

Introduction

The UMC builder application is a small utility that automates the creation of UMC loader *.hex files.

Configuration File

At the centre of the builder application is the configuration file. This is a simple *.ini file which defines the essential elements needed to build a working loader *.hex file. For example:

```
; source code files...
[TEMPLATE]
PIC16=..\src\16F\umc_loader.asm
PIC18=..\src\18F\umc_loader.asm

; device name and OSC...
[MCU]
Device=18F452
OSC=20000000

; device configuration settings...
[CONFIG]
config OSC    = HS
config PWRT   = OFF
config WDT    = OFF
config LVP    = OFF
config DEBUG  = OFF
```

The above shows a working, but minimal configuration. More options are shown later in this document.

Main Application

To build your loader *.hex file, simply invoke "umcbuild.exe" with the name of the *.ini file you want to use. For example,

```
umcbuild.exe "c:\myfiles\config.ini"
```

Alternatively, if you place an *.ini file called "umcbuild.ini" in the same folder as the main application then you just need to double click on the "umcbuild.exe" application to start the build process.

Configuration Options

PATH

- MPASM=<optional path to mpasm>
- DB=<optional path to MPLAB device files>
- Output=<optional path to output folder>

Example

```
[PATH]
output=$app\firmware
```

will place all output files (asm, hex etc) in the folder defined by "output". If this option is not used, output files are placed in the users "documents" folder under "umcbuild". The paths to MPASM and DB are not normally needed. If you have a working MPLAB installation on your machine, the application will detect and set these paths automatically.

TEMPLATE

- PIC16=<mandatory 16F asm template file>
- PIC18=<mandatory 18F asm template file>

These are mandatory values and must point to one of the *.asm files supplied with the UMC loader application.

Example

```
[TEMPLATE]
PIC16=..\src\16F\umc_loader.asm
PIC18=..\src\18F\umc_loader.asm
```

MCU

- Device=<mandatory device name>
- OSC=<mandatory OSC frequency>

These are mandatory values are used to set the device name and oscillator frequency.

Example

```
[MCU]
Device=18F452
OSC=20000000
```

USART

- BAUDRATE=<optional baudrate setting>
- BRG16=<optional 0 or 1>

An optional set of values used to configure the baud rate generator. If no value is given for baudrate, 115200 is used by default for all oscillator frequencies above 20MHz. For frequencies less than 20MHz, 19200 baud is used by default. The BRG16 value defaults to OFF (0) but can be switched on in this section. Note that setting BRG16 to true (1) requires a device with a 16 bit SPBRG register (refer to your device datasheet). Additional code may also be needed to configure a device if this option is used in the USERCODE section. Unless you want to run your bootloader

with low baudrates and high clock frequencies, it is usually best to leave this option switched OFF.

Example

```
[USART]
BAUDRATE=19200
BRG16=1
```

CONFIG

- <one or more configuration fuse settings>

Example

```
[CONFIG]
config OSC    = HS
config PWRT   = OFF
config WDT    = OFF
config LVP    = OFF
config DEBUG  = OFF
```

This section is used to set you device configuration fuses. Setting device fuses is beyond the scope of this document as there is so much variation between devices. For more information on configuration fuses, you should refer to your device datasheet.

USERCODE

- <optional user code statements>

This area is used to place optional startup code. For example, some devices require their TX and RX pins be explicitly set to DIGITAL or you may need to configure your device to use its internal oscillator.

Example

```
[USERCODE]
bsf ADCON1, PCFG5 ; 18F1220 example code
bsf ADCON1, PCFG6 ; 18F1220 example code
```