

**Dawar Technologies**  
**Simple-Host User's Guide**

**Sustaining Quality,  
Exceeding Expectations**

**DawarTouch®**

## 1. Introduction

Dawar Technologies' Simple-Host board (Dawar part number CT11403-A) is designed to help you implement high-power USB-C in your product. Most single board computers (SBCs) do not include support for Alternate Mode video over USB-C, or for USB-C voltages higher than 5V. Without these features, your SBC cannot be connected directly to Dawar's Simple-C™ monitor driver board.

That's where Dawar's Simple-Host board comes in. The Simple-Host sits between your SBC and Dawar's Simple-C monitor board. Your system provides DisplayPort (DP) video, USB data, and power to Dawar's Simple-Host. Simple-Host combines that video, USB data, and power into a USB-C 3.0 compliant data stream compatible with Simple-C.

Dawar's Simple-Host is based on the Cypress CY4531 eval kit design. To simplify implementation, Dawar combined the two CY4531 boards into a single board. We also removed the circuit used to program and debug the host board as it is only needed during development and manufacturing. Dawar can provide the programming board and cable if needed.

With Simple-Host and Simple-C, you can quickly assemble a demonstration system showing the capabilities of Dawar's USB-C monitor solutions. Simple-Host can also be integrated directly into your production design if desired. Alternatively, you can save some costs and space by incorporating the Simple-Host design elements onto your own custom processor board using the Cypress CY4531 as a reference design.

If you're not familiar with USB-C, the "Dawar Technologies Introduction to USB-C" white paper is available on Dawar's website. The features of Dawar's Simple-C monitor driver board are explained in "Dawar Technologies Simple-C User's Guide Rev B", also found on Dawar's website.

This document explains the features, connectors, and power information for Dawar's Simple-Host board.

## 2. Simple-Host Features

Dawar's Simple-Host board accepts DP video, USB 2.0 data, and +24V DC power. The DP video stream is converted to USB-C compatible Alternate Mode video and encoded onto a USB-C data stream. Simple-Host also provides several power options over USB-C up to 20V at 3A (60W).

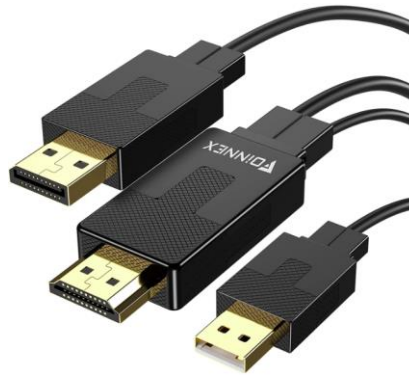


Each Simple-Host feature and the accompanying connectors are explained in the following sections.

### 3. Video Input

Simple-Host accepts DP video from a host processor via a standard DP connector (J4). The DP video can include encoded audio which will also be sent to the USB-C monitor. To be compatible with Dawar's Simple-C board, the DP video must be 1920 x 1200 x 60Hz or lower.

If your system only has HDMI output, an HDMI-to-DP converter can be used to convert the video to DP format. Note that these cables are typically one-way only, so you must use a cable specifically made to convert HDMI to DP, not DP to HDMI. Most HDMI-to-DP converters also require external power which is typically provided by a USB-A connector that must also be connected to the host system:



The [FOINNEX HDMI to DisplayPort cable on Amazon](#) is one example.

### 4. USB Data

Simple-Host includes a high-speed USB-B 2.0 connector (J2). You may use a standard USB-B cable or a high-speed USB-B cable for this connection:



Standard USB-B



High Speed USB-B

If you use a low-speed cable, the throughput of the four USB-A 2.0 connectors on the Simple-C board may be limited.

## 5. Power Input

Simple-Host requires a +24V DC. Two connectors are provided for this power input. The first, J1, is a barrel connector compatible with many off-the-shelf power supplies (for example, the [Kaga Electronics KTPS65-2427DT-3P-VI-C-P1 available on DigiKey](#)). The J1 connector is Würth Electronics 694106301002. The connector is center-positive.

The second power connector, J12, is a two-pin terminal block. Pin 1 is +24V DC; pin 2 is ground.

Only one power connector, J1 or J12, may be used at a time. Incoming power must be +24V DC  $\pm$ 5% at 2.7A (65W).

## 6. Power Delivery

Simple-Host supports up to four Power Delivery Objects (PDOs). The PDOs are configured to support the following:

- PDO 0: 5V @ 3A
- PDO 1: 9V @ 3A
- PDO 2: 15V @ 3A
- PDO 3: 20V @ 3A

By default, Dawar's Simple-C board is configured to use PDO 3 (20V @ 3A). However, Dawar can customize the Simple-C configuration upon request. Refer to the "Dawar Technologies Simple-C User's Guide Rev B" for more information.

## 7. USB-C Output

Simple-Host includes a standard USB-C output connector (J8). The USB-C output includes the Alternate Mode encoded video and audio, USB 2.0 data, and up to 60W of power. For information on what cables to use between Simple-Host and Simple-C, refer to the "Dawar Technologies Simple-C User's Guide Rev B" available on the Dawar website.

## 8. Default Roles

Simple-Host defaults to the following roles:

- ▶ Downward facing port (UFP)
- ▶ Downward facing Display Port (UFP\_D)
- ▶ Downward facing USB data port (UFP\_U)
- ▶ Power Source

## 9. Programming

The Cypress CCG3 chip on the Simple-Host board can be configured using the Cypress EZ-PD desktop software. A USB-to-I<sup>2</sup>C bridge board is required. Dawar can provide the bridge board (Dawar part number CT11402-A) and the accompanying cable (Dawar part number RM10811) which connects to the programming header, J7, on the Simple-Host board.



**Revision History**

Rev A March 1, 2023	Initial Release
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