StarFive 赛昉科技

StarLight vs. VisionFive

StarFive General Board Guide

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Preface

About this guide and technical support information.

About this document

This document is intended to provide users with:

- An overview of the differences between StarLight and VisionFive.
- How to use VisionFive's software documents as references to configure and debug StarLight SBC (single board computer).

Revision History

Table 0-1 Revision History

Version	Released	Revision
1.0	2021/12/08	First release.

Notes and notices

The following notes and notices might appear in this guide:

- **Tip:**
  Suggests how to apply the information in a topic or step.
- **Note:**
  Explains a special case or expands on an important point.
- **Important:**
  Points out critical information concerning a topic or step.
- **CAUTION:**
  Indicates that an action or step can cause loss of data, security problems, or performance issues.
- **Warning:**
  Indicates that an action or step can result in physical harm or cause damage to hardware.

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1. Introduction

VisionFive board is world's first generation of affordable RISC-V boards designed to run Linux. Based on RISC-V architecture, VisionFive pushes open-source to the next level and gives developers more freedom and power to innovate and design industry-leading solutions. And StarLight SBC is the predecessor of VisionFive. From user's perspective, VisionFive and StarLight have the same peripheral interfaces, and hardware components, including 40-pin GPIO header. The following sections will focus on: The hardware layout and software differences between Starlight and VisionFive. How to use VisionFive's software documents as references to configure and debug StarLight SBC (single board computer).

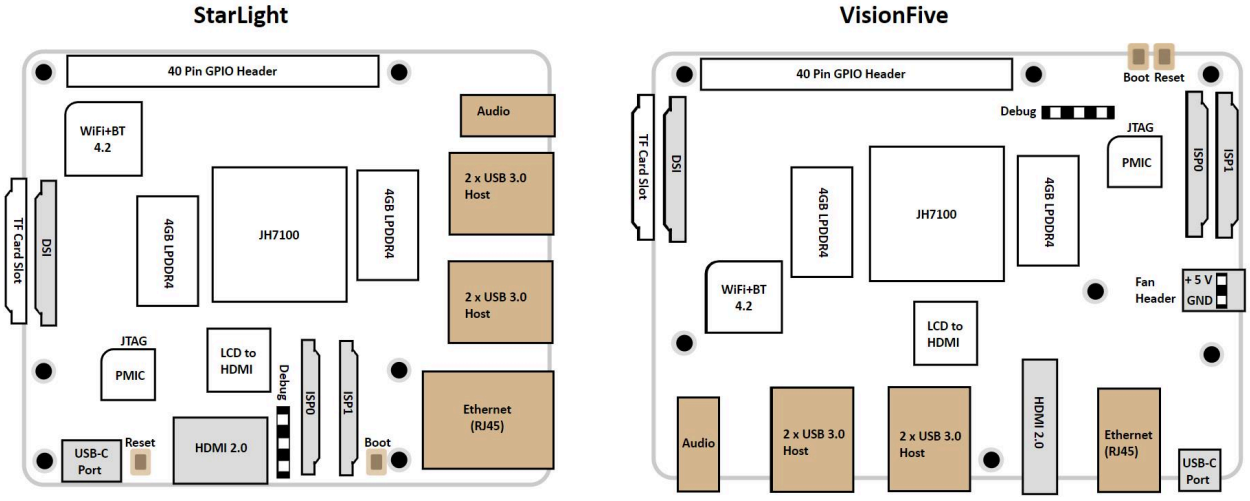
2. Hardware Differences

This chapter describes the hardware differences between VisionFive and StarLight.

2.1. Board Layout

The board layouts of StarLight and VisionFive are different as described in the following figure:

Figure 2-1 Hardware Layout of StarLight and VisionFive



As shown in the figure, StarL:ight and VisionFive have the same hardware components, of which the locations are different. Particularly, they use the same 40-pin GPIO header. Thus, you can refer to the *StarFive 40-Pin GPIO Header User Guide* for instructions to configure and debug the GPIOs.

For the hardware component descriptions, refer to *Features and Specifications section and Interface Description* table in *VisionFive Single Board Computer Quick Start Guide*.

2.2. Hardware Specification Details

Compared with StarLight, the VisionFive has the following updates related to hardware in details:

- Exchanged the location of TX and RX on UART debugging header
- StarLight is reset with power on; VisionFive is reset with power off.
- Added power off support via a GPIO line for reset.
- Added a fan header.

2.3. Connection Differences

Particularly, StarLight and VisionFive are different in connecting to debug header and fan as shown in the following figures:

Connecting to Debug

Figure 2-2 Connecting to StarLight for Debug

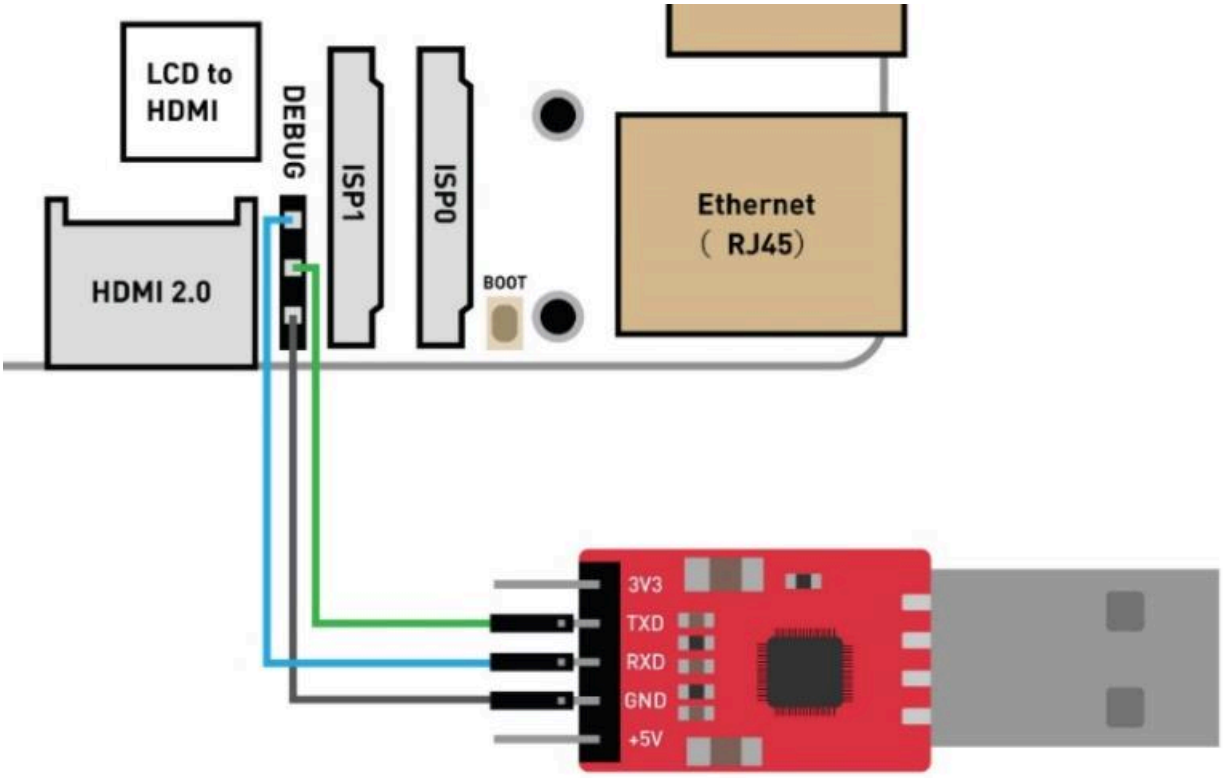
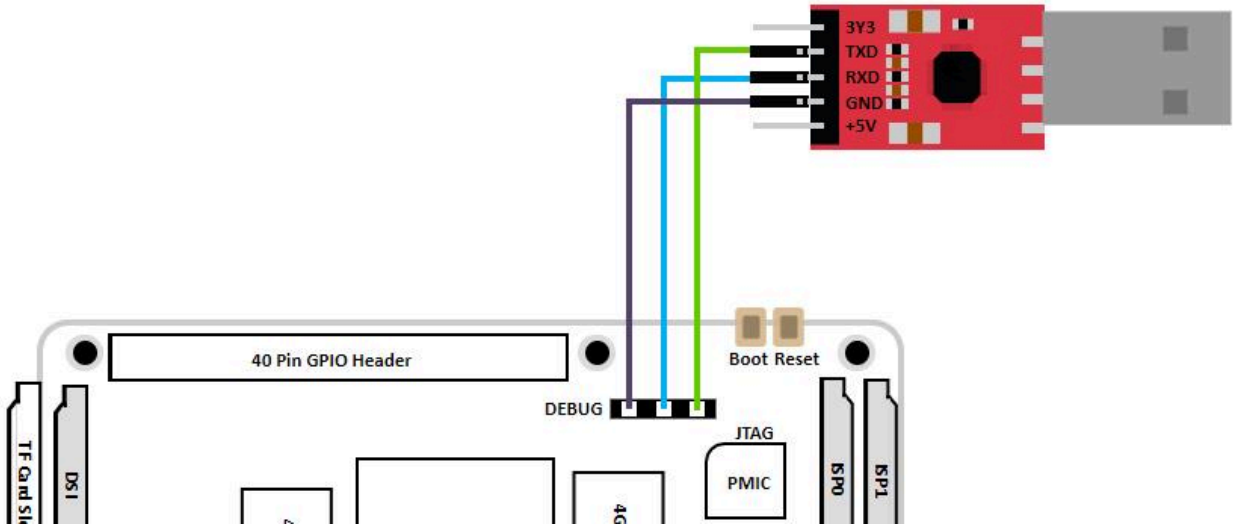


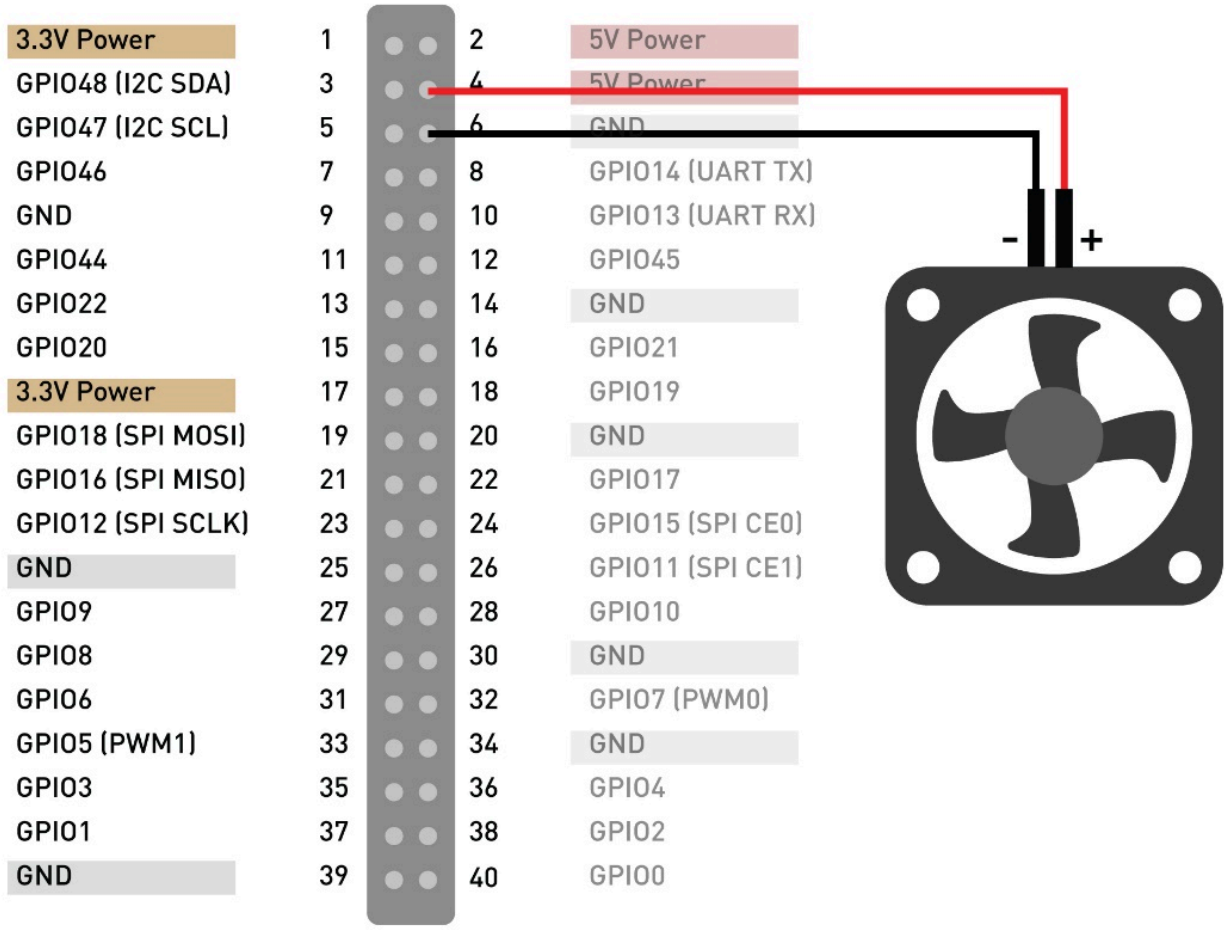
Figure 2-3 Connecting to VisionFive for Debug



Connecting a Fan to the Board

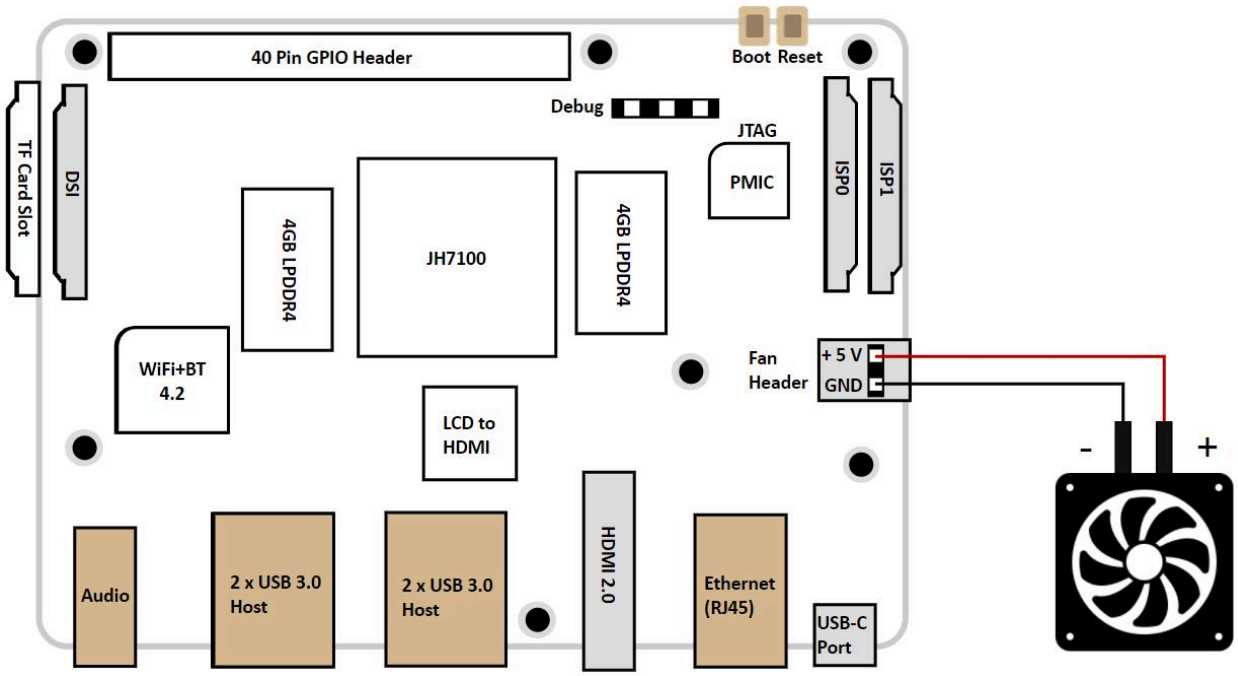
For StarLight, you can connecting a fan to the board through the 40-pin GPIO header:

Figure 2-4 Connecting a Fan to StarLight



For VisionFive, you can connecting a fan to the board through the 2-pin fan header:

Figure 2-5 Connecting a Fan to VisionFive



3. Software Differences

Generally, the procedures of the use cases are the same:

- get started with Fedora operation system as described in *VisionFive Single Board Computer Quick Start Guide*.
- compile firmware, u-boot, Linux Kernel and make file systems as described in *VisionFive Single Board Computer Software Technical Reference Manual*.

However, some configurations files are different for Starlight and VisionFive. We have added notes in the particular steps in the documents. And the following tables give you an overview of the configuration files differences.

3.1. dtb Files

The dtb files are used for the following use cases:

- Compile and replace the dtb files when making software preparation for configuring and debugging GPIOs in Compiling dtb section in *StarFive 40-Pin GPIO Header User Guide*.
- Add new files as described in Updating Kernel and Modules section *VisionFive Single Board Computer Software Technical Reference Manual*.
- Move dtb into the board as described Moving Rootfs, Kernel and dtb into VisionFive section in *VisionFive Single Board Computer Software Technical Reference Manual*.

Please note the file differences in the above cases. The following table describes the dtb file differences:

Table 3-1 dtb Files Differences

Board	File
StarLight	/linux/arch/riscv/boot/dts/starfive/jh7100-beaglev-starlight.dtb
VisionFive	/linux/arch/riscv/boot/dts/starfive/jh7100-starfive-visionfive-v1.dtb

3.2. Configuration Files for Compiling U-Boot

The configuration files used for compiling u-boot are also different as noted in Compiling the u-boot section in *VisionFive Single Board Computer Software Technical Reference Manual*.

Table 3-2 Configuration Files for Compiling U-Boot

Board	File
StarLight	`starfive_jh7100_starlight_smode_defconfig`
VisionFive	`starfive_jh7100_visionfive_smode_defconfig`