QDSP-1600

Extended Temperature Fanless Mini Media Player
w/ ARM® Cortex®-A53 Based Processor, Rockchip RK3368

User's Guide

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Safety Instructions

■ Before You Begin

Before handling the product, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the "Advisories" section in the Preface for advisory conventions used in this user's guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- Always use caution when handling/operating a computer. Only qualified, experienced, authorized electronics service personnel should access the interior of a computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.
- Use extreme caution when installing or removing components. Refer to the installation instructions in this user's guide for precautions and procedures. If you have any questions, please contact our Post-Sales Technical Support.
- Access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and access is through the use of a tool or lock and key, or other means of security, and is controlled by authority responsible for the location.

WARNING

High voltages are present inside the chassis when the unit's power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.

■ When Working Inside a Computer

Before taking covers off a computer, perform the following steps:

1. Turn off the computer and any peripherals.
2. Disconnect the computer and peripherals from their power sources or subsystems to prevent electric shock or system board damage. This does not apply when hot swapping parts.
3. Follow the guidelines provided in “Preventing Electrostatic Discharge” on the following page.
4. Disconnect any telephone or telecommunications lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- To help avoid possible damage to system boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.
- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sure both connectors are correctly oriented and aligned.

CAUTION

Do not attempt to service the system yourself except as explained in this user’s guide. Follow installation and troubleshooting instructions closely.

■ Preventing Electrostatic Discharge

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. We strongly encourage you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not

remove the component's antistatic packing material until you are ready to install the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This will discharge any static electricity that may have built up in your body.

- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.
- Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.
- Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

■ Instructions for Lithium Battery

WARNING

Danger of explosion when battery is replaced with incorrect type. Only replace with the same or equivalent type recommended by the manufacturer.

Do not dispose of lithium batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e.g. to the collecting points for disposal of batteries)

■ Voltage Ratings

The external power adaptor of the QDSP-1600 has the following voltage ratings:

- Input: 100~240 VAC, 50~60 Hz
- Output: 40W, +12VDC / 1.5A output

Preface

■ How to Use This Guide

This guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.

■ Unpacking

When unpacking, follow these steps:

1. After opening the box, save it and the packing material for possible future shipment.
2. Remove all items from the box. If any items listed on the purchase order are missing, notify our customer service immediately.
3. Inspect the product for damage. If there is damage, notify our customer service immediately. Refer to “Warranty Policy” for the return procedure.

■ Regulatory Compliance Statements

This section provides the FCC compliance statement for Class B devices.

FCC Compliance Statement:

This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reason able protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radiofrequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the

receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by us could void the user's authority to operate the equipment.

NOTE

The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interference or to be noncompliant with the appropriate standards for its intended use.

Maintaining Your Computer

Environmental Factors

- **Temperature**

  The ambient temperature within an enclosure may be greater than room ambient temperature. Installation in an enclosure should be such that the amount of air flow required for safe operation is not compromised. Consideration should be given to the maximum rated ambient temperature. Overheating can cause a variety of problems, including premature aging and failure of chips or mechanical failure of devices.
  If the system has been exposed to abnormally cold temperatures, allow a two-hour warm-up period to bring it up to normal operating temperature before turning it on. Failure to do so may cause damage to internal components, particularly the hard disk drive.

- **Humidity**

  High-humidity can cause moisture to enter and accumulate in the system. This moisture can cause corrosion of internal components and degrade such properties as electrical resistance and thermal conductivity. Extreme moisture buildup inside the system can result in electrical shorts, which can cause serious damage to the system.
  Buildings in which climate is controlled usually maintain an acceptable level of humidity for system equipment. However, if a system is located in an unusually humid location, a dehumidifier can be used to maintain the humidity within an acceptable range. Refer to the “Specifications” section of this user’s guide for

the operating and storage humidity specifications.

- **Altitude**
  Operating a system at a high altitude (low pressure) reduces the efficiency of the cooling fans to cool the system. This can cause electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

Power Protection

The greatest threats to a system's supply of power are power loss, power spikes, and power surges caused by electrical storms, which interrupt system operation and/or damage system components. To protect your system, always properly ground power cables and one of the following devices.

- **Surge Protector**
  Surge protectors are available in a variety of types and usually provide a level of protection proportional with the cost of the device. Surge protectors prevent voltage spikes from entering a system through the AC power cord. Surge protectors, however, do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

- **Line Conditioner**
  Line conditioners go beyond the overvoltage protection of surge protectors. Line conditioners keep a system's AC power source voltage at a fairly constant level and, therefore, can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors. However, line conditioners cannot protect against a complete loss of power.

- **Uninterruptible Power Supply**
  Uninterruptible power supply (UPS) systems offer the most complete protection against variations on power because they use battery power to keep the server running when AC power is lost. The battery is charged by the AC power while it is available, so when AC power is lost, the battery can provide power to the system for a limited amount of time, depending on the UPS system.
  UPS systems range in price from a few hundred dollars to several thousand dollars, with the more expensive units allowing you to run larger systems for a

longer period of time when AC power is lost. UPS systems that provide only 5 minutes of battery power let you conduct an orderly shutdown of the system, but are not intended to provide continued operation. Surge protectors should be used with all UPS systems, and the UPS system should be Underwriters Laboratories (UL) safety approved.

Chapter 1

Introduction

■ Overview

QDSP-1600 is an ARM and Android based fanless mini media player designed for digital signage. It has a HDMI2.0 port to supports 4K Ultra HD video output. With built-in Wi-Fi, Bluetooth technology and IR receiver, it enables wireless connection to streaming content, data transfer and flexible / fast content control. Small shops and individual entrepreneurs can use it to replace traditional signs and electronic billboards at an affordable rate. Ventless aluminum chassis with extended temperature support also makes it ideal for DOOH (Digital Out-of-Home) application.

Checklist

- 1x QDSP-1600
- 1x Power Adapter
- 1x HDMI Cable
- 1x Antenna

Features

- Rockchip RK3368 64-bit Octa Core ARM® Cortex®-A53 @1.5GHz
- 2GB / 4GB DDR3 memory
- 8GB / 16GB / 32GB NAND Flash, 1x TF Card for storage
- 1x HDMI2.0 (4K support) for video output
- 1x LAN, Wi-Fi, Bluetooth for network connection
- 3x USB2.0, 1x USB OTG for peripheral connection
- IR remote control
- Ultra-mini size
- Android based media player
- Extended operating temperaturer range: -25°C ~ 70°C

■ Product Specifications

Processor	Rockchip RK3368 64-bit Octa Core ARM Cortex-A53 @1.5GHz
Memory	2GB DDR3 memory (default) 4GB DDR3 memory (optional)
Display Interfaces	1x HDMI2.0 (on rear)
Audio Interfaces	1x Line-out / Mic-in (on rear)
Ethernet	1x LAN (RJ-45 on rear)
Wireless	Wi-Fi (IEEE 802.11 b/g/n) Bluetooth (V2.1+EDR/Bluetooth 3.0/3.0+HS/4.0) 3G / 4G (optional) GPS (optional)
USB	3x USB2.0 (Type A on rear) 1x USB OTG (Micro-USB on rear)
Storage	8GB NAND Flash (default) 16GB / 32GB NAND Flash (optional) 1x TF Card Slot (on rear, support up to 64GB)
Power Supply	Connector: DC Jack (on rear) Input Voltage: DC 12V / 1.5A Power Adapter: AC to DC, 100V ~ 240V
System Control & Monitoring	1x Power Button (on top) 1x Power LED (on front) 1x IR Receiver (on front)
Cooling	Fanless
OS Support	Android 5.1 Lollipop
Construction	Aluminum Chassis
Dimensions	167.5 x 120 x 26.5 mm / 6.59" x 4.72" x 1.04" (W x D x H)
Weight	200 g / 0.44 lb
Environmental Characteristics	Operation Temp.: -25°C ~ 70°C / -13°F ~ 158°F Storage Temp.: -25°C ~ 80°C / -13°F ~ 176°F Humidity: 10% ~ 90%
Mounting	VESA Mount (100 x 100 mm)
Security	1x Kensington Security Slot (on rear)
Certifications	CE, FCC Class A

Table 1 QDSP-1600 product specifications

■ System tour

Refer to the diagrams below to identify the components of the system.

■ Front Panel

Figure 1 Front Panel

Power LED

The power LED will light when the PC is power-on.

IR Receiver

The IR receiver is an infrared receiving sensor allowing users to remotely control the box PC itself or the content that is displayed on connected screens.

■ Rear Panel

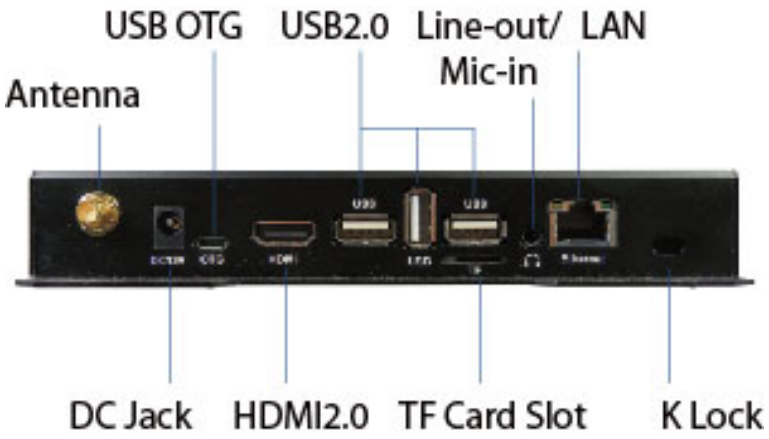

Figure 2 Rear Panel

Ethernet

The eight-pin RJ-45 LAN port supports a standard Ethernet cable for connection to a local network.

DC Jack

The supplied power adapter converts AC power to DC for use with this jack. Power supplied through this jack supplies power to the PC. To prevent damage to the PC, always use the supplied power adapter.

HDMI

HDMI connector for display output.

External Antenna

Spared hole on the casing for connecting Wi-Fi or 3G/4G external antenna.

USB

The USB (Universal Serial Bus) port is compatible with USB devices such as keyboards, mouse devices, cameras, and hard disk drives. USB allows many devices to run simultaneously on a single computer, with some peripheral acting as additional plug-in sites or hubs.

USB OTG

The USB (Universal Serial Bus) OTG (On-The-Go) port allows the system not only to act as a host, allowing other USB devices, such as USB flash drives, digital cameras, mice, or keyboards, to be attached to it, but also to present itself as a USB mass storage device when connected to a host computer.

LINE-OUT / MIC-IN

The combo headphone / microphone jack (3.5mm) is used to connect the system's audio out signal to amplified speakers or headphones, and to connect the microphone used for video conferencing, voice narrations, or simple audio recordings.

TF Card Slot

The TF Card Slot provides users with expandable memory space suitable for multimedia file retrieval, including images, animations and movie clips.

Kensington Lock Slot

The slot is used for attaching a lock-and-cable apparatus. Locks are generally secured in place with a key or combination lock attached to a rubberized metal cable.

■ Top Panel

Figure 3 Top Panel

Power Button

The power button allows powering ON and OFF the system.

■ Mechanical Dimensions

167.5 x 120 x 26.5 mm (W x D x H)

Figure 4 Mechanical Dimensions

Chapter 2

Getting Started

■ Setting up your PC

■ Connecting the monitor

- **Connect the HDMI cable from your display to the HDMI port.**

Figure 5 HDMI

■ Connecting USB mouse & keyboard

Your QDSP-1600 does not come with a keyboard and mouse, but you can use any USB keyboard or mouse with your computer.

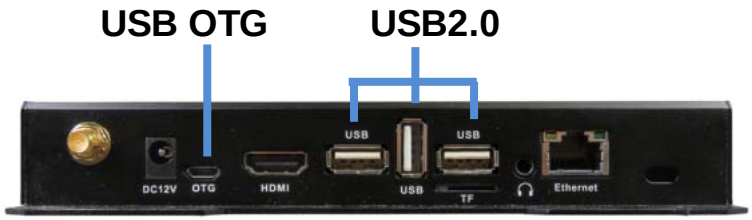

Figure 6 Connecting USB mouse & keyboard

NOTE

Using a third-party USB mouse or keyboard may require software drivers. Check the manufacturer's website for the latest software drivers.

■ Connecting to a network device

Connect one end of a network cable to the LAN port on the system rear panel and the other end to a hub or switch.

Figure 7 RJ45 connector

■ Turning on the system

1. Connect the power adapter cable to the DC jack (DC IN) of QDSP-1600
2. Connect the power cable to the power adapter
3. Connect the power cable to a power outlet
4. Press the power switch on the front panel to turn on the system

Figure 8 Turning on the system

■ Mounting your PC to a display

Secure the QDSP-1600 to your display directly with four screws.

NOTE

To fasten the QDSP-1600, your display must comply with VESA100 standard.

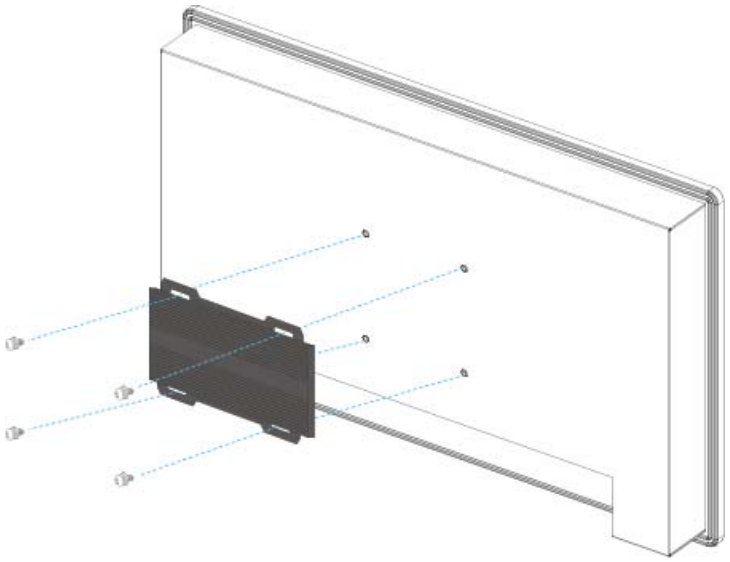

Figure 9 VESA mounting