

KEIL Scatter Loading Instructions

1. the .c file is loaded to the specified location

To achieve to the scatter load under the keil and the .sct file is modified. This project will be implemented to load the hw_config.c file to the 0x08002000 starting position. The path to the .sct file is " ScatterLoading\Project\KEIL\MDK-ARM\ Project.sct", opened as follows:

```
. *****
;
; *** Scatter-Loading Description File generated by uVision ***
; *****
;

LR_IROM1 0x08000000 0x00002000 {      ; load region size_region
  ER_IROM1 0x08000000 0x00002000 {    ; load address = execution address
    *.o (RESET, +First)
    *(InRoot$$Sections)
  }

  RW_IRAM1 0x20000000 0x00002000 {    ; RW data
    .ANY (+RW +ZI)
  }
}

LR_IROM2 0x08002000 0x00000050 {
  ER_IROM2 0x08002000 0x00000050 { ; load the hw_config.c file to the 0x08002000 starting
                                  position
    hw_config.o (+RO)
  }
}

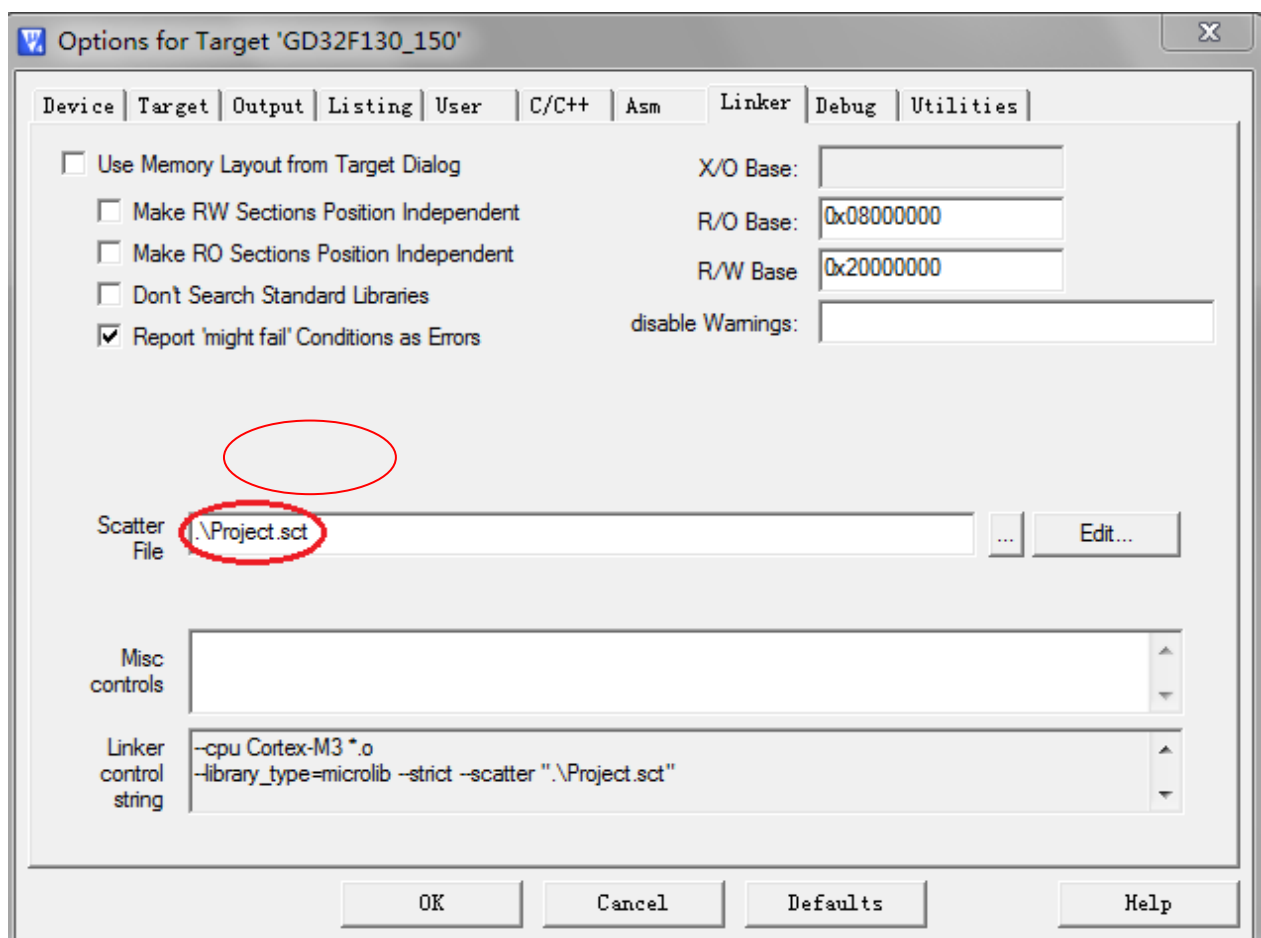
LR_IROM3 0x0800dfb0 0x00000040 {
  ER_IROM3 0x0800dfb0 0x00000040 { ; the delay() function defined as section "delay", then
                                  load the delay() to the 0x0800dfb0 starting position
    main.o (delay)
  }
}

LR_IROM4 0x08002050 0x0000dfb0 {
  ER_IROM4 0x08002050 0x0000dfb0 { ; load address = execution address
    .ANY (+RO)
  }
}
```

The red part is part of the added part for implementing the scatter loading, if you want to implement hw_config.c to load to 0x08002000 starting position only need to add the following code in the sct file:

```
LR_IROM2 0x08002000 0x00000050 {  
    ER_IROM2 0x08002000 0x00000050 { ; load the hw_config.c file to the 0x08002000  
                                     starting position  
        hw_config.o (+RO)  
    }  
}
```

2. Add the modified sct file above to Keil



3. Load the function to the specified location

Load the delay function in the main.c to the starting position of 0x0800dfb0.

1、 add the following code in the .sct file:

```
LR_IROM3 0x0800dfb0 0x00000040 {  
    ER_IROM3 0x0800dfb0 0x00000040 { ; the delay() function defined as section "delay",  
                                     then load the delay() to the 0x0800dfb0 starting  
                                     position
```

```

    main.o(delay)
}
}

```

2. `__attribute__((section("delay")))` in the definition of the function, and the specific code as follows:

```

void delay(void)__attribute__((section("delay")));
void delay(void)
{
    for(i=0;i<0xffff;i++);
}

```

4. Load the array to the specified location

```

/*将只读数组constdata移到0x08003000以后的区域*/
const char constdata[]__attribute__((at(0x8003000)))={
    ... 0x52,0x49,0x46,0x46,0xB4,0x5C,0x03,0x00,
    ... 0x57,0x41,0x56,0x45,0x66,0x6D,0x74,0x20,
    ... 0x10,0x00,0x00,0x00,0x01,0x00,0x02,0x00,
    ... 0x80,0x3E,0x00,0x00,0x00,0xFA,0x00,0x00,
    ... 0x04,0x00,0x10,0x00,0x64,0x61,0x74,0x61,
    ... 0x90,0x5C,0x03,0x00,0x00,0x00,0x00,0x00,
    ... 0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
    ... 0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
    ... 0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
}

```

5. The result

Open the "ScatterLoading\Project\KEIL\MDK-ARM\ list\Project.map", as follows:

```

Load Region LR_IROM2 (Base: 0x08002000, Size: 0x00000010, Max: 0x00000050, ABSOLUTE)$
$
Execution Region ER_IROM2 (Base: 0x08002000, Size: 0x00000010, Max: 0x00000050, ABSOLUTE)$
$
Base Addr      Size      Type  Attr   Idx   E Section Name      Object$
$
0x08002000     0x0000000e  Code  RO      12   i.interrupt_config  hw_config.o
$
$
Load Region LR_IROM3 (Base: 0x0800dfb0, Size: 0x00000014, Max: 0x00000040, ABSOLUTE)$
$
Execution Region ER_IROM3 (Base: 0x0800dfb0, Size: 0x00000014, Max: 0x00000040, ABSOLUTE)$
$
Base Addr      Size      Type  Attr   Idx   E Section Name      Object$
$
0x0800dfb0     0x00000014  Code  RO     125   delay              main.o$
$

```

Load Region LR_IROM4 (Base: 0x08002050, Size: 0x000094a0, Max: 0x0000dfb0, ABSOLUTE)\$							
Execution Region ER_IROM4 (Base: 0x08002050, Size: 0x000094a0, Max: 0x0000dfb0, ABSOLUTE)\$							
Base Addr	Size	Type	Attr	Idx	E	Section Name	Object\$
0x08002050	0x00000024	Code	RO	237		.text	startup_gd32f1x0.o\$
0x08002074	0x00000084	Code	RO	155		i.SystemInit	system_gd32f1x0.o\$
0x080020f8	0x00000054	Code	RO	3681		i.gd_eval_led_init	gd32f1x0_eval.o\$
0x0800214c	0x00000024	Code	RO	3684		i.gd_eval_led_toggle	gd32f1x0_eval.o\$
0x08002170	0x0000004e	Code	RO	1419		i.gpio_mode_set	gd32f1x0_gpio.o\$
0x080021be	0x00000042	Code	RO	1421		i.gpio_output_options_set	gd32f1x0_gpio.o\$
0x08002200	0x00000018	Code	RO	126		i.main	main.o\$
0x08002218	0x00000014	Code	RO	1704		i.nvic_vector_table_set	gd32f1x0_misc.o\$
0x0800222c	0x00000020	Code	RO	1876		i.rcu_periph_clock_enable	gd32f1x0_rcu.o\$
0x0800224c	0x000000a0	Code	RO	156		i.system_clock_72m_hxtal	system_gd32f1x0.o\$
0x080022ec	0x00000008	Code	RO	157		i.system_clock_config	system_gd32f1x0.o\$
0x080022f4	0x000000d0c	PAD\$					
0x08003000	0x000084f0	Data	RO	1		.ARM.__AT_0x08003000	Const-data.o\$