iWave
Embedding Intelligence

Arria10 SoC/FPGA SOM Development Platform

iW-RainboW-G24D Quick Start Guide

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Introduction

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Quick Start Guide (QSG)

This Quick Start Guide (QSG) is designed for users to quickly understand the iW-RainboW-G24D Arria10 SoC/FPGA SOM Development Platform and start the evaluation. It provides the instructions for setting-up the Development Platform from the packed box.

Development Platform Description

The iW-RainboW-G24D Arria10 SoC/FPGA SOM Development platform incorporates with iWave's Arria10 SoC/FPGA based SOM and High Performance carrier board with all necessary interface connectors for developing an embedded application based on Intel Arria10 SoC/FPGA.

Some Key Features of the Board Include:

- Arria10 SoC/FPGA with upto 660K logic elements
  - ❖GX270/GX320/GX480/GX570/ GX660/GX900/GX1150
  - ❖SX270 / SX480 / SX660
- 2GB HPS DDR4 RAM with ECC
- 4GB FPGA DDR4 RAM
- Micro SD (Boot & OS storage)
- Configuration Flash for FPGA
- Gigabit Ethernet RJ45 Magjack x1
- PCIe x1 Port
- SFP+ Connector
- Dual FMC HPC Connectors
- Dual 12 Pin PMOD Connectors

Safety

Environmental Compliance

iW-RainboW-G24D-Arria10 SoC/FPGA SOM Development Platform is designed by using RoHS and REACH compliant components and manufactured on lead free production process.

ESD Protection

This development platform is ESD sensitive. Handle the product only in accordance with the installation instructions given in the manual. Therefore ESD precautions should be taken care during transport and handling.

Must use a ESD ground strap or other grounded source before unpacking or handling the hardware.

Product Disposal

Check the local regulations for disposal of electronic products before disposing.

Quick Start Steps

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Step 1 - Unpacking

Remove the Development platform from antistatic cover and place it above the ESD free area. Use anti-static pad/mat with proper grounding to place the Development Platform. Don't touch inside surface of the circuit board.

Avoid using board in extreme dust, humidity and temperature conditions. Also this development platform is not water proof. Keep away from wet surface.

Package Box

Step 2 - What's Inside The Box ?

Make sure that, below deliverables are received without any physical damage.

Development Platform

QSG

12V,5A Power Supply

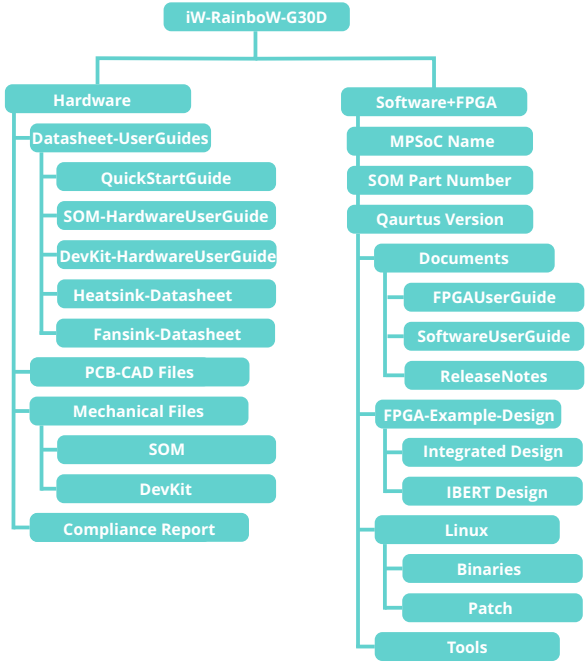
JTAG Cable

USB OTG Cable

Step 3 - Download FTP Contents

All the technical resources of iW-RainboW-G24D Arria10 SoC/FPGA SOM Development platform is available in iWave FTP server.

FTP Folder Structure



For FTP Credentials, Contact ***: mktg@iwavesystems.com***

Step 4 - Read Documents

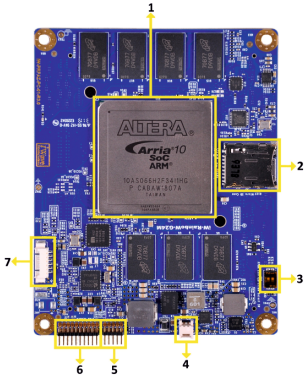
Before moving to next step, one must go through all the documents including Hardware User Guides and get familiar about iW-RainboW-G24D Development platform.

Development Platform Documents:

- Quick Start Guide (This document)
- SOM Hardware User Guide
- DevKit Hardware User Guide
- Release Notes
- Software User Guide
- FPGA User Guide

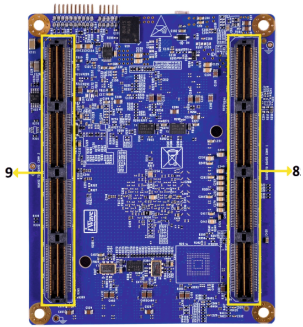
Step 5 -Quick View-SOM

TOP View



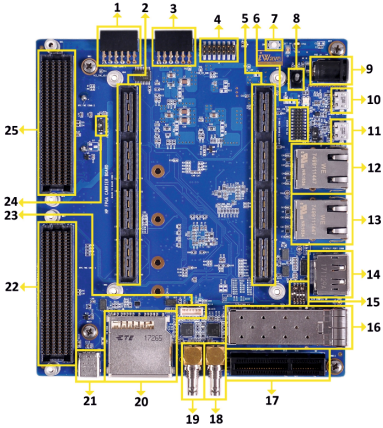
1. Arria10 SoC/FPGA
2. Micro SD Connector
3. Configuration Selection switch
4. FAN Header
5. AS Programming Header
6. JTAG Header
7. PMIC Programming Header
8. Board to Board connector 1
9. Board to Board connector 2

BOTTOM View

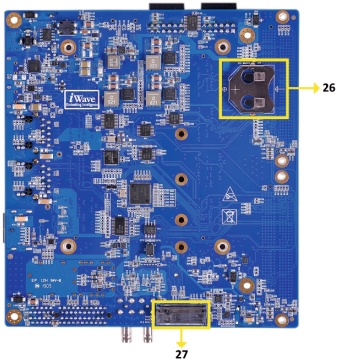


Step 6 - Quick View-Carrier Board

TOP View



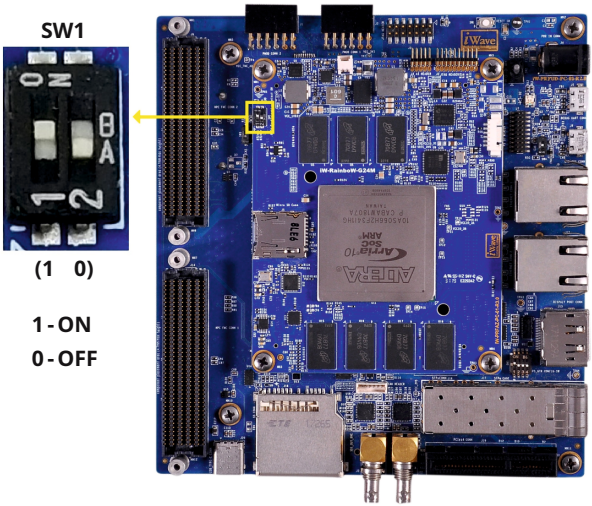
BOTTOM View



01. PMOD Connector 2
02. Board to Board Connector 1
03. PMOD Connector 1
04. JTAG Header
05. Board to Board Connector 2
06. GPIO Header
07. RESET Switch
08. ON/OFF Switch
09. Power Jack
10. Debug UART Connector
11. USB OTG Connector
12. EMAC1 Ethernet Jack
13. 2nd Ethernet Jack
14. Display Port
15. Channel Selection Switch
16. SFP+ Connector
17. PCIe X1 Connector
18. SDI IN HD BNC Jack
19. SDI OUT HD BNC Jack
20. Standard SD Connector
21. USB Type C Connector
22. FMC Connector 1
23. CAN Header
24. FMC Voltage Select Switch
25. FMC Connector 2
26. RTC Battery Holder
27. M.2 SATA Connector

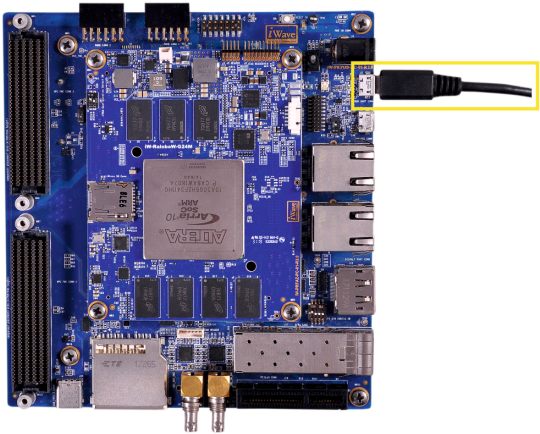
Step 7 - On Board Switch Setting

Make sure that On-SOM FPGA Configuration Select Switch (SW1) is set for PS & FPP (Configuration via HPS) configuration scheme as shown in below image.



Step 8 - Debug Port Setting

Connect TypeA end of USB cable to PC and MicroB end of USB cable to Development platform's Debug USB MicroAB Connector (J5) as shown below.



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

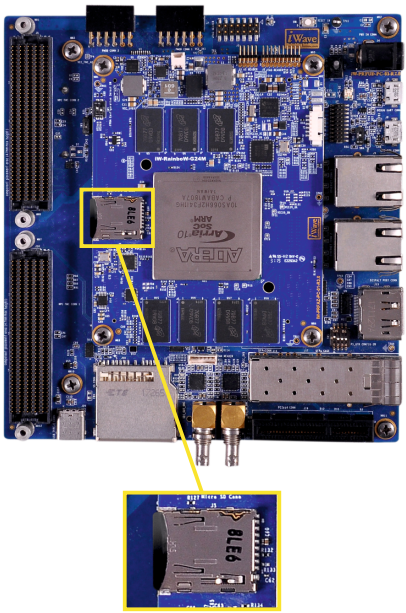
https://ftdichip.com/products/ft232rq/

Setup the Debug Terminal parameters.

- Baud Rate : 115200
- Data bits : 8
- Parity : None
- Stop Bits : 1
- Flow Control : None

Step 9 - Micro SD Card Insertion

Make sure that the micro SD card with bootable image is inserted in the SOM as shown below.

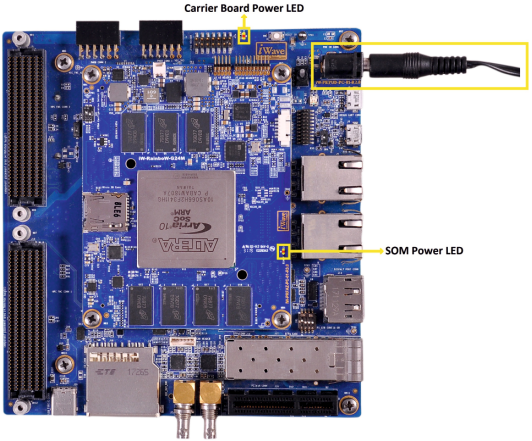


Note: *This step is not applicable for the SOMs where MicroSD is not used as boot device.*

Step 10 - Power-ON the Development Platform

Connect the 12V power supply plug to the power connector (J4) of the Development platform as shown below and switch ON the power supply.

Once power is applied to the Development platform, the power LEDs in Arria10 SoC/FPGA SOM and High Performance carrier board will glow as shown in the below image.



Warning:

1. Do not try to connect any other power supply other than supplied along with the Development platform.

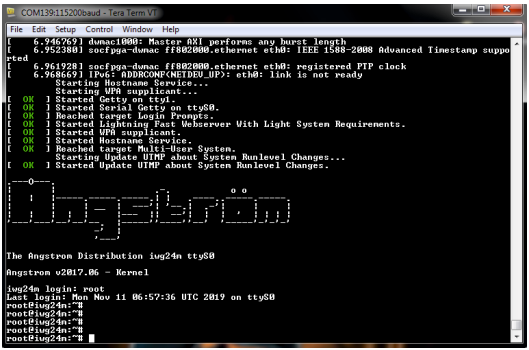
2. Do not plug or remove the Arria10 SoC / FPGA SOM from carrier board with live power.

3. Contact iWave if power LEDs are not glowing.

Step 11 - Test Environment setup

Once power is applied to the Development Platform as explained in the previous section, boot messages being displayed in the debug terminal of the PC/Laptop which is connected to the Development platform. Press any key in terminal immediately to see the command prompt of the Boot loader or wait until OS boots.

After OS boots, Login prompt being displayed in the debug terminal. Enter username and password as “root” to get the Linux command prompt as shown below.



Command Prompt

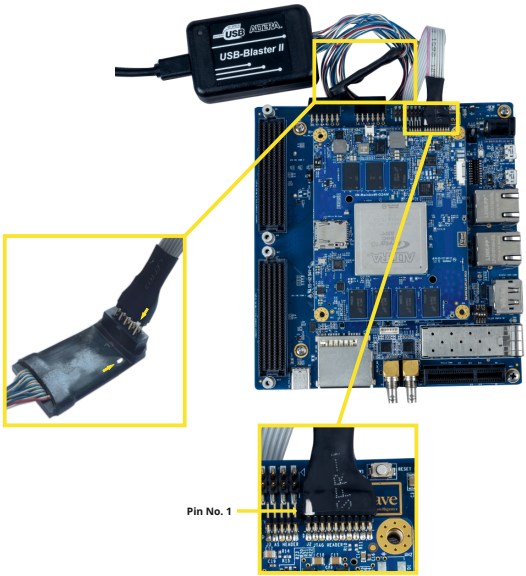
JTAG

JTAG Connection

iW-RainboW-G24D Arria10 SoC/FPGA SOM Development platform support JTAG interface for FPGA Programming and debugging. Use the JTAG cable which is shipped with the development platform to connect SOM and USB Blaster.

Example USB Blaster which is tested with this Platform is mentioned below.

USB Blaster-2
Part Number: PL-USB2-BLASTER from Intel

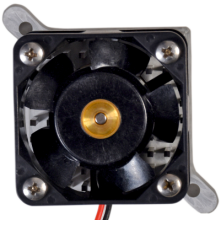


Heatsink

Heat Sink Integration

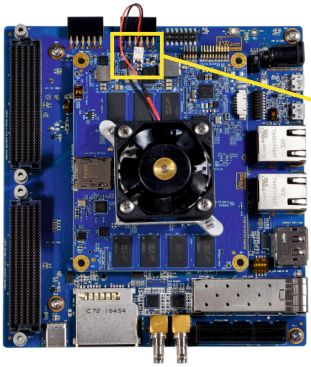
iW-RainboW-G24D Arria10 SoC/FPGA SOM Development platform comes with Heatsink+Fan attached to it. Makesure to power up the platform only with Heatsink+Fan attached.

Below is the Heatsink+Fan integration procedure for reference.



Heatsink + Fan

Peel off Thermal pad sticker



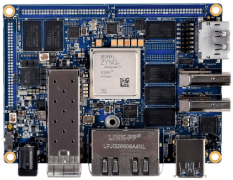
Paste the heatsink in to Arria10 SoC

Connect the Fan to SOM Fan Header

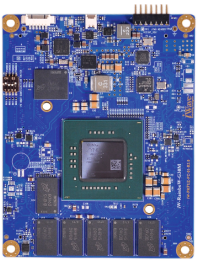
iWave's Other Products

Product Name: Zynq 7000 SODIMM SOM
Processor: Xilinx Zynq 7000 SoC
RAM: 512MB DDR3*
Application: Industrial Automation, Industrial Equipments, Machine Vision, Control & Measurement.

Product Name: iMX8 SMARC SOM
Processor: NXP's iMX8 QuadMax SoC
RAM: 8GB LPDDR4*
Application: Industrial Control Systems & HMI, Portable Medical devices, Augmented & Virtual Reality.



Product Name: Zynq UltraScale+ MPSoC (ZU5/ZU4/ZU3/ZU2) SBC
Processor: Xilinx's Zynq US+ MPSoC (2/3/4/5-EV/EG/CG)
RAM: 8GB PS DDR4* & 4GB PL DDR4*
Application: AI/ML, Industrial IoT, Human Machine Interface, Advanced Driver Assistance Systems.



Product Name: Zynq US+ MPSoC (4/5/7-EV/EG/CG) SOM
Processor: Xilinx's Zynq US+ MPSoC (4/5/7-EV/EG/CG)
RAM: 4GB PS DDR4*
1GB PL DDR4*
Application: Industrial Motor Control & IoT, Sensor Fusion, ADAS/Embedded Vision, Data Centor, Medical Endoscopy

RAM size is expandable. Contact iWave team for further details

Need More Help ?

iWave Systems Provides Technical Support to all Customers Worldwide.

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Write your technical queries to ***support.ip@iwavesystems.com***

■Live Chat

We provide Live Chat technical support to our customers. Contact iWave to enable Live Chat support.

■Phone

Call us on : +91-80-26683700, 26781643, 26786245

Warranty & RMA

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

For Warranty terms & Registration, scan the QR code or go to : https://www.iwavesystems.com/support/warranty/

For Return Merchandise Authorization (RMA), scan the QR code or go to : https://www.iwavesystems.com/support/rma/

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