

Software package for STEVAL-2STPD01 USB Type-C™ Power Delivery dual port adapter kit

Application	Device Policy Manager	Power Monitor	Power Sharing
Middleware	USB PD Library		FreeRTOS
Hardware Abstraction	Hardware Abstraction Layer API		Board Support Package
Hardware	STM32G071RB	STPD01	TCPPO2-M18
	STEVAL-2STPD01		

Features

- Software package for the STEVAL-2STPD01 USB Type-C™ Power Delivery dual port adapter kit
- USB-PD middleware stack based on STM32CubeG0 STM32Cube MCU Package for STM32G0 series running on the ARM® Cortex®-M0+ 32-bit STM32G071RB microcontroller
- Software IPs included: Power Sharing and Power Monitor modules

Description

The **STSW-2STPD01** software package contains the application, source code, and libraries designed to demonstrate the capabilities of the **STEVAL-2STPD01** USB Type-C™ Power Delivery dual port adapter kit.

The application firmware runs on the mainstream ARM® Cortex®-M0+ 32-bit **STM32G071RB** microcontroller embedded in the **NUCLEO-G071RB** development board, which is part of the **STEVAL-2STPD01** kit.

It exploits the USB-PD middleware stack coming from the **STM32CubeG0** firmware package, which makes the solution compliant with the USB Type-C 2.1 and Power Delivery 3.1 specifications.

The package includes the firmware drivers of the **STPD01** DC-DC converter and the **TCPPO2-M18** protection, which manage two USB Type-C ports and which are driven by the microcontroller through a set of dedicated APIs.

The **STSW-2STPD01** embeds two software IPs, the Power Sharing algorithm and the Power Monitor, which allow the **STM32G071RB** microcontroller to optimize the management of the power in the solution.

The Power Sharing IP empowers the microcontroller to manage the two **STPD01** DC-DC converters, associated to each USB Type-C port, and dynamically handle the available output power according to the power negotiation requests made by the connected equipment and the internal power balance.

The IP also permits, thanks to the **STM32CubeMonitor-UCPD** GUI, to set the input power rating (as input voltage and current delivered by the power supply) as specification data, enabling the negotiable PDOs for that fixed rating for each port.

At the maximum input power rating, the application firmware enables the adapter kit to deliver four fixed PDOs for each port: 5 V at 3 A, 9 V at 3 A, 15 V at 3 A, 20 V at 3 A.

The **STSW-2STPD01** software package is distributed for **STM32CubeIDE**, IAR EWARM and Keil µVision IDEs.

Product summary	
Software package for STEVAL-2STPD01	STSW-2STPD01
USB Type-C™ Power Delivery dual port adapter kit based on the STPD01	STEVAL-2STPD01
Programmable buck converter for USB power delivery	STPD01
Mainstream Arm Cortex-M0+ MCU with 128 Kbytes of flash memory	STM32G071KB
Integrated Development Environment for STM32	STM32CubeIDE
Software tool for USB Type-C™ Power Delivery port management	STM32CubeMonitor-UCPD
Applications	USB Type C and power delivery

1 Licensing information

STSW-2STPD01 is delivered under the *Mix Ultimate Liberty+OSS+3rd-party V1 license*.

The software components provided within this package come with different license agreements as listed in the following table.

Table 1. Software component license agreements

Software component	Owner	License
Cortex [®] -M CMSIS	Arm [®]	BSD 3-Clause
FreeRTOS [™] Kernel	Copyright ^(C) 2017 Amazon.com, Inc. or its affiliates	MIT open source license
STM32G0 HAL/LL APIs	STMicroelectronics International N.V.	BSD 3-Clause
STM32 USB-PD Library	STMicroelectronics International N.V.	Ultimate Liberty software license agreement (SLA0044)
STSW-2STPD01	STMicroelectronics International N.V.	Software package license agreement (SLA0048)
STSW-2STPD01 BSP APIs	STMicroelectronics International N.V.	Ultimate Liberty software license agreement (SLA0044)
STSW-2STPD01 Power Sharing Library	STMicroelectronics International N.V.	Ultimate Liberty software license agreement (SLA0044)

Revision history

Table 2. Document revision history

Date	Revision	Changes
22-Nov-2021	1	Initial release.

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