

# IAR EWARM device description file format

This document describes the format of the EWARM device description file, also called DDF file. A DDF file is used by the C-SPY debugger to display the content of peripheral registers in a symbolic form. The file name extension used for a device description file is `ddf`.

## File format

The file format is line oriented, a definition must be completely described on one line, splitting a definition on multiple lines is not allowed.

All comments begin with a semicolon.

Section markers are used identifying the type of section. The section marker is located in the first column. The available section markers are `[Sfr]` and `[SfrGroupInfo]`. The `[Sfr]` section is used for defining registers and optionally individually bits of registers. The `[SfrGroupInfo]` section is used for grouping a collection of registers into a group. A group typically maps into a peripheral unit with a set of registers.

## Register definitions

This section starts with the marker

`[Sfr]`

Note that the marker text is case sensitive.

The format of a register definition is:

```
sfr = "name", "zone", address, size, base=radix [, bitRange=range]
```

<i>name</i>	The name of the register. A dot . in the name is used for separating the register name and the optional bit name.
<i>zone</i>	The memory zone of the register. The only available zone is <code>Memory</code> .
<i>address</i>	The address of the register.
<i>size</i>	The size in bytes of the register. Use 1, 2 or 4.
<i>radix</i>	The radix used for displaying the numeric value of the register. Use 10 for decimal and 16 for hexadecimal.
<i>range</i>	An optional bit range definition which can be a single bit number or a range of bits of the form <code>i-j</code> . For example <code>0-2</code> . As an alternative <code>bitRange</code> can be replaced with <code>bitMask</code> to specify the bit mask for the bit field.

## Group definitions

This section starts with the marker

`[SfrGroupInfo]`

Note that the marker text is case sensitive.

The format of a group definition is:

```
group = "groupname", "name0", "name1", "name2" ...
```

<i>groupname</i>	The group name.
<i>name</i>	The register names of this group. A register name in the group must be defined in the register definition section <code>[Sfr]</code> .

## Example

This example shows how to setup a DDF file for a few UART (serial port) registers. The UART is named `UART0` and the registers are:

- A 32-bit baud rate register at address `0xf0001600`.
- An 8-bit control register at address `0xf0001604`. Bit 0 is RX enable, bit 1 is TX enable and bit 2-3 encodes the character length.

```
[Sfr]
sfr = "BAUD",           "Memory", 0xf0001600, 4, base=16
sfr = "CONTROL",      "Memory", 0xf0001604, 1, base=16
sfr = "CONTROL.RXEN", "Memory", 0xf0001604, 1, base=16, bitRange=0
sfr = "CONTROL.TXEN", "Memory", 0xf0001604, 1, base=16, bitRange=1
sfr = "CONTROL.CHAR", "Memory", 0xf0001604, 1, base=16, bitRange=2-3
; alternative definition:
```

```
; sfr = "CONTROL.CHAR", "Memory", 0xf0001604, 1, base=16, bitMask=0x0c
[SfrGroupInfo]
group = "UART0", "BAUD", "CONTROL"
```