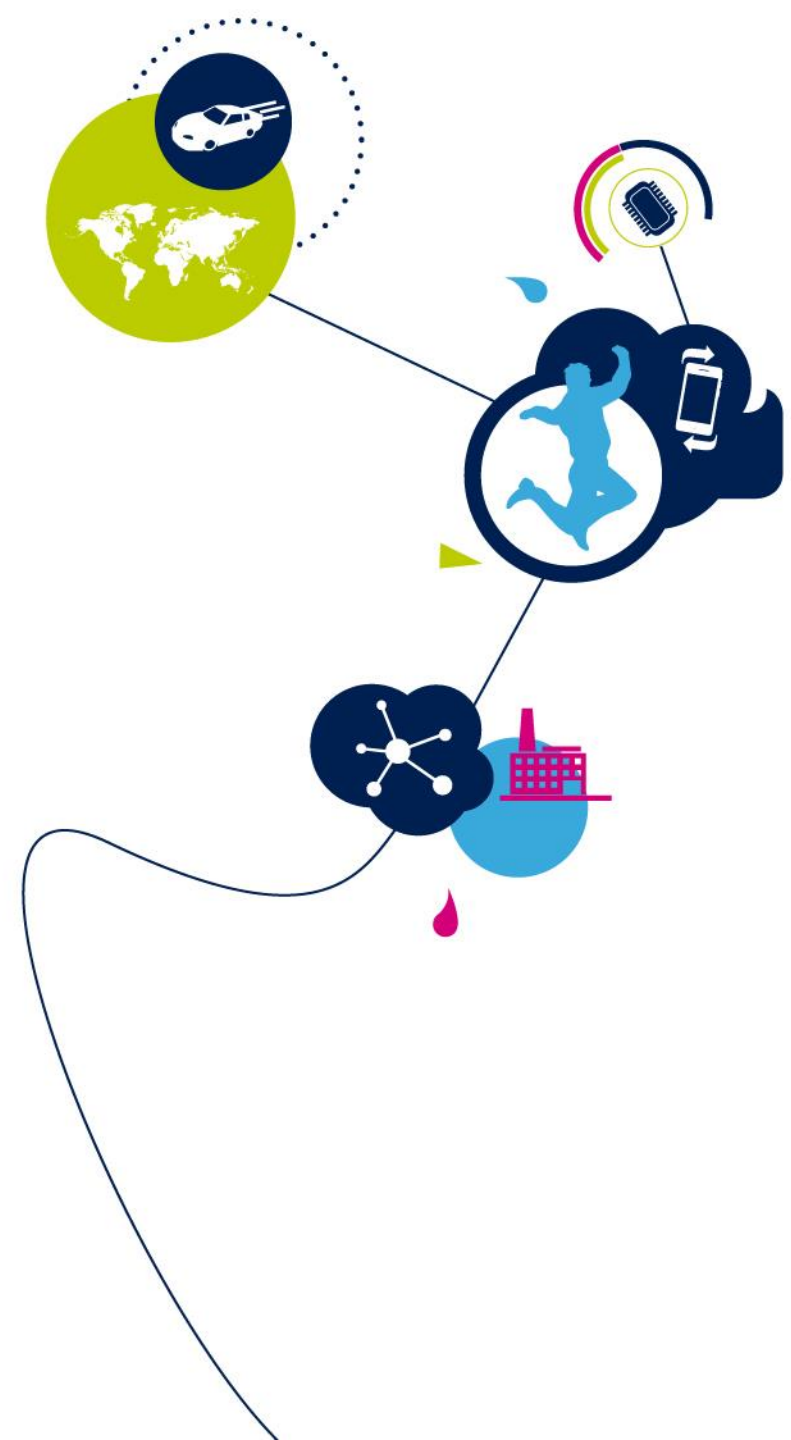


# STSW-STUSB010

## Quick Start Guide

STUSB1602 software library  
for P-NUCLEO-USB002





# QUICK START

## Introduction

This document provides an overview of the STUSB1602 software package enabling the functionalities of the P-NUCLEO-USB002 development board.

SOFTWARE	
STSW-STUSB010	STUSB1602 software library for P-NUCLEO-USB002
IAR 8.x	C code compiler
HARDWARE	
P-NUCLEO-USB002	USB-C and Power Delivery Nucleo Pack with NUCLEO-F072RB



# SW library set-up (1/3)

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- 1 Download the STUSB1602 software package by searching [STSW-STUSB010](#) from [www.st.com](#) home page:

The screenshot shows the ST website search results for the query "STSW-STUSB010". The page features the ST logo and "life.augmented" tagline. A search bar at the top right contains the query "STSW-STUSB010" and a "Search" button. Below the search bar, a navigation menu includes "Products", "Applications", "Tools & Software", and "About ST". A "Sample & Buy" link is also present. The search results section shows "1 tools & software: STSW-STUSB010". A table lists the results with columns: Part Number, Status, Type, Category, and Description. The table contains one entry: "STSW-STUSB010" with status "ACTIVE", type "Embedded Software", category "Evaluation Tool Software", and description "STUSB1602 software library for P-NUCLEO-USB002". On the left side, there are filters for "REFINE BY TYPE" (showing "Embedded Software (1)") and "REFINE BY VENDOR" (showing "ST (1)").

ST life.augmented

Tools & Software ▾ STSW-STUSB010 Search

Products Applications Tools & Software About ST Sample & Buy

Search result >

STSW-STUSB010 🔍 ★ My bookmarks ⌚ Search History

Products **Tools & Software (1)** Resources (2) Videos Solutions Applications X-Reference All site

**REFINE BY TYPE** [Clear](#)

Embedded Software (1)

**REFINE BY VENDOR** [Clear](#)

☐ ST (1)

1 tools & software: STSW-STUSB010

Part Number ▾	Status ▾	Type ▾	Category ▾	Description ▾
<a href="#">STSW-STUSB010</a>	ACTIVE	Embedded Software	Evaluation Tool Software	STUSB1602 software library for P-NUCLEO-USB002



# SW library set-up (2/3)

4

2 Then click on “Get Software” from either the bottom or top of the page

Get Software				
Part Number	Software Version	Marketing Status	Supplier	Download
STSW-STUSB010	1.0.1	Active	ST	<a href="#">Get Software</a>

3 Download will start after accepting the License Agreement, and filling contact information.

## License Agreement

ACCEPT

### IMPORTANT-READ CAREFULLY:

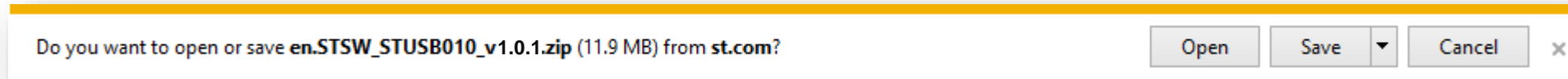
This Limited License Agreement ("LLA") is made between you (either an individual person or a single legal entity, who will be referred to in this LLA as "You" or "Licensee") and STMicroelectronics International NV, a company incorporated under the laws of the Netherlands acting for the purpose of this LLA through its Swiss branch 39, Chemin du Champ des Filles, 1228 Plan-les-Ouates, Geneva, Switzerland (hereinafter "ST") for the software licensed materials that accompany this LLA, including any associated media, printed materials and electronic documentation (the "Licensed Materials"). The Licensed Materials include any software updates and supplements, that ST may provide You or make available to You after the date You obtain the Licensed Materials to the extent that such items are not accompanied by a separate license agreement or other terms of use.



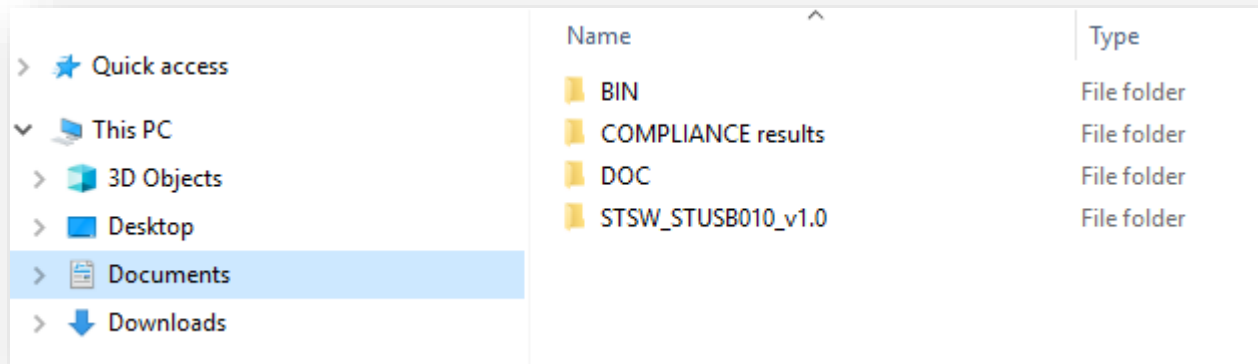
# SW library set-up (3/3)

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- 4 Save the file **en.STSW-STUSB010.zip** on your laptop



and unzip:



- 5 The package contains a DOC directory, ready-to-use binary files, associated projects and compliance reports



# Hardware settings

The software library has been optimized to quickly compile on the P-NUCLEO-USB002 development board. The board is composed of a customized NUCLEO-F072RB and a STUSB1602 expansion board.

It is composed of 2 Dual Role Ports (DRP) USB PD capable receptacles.

It is mandatory to align board settings with the selected application requirements. Please refer to bellow 2 user manuals from P-NUCLEO-USB002 web page.

Title ▾	Type ▾	Product Associations	Version ▾	Size ▾	Icon
<a href="#">UM2205: Getting started with the STM32 Nucleo pack for USB Type-C™ and Power Delivery with the Nucleo-F072RB board and the STUSB1602</a>	User Manual	<a href="#">P-NUCLEO-USB002</a>	1	1.6 MB	<a href="#">↓ PDF</a>
<a href="#">UM2191: STM32 Nucleo pack for USB Type-C™ and Power Delivery with the Nucleo-F072RB board and the STUSB1602</a>	User Manual	<a href="#">P-NUCLEO-USB002</a>	2	3.7 MB	<a href="#">↓ PDF</a>



The software library includes 6 different software frameworks already optimized to address most common application scenarios:

	Project	.bin	Typical Application
#1	MB1303_SRC_ONLY	Provider_RTOS	SOURCE – power management
#2	MB1303_SRC_VDM	Provider_VDM_RTOS	SOURCE – power management + extended message support
#3	MB1303_SNK_ONLY	Consumer_RTOS	SINK – power management
#4	MB1303_SNK_VDM	Consumer_VDM_RTOS	SINK – power management + extended message support + UFP support
#5	MB1303_DRP_SNK	Consumer_DRP_RTOS	Dual Role Port power management support supporting dead battery mode
#6	MB1303_DRP_VDM	Consumer_DRP_VDM_RTOS	Dual Role Port power management support supporting dead battery mode + extended message support + UFP support

# #1 - MB1303\_SRC\_ONLY

## overview

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- This is the typical framework for SOURCE only applications, implementing USB PD power negotiation.
- The code provided includes 1 PDO including EMCA support : when used with 3A only cables, maximum current advertised by the SOURCE is bounded to 3A for those PDO which normally support more than 3A.
- Default profiles is:
  - PDO1: 5V, 3A



# #2 - MB1303\_SRC\_VDM

## overview

9

- This is the typical framework for SOURCE only applications, implementing USB PD power negotiation and supporting optional extended messages.
- The code provided includes 1 PDO (including EMCA support ), and is able to answer to the following messages:
  - Manufacturer info
  - Discover identity
  - Unchunked extended messages
- Defaults profiles is:
  - PDO1: 5V - 3A

# #3 - MB1303\_SNK\_ONLY

## overview

10

- This is the typical framework for SINK only applications, implementing USB PD power negotiation.
- The code provided includes 2 PDOs (max power has priority),
- Defaults profiles are:
  - PDO1: 5V - 1.5A
  - PDO2: 9V - 1.5A

# #4 - MB1303\_SNK\_VDM

## overview

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- This is the typical framework for SINK only applications, implementing USB PD power negotiation and supporting optional extended messages. Project is defined as an Alternate Mode Adapter: it is able to enter alternate as a Display Port and enumerate as Billboard otherwise.
- The code provided includes 2 PDOs, and is able to answer:
  - Manufacturer info
  - Discover identity
  - Unchunked extended messages
- Defaults profiles are:
  - PDO1: 5V - 1.5A
  - PDO2: 9V - 1.5A

# #5 - MB1303\_DRP\_SNK

## overview

12

- This is the typical framework for Dual Role Port applications, such as Power bank applications.
- By default, the port connects as a SINK when application is not supplied (dead Battery mode), and supports both power and data role swap (PR\_SWAP and DR\_SWAP) and EMCA.
- Defaults profiles are:
  - Source:
    - PDO1: 5V - 3A
  - Sink:
    - PDO1: 5V - 1.5A
    - PDO2: 9V - 1.5A

# #6 - MB1303\_DRP\_VDM

## overview

13

- This is the typical framework for Dual Role Port supporting alternate mode in UFP.
- By default, the port connects a SINK when application is not supplied (dead Battery mode), and supports both power and data role swaps (PR\_SWAP and DR\_SWAP). It implements USB PD power negotiation for both SOURCE (including EMCA support) and SINK, and supports optional PD3 features like:
  - Manufacturer info, Discover identity, Unchunked extended messages
  - Alternate mode:
    - Enters DP mode
    - Enumerate as Billboard if needed
- Defaults profiles are:
  - Source:
    - PDO1: 5V – 3A
  - Sink:
    - PDO1: 5V 1.5A
    - PDO2: 9V 1.5A