

USB Bootloader

USB bootloader solution for embedded devices

Thesycon's USB bootloader is an off-the-shelf solution to add firmware upgrade functionality to embedded devices. The product consists of embedded bootloader firmware and Windows software.

The bootloader image needs to be made persistent in the device's FLASH memory. No modification of the user's application firmware is required, except that the image is to be linked to a dedicated target address.

The Windows software is easy to deploy and easy to integrate in custom utilities, factory tools or scripts. Included is a WHQL-certified device driver, a driver installer and a programming interface DLL. Thesycon provides sample code that shows how the API is to be used.

Features

Small Footprint. Depending on the feature set, 8KB..16KB FLASH need to be reserved for the bootloader.

Transparent Operation. The bootloader is not active when the embedded application runs. It can be activated via USB request or via an I/O pin which is to be asserted during power-on reset.

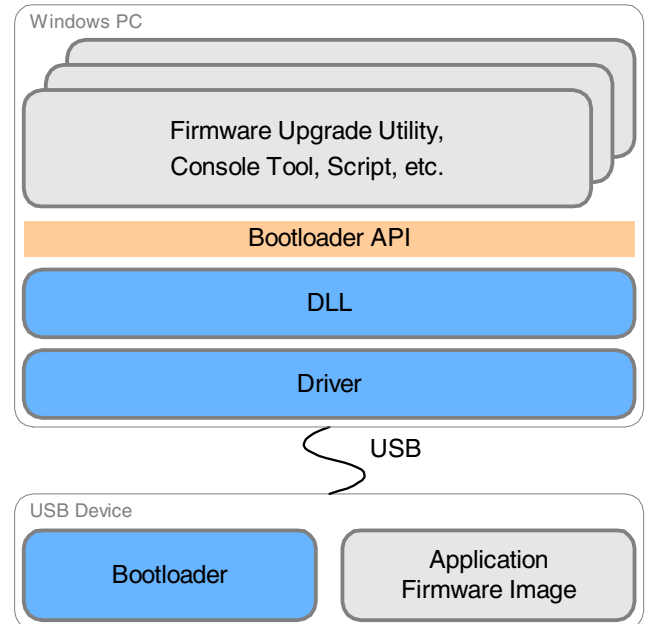
Fail-safe Operation. In case of a power failure during firmware upgrade, automatic fallback to bootloader mode is ensured. To guarantee consistency, the application firmware image is protected by a CRC-32 checksum.

DFU Compliant. The bootloader protocol is compliant to the Device Firmware Upgrade (DFU) device class.

Easy-to-use Windows Software. The software supports Windows 2000/XP/Vista including x64 variants. The programming interface DLL exposes C-style functions which can easily be used from any programming language or scripting engines.

Persistent Parameters. To support persistent settings such as serial numbers, MAC addresses or calibration data, the bootloader manages a parameter set in FLASH memory. Parameters can be get/set via Windows API and queried by the embedded application.

Image Protection. Optionally, the user's application firmware image can be encrypted. It will be decrypted by the bootloader before stored in FLASH memory. Furthermore, an image can be personalized so that it can be downloaded to one individual device only.



Licensing

The license includes embedded and Windows software and optionally source code. The license allows royalty-free distribution of binaries.

The bootloader solution will be available soon. For information on prices and availability, contact Thesycon.

Supported Controllers

- ❑ **NXP** ARM Cortex-M3 core, LPC23xx, LPC24xx, LPC28xx, LPC31xx, LPC32xx
- ❑ **Atmel** ARM Cortex-M3 core, AT91SAM7, AT91SAM9 families (ARM)
- ❑ **Atmel** AT32 family (AVR32)
- ❑ **Renesas** H8S/H8SX, M16C/6C families
- ❑ **ST Microelectronics** STR9xx based family

Other device controller drivers can be created on request. For the latest list of supported platforms, check out <http://www.thesycon.de/bootloader>

Thesycon Systemsoftware & Consulting GmbH
 Werner-von-Siemens-Str. 2 • D-98693 Ilmenau • Germany

Tel: +49 3677 8462-0 • Fax: +49 3677 8462-18
 e-mail: usb@thesycon.de • <http://www.thesycon.de/bootloader>