ZS1120, USB 3.0 Switch

User Manual

1.1, Feb 2025

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Chapter 1. Revision History

Revision	Date	Comment
1.0	18 Oct, 2024	• Initial version.
1.1	05 Feb, 2025	• Add LED indications and port markings. • Update product name. • Update known issues section.

Chapter 2. Introduction

ZS1120, USB 3.0 Switch, allows for switching between eight devices and two hosts. It can accept commands over USB serial based command interface, typically connected to a PC. The USB 3.0 Switch has two upstream ports, with USB 3.0 Type-B connectors and eight downstream ports, with USB 3.0 Type-A connectors. Built-in over current, under voltage lockout (UVLO) protections ensure safe operations under abnormal operating conditions.

Applications

- USB Reflash Automation
- USB Device Interoperability Testing
- Jack-In Jack-Out Testing

2.1. Specification

The USB 3.0 Switch has the following specification.

Parameter	Value
Power Supply & Command Port	USB Type Mini-B connector
Downstream Ports	8x USB standard type-A connectors
Upstream Ports	2x USB standard type-B connectors
USB Speeds	USB 3.0 SuperSpeed
Programming Interface	Serial Command
Current Consumption	50mA
Dimension	214mm x 88mm x 32mm

2.2. Features

An USB 3.0 Switch has the following key features:

- USB3.0 SuperSpeed compatible.
- Designed for programmatic switching between the eight downstream ports, and 2 upstream ports.
- Implemented using USB redrivers muxes that compensate for Inter Symbol Interference (ISI) using receiver or transmitter equalization.
- Works with a variety of USB peripherals, such as printers, scanners, external hard drives, and more.
- Easy to control by a terminal software from control port.
- Has built-in device over current detection.
- Per-Port LEDs
  - indicate if the port is selected / deselected.
  - indicate if over-current error has occured.

2.3. Ordering Information

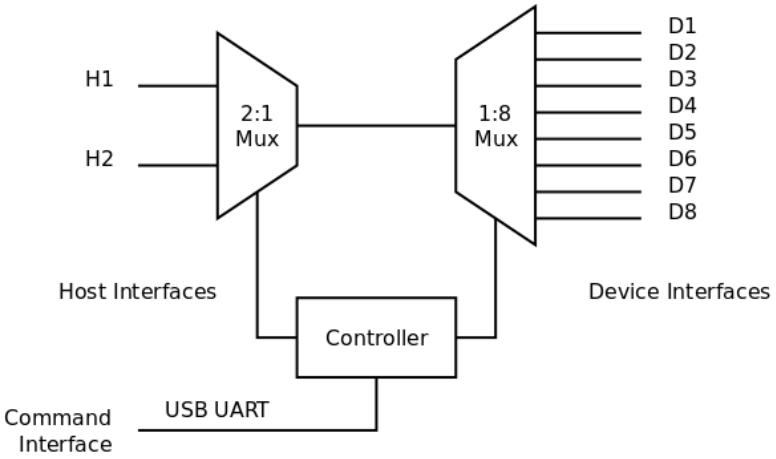
- Product Name: ZS1120, USB 3.0 Switch
- Part Number: ZS-USB3SW2H-P1

2.4. Operation

USB 3.0 Switch control interface is detected as a USB serial device in a PC. It has built-in command engine which accepts the commands through serial interface and switches connection based on it. The built-in commands in USB 3.0 Switch facilitates the host software to choose USB ports via serial commands.

The following diagram shows a schematic representation of the USB 3.0 Switch.

Figure 2.1. Schematic Representation



2.5. Recommended Operating Range

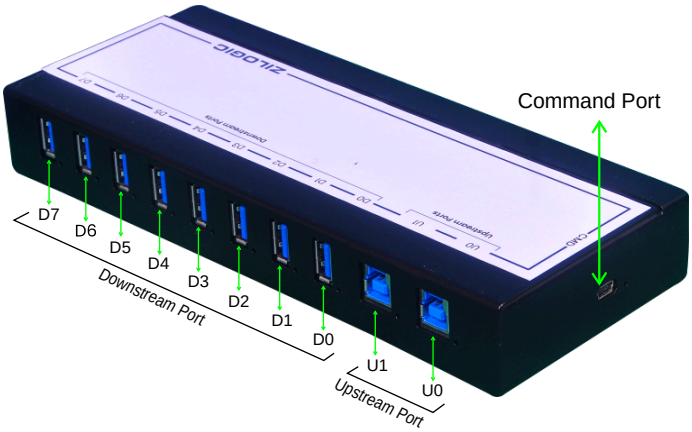
Parameter	Minimum	Typical	Maximum	Units
Current	-	2	-	A
USB Downstream 2.0 Voltage	-	5	-	V
USB Downstream 2.0 Current	-	500	-	mA
USB Downstream 3.0 Voltage	-	5	-	V
USB Downstream 3.0 Current	-	900	-	mA

Chapter 3. Device Usage

3.1. Port Markings

The location of the ports and their names are indicated in the following diagram.

Figure 3.1. Port Markings

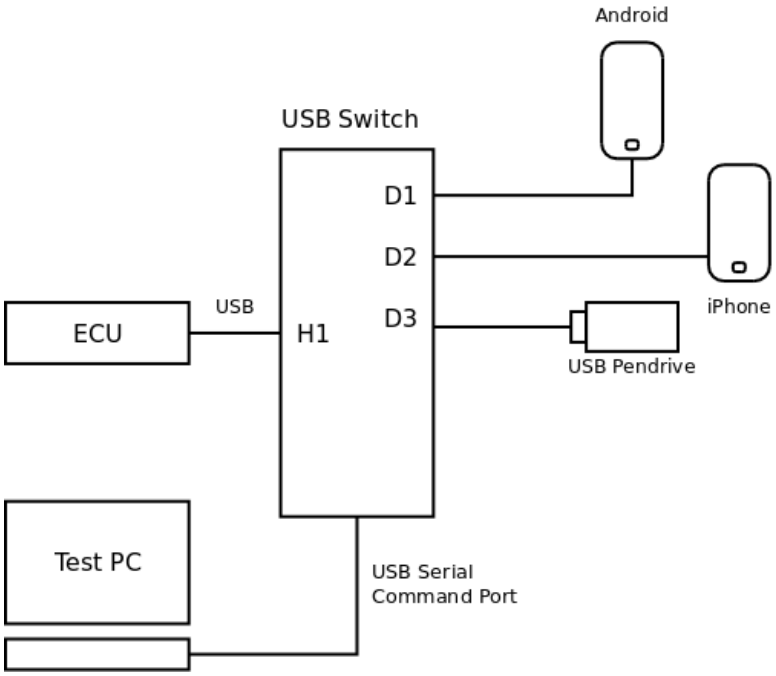


3.2. Device Hardware Setup

- Power-on the USB 3.0 Switch by connecting it to a PC, using a USB Mini-B cable.
- Connect up-to two hosts to the upstream ports.
- Connect up-to 8 devices to the downstream ports.

The following diagram shows an example of a hardware setup, with one host and 3 devices connected to the USB 3.0 Switch.

Figure 3.2. Example Hardware Setup



3.3. Device Software Setup

- In Windows OS, the USB 3.0 Switch will be detected as a COM port under [Ports COM and LPT] section of the Device Manager. If the device is not detected properly, the driver can be downloaded from the site http://www.ftdichip.com/Drivers/VCP.htm.

Chapter 4. Command Interface

4.1. Serial Port Setting

In order to establish serial communication between the USB 3.0 Switch and the control PC, the following serial parameters has to be configured as shown below.

Parameter	Value
Baud Rate	9600
No. Bits	8
Stop bit	1
Parity	No
Flow Control	No

4.2. Command Line Interface

The USB 3.0 Switch is designed to accept requests through serial commands.

- Each command should end with `CR(\r)`.
- Device will respond back with the reply appended with CR prompt symbol.

```
OK
>
```

- Commands are not case sensitive.

4.3. Command List

Version Command. Version command is used to check the device version.

Command `V`

Response `OK:101`

Information Command. Information command lists the available USB ports, with the corresponding numbers.

Command `I`

Response `OK:00 01 02 03 04 05 06 07`

Status Command. Status command returns the USB port number which is ON currently.

Command `S`

Response `OK:<port no>`

Host ON Command. Host command enables the specified host. The port number is a number either `0` or `1`

Command `H<port no>`

Response `OK`

Device ON Command. ON command enables the given port. The port number is a single digit number from 0 - 7.

Command `O<port no>`

Response `OK`

OFF Command. Device OFF command disables the given port. The port number is a single digit number from 0 - 7

Command `F<port no>`

Response `OK`

Any Command. Any command will disable which ever port is currently ON. This command does not need port number.

Command `A`

Response `OK`

Error Command. Error command returns over current consumption error log. The error log will reset after reading the error.

Command `E`

Response `OK: E: <er> <er> <er> <er> <er> <er> <er> <er>`

where, `er` - error, er - 0: no error, 1: error

Example `0 0 0 0 0 0 0 0` (if there is no error in ports)

`0 1 0 0 0 0 0 0` (if an error occured in port)

`0 1 0 0 0 0 0 1` (if an error occured in port 1 and 7)

4.4. LED Indications

The various LED indications are listed in the following table.

Table 4.1. LED Indications

LED	Color	Description
Upstream Port LED	Red	Upstream Port is selected
	Off	Upstream Port is deselected
Downstread Port LED	Green	Downstream Port is selected
	Off	Downstream Port is deselected
	Red	Overcurrent error has occurred

Appendix A. Limited Hardware Warranty

The warranties provided by Zilogic Systems in this Limited Hardware Warranty apply only to Hardware Products you purchase for your use, and not for resale. The term "Hardware Product" means a computing device with a specific function and limited configuration ability.

A.1. LIMITED HARDWARE WARRANTY

Zilogic Systems warrants that the hardware components of its Hardware Product shall be free from material defects in design, materials, and workmanship and will function, under normal use and circumstances, in accordance with the documentation provided, for a period of one (1) year from the date of purchase of the Hardware Product.

Your sole and exclusive remedy, and Zilogic Systems' sole and exclusive liability for defective hardware components, shall be that Zilogic Systems, subject to the terms and conditions of this Section, and solely upon confirmation of a defect or failure of a hardware component to perform as warranted, shall at its sole option, either repair or replace the nonconforming hardware component. All replacement parts furnished to you under this warranty shall be refurbished and equivalent to new, and shall be warranted as new for the remainder of the original warranty period. All defective parts, which have been replaced, shall become the property of Zilogic Systems. All defective parts that have been repaired shall remain your property.

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If a Hardware Product or one of its component parts does not function as warranted during the warranty period, and such nonconformance can be verified by Zilogic Systems, Zilogic Systems, at its election, will provide either return and replacement service or replacement with a refurbished part/unit for the Hardware Product under the type of warranty service Zilogic Systems designates for that Hardware Product. A defective Hardware Product or one of its component parts may only be returned to Zilogic Systems upon Zilogic Systems' prior written approval. Any such approval shall reference an RMA number issued by an authorized Zilogic Systems service representative. If

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Transportation costs, if any, incurred in connection with the return of a defective item to Zilogic Systems shall be borne by You. Any transportation costs incurred in connection with the redelivery of a repaired or replacement item to You by Zilogic Systems shall be borne by Zilogic Systems; provided, however, that if Zilogic Systems determines, in its sole discretion, that the allegedly defective item is not covered by the terms and conditions of the warranty or that a warranty claim is made after the warranty period, the cost of the repair by Zilogic Systems, including all shipping expenses, shall be reimbursed by You.

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You agree:

- To provide Zilogic Systems or its partner with sufficient and safe access to your facilities to permit Zilogic Systems to fulfill its obligations.
- To ship back the faulty Hardware Product (or replaceable unit) suitably packaged, quoting the RMA number, to the Zilogic Systems designated location.
- You shall ship the faulty Hardware Product once Zilogic Systems approves the RMA and provide the courier name and tracking number.
- To securely erase from any Hardware Product you return to Zilogic Systems for any reason all programs and data not provided by Zilogic Systems with the Hardware Product. You acknowledge that in order to perform its responsibilities under this Limited Hardware Warranty, Zilogic Systems may ship all or part of the Hardware Product or its software to third party locations around the world, and you authorize Zilogic Systems to do so.

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