SPD1179 Bootloader Download Usage Guide

Revision A/0 – January 2023

Overview

A bootloader is built in the SPD1179 Boot ROM. The main task of the bootloader is downloading the application program to the Flash memory inside the chip through UART0 or LIN interface. This document describes how to download programs through UART0 or LIN interface.

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Revision history

Revision	Date	Author	Changes
A/0	15-Jan-2022	Hang Su	Initial release.

Terms or abbreviations

Terms or abbreviations	Description

1 Bootloader description

1.1 Bootloader activation

Pull up the BOOT pin (BOOT = 1) and startup (reset) the chip to make the chip enter bootloader downloading mode. Thereby, the bootloader is activated.

1.2 Bootloader setting

The hardware interfaces used in bootloader downloading mode and their configuration are show in Table 1-1.

Table 1-1: The hardware interfaces used by bootloader and their settings

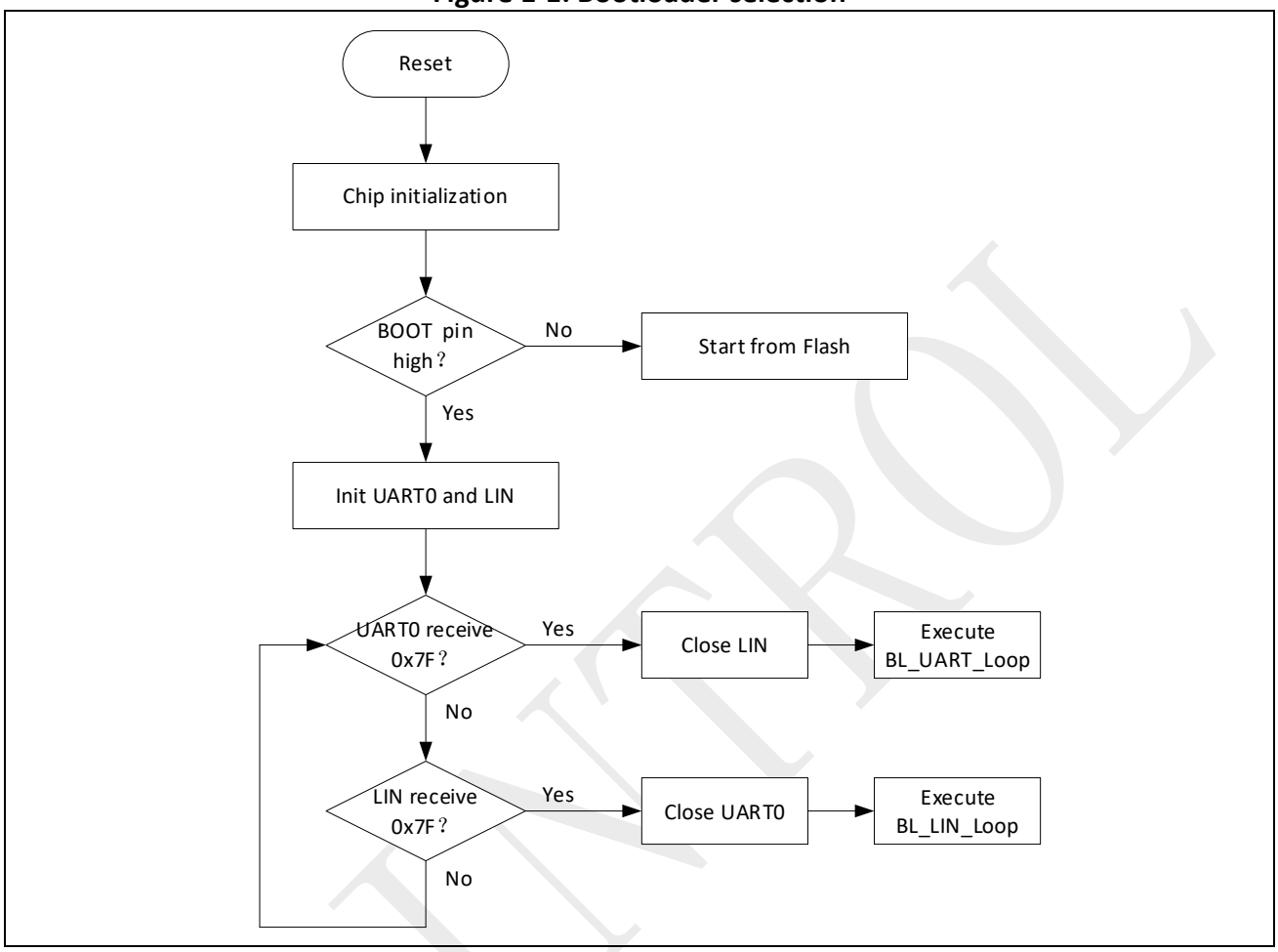
Bootloader	Peripheral	State	Description
UART bootloader	UART0	Enable	Once initialized, UART0 is configured with 8 data bits, 1 stop bit and no parity
	UART0_RXD Pin	Input	Configure the GPIO11 pin as UART0_RXD, using the internal pull-up
	UART0_TXD Pin	Output	After receiving the 0x7F handshake byte, configure the GPIO10 pin as UART0_TXD, using the internal pull-up
LIN bootloader	UART1	Enable	Once initialized, UART1 is configured with 8 data bits, 1 stop bit and no parity
	LIN Phy	Enable	Once initialized, Enable transceiver function
	UART1_RXD Pin	Input	Configure GPIO26 as pin UART1_RXD, using the internal pull-up
	UART1_TXD Pin	Output	Configure GPIO25 as pin UART1_TXD, using the internal pull-up
	LIN Pin	Input/Output	After LIN Phy is enabled, the LIN Pin is directly used as LIN communication interface

Note: The download protocol used in LIN bootloader mode is SPINTROL's proprietary UART protocol, which simply converts UART signal levels to LIN bus levels using the chip integrated LIN transceiver.

1.3 Bootloader selection

Bootloader selection mechanism is show in Figure 1-1.

Figure 1-1: Bootloader selection



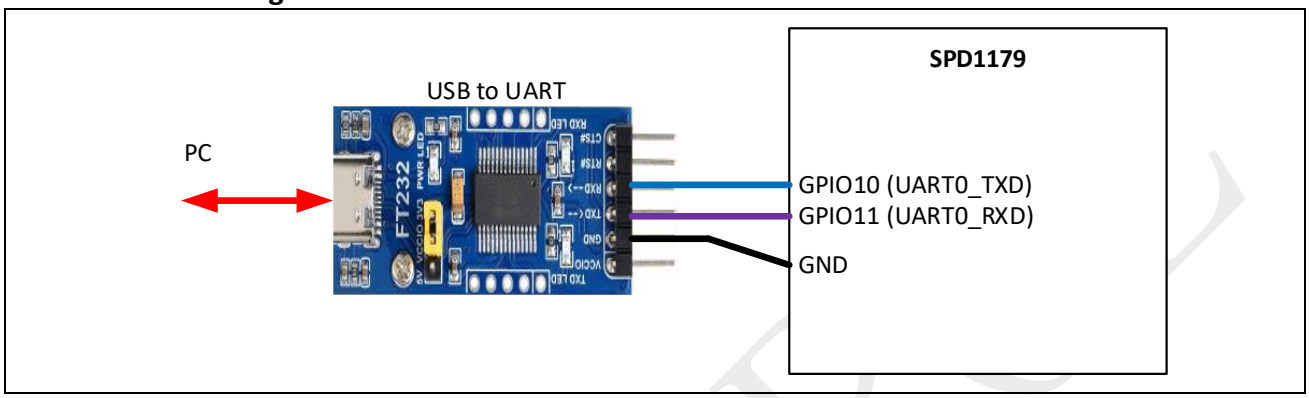
As you can see from the figure above, the Bootloader selection mechanism is: using the interface that receives the handshake byte 0x7F first as the download interface.

2 Bootloader download

2.1 UART interface download

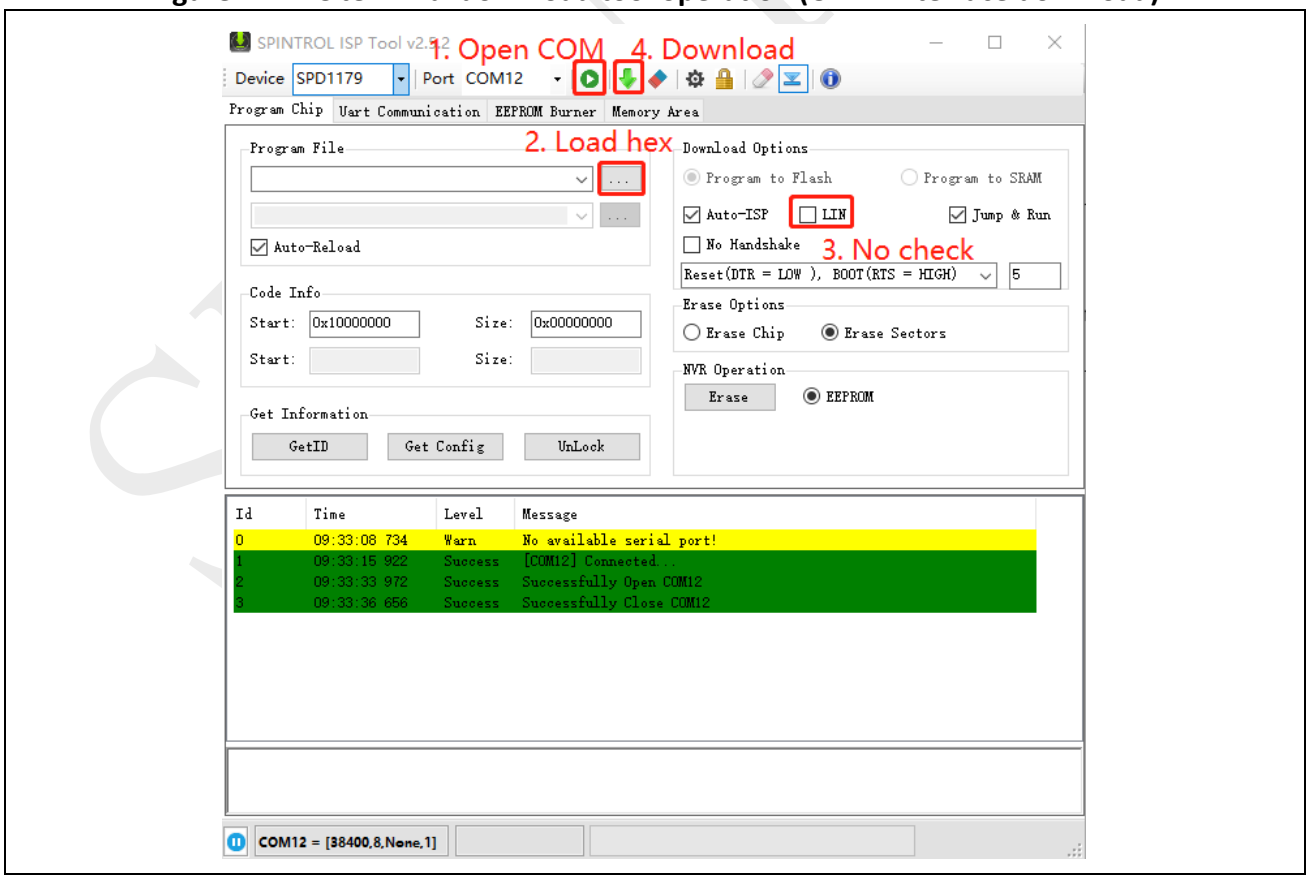
When selecting UART0 interface for Bootloader download, the USB-to-UART tool can be used as the download tool. Show in Figure 2-1.

Figure 2-1: Hardware connection of UART interface download



After finishing the hardware connection, power up the chip normally. Then, the PC terminal download tool provided by SPINTROL can be used for downloading. The specific operation steps are shown in Figure 2-2.

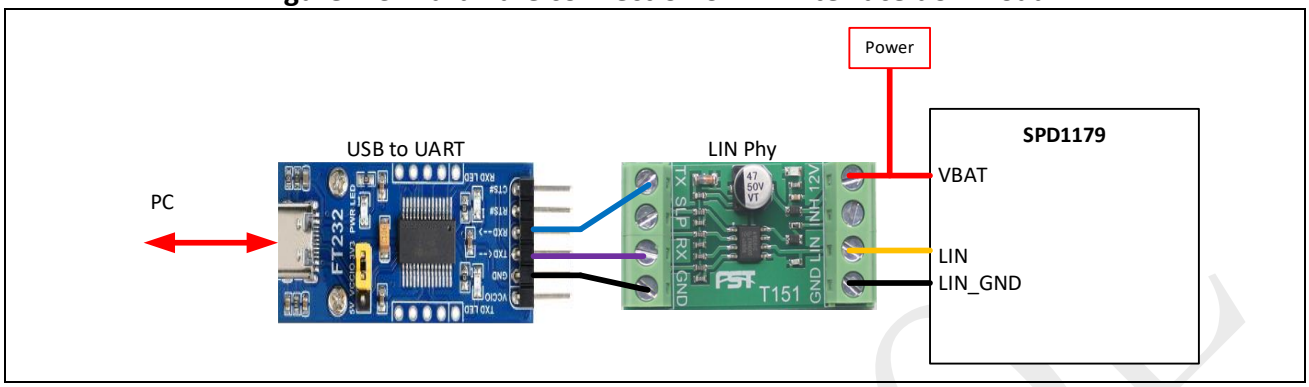
Figure 2-2: PC terminal download tool operation (UART interface download)



2.2 LIN interface download

When LIN interface is selected for Bootloader download, USB to UART tool and LIN transceiver can be used as download tools. Show in Figure 2-3.

Figure 2-3: Hardware connection of LIN interface download



After finishing the hardware connection, power up the chip normally. Then, the PC terminal download tool provided by SPINTROL can be used for downloading. The specific operation steps are show in Figure 2-4.

Figure 2-4: PC terminal download tool operation (LIN interface download)