

# FLOAD\_XC800

Flash Programmer for XC800  
Microcontrollers

Microcontrollers



Never stop thinking

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## ABBREVIATIONS

PC: Personal Computer

HEX: hexadecimal

OTP: One Time Programming

EEPROM: Electrically-Erasable Programmable Read-Only Memory

XRAM: On-Chip Expanded Random Access Memory

BSL: Bootstrap Loader

UART: Universal Asynchronous Receiver/Transmitter

CAN: Controller Area Network

LIN: Local Interconnect Network

JTAG: Joint Test Action Group

DAS: Device Access Server

GUI: Graphical User Interface

## 1 What is FLOAD?

### 1.1 Overview

FLOAD is a **free-of-charge** software program that runs on a PC to download HEX code into Infineon XC800 microcontrollers with programmable non-volatile on-chip memory (OTP, Flash, EEPROM) or volatile memory (XRAM). It is able to program XC800 devices through different types of bootstrap loaders (BSLs), i.e. UART, CAN, and LIN, through JTAG/DAS, and through RS485 as well.

### 1.2 System Requirements on Host

- Fload is able to run on Microsoft Windows 9x, Windows ME, Windows NT4.0, Windows 2000, and WindowsXP.

### 1.3 System Requirements on Target

A target system should contain one or more XC800 device and one or more of the following programming interfaces:

- UART/CAN/LIN BSL
- JTAG
- USB Interface

### 1.4 Hardware Connection between Host and Target

Programming through different interfaces e.g. UART BSL, CAN BSL, JTAG, etc., requires different hardware connections between host and target. Please refer to the following section for detailed information for these connections.

## 2 A Basic Tutorial for FLOAD

- (1) Download FLOADxx.zip (here xx stands for the revision version, for example FLOAD4.4.zip) from Infineon's Webpage ([www.infineon.com](http://www.infineon.com)>microcontrollers>Development Tools, Software and Training>C500/C800, XC800 Development Tools and Software>Software Downloads).
- (2) Unzip FLOADxx.zip into a local directory on the PC, e.g. C:\FLOAD.
- (3) Click XC800\_FLOAD in the local directory.
- (4) FLOAD will start and a graphical user interface (GUI) as shown in Figure 1 will pop up on the screen.
- (5) Connect the host PC with the target system. Since FLOAD is able to program target systems with different interfaces (protocols), the connection between the PC and the target system should be suitable for respective interfaces.
  - Figure 2 shows the connection between a PC and a target system with RS232 port, where FLOAD uses UART BSL for programming.
  - Figure 3 shows the connection between a PC and a target system with USB-UART bridge controller (e.g. Silicon Labs CP2102) for UART BSL programming. In this case, the USB-UART bridge controller will convert the USB signal to UART signal and therefore FLOAD can use UART BSL for programming.
  - Figure 4 shows the connection between a PC with CAN Interface board and a target system with CAN transceiver, where FLOAD uses CAN BSL for programming. In this case, the user should check the "Use CAN Board" under the "Option" menu.

- Figure 5 shows the connection between a PC and a target system with LIN transceiver for LIN BSL programming. In this case, the user should check the “Use LIN Transceiver” under the “Option” menu.
  - Figure 6 shows the connection between a PC and a target system without LIN transceiver for LIN BSL programming. In this case, the user should **NOT** check the “Use LIN Transceiver” under the “Option” menu.
  - Figure 7 shows the connection between a PC and a target system with RS485 transceiver. In this case, the user should check the “Use RS485” under the “Option” menu.
  - Figure 8 shows the connection between a PC and a target system with JTAG interface for programming. In this case, the user should check the “Use JTAG/DAS” under the “Option” menu.
- (6) (In the case that FLOAD programs the target device through BSL) Configure the corresponding pins (e.g. MBC and TMS) properly and then do a hardware-reset to the target device to make it enter the BSL mode.
  - (7) Click the “Find Device” button to search for target devices connected on COM port, JTAG, CAN, etc.
  - (8) Click “File” -> “Open Hex File” and then open a Hex file.
  - (9) Click the “Download” button to program the Hex file into the target device.

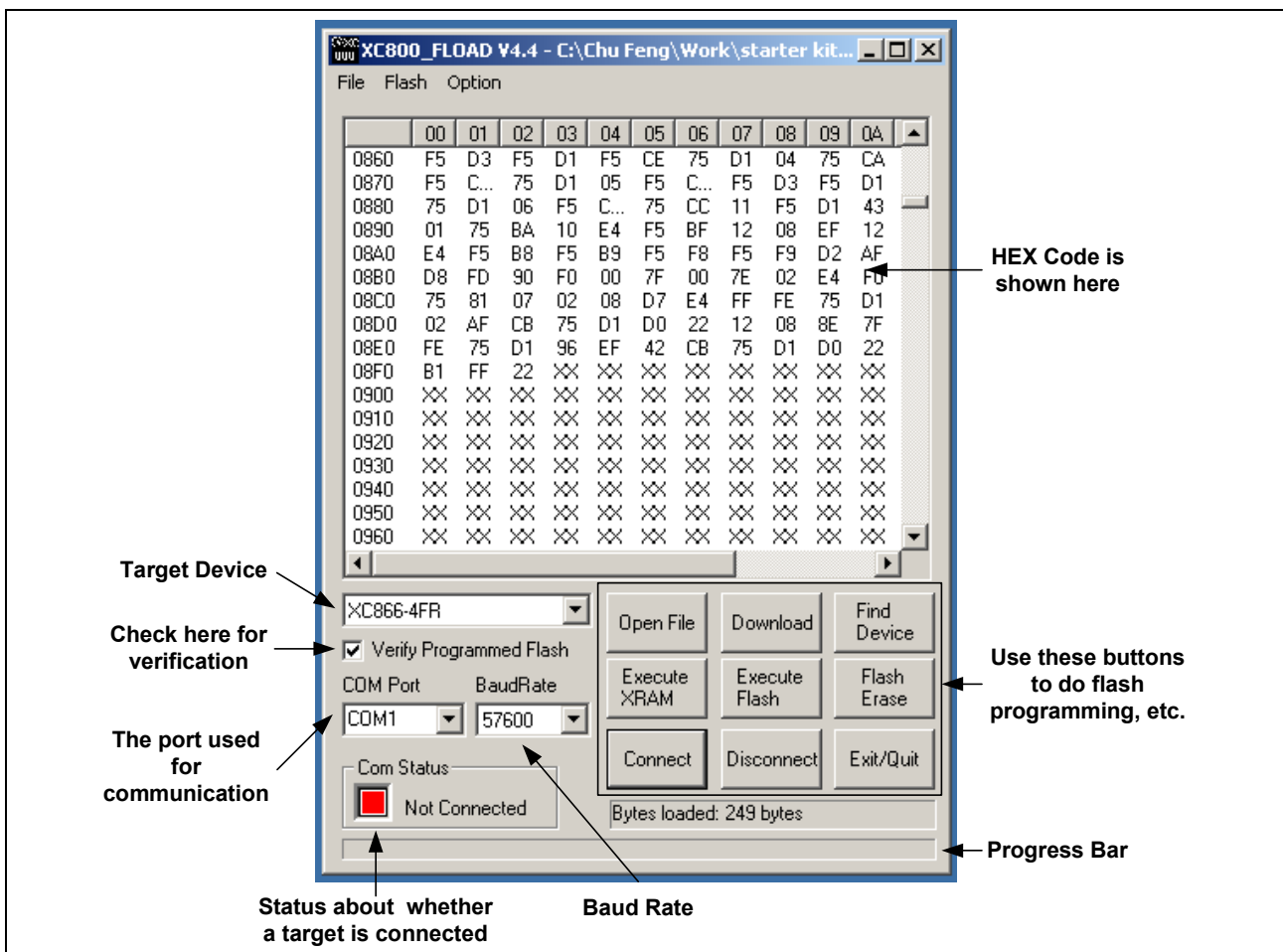
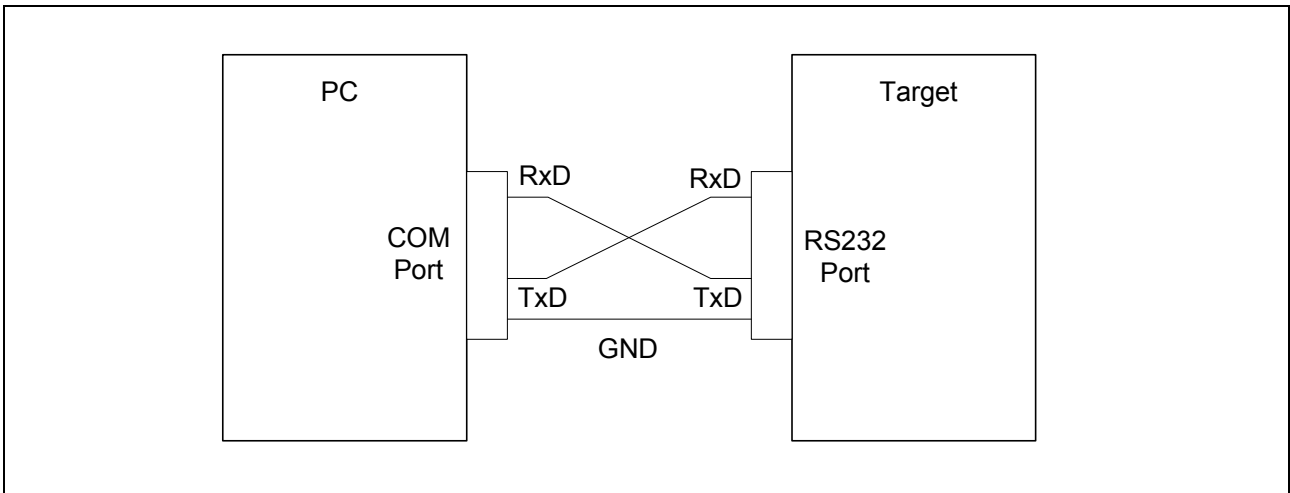
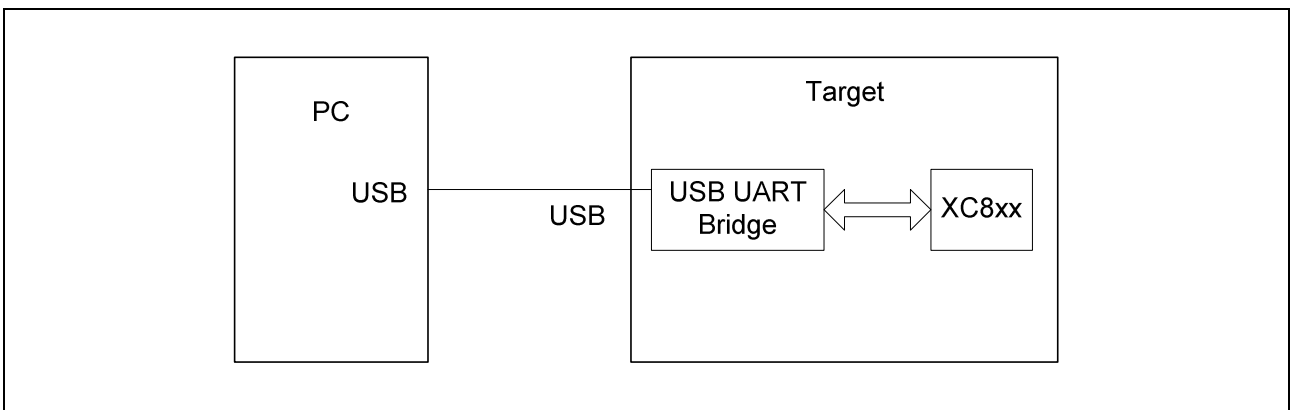


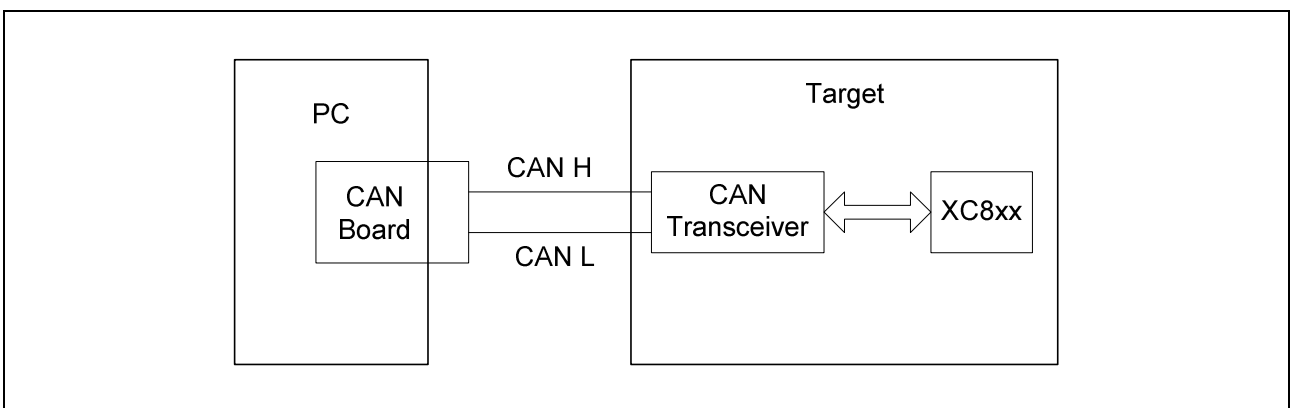
Figure 1 The user interface of the Fload



**Figure 2** The connection between a PC and a target system with RS232 port for UART BSL programming.

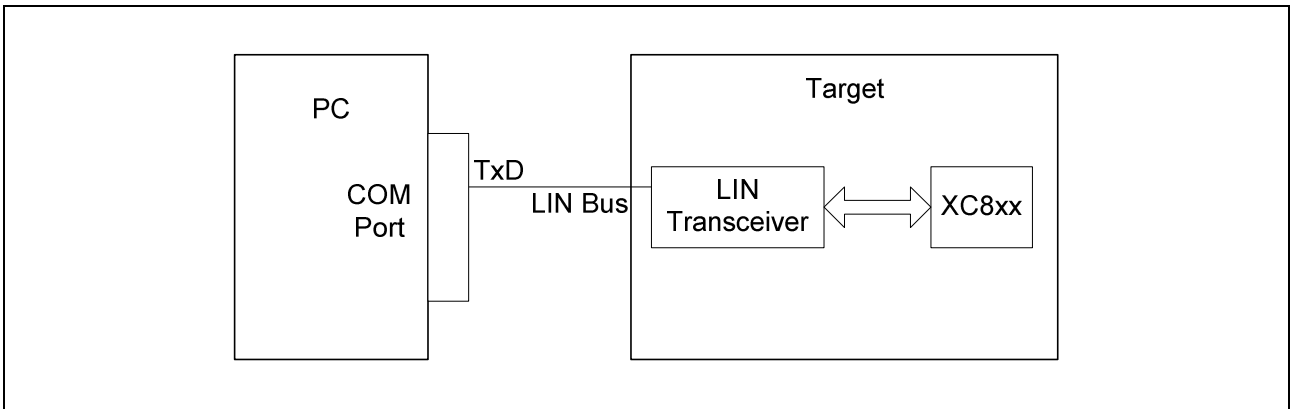


**Figure 3** The connection between a PC and a target system with USB-UART Bridge Controller (e.g., Silicon Labs CP2102) for UART BSL programming.

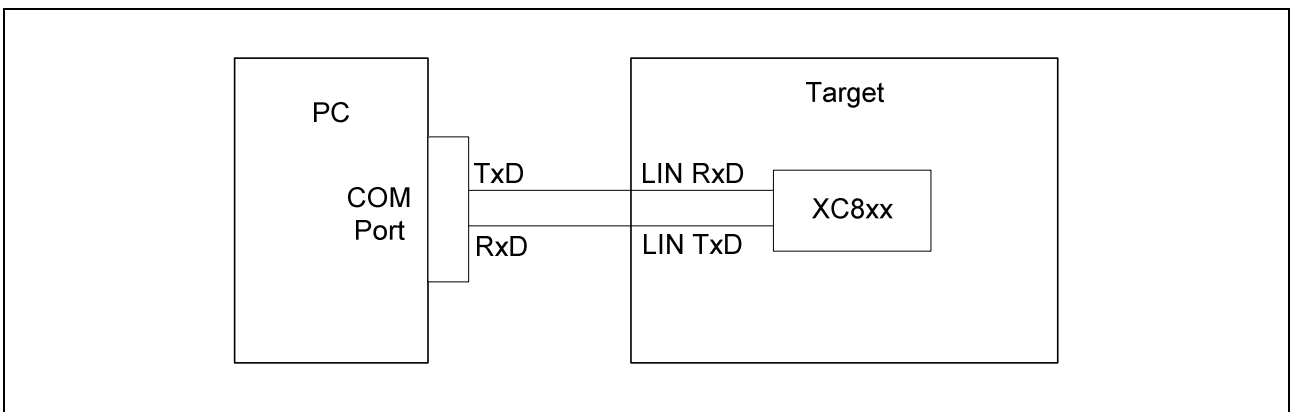


**Figure 4** The connection between a PC with CAN board and a target system with CAN transceiver for CAN BSL programming.

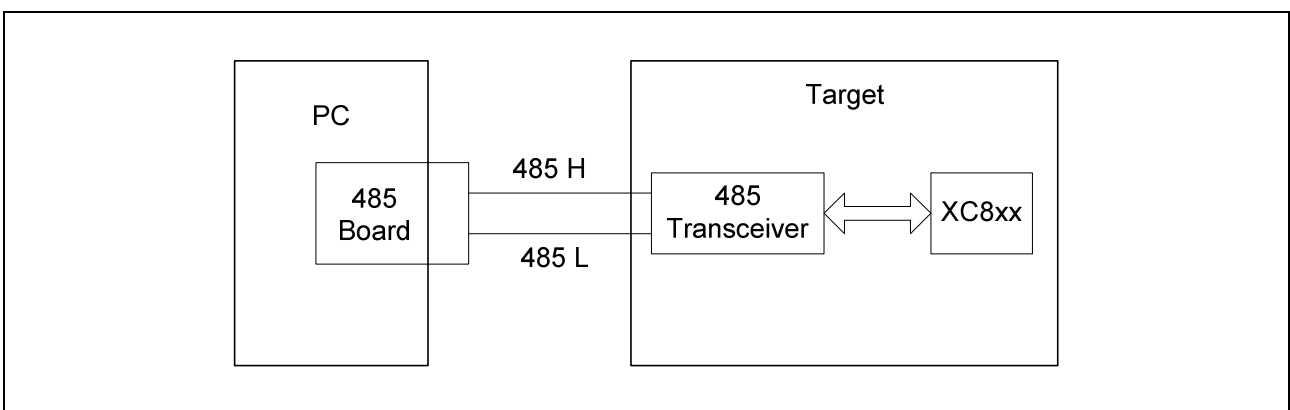




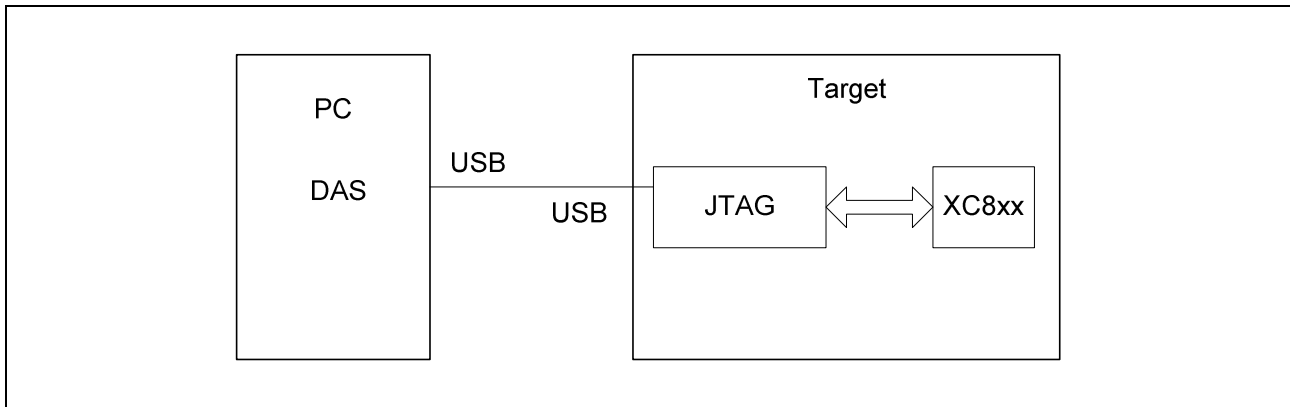
**Figure 5** The connection between a PC and a target system with LIN transceiver for LIN BSL programming.



**Figure 6** The connection between a PC and a target system (based on LIN device, e.g. XC866L) without LIN transceiver for LIN BSL programming.



**Figure 7** The connection between a PC and a target system with RS485 transceiver for programming.



**Figure 8** The connection between a PC and a target system with JTAG interface for programming.

### 3 Some Other Features

**Flash erase:** When a target system is connected with the PC, a user can erase the flash memory by clicking the “Flash Erase” button (or “Flash Erase” under the “Flash” menu).

**Flash read:** When a target system is connected with the PC, a user can read back the content in the target’s flash memory by clicking “Flash Read” under the “Flash” menu.

**Verification:** When the “Verify Programmed Flash” on the control panel is checked, FLOAD will do verification after HEX code is downloaded into the memory, i.e FLOAD will read back the downloaded code and compare it with the original code. If the verification is successful, FLOAD will pop up a “Download and Verification are successful” message.

**Flash protect/unprotect:** clicking “Flash (Un)Protect” under the “Flash” menu allows a user to protect the code with a password or read out the protected code.

**Execute from XRAM:** by clicking the “Execute XRAM” button (or “Execute from XRAM” under the “Option” menu), a user can run the code that has been downloaded in XRAM.

**Execute from Flash:** by clicking the “Execute Flash” button (or “Execute from Flash” under the “Option” menu), a user can run the code that has been downloaded in Flash.

**USCALE:** USCALE is a small USB-based evaluation kit from Infineon Technologies (please refer to [www.infineon.com/USCALE](http://www.infineon.com/USCALE) for further details). When a USCALE is plugged on the PC’s USB port, a user can find the three target devices on the USCALE by clicking the “Find Device” button -> “USCALE”. After that, the user can select any of the three devices and download HEX code into it.

### 4 Additional Information

Please refer to the Release Notes that is included in the FLOADxx.zip for the latest changes in FLOAD.

<http://www.infineon.com>