 2	Not Used

Broadcast I/O combination

Ingest (CaptureBox) SD back panel

The following information describes different I/O combinations depends of system type.
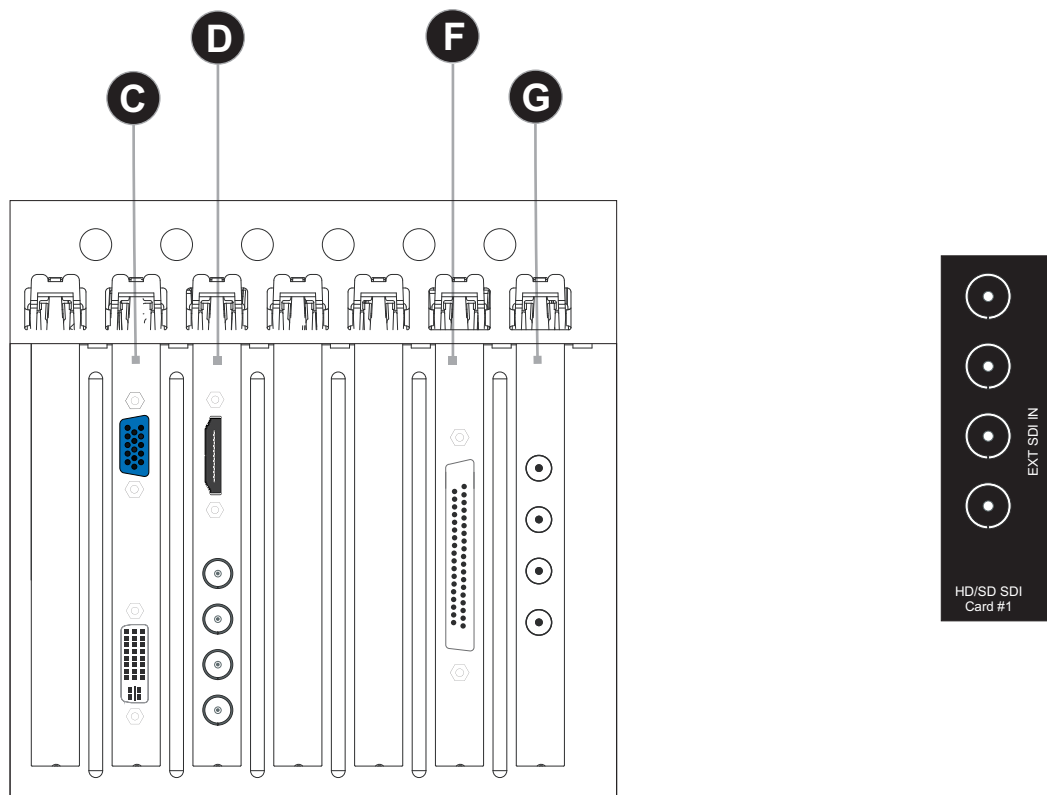

Figure 3-4. Ingest (CaptureBox) SD back panel

Ingest (CaptureBox) SD In/Out Card	
SDI Card I/O	
SD/HD-SDI Out 1	External signal SDI Preview
SD/HD-SDI Out 2	Not Used
SD/HD-SDI In 1	External signal SDI Input
SD/HD-SDI In 2	Not Used

Broadcast I/O combination

CG (TitleBox) Box SD/HD back panel

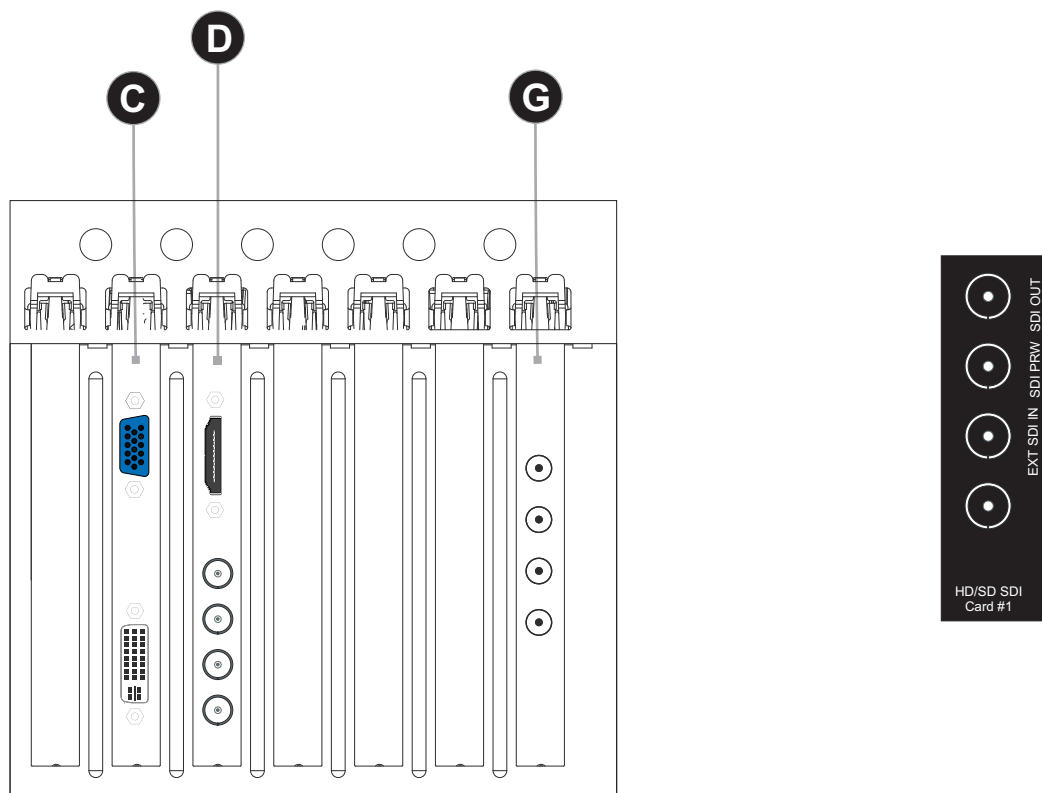The following information describes different I/O combinations depends of system type.

Figure 3-5. CG (TitleBox) SD back panel

TitleBox In/Out configuration (Refer to PlayBox Software Manual)		
SDI Card I/O	**CG with ext. Input**	**CG with SDI Fill&key**
SD/HD-SDI Out 1	CG Program SDI Output	SDI FIll
SD/HD-SDI Out 2	CG Preview SDI Output	SDI KEY
SD/HD-SDI In 1	External signal SDI Input	Not Used
SD/HD-SDI In 2	Not used	Not Used

System Installation and Setup

This section describes important safety guidelines for proper chassis rack installation, tools needed for installation, how to access chassis components, and chassis installation instructions.

Important Safety Guidelines

For your convenience, the following information includes some Safety Steps:

⚠ **Caution**
This product shall only be accessed and serviced by technically qualified personnel or technicians.

Before accessing the chassis:

1. Turn off all peripheral devices and turn off the power supply connected to the system.
2. Unplug all power cords from the system or the wall outlets.
3. Disconnect all the cables and label the cables for easy identification.
4. Use a grounded wrist strap designed to prevent static discharge when handling components.

⚡ **Warning**
To avoid personal injury and property damage, please adhere to the following safety steps.

Before installing the chassis rails:

1. Enclose the chassis with chassis covers.
2. Unplug the AC power cord(s).
3. Remove all external devices and connectors.

General System Precautions

Warnings and Precautions!

⚠ Warning

1. Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.In single rack installation, stabilizers should be attached to the rack.
2. In multiple rack installations, the racks should be coupled together.
3. Always make sure the rack is stable before extending a component from the rack.
4. You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

⚠ Caution

1. Review the electrical and general safety precautions that came with the components you are adding to your chassis.
2. Determine the placement of each component in the rack before you install the rails.
3.Install the heaviest server components on the bottom of the rack first, and then work up.
4. Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
5. Allow the hot plug hard drives and power supply modules to cool before touching them.
6. Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

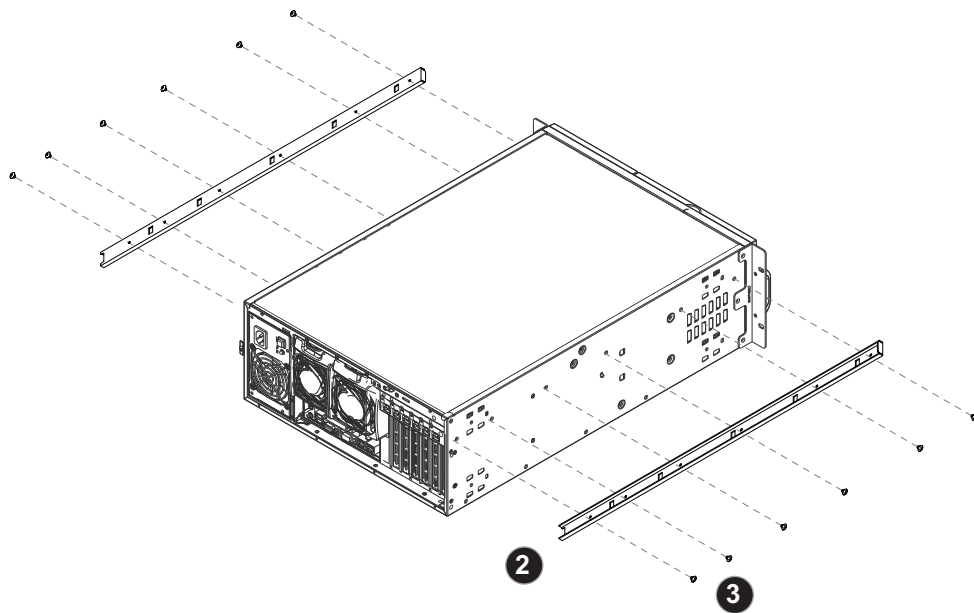# Rack Mounting Instructions

Installing the Iner Rack Rails

Figure 4-1: Separating the Inner Rack Rails

1. Locate the pair of inner rails and two sets of screws (6 screws per set) that are included in the shipping package.

2. Align the inner rails against the chassis as shown.

3. Secure inner rails with screw included

4. Repeat steps 1 and 2 for 3. the other inner rail extension.

Assembling the Outer Rack Rails

Assembling the Outer Chassis Rails

1. Locate the two pairs of outer rails. Each pair consists of one middle rail, one end bracket and one end rail as shown.
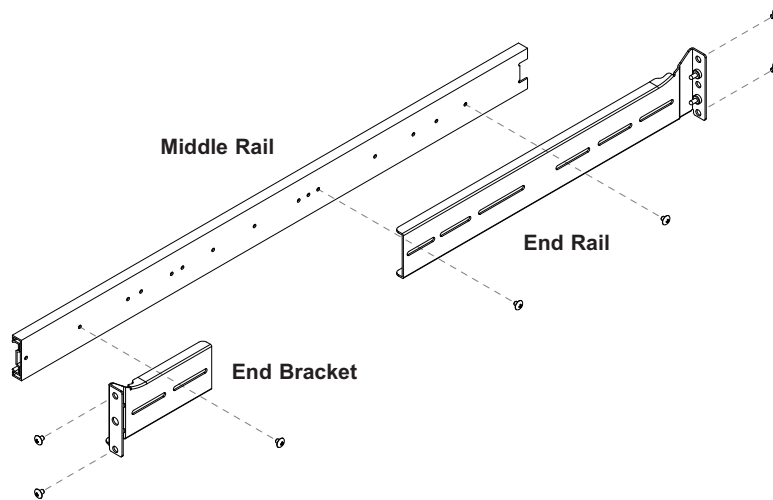

Figure 4-2: Assembling the Outer Chassis Rails

2. Insert the end bracket and the end rail onto the middle rail and secure them with the screws as shown.

3. Install a set of outer rail assemblies to each side of the rack and secure them with the screws provided.

4. Check that both sets of inner rails are securely attached to the chassis.

5. Check that both sets of outer rails are securely attached to the rack.

6. Insert the inner rails on the chassis, into the outer rails on the rack.

7. Gently slide the chassis into position within the rack.

Rack Mounting Instructions
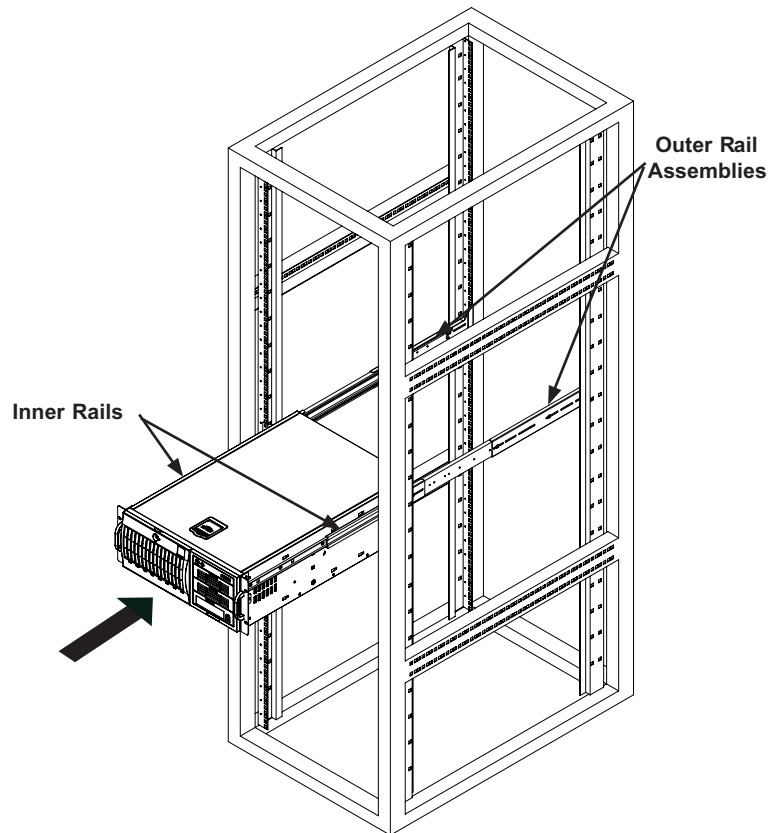
Installing the Chassis into a Rack

Figure 4-3: Installing the Chassis into a Rack

1. Extend the outer rails.

2. Align the inner rails of the chassis with the outer rails on the rack.

3. Slide the inner rails into the outer rails, keeping the pressure even on both sides. When the chassis has been pushed completely into the rack, it should click into the locked position.

4. Screw my be used to secure the to hold the front of the chassis to rack **Figure 4.6**

Access the SCA Drive Tray and Install an HDD

Installing and Replacing Hard Drive

The drives are mounted in drive trays to simplify their installation and removal from the chassis.

1. Unlock and open the drive tray door as shown..

2. Press the release tab located on the drive tray door to release the drive tray from its locking position.

3. Lift up the drive tray handle.

4. Pull the drive tray door downward and pull the drive tray out from the chassis.

9. (Note: The orientation of the picture shown below is for rack mount systems.)
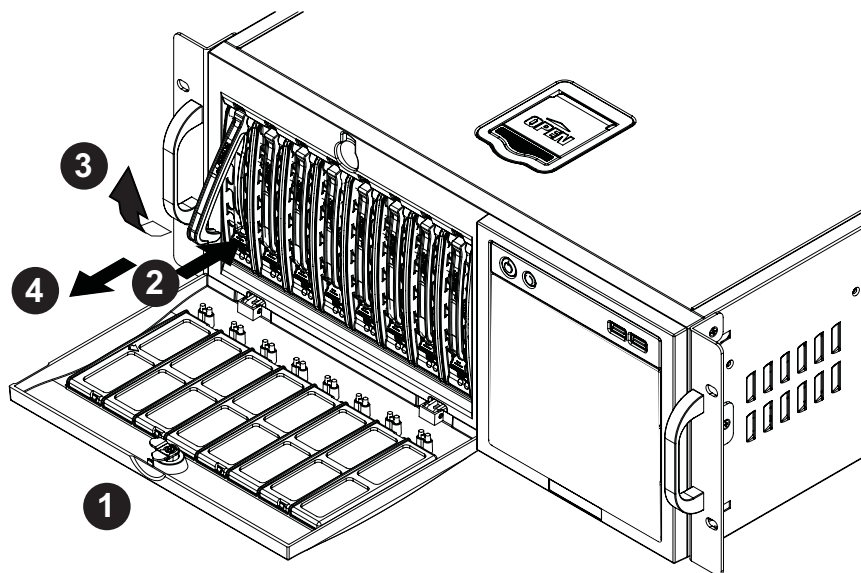

Figure 4-4: Removing the Hard Drive Tray

Access the SCA Drive Tray and Install an HDD

Installing and Replacing a Hard Drive into the Hard Drive Tray

1. Remove the four screws securing the dummy drive to the drive tray.

2. Slide the hard drive into the tray with the printed circuit b oard side facing down.

3. Carefully align the mounting holes in the hard drive and the tray. Make sure the bottom of the hard drive and bottom of the hard drive tray are flush.

4. Secure the hard drive using all four screws.

5. Replace the drive tray into the chassis. Make su re to close the drive tray using the drive tray ha ndle.
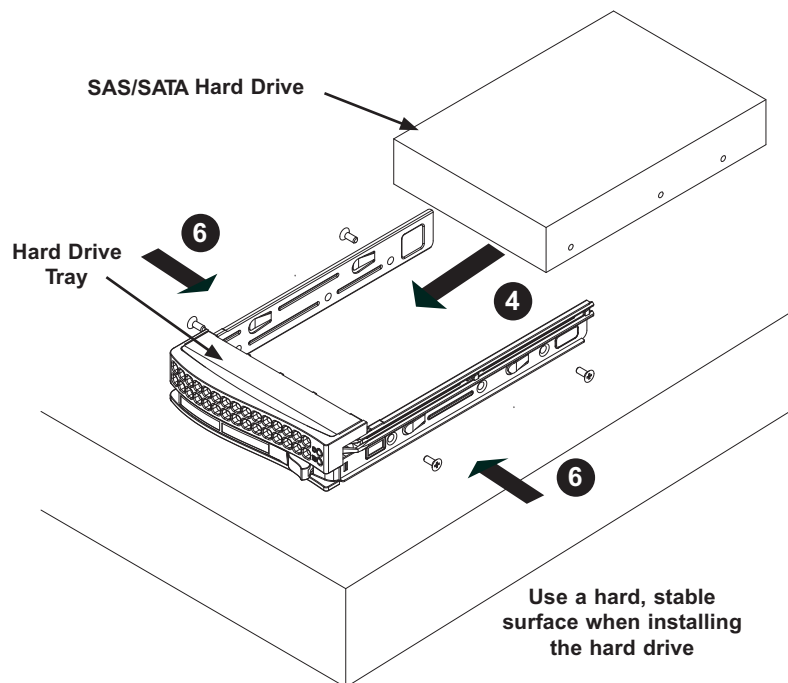

Figure 4-5: Installing SATA Drive to Hard Drive Tray

System and Video Drives Configuration

System and Video Drives Configuration

Table 5-1. System and Video Drives Configuration

System Configuration
One (1) SATA boot drives
One (1) SATA Video Drive

Note *The Video Drive size and number of drives and configuration my vary depending of purchase option.*

Drive Location

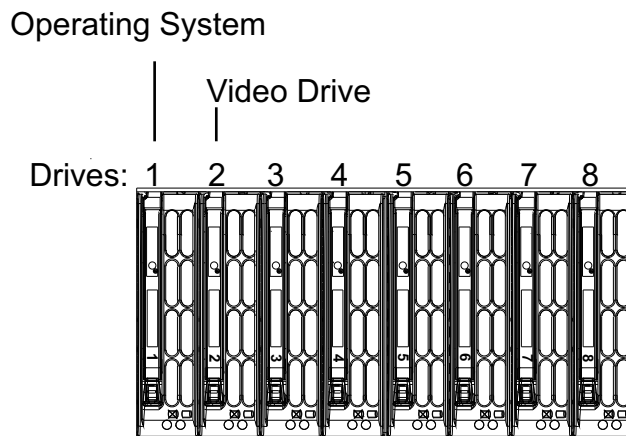The system and video drives are labelled on the front panel.

Operating System

Video Drive

Drives: 1 2 3 4 5 6 7 8

Figure 4-6. Front Panel: System Drives

System Backup and Restore

Back Up Files

You should back up your files on a regular basis. As you work with your system, you create work files that are typically saved to your hard drive.

You should make back up in case your hard drive stops functioning properly.Use the network connection to make back up copies.

Restore Your System

The restore process returns your system to the original factory settings. When you ordered your system, you provided details about your application on the system configuration sheet.
Your system is set up according to this configuration sheet.

Before you start the restore process, back up all of your files. The restore process completely overwrites the hard drive that contains your system files. Any additional media drives in your system are not overwritten.

The restore process does not restore any unsupported third-party software or personal preferences in the Windows operating environment. Changes made, settings, or patches installed after delivery, are not restored.

The System Recovery DVD

The restore procedure requires the System Recovery DVD that was delivered with your system.

 PlayBox maintans a duplicate copy of your system restore DVD. If diagnostics are required, your system an be recreated at the factory using the duplicate System

System Backup and Restore

Restore Procedure

The Recovery DVD package consists of these user instructions and bootable DVD. The DVD contains a copy of the software that was preinstalled on your PlayBox system.

Important: During the recovery process, all data saved on the primary partition of the hard disk (typically C: drive) will be deleted, including any personal data and configuration settings. We recommend you to back up on removable media personal files that are currently on the primary partition before using the Recovery DVD.

Prevent Damage and Malfunction

Read and observe all instructions in this section to keep your system working safely and effectively.

Do NOT Modify Hardware

Your system is delivered with all the necessary hardware and software already installed. You should not have to open the system case. However, if the system case is damaged, please call PlayBox Technical Support and follow their direct instructions.

Installing aAdditional hardware or modifying the hardware in any way can compromise the uninterrupted operation of your system and void waranty.

Do NOT Add Software

Your system is a closed system. Do not install any additional third party software.

Additional software can create undesired effects and possibly introduce viruses to the system. If you install additional third party software your system may no longer run satisfactorily.

Verify Monitor Refresh Rate

The factory sets the system graphical resolution to 1280 X 1024 pixels with a vertical refresh rate of 60Hz.

If your computer monitor is an older model that does not support a refresh rate of 60Hz, your display could be unusable and you could damage your hardware.

You need to change the system refresh rate toa value that your monitor does support.

Technical Specifications

System Technical Specifications

The following information details your system technical specifications.

Table 6-1. System Technical Specifications

Item	Specification
Chassis	4U rack mount (Rack rails included) **Dimensions:** Height: 7" (178 mm) Width: 19" (48.26 cm) Depth: 25.5" (59.69 cm) Weight 56 lbs (25.4 kg)
Floppy Drive	1.44 MB
Serial Card	Four Rs232 serial port card via DB-9 [1]
USB ports	Two USB ports back panel
Optical Drive	Recordable CD/DVD-RW drive
Sound	Sound card PCI
CPU	Intel® I7 ™ Quad Processor
RAM	3 GB DDR3 SDRAM
GPU	Dual-Head Video Card
Network	Two (2) Intel® Gigabit Ethernet Controllers Supports 10BASE-T, 100BASE-TX, and 1000BASE-T, RJ45
SDI Audio/Video Board	One (1) SD/HD SDI card [2]
Disk Subsystem	
System	One (1) SATA bootable drive
Video	One (1) SATA video drive

[1] Serial card is not included in CG (TitleBox) system
[2] Channel in The Box SD system is supplied with two SD SDI cards

System Technical Specifications

Operating Environment (System)

Table 6-2. Operating environment

Operating Temperature Range 10 - 35°C (50° - 95°F)
Non-Operating Temperature Range -40 - 70°C (-40° - 158°F)
Humidity Range 8 - 90% non-condensinifg
Non-Operating Humidity Range 5 - 95% non-condensing

Power Supply Module Specifications

Table 6-3. Power Supply Technical Specifications

645/650W AC-DC power supply w/ PFC
AC Voltage 100 - 240V, 50-60Hz, 11-5 Amp
+5V standby 4 Amp
+12V 46Amp
+5V 30 Amp
+3.3V 30 Amp
-12V 0.6 Amp

Power Supply Safety / EMC

USA - UL listed
Canada - CUL listed
Germany - TUV Certified
EN 60950/IEC 60950-Compliant
CB Report
CCC Certification

Technical Support

If you need technical support or have any questions related to the system, please contact local PlayBox technical suppor.

He will need the following additional information depending on the questions you have: For hardware related questions provide a detailed description of what you would like to achieve.

For software related questions provide a PlayBox Doctor report from the server, a detailed description of what you would like to achieve or the phenomenon you observed, and take screenshots if necessary.

E-mail: support@playbox.tv
Web: http://www.playbox.tv

Live Support
Web: http://support.playbox.tv

PlayBox Technology Ltd.

Appendix 1 - Bypass Relay and GPI/O Board

Board Model

Board Model Structure: BxOyyzIiiVvv

x - number of bypass relays
yy - number of GPI outs
z - type of GPI outs - R for relay, O for Optocoupler
ii - number of GPI inputs
vv - protocol version (currently 2C)

example: The current board is B1O04RI04V2C

Bypass Relay I/O
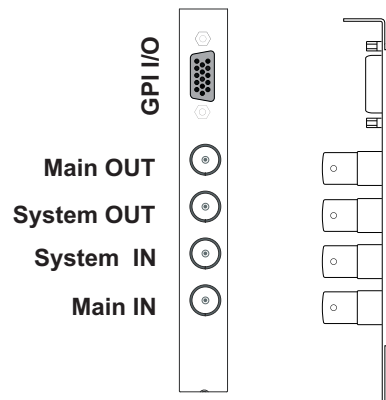
The Bypass relay I/O is accessible thru Four (4) BNC connectors

Figure A1-1. Front and rear vie

- "**Main IN**" is the signal which is coming from outside the system

- "**Main OUT**" is the signal which is going outside the system

- "**System IN**" is the Bypassed system input

- "**System OUT**" is the Bypassed system Output

Appendix 1 - Bypass Relay and GPI/O Board
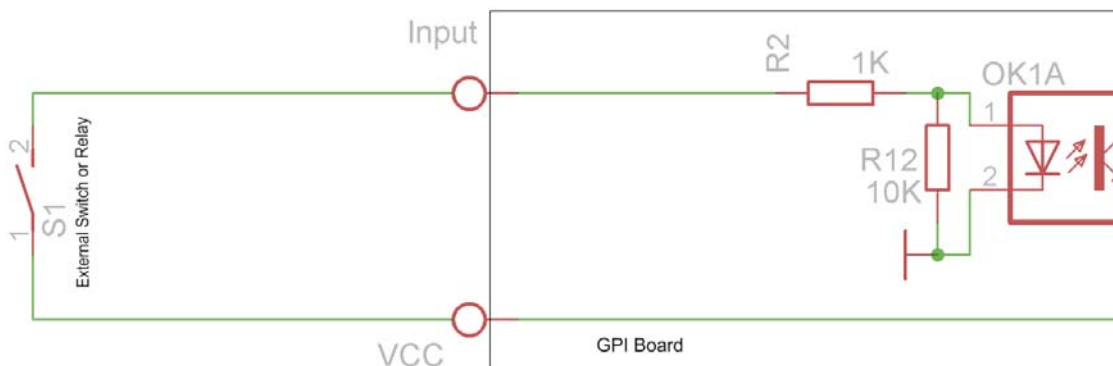
GPI/O Connector (HD15)

PIN	Signal Name	Remarks
1	NC	Not Connected
2	GPI OUT 3	Contact pin 2-7
3	GPI OUT 2	Contact pin 3-8
4	GPI OUT 1	Contact pin 4-9
5	GPI OUT 0	Contact pin 5-10
6	GND	Common Ground
7	GPI OUT 3	Contact pin 2-7
8	GPI OUT 2	Contact pin 3-8

PIN	Signal Name	Remarks
9	GPI OUT 1	Contact pin 4-9
10	GPI OUT 0	Contact pin 5-10
11	+5V	Contact pin 5-10
12	GPI IN 0	Common Ground
14	GPI IN 2	Contact pin 3-8
15	GPI IN 3	Contact pin 4-9

Table A1-1. GPI PIN Description

4. Using the GPI Inputs

All GPI inputs are using optocouplers.

4.1 Connecting GPI input to Switch/Relay Contact