

iW-RainboW-G23S

Quick Start Guide

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Warranty support for Hardware: 1 Year from iWave or iWave's EMS partner.

For warranty terms, go through the below web link,
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For Return Merchandise Authorization (RMA), go through the below web link,
<http://www.iwavesystems.com/support/rma.html>

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iWave Systems technical support team is committed to provide the best possible support for our customers so that our Hardware and Software can be easily migrated and used.

For assistance, contact our Technical Support team at,

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Website	: www.iwavesystems.com
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INTRODUCTION

About this Guide

This document is intended as the guide for unpacking iWave's iW-RainboW-G23S-RZ/G1C Single Board Computer package and setting up the test environment for it. It also gives details about safety information and important cautions which should adhere while using the Single Board Computer.

Single Board Computer (SBC) Overview

The RZ/G1C Single Board Computer is an extension of RZ/G1C CPU, which is based on Renesas high performance RZ/G1C (Dual/Solo Core - ARM Cortex A7 MPUs). This SBC can be used for quick prototyping of any high end applications in verticals like Automotive, Industrial & Medical. The board is highly packed with all necessary on-board connectors to validate almost complete RZ/G1C CPU features.

Important Symbols Used



Important Note



Warning



Use ESD Protection



ROHS complaint



Check the local regulations for disposal of electronic products

UNPACKING

Safety Information

- Before unpacking and installing the SBC or adding devices on it, carefully read all the manuals that came with the package.
- Place the product on a stable surface. To avoid short circuits in electronics, keep all conducting material away from the SBC.
- Avoid using board in extreme dust, humidity and temperature conditions. Do not place the SBC in wet area.
- Before using the SBC, make sure that all cables are correctly connected and the power adapter is correctly selected.
- Make sure that Electrical outlet where you connected the power adapter is not damaged and working fine.
- If the power adapter is broken, do not try to fix it by yourself. To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before displacing the system



Check the local regulations for disposal of electronic products.

Unpacking Guidelines

Please follow the below guidelines while unpacking the RZ/G1C Single Board Computer.

- Wear the anti-static wristband while unpacking and handling the SBC to prevent electrostatic discharge.
- Use anti-static pad/mat with proper grounding to place the SBC.
- Don't touch the inside surface of the SBC circuit board.
- Self-grounding: Touch a grounded conductor every few minutes to discharge any excess static build-up.








- Make sure that packing box is facing upwards while opening.
- Make sure that the entire packing list items mentioned in Package Checklist are present.



Static electricity can destroy electronics in the SBC. Make sure to follow the ESD precautions to prevent damage to the SBC and injury to the user.

Package Checklist

The RZ/G1C Single Board Computer will be shipped with the following items:

Sl. No.	Package Item	Qty	Image
1	iW-RainboW-G23S RZ/G1C Single Board Computer	1	 <div>  <p>All components used in this SBC is Lead free and ROHS compliant</p> </div>
2	5V,2.5A Power Adaptor with universal plugs	1	
3	DVD (Please refer DVD Content section)	1	
4	Custom JTAG Cable	1 (Optional)	



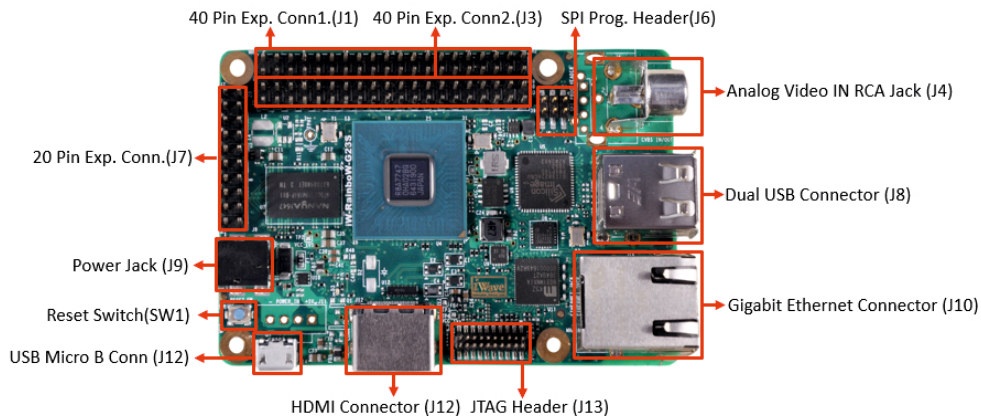
Do not proceed with installation, if any of the items listed in the above checklist is missing or damaged. Contact iWave support team.

Get to Know the RZ/G1C Single Board Computer

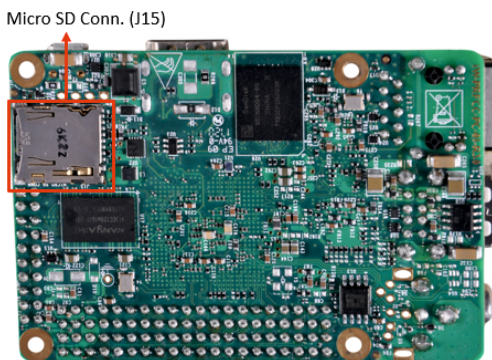
The RZ/G1C Single Board Computer consists of 85mmx56mm RZ/G1C Single Board Computer. The RZ/G1C SBC supports the following features.

RZ/G1C Single Board Computer Features	
CPU	Renesas RZ/G1C MPU Dual/Solo ARM Cortex®-A7 MPCore® @ 1GHz
Memory	512MB DDR3 (Expandable) 8GB eMMC Flash (Expandable) 2MB SPI NOR Flash (Expandable) Micro SD Slot
Communication Features	100/1000Mbps Ethernet through RJ45MagJack x 1 USB2.0 Host x 2 Port through Dual stack Type A Connector USB2.0 OTG as a Device x 1 Port through Micro B Connector
Video Features	HDMI x 1 Port through HDMI connector CVBS Video Input through RCA Jack CVBS Video Output through RCA Jack/Header (Optional)
Other Features	JTAG Header x 1 SPI Flash Programming Header x 1 Reset Switch x 1
Expansion Features	40pin Expansion Connector x 2 (To Connect Add-On-Module) 20pin Expansion Connector x 1 (To Connect Add-On-Module)
General Specification	Power Supply : 5V,2.5A Power Input Jack Form Factor : 85mm X 56mm

The RZ/G1C Single Board Computer major components location are shown in the below figure.



Top View of Single Board Computer



Bottom View of Single Board Computer



Note

Refer Single Board Computer Hardware User Guide for more details.

SETTING UP THE TEST ENVIRONMENT

Getting Start

This section describes the step by step procedure to setup the test environment for RZ/G1C Single Board Computer.

- Read the Single Board Computer Documents
- Setting up the Debug port
- Power ON the Single Board Computer

Read the Documents

Before setting up the test environment, one must read all the documents of the RZ/G1C Single Board Computer to know about its features and get familiar with it. These documents are available in the DVD which comes along with the RZ/G1C Single Board Computer Package.

Below mentioned documents are available in the DVD,

- RZ/G1C SBC Quick start Guide (This Guide)
- RZ/G1C SBC Hardware User Guide
- RZ/G1C SBC Software User Guide
- RZ/G1C SBC Software Release Note



Refer DVD contents section to know about the DVD content structure and SBC related document's path.

Debug Port Setting

Please follow the below procedure to setup the Debug Micro USB port of RZ/G1C Single Board Computer.

- Connect TypeA end of TTL-R232R-RPI cable to PC and 3pin (100mil) Berghosue end of TTL-R232R-RPI cable to Single Board Computer's 20pin Expansion connector(J7) as shown below.



Debug Port Connection

- Install the driver for Debug USB Port in Host PC/Laptop using the below link.

Drivers located at: <http://www.ftdichip.com/Products/ICs/FT232R.htm>

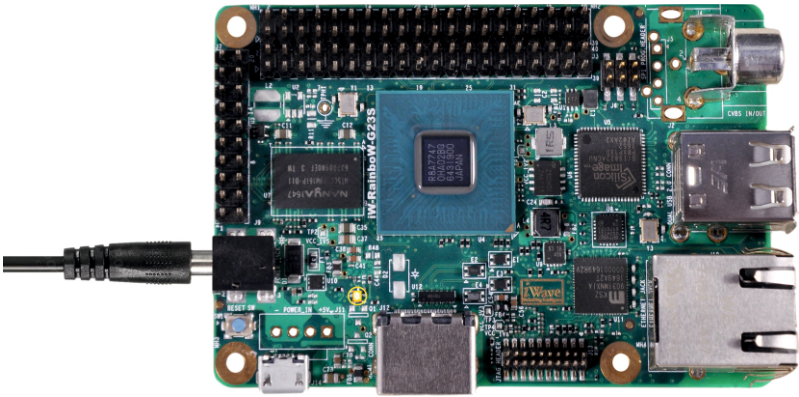
- Open the HyperTerminal on PC/Laptop with the following setting.

Baud rate	: 115200 bps
Data bits	: 8
Parity	: None
Stop bits	: 1
Flow control	: None

Powering ON the Single Board Computer

The RZ/G1C Single Board Computer comes with 5V, 2.5A power supply with universal plugs. Please follow the below procedure to power ON the Single Board Computer.

- Connect the 5V power supply plug to the power connector (J9) of the Single Board Computer as shown below and Power ON the power supply.



Power Supply Connection

- Once Power is applied to the Single Board Computer, the Red Power LEDs in the RZ/G1C Single Board Computer will glow as shown in the above image.



**Do not use different power adapter other than the supplied one.
Do not proceed with installation, if Power Status LED is blinking
or not glowing. Contact iWave support team.**

Done with Test Environment

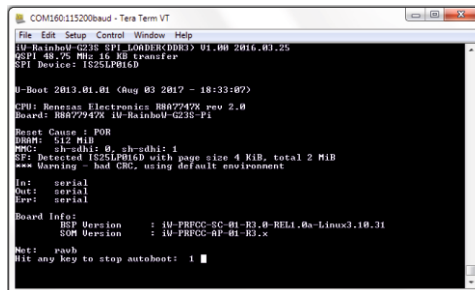
iWave supports below mentioned Operating System Releases for RZ/G1C Single Board Computer.

- Linux 3.10.31(or higher)

Once power is applied to the RZ/G1C Single Board Computer as explained in the previous section, the HyperTerminal of the PC/Laptop which is connected to the Single Board Computer will immediately show the boot messages of the boot loader.

Linux Test Environment

- In Linux Release, U-boot boot messages will appear in Hyper Terminal as shown below.



```

COM160:115200baud - Tera Term VT
File Edit Setup Control Window Help
iW-RainboW-G23S-F1 (LONDERBOARD) 01.00 2016.03.25
CPU: 48.75 MHz: 16 KB transfer
SPI Device: IS25LP016D

U-Boot 2013.01.01 (Aug 03 2017 - 18:33:07)
CPU: Renesas Electronics R8A7747X rev 2.0
Board: R8A7747X iW-RainboW-G23S-F1

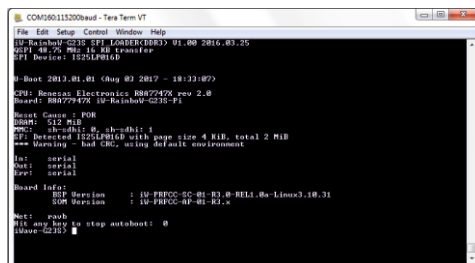
Reset Cause: POR
DRAM: 512 MiB
MMC: sh-dhi: 0, sh-dhi: 1
DF: Detected IS25LP016 with page size 4 KiB, total 2 MiB
*** Warning - bad CRC, using default environment

In: serial
Out: serial
Err: serial

Board Info:
  U-Boot Version: iW-PRPCC-SC-01-R3.0-REL1.0a-Linux3.10.31
  U-Boot Version: iW-PRPCC-0P-01-R3.x

Net: veth
Hit any key to stop autoboot: 1 █
  
```

- Immediately after power on, press any key in HyperTerminal to go to the U-boot command prompt as shown below. Otherwise Linux will launch automatically.



```

COM160:115200baud - Tera Term VT
File Edit Setup Control Window Help
iW-RainboW-G23S-F1 (LONDERBOARD) 01.00 2016.03.25
CPU: 48.75 MHz: 16 KB transfer
SPI Device: IS25LP016D

U-Boot 2013.01.01 (Aug 03 2017 - 18:33:07)
CPU: Renesas Electronics R8A7747X rev 2.0
Board: R8A7747X iW-RainboW-G23S-F1

Reset Cause: POR
DRAM: 512 MiB
MMC: sh-dhi: 0, sh-dhi: 1
DF: Detected IS25LP016 with page size 4 KiB, total 2 MiB
*** Warning - bad CRC, using default environment

In: serial
Out: serial
Err: serial

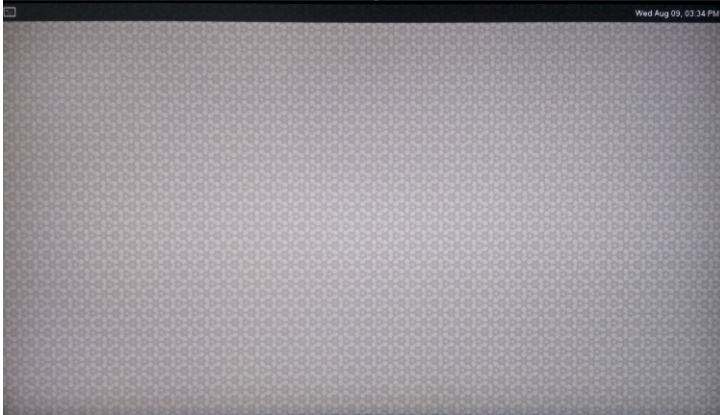
Board Info:
  U-Boot Version: iW-PRPCC-SC-01-R3.0-REL1.0a-Linux3.10.31
  U-Boot Version: iW-PRPCC-0P-01-R3.x

Net: veth
Hit any key to stop autoboot: 0
iWave-G23S-F1 █
  
```



1. RZ/G1C SBC comes with bootable binary in default boot media.
2. Make sure that all the steps mentioned in Getting Start section is followed.

- Once Linux is launched, the HDMI Monitor will show the Yocto images as shown below and HyperTerminal will show the Linux Login.



HDMI Monitor after Linux Launch

- To Login in Linux, enter “root” in terminal and you will get the Linux command prompt as shown below. Once you get the prompt you are done with Test Environment setup on Linux delivery.

```
COM160:115200baud - Tera Term VT
File Edit Setup Control Window Help
range <physical> = 0x50100000-0x518bb000
size <bytes>     = 0x17bb000
xres x yres     = 1920x1080
xres x yres <u> = 1920x3240
img pix fmt     = 20
num buffers     = 3
Loaded PowerVR consumer services.
vopm (Jul 28 2017 17:43:19) driver installed
Starting Dropbear SSH server: dropbear.
Starting rpcbind daemon...rpcbind: cannot create socket for udp6
rpcbind: cannot create socket for tcp6
done.
creating NFS state directory: done
starting statd: done
Starting advanced power management daemon: No RPM support in kernel
(failed.)
Starting Distributed Compiler Daemon: distcc.
NFS daemon support not enabled in kernel
Starting syslogd/klogd: done
* Starting Avahi mDNS/DNS-SD Daemon: avahi-daemon [ ok ]
Starting Telephony daemon
Starting Linux NFC daemon
Stopping Bootlog daemon: bootlogd.

Rootfs Version : iW-PRFCC-SC-01-R3.0-REL1.0a-YoctoDaisy
Poky <Yocto Project Reference Distro> 1.6.1 iWave-G23S /dev/tty$C1
iWave-G23S login: root
root@iWave-G23S:~#
```

Linux Command Prompt

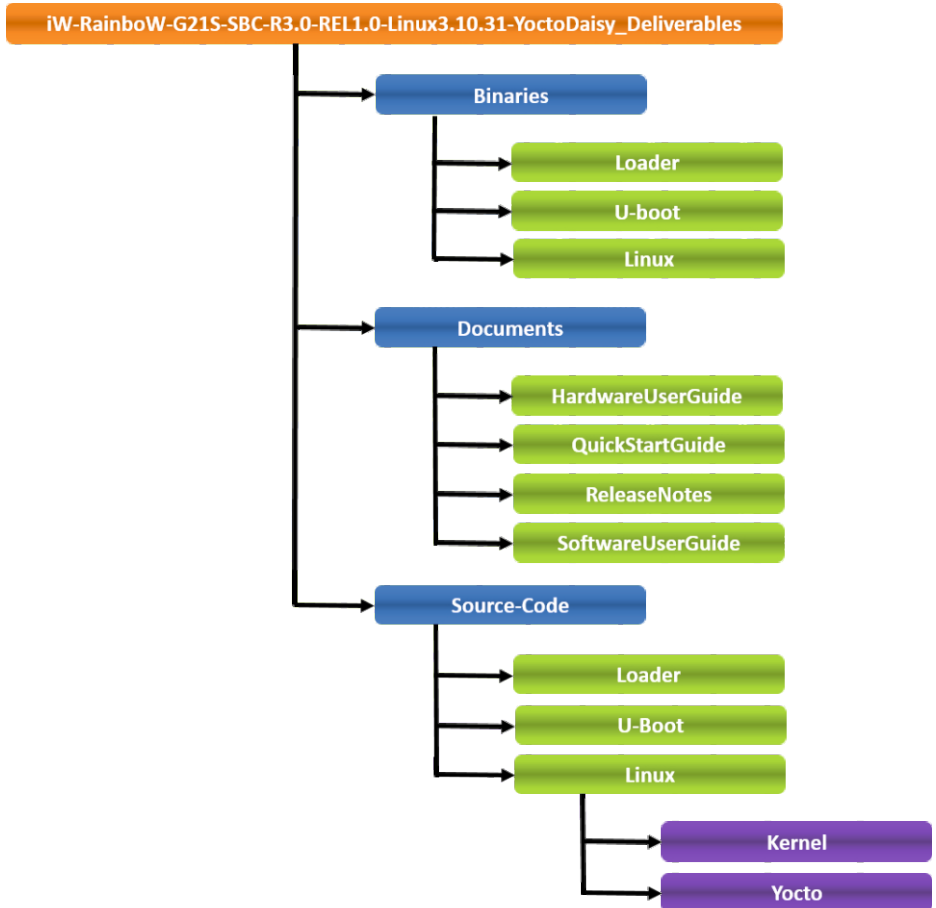


Refer Linux Software User Guide for further details.

DVD Contents

The following figure shows the DVD content structure for Linux Operating System Release.

Linux Release DVD Contents

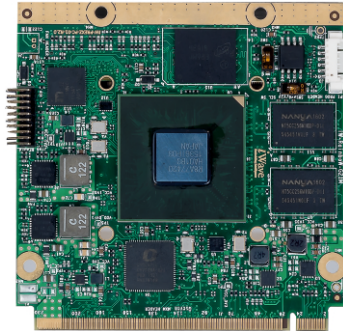


Note iWave continuously improves software releases with latest kernel version. Contact iWave for latest software release detail.

iWave's other Products

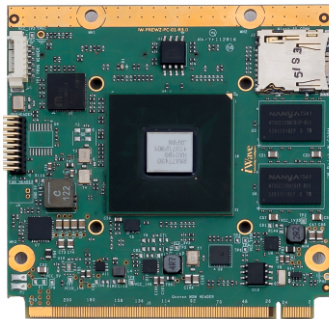
iW-RainboW-G21M-RZ/G1H Qseven SOM

The RZ/G1H Qseven SOM is based on the Renesas's RZ/G1H processor running at 1.4GHz Quad Core ARM® Cortex®-A15 and 780MHz Quad Core ARM Cortex-A7 MPCores.



iW-RainboW-G20M-RZ/G1M/G1N Qseven SOM

The RZ/G1M/G1N Qseven SOM is based on the Renesas's RZ/G1M/G1N Dual Core processor running at 1.5GHz ARM® Cortex®-A15 MPCores.



iW-RainboW-G22M-RZ/G1E SODIMM SOM

The RZ/G1E SODIMM SOM is based on the Renesas's RZ/G1E Dual Core processor running at 1GHz ARM® Cortex®-A7 MPCores.



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