LIBEEPROM – EEPROM Library for LPC1100 and LPC1300
Version 1

Why LIBEEPROM?

Selected devices in the LPC1100 and LPC1300 families come with a dedicated EEPROM block of up to four kilobytes size. Reading and writing the EEPROM is supported by boot ROM based IAP routines.

For the time being, interrupts must be globally disabled when making IAP calls. The technical reason for this is that for a short moment during the IAP call the flash becomes inaccessible. Interrupts could be allowed only if both the exception vector table and exception handlers are located in SRAM.

LIBEEPROM allows full access to EEPROM whit no restrictions on interrupts.

Implementation

LIBEEPROM is a simple replacement of the built-in EEPROM IAP calls. It presents the same API, and can be used the same way as IAP calls. Request for flash functions are redirected to the ROM handler, and EEPROM related calls (read and write) are provided by LIBEEPROM. There are two differences between the IAP calls and LIBEEPROM:

1. LIBEEPROM has no restrictions with respect to interrupts. When making EEPROM read and write calls, all interrupts can be allowed, even if exception table and handlers are all located in flash memory.

2. LIBEEPROM has a limited capability to do parameter checks. In particular, it cannot verify the actual size of the flash block in the device. If, for instance, you try to write to EEPROM address 0x500 in a device that only has 1 KiB of EEPROM, the data would end up in EEPROM at address 0x100. This is because the 1 KiB block is mirrored four times at addresses 0x000, 0x400, 0x800, and 0xC00.
The built-in ROM IAP drivers would reject that request, and return an error code.

Usage

Using LIBEEPROM is easy: An existing application using IAP jumps to address 0x1FFF1FF1, the entry point of the ROM IAP routines. Typically this is done in C code like this:

```
uint32_t command[5];
uint32_t result[5];
typedef void (*IAP)(uint32_t command[5], uint32_t result[5]) ;
IAP *iap_entry = (IAP *)0x1FFF1FF1;
…
((IAP)IAP_ENTRY)(command, result);
```

In order to use LIBEEEPROM, include the libeeprom.h header in your application, and change the IAP entry address to the library entry point:

```
IAP *iap_entry = (IAP *)EELIB_entry;
```

Then just link your application to libeeprom.a (GCC compiler) or libeeprom.lib (ARM compiler).

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Supported Devices

The library is compiled for the Cortex-M0 instruction set, and currently supports the following devices:

LPC11A02
LPC11A04
LPC11A11
LPC11A12
LPC11A13
LPC11A14
LPC11E11
LPC11E12
LPC11E13
LPC11E14
LPC11U23
LPC11U24
LPC11U34
LPC11U35
LPC11U36
LPC11U37
LPC1315
LPC1316
LPC1317
LPC1345
LPC1346
LPC1347

Do not attempt to use this library with any device not listed above.