

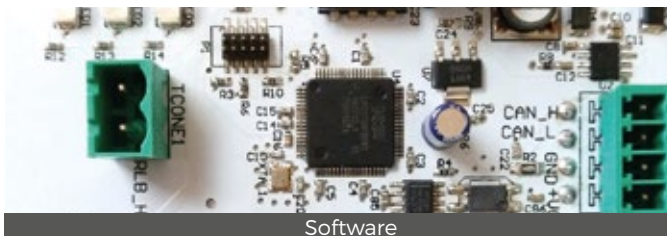


BOOTLOADER Remote Software Process

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Abstract

Software Download (SWD), commonly known as a Remote Bootloader or Firmware Upgrade, is a software process where the firmware of a microcontroller based electronic module is updated with a newer functional version in order to give the user more functionality or bug error fix. As it is remotely controlled, it is not necessary that the user physically interacts with the smart unit microcontroller.



Software

Hardware characteristics

A bootloader feature can be implemented for any microcontroller type. The firmware to be upgraded can be downloaded from any communication interface, as per the details listed below:

- Physical interfaces for FW upgrade:
 - a. CAN
 - b. LIN
 - c. Ethernet
 - d. Flexray
 - e. RF (OTA)
 - f. Bluetooth (OTA)
 - g. WIFI (OTA)
 - h. Serie / RS485
- Microcontroller supported families:
 - a. ARM (STM32, Kinetis, NXP)
 - b. Renesas
 - c. Microchip
- BUS parallelization for boosting bootloading speed via CAN.
- Firmware encryption for security applications. End-2-End encryption to avoid firmware cloning/copy.
- Possibility to compress the Firmware to boost bootloading process, mainly used for low speed protocols in applications where the bootloading time is critical.

Host Windows app

For quick time to market, pre-build and configurable host used the manage bootloader process over the different interfaces, where is defined memory ranges, memory backups, preserve memory ranges.



Software

Applications

Bootloader is a must to be programmed in any remote equipment where it is not easy to access. The main markets where to use it are listed below:

- Automotive.
- Industrial.
- Telecommunications.
- Medical devices.
- Manufacturing process.

Summary

The bootloader functionality is the most profitable investment a company can do when its electronic products can be potentially installed in a remote location, with difficult access or when feature high sells potential. With a minimum investment, recall costs due to firmware upgrade necessities are cut to almost 0.

