

Interfacing FlashRunner 2.0 with TPS devices

Supported protocols:

- FlexWire
- Maximum Protocol Frequency = 1 MHz
- Minimum Protocol Frequency = 10 KHz
- Default Protocol Frequency = **924.5 KHz**

The **FlexWire** interface is a robust address-based master-slave interface with flexible baud rate. The interface is based on multi-frame Universal Asynchronous Receiver-Transmitter (UART) protocol. It also supports various physical layer with the help of external physical layer transceiver such as CAN or LIN transceivers.

According to PCB layout 2 different programming scenarios are possible:

- Programmer **Direct Connection** to FlexWire interface.
- Programmer connection to **CAN-FD adapter**.

Please see Algorithm Additional Parameters to choose the one that best fits your PCB layout.

Direct Connection:

This is faster and easiest way to connect FlashRunner to FlexWire bus.

It is possible when no CAN transceivers are present on the PCB or, if they are present, they can be by-passed.

CAN-FD Adapter:

FlexWire protocol is basically an UART protocol over CAN bus, CAN-FD adapter must be used to fulfill hardware requirements. In this kind of application FlashRunner is connected to CAN-FD adapter input through UART interface and CAN-FD adapter output is then connected to PCB transceiver input.

Please consult **DC11291 - FlashRunner 2.0 CAN FD adapter.pdf** guide to choose the configuration that best fits your needs.

Supported devices:

- TPS929120-Q1 (High_Side LED driver)
- TPS929120A-Q1 (High Side LED driver, variant A)

Part numbers **TPS929120-Q1** and **TPS929120A-Q1** are identical except for the default value of EEPROM register **EEPROM6**. That implies the following.

If **External Addressing Mode** is used, available addresses range for **TPS929120-Q1** is **0 to 7** while for **TPS929120A-Q1** is **8 to 15**.

By mixing devices of those 2 part numbers *it is possible to control up to 16 LED drivers* with a single FlexWire bus.

Please see Algorithm Additional Parameters to know more about addressing modes.

Programmable regions are reported below:

MEMORY	SIZE	PAGE SIZE	Notes
EEPROM (E)	12B [0x80 - 0x8B]	N/A	

EEPROM (E)	12B [0xA0 - 0xAB]	N/A	
EEPROM (E)	16B [0xC0 - 0xCF]	N/A	value of 0xCF is EEP_CRC

Algorithm Additional Parameters

ADDRESSING_MODE:

- External [default] Digital input pins **ADDR0**, **ADDR1** and **ADDR2**, combined with the value of **EEP_DEVADDR bit 3** (default=0b0 for TPS929120-Q1, default=0b1 for TPS929120A-Q1) are used to determine Slave Address.
- Internal The device uses the binary code burnt in EEPROM register **EEP_DEVADDR** as slave address.

If this addressing mode is selected, **REF** pin has to be connected as **chip-select** during EEPROM programming.

DEVICE_ADDRESS:

- Address of device to program, It is mandatory when **External Addressing Mode** is selected.

EXTERNAL_HARDWARE:

- Yes [default]/No Select if your PCB layout needs *CAN-FD Adapter*.

Commands List

Please refer to `HELP libtps.so` command.

Memory types:

E → EEPROM

PROGRAM

PROGRAM E

Program command for EEPROM - Manual mode not allowed.

VERIFY

VERIFY E R

or **VERIFY E R <addr> <size>**

Verifies all EEPROM or a range of addresses within EEPROM by reading back programmed data.

READ

READ E <addr> <size>

Reads back all EEPROM or a range of addresses within EEPROM and prints values to **Terminal**.

DUMP

DUMP E <addr> <size>

Reads back all EEPROM or a range of addresses within EEPROM and prints values to a **Binary file**.