



R Series

Manual and Specifications

Version 5.0, July 2023

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Overview

R Series screens integrate the RK3399 Rockchip SoC into robust interactive screens, allowing Linux or Android to display without an external player. R Series screens are available with a selection of pre-configured operating systems supplied by Bluefin in partnership with Rockchip, and will not support user-generated operating systems, or those available to download online. Touch screens, power over ethernet and wi-fi are optionally available.

Available Operating Systems

R Series screens are available with **Android Open Source Project, version 11** without Google Mobile Services. To install an app, download the APK file and install from the Android file system.

R Series screens are also available with Debian 11 “bullseye” for RK3399. Other Linux distributions are not supported.

Integrated Player Differences

DRAM

R Series screens come standard with 2GB DRAM. 4GB is optionally available.

Storage

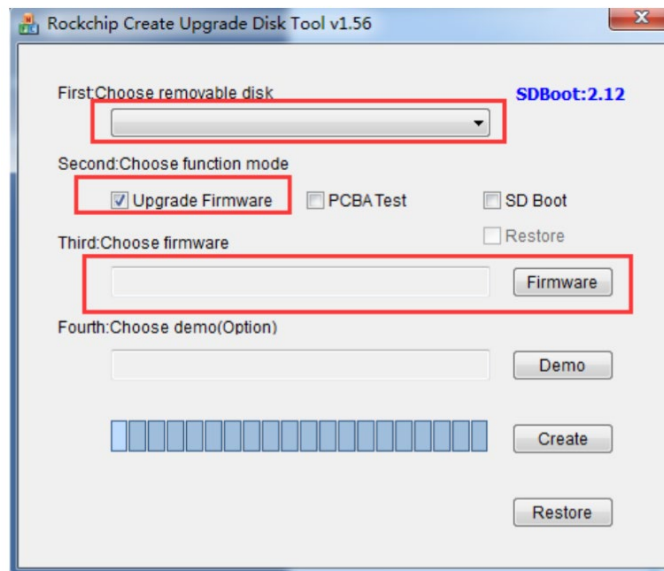
R Series screens come standard with 16GB eMMC storage. 32GB and 64B storage is optionally available.

Flash an OS

R Series Screens are delivered with an operating system at request. If you wish to change your operating system, contact support@thebluefin.com for available images and the SDDiskTool OS Flash utility.

Proceed to Step 8 if you have received a pre-made micro-SD card.

1. Connect a micro-SD card to your PC.
2. Run SDDiskTool as an administrator. Windows and antivirus software may flag this program, please add it to your trusted software list if this occurs
3. Select your micro-SD card from the removable storage list in SDDiskTool
4. Ensure 'Upgrade Firmware' is selected
5. Under "Choose Firmware" select the desired img file. If it is not immediately visible, navigate to the folder manually from the C: drive.
6. Click 'Create' and confirm. Allow the operation to complete. Repeat these instructions after confirming this program can be trusted if antivirus software interrupts the action.



7. Eject the micro-SD card.
8. Insert the micro-SD card into the R Series screen while it is disconnected from power.
9. Connect the screen to power. Allow 5-10 minutes for the operating system to install.
10. A dialogue at the bottom of the screen will indicate when the installation is complete. Remove the micro-SD card when prompted.
11. Allow the screen to automatically reboot. Your operating system will display once initialization is complete. If no image appears on-screen, disconnect and reconnect power once to reboot again.

R Series Serial Communication and Debug

The following lists instructions for serial communication on Bluefin R Series screens, such as for the purpose of Android Debug Bridge. **You will need a USB-TTL tool to interface with the internal R Series serial port. Contact support@thebluefin.com for more information.**

1. Remove the back cover of the unit using a Philips head screwdriver. The exact method may differ by screen size.
 - a. For screens with Philips screws on top of the ‘player box’ surface, such as 15.6” screens, remove only this portion and lift the lid away.
 - i. The circuit boards and RK3399 module will be immediately visible and accessible. Proceed to step 2.
 - b. For other screens, remove the screws around the back-facing edge of the display.
 - i. The circuit board is mounted inside of the player box. Remove the four Philips-head screws to access the other side of the board.
 - ii. Carefully pull the board assembly back and away from the I/O ports. You may feel some resistance due to an adhesive thermal pad between the CPU and the housing.
 - iii. Once the other side of the board is accessible, proceed to step 2.



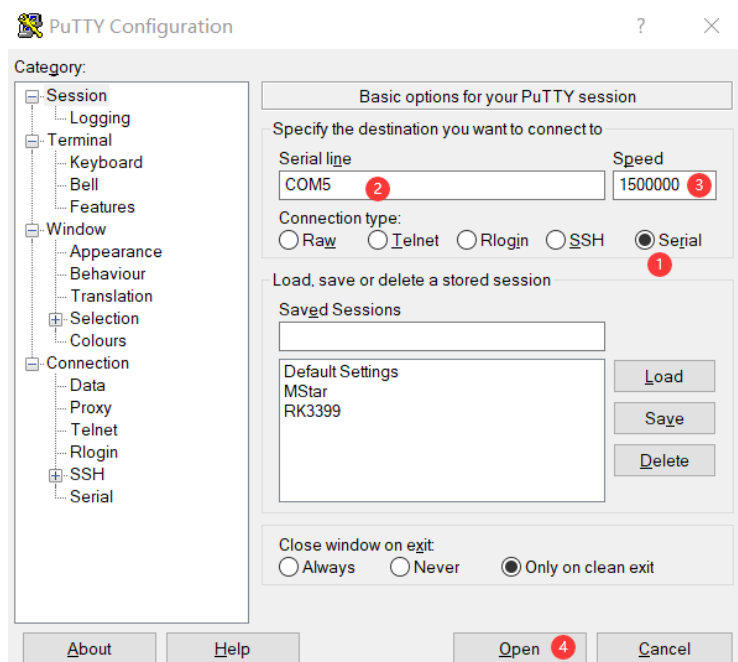
15.6” unit with back housing cover removed.

2. Plug the TTL end of the USB-TTL tool into the matching 3-pin slot on the RK3399 module. This module is a smaller board mounted on top of the larger assembly.



The 3-pin connector is located near the PCI-E style slot that connects the two boards, as seen here.

3. Plug the USB end of the USB-TTL tool into your PC. You can open serial communication using the following settings in PuTTY. Double check your USB Serial Port in device manager for the correct COM number.



Screen Menu

The screen menu provides configuration options for the monitor. This includes color correction, brightness, and CEC controls. To enter the menu, press the **MENU** key four times.

(Note: If you received your screen before August 2018, the sequence may be **MENU UP UP UP**)

Use the **UP** and **DOWN** buttons to navigate up and down, and the **VOL-** and **VOL+** to navigate left and right respectively. Return to the previous screen with **MENU**, or select an option with **SELECT**.

Page 1: Color Correction

Picture Mode: Adjust settings for Contrast, Brightness, Saturation, and Sharpness.

Color Temperature: Adjust the RGB levels.

Backlight: Turn the LCD backlight on or off

Page 2: Accessibility

OSD Language: Choose your language for the menu options

Restore Factory Default: Restore factory default settings for the screen

HDMI CEC: Enable and configure CEC controls between the screen and the integrated media player. To enable CEC controls, select HDMI CEC from the menu, and press VOL+ to enable. If necessary, navigate down and press VOL+ to disable specific commands.

Page 3: Input

DMP and Input Source settings are not available on R Series units. **These settings should not be changed.**

Page 4: Software Update

Configure a screen software update via the 6-pin JST connector. This feature should not be utilized.

Hardware Interfaces

Power in: CN1: DC Molex 4 pin input

Ethernet: RJ45 ethernet. POE+ power input on applicable screens up to 19.5”. POE++ power input on applicable screens up to 27.0”

Micro SD: Micro SD card slot. Protective cover on Finished units.

USB: 1x USB 2.0 host port

Status LEDs: Power, Error, Busy, Update

SVC, PS_ON, RST: Service, Power Signal, Reset

Wi-Fi / Bluetooth: M.2 (E) Keyed Wi-Fi/Bluetooth connector

Audio: 3.5mm Audio Out (Analog and Digital)

Power out /LED: J10: DC 12V 6 pin output

NO.	DEFINATION	DESCRIPTION
1	GND	GND
2	GND	GND
3	GND	GND
4	VDD12V	VDD12V
5	VDD12V	VDD12V
6	VDD12V	VDD12V

Update

Update port for LCD chipset

Touch Screen

10-point projective capacitive touch screen

GPIO

CON4: general input and output with power supply. R Series Screens have no GPIO function programmed by default.

PIN1-6 from left to right have the following definition.

NO.	DEFINATION	DESCRIPTION
1	GND	GND
2	3.3V	3.3V
3	GPIO	GPIOX0
4	GPIO	GPIOX1
5	GPIO	GPIOX2
6	GPIO	GPIOX3

Serial port

3.5mm RS-232 Serial Port. Not for debug.

IR

Not Available

SPK L / R

Amplified audio L / R output to 3W speaker – Only on Frameless screens

RK3399 SoC Specifications

- CPU: Dual-Cortex A72 + Quad Cortex-A53, 64-bit
- GPU: Mali-T860
- Memory: LPDDR4 2/4Gb
- Video Decoder: 4Kp60 H.265/H.264/VP9
- Video Encoder: 1080p30 H.264
- Networking: RJ45 Ethernet, Wi-Fi Optional
- Internal Storage: 16/32Gb
- I/O: 1x USB 2.0

Screen Specifications

Type	Description
Power Supply	+12V/24V @2A-5A*
Ethernet	1000BASE-T
Brightness	>250 nits
Viewing angle	>85

*See unit specifications for exact power information

Absolute maximum ratings

Parameters	Value	Unit
Power supply	12/24	Voltage
Storage temperature	-10~+60	Degree C
Operating temperature	0~+40	Degree C
Humidity	20~80	%RH

Installation and Safety

Choosing a Location

Do not install the display in a location where a door or object could hit it.

Do not install the display in an area where it will be subjected to strong vibrations or dust.

Do not install the display near strong light sources such as sunlight or strong overhead lighting.

Do not install the display near the entry of the building's main power supply.

Ensure adequate ventilation and climate. See "Safe Operating Temperature" for details.

Mounting

This product does not ship with mounting accessories. Only use commercially manufactured mounting accessories which meet the specifications of the screen and follow the manufacturer's installation instructions.

To prevent damage to the screen surface while installing mounting equipment, place the screen face-down on a clean, cushioned surface.

Do not install the monitor near any heat sources such as radiators, heat registers, stoves, amplifiers, or other devices which produce heat.

Do not place the monitor in areas exposed to direct sunlight, humidity, grease, dust, rain, smoke or steam.

The screen may be rotated 90 degrees clockwise or counterclockwise as desired for I/O placement. Do not position the screen at an angle exceeding 15 degrees, as illustrated:

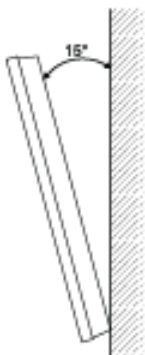


Figure 1.1

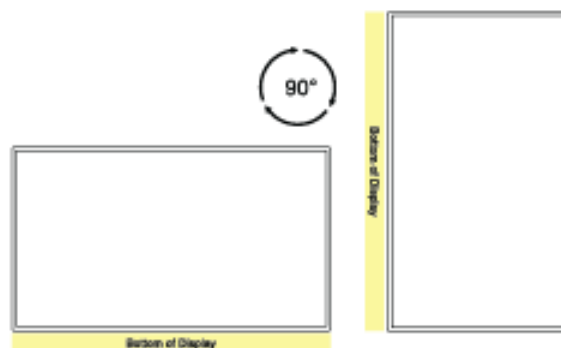


Figure 1.2

Safe Operating Temperature

R Series Screens require airflow in order to cool the RK3399 chipset. Failure to provide enough airflow can cause the unit to reach temperatures above 50 degrees Celsius, which may cause areas of permanent LCD discoloration.

To maintain a safe operating temperature:

Provide a minimum of 6.35mm (.25") **Figure A** between the back of the unit and the wall it is mounted to.

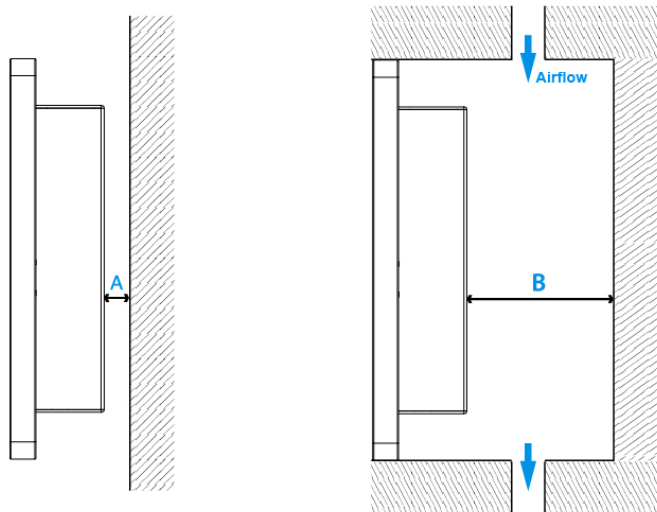
Do not install the monitor near any heat sources including but not limited to: radiators, heat registers, stoves, amplifiers, or other devices which produce heat.

Ensure the ambient temperature of the room containing the unit is kept below 35 degrees Celsius (95 degrees Fahrenheit)

Recessed Mounting

This item's warranty does not cover damage resulting from improper ventilation resulting in damage to the LCD.

Maintain a minimum of 10cm (4") **Figure B** of space between the unit and the recessed wall to enable ventilation. Ensure there is enough airflow to prevent the unit from exceeding 50 degrees Celsius.



Support

For information and support, contact support@thebluefin.com

Limited Warranty

There are no warranties, which extend beyond the description on the face hereof. Bluefin warrants products to be free of defects in material and workmanship for the specified warranty period of 1 year from date of shipment from Bluefin. During this period, Bluefin will at its option, repair or replace this product at no additional charge to the purchaser except as set forth below.

Bluefin, will, at its option, repair or replace products at no additional charge to the purchaser, if the defect is related to the Bluefin manufactured product, such as Power Supplies, Disk Drives, CPU Boards, Backplanes, Video Cards and other Peripheral Boards.

Bluefin warrants that the product is free from defects in material or workmanship under normal operation.

Replacement parts that are furnished at no-charge to the purchaser in completion of this warranty are warranted only for the unexpired time portion of the original warranty. Any repairs or services outside the scope of this limited warranty policy shall be at Bluefin normal rates with standard terms and conditions applicable.

Bluefin is unable to provide loaner units or advance replacements.

Repair parts and replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replacement parts and products become the property of Bluefin.

Bluefin is not responsible for damages outside of Bluefin's control including, but not limited to, physical damage, modifications to products, or improper packaging and handling.

If items have been returned for warranty service and found not to be defective a nominal service expense will be charged to cover diagnoses, testing, return shipping and other related costs.

This limited warranty does not include service to repair damage to product resulting from accident, disaster, misuse, abuse, modification, alteration, or if unauthorized repairs have been attempted.

It is the customer's responsibility to back up the contents of their hard drive, including any data you have stored or software you have installed on the hard drive. Bluefin shall not be responsible for i) any loss of data due to storage media failure, ii) for any software programs, data or other information stored or used on any media or part of any product returned to Bluefin for warranty and non-warranty servicing. If during servicing the contents of the hard disk or any other data storage media are altered, deleted, modified or lost, Bluefin will not be held responsible. It is solely the customers/purchaser's responsibility to back up any software programs, data, or information stored on any storage media or any part of a product returned for servicing.

Limited warranty service may be obtained by returning the product during warranty period to Bluefin along with proof of purchase and a Returned Material Authorization (RMA) number. The RMA number is obtained in advance from Bluefin and is valid for 30 days. The RMA number should be clearly marked on the exterior of the shipping container or equivalent.

The customer or Purchaser prepays all inbound freight charges for both Warranty and Non-Warranty repairs. Bluefin is not responsible for damage during shipment. It is recommended that you either insure the product or assume full liability for loss or damage during transit.

Bluefin will cover the return freight via ground/surface service only to the original ship to address for warranty repairs within North America. If you require overnight, expedited or overseas shipments, this service will be extra and at the purchaser's expense. You may pay freight by issuing a purchase order, credit card or wire transfer. Return freight can also be covered by offering your own carrier account number (freight collect) with your specified services.

In no event will Bluefin be liable for any damages, including lost profits, lost business, lost savings, downtime, or delay, labor, repair or material cost, injury to person, property, or other incidental or consequential damages arising out of use of or inability to use such product, even if Bluefin has been advised of the possibility of such damages or losses, or for any claim by any other party. The above warranty is the only warranty authorized by Bluefin and is in lieu of any implied warranties, including implied warranty of merchant-ability and fitness for a particular purpose. Bluefin reserves the right to waive its warranty policy if the customer fails to pay invoice in full and/or on a timely basis as set out on the face of the invoice. How to Return Products for Servicing: To return products, you must obtain a valid RMA number. RMA numbers can be obtained by calling 770-205-6636 or email us at support@thebluefin.com.