

How to use SWD password in CCS

MSP Team

timx_timer_mode_periodic_sleep.c empty.c MSPM0L1306.cxml dl_sysctl_mspm0l11xx_l13xx.h 0x23a

Target Configuration

All Connections

- Texas Instruments XDS110 USB Debug Probe
 - MSPM0L1306**
 - CS_DAP_0
 - subpath_0
 - CORTEX_M0P
 - subpath_1
 - SEC_AP

Import...
New...
Add...
Delete
Up
Down
Test Connection
Save

Device Properties
ARM Cortex-M0 Plus MCU

Set the properties of the selected device.

MSPM0 SWD Password [0] (32-bit HEX format)	0x00000001
MSPM0 SWD Password [1] (32-bit HEX format)	0xFFFFFFFF
MSPM0 SWD Password [2] (32-bit HEX format)	0xFFFFFFFF
MSPM0 SWD Password [3] (32-bit HEX format)	0xFFFFFFFF

Basic **Advanced** Source

workspace_v12_3 - timx_timer_mode_periodic_sleep_LP_MSPM0L1306_nortos_ticlang/timx_timer_mode_periodic_sleep.c - Code Composer Studio

File Edit View Navigate Project Run Scripts Window Help

- Resource Explorer
- Project Explorer
- Problems Alt+Shift+Q, X
- Console Alt+Shift+Q, C
- Advice
- Debug
- Memory Browser
- Registers
- Expressions
- Variables Alt+Shift+Q, V
- Disassembly
- Breakpoints Alt+Shift+Q, B
- Modules
- Terminal
- Scripting Console
- Target Configurations Alt+Shift+Q, O**
- Outline
- Stack Usage
- Memory Allocation
- Optimizer Assistant
- Other... Alt+Shift+Q, Q

```
15 *
16 * Neither the name of Texas Instruments Incorporated nor the names of
17 * its contributors may be used to endorse or promote products derived
18 * from this software without specific prior written permission.
19 *
20 * THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
21 * AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO,
22 * THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
23 * PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
24 * CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
25 * EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
26 * PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS;
27 * OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
28 * WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR
29 * OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE,
30 * EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
31 */
32
33 #include "ti_msp_d1_config.h"
34
35 int main(void)
36 {
37     SYSCFG_DL_init();
38
39     NVIC_EnableIRQ(TIMER_0_INST_IRQN);
40     DL_SYSCCTL_enableSleepOnExit();
41
42     DL_TimerG_startCounter(TIMER_0_INST);
43
44     while (1) {
45         __WFI();
46     }
47 }
48
49 void TIMER_0_INST_IRQHandler(void)
50 {
51     switch (DL_TimerG_getPendingInterrupt(TIMER_0_INST)) {
52         case DL_TIMER_IIDX_ZERO:
53             DL_GPIO_togglePins(GPIO_LEDS_PORT, GPIO_LEDS_USER_LED_1_PIN);
54             break;
55         default:
56             break;
57     }
58 }
```

Target Configurations

- type filter text
- Projects
 - E2E-TEST
 - empty_LP_MSPM0L1306_nortos_ticlang
 - spl_peripheral_multibyte_fifo_poll_LP_MSPM0L1306
 - timx_timer_mode_periodic_sleep_LP_MSPM0L1306
 - targetConfigs
 - MSPM0L1306.ccm1**
 - User Defined

Click the New button to create a new target configuration file. Click [here](#) to hide this message.

Console x MSPM0L1306.ccm1

Description	Resource	Path
0 Items		

Writable Smart Insert 37 : 1 : 1663

workspace_v12_3 - timx_timer_mode_periodic_sleep_LP_MSPM0L1306_nortos_ticlang/timx_timer_mode_periodic_sleep.c - Code Composer Studio

File Edit View Project Tools Run Scripts Window Help

MSPM0L1306.Commands

- MSPM0_MailboxMassErase_Manual
- MSPM0_MailboxMassErase_Auto
- MSPM0_Mailbox_FactoryReset_Manual
- MSPM0_Mailbox_FactoryReset_Auto
- MSPM0_Mailbox_PasswordAuthentication_Auto

Debug

- MSPM0L1306.ccmml [Code Composer Studio - Device Debugging]
- Texas Instruments XDS110 USB Debug Probe/CORTEX_M0P [Discon...

Variables Expressions Registers Breakpoints

Identity	Name	Condition	Count	Action
<input type="checkbox"/>	timx_timer_mode_periodic_sleep.c line 51 (DL_Timer.g...	---	---	---

@ timx_timer_mode_periodic_sleep.c x @ empty.c x MSPM0L1306.ccmml d_sysctl_mspm0l13xx_l3xx.ch 0x23a

```

15 *
16 * Neither the name of Texas Instruments Incorporated nor the names of
17 * its contributors may be used to endorse or promote products derived
18 * from this software without specific prior written permission.
19 *
20 * THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
21 * AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO,
22 * THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
23 * PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
24 * CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
25 * EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
26 * PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS;
27 * OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
28 * WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR
29 * OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE,
30 * EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
31 */
32
33#include "ti_msp_d1_config.h"
34
35int main(void)
36{
37    SYSCFG_DL_init();
38
39    NVIC_EnableIRQ(TIMER_0_INST_IRQN);
40    DL_SYSCTL_enableSleepOnExit();
41
42    DL_TimerG_startCounter(TIMER_0_INST);
43
44    while (1) {
45        __WFI();
46    }
47}

```

Disassembly

Console

```

CDT Build Console [timx_timer_mode_periodic_sleep_LP_MSPM0L1306_nortos_ticlang]

**** Build of configuration Debug for project timx_timer_mode_periodic_sleep_LP_MSPM0L1306_nortos_ticlang ****

"C:\ti\ccs1230\ccs\utils\bin\gmake" -k -j 8 all -O

gmake[1]: 'timx_timer_mode_periodic_sleep_LP_MSPM0L1306_nortos_ticlang.out' is up to date.
gmake[1]: Nothing to be done for 'secondary-outputs'.

**** Build Finished ****

```

Writable Smart Insert 37 : 1 : 1663

workspace_v12_3 - Source not found. - Code Composer Studio

File Edit View Project Tools Run Scripts Window Help

Debug ×

- Load Program... (Ctrl+Alt+L)
- Reload Program (Ctrl+Alt+R)
- Load Symbols...
- Add Symbols...
- Verify Program...
- Remove All Symbols
- C:\Users\workspace_v12_3\...\Debug\timx_timer_mode_periodic_sleep_LP_MSPM1306_nortos_ticlag.out
- C:\Users\workspace_v12_3\...\Debug\empty_LP_MSPM1306_nortos_ticlag.out
- C:\Users\workspace_v12_3\...\Debug\timx_timer_mode_periodic_sleep_LP_MSPM1306_nortos_ticlag.out
- C:\Users\workspace_v12_3\...\Debug\empty_LP_MSPM1306_nortos_ticlag.out
- C:\Users\workspace_v12_3\...\Debug\spl_peripheral_multibyte_fifo_poll_LP_MSPM1306_nortos_ticlag.out
- C:\Users\workspace_v12_3\...\Debug\spi_peripheral_multibyte_fifo_poll_LP_MSPM1306_nortos_ticlag.out

timx_timer_mode_periodic_sleep.c

Break at address "0x14a" with no debug information available, or outside of program code.

View Disassembly...

Configure when this editor is shown Preferences...

Disassembly ×

Address	Hex	Symbol	Instruction	Comment
*0000014a	Bf30	wfi		
0000014c	E7FD	b		#0x14a
0000014e	45C0	mov	r8, r8	
00000150	E100	b		#0x354
00000152	E000	b		#0x156
00000154	ED10E000	ldc	p0, c14, [r0, #-0]	
00000158	5804	ldr	r4, [r0, r0]	
0000015a	4008	ands	r0, r1	
0000015c	8500	push	{r7, r14}	
0000015e	4806	ldr	r0, [pc, #0x18]	
00000160	4906	ldr	r1, [pc, #0x18]	
00000162	6041	str	r1, [r0, #4]	
00000164	4A06	ldr	r2, [pc, #0x18]	
00000166	6051	str	r1, [r2, #4]	
00000168	4906	ldr	r1, [pc, #0x18]	
0000016a	6001	str	r1, [r0]	
0000016c	6011	str	r1, [r2]	
0000016e	2010	movs	r0, #0x10	
00000170	F900F85E	b1		#0x230
00000174	8D00	pop	{r7, pc}	
00000176	46C0	mov	r8, r8	
00000178	0800	lsls	r0, r0, #0x20	
0000017a	400A	ands	r2, r1	
0000017c	0003	movs	r3, r0	
0000017e	E100	cbz	r0, #0x182	
00000180	4800	ldr	r0, [pc, #0]	
00000182	4008	ands	r0, r1	
00000184	0001	movs	r1, r0	
00000186	2600	movs	r6, #0	
00000188	4806	ldr	r0, [pc, #0x18]	
0000018a	6301	ldr	r1, [r0]	
0000018c	2203	movs	r2, #3	
.....			

Console ×

MSPM1306.ccm1

```

CS_DAP_0: GEL Output: SEC_AP Disconnect
CS_DAP_0: GEL Output: SEC_AP Reconnect
CS_DAP_0: GEL Output: Send Data...
CS_DAP_0: GEL Output: Data 1 Sent = 0x00000001
CS_DAP_0: GEL Output: Data 2 Sent = 0xFFFFFFFF
CS_DAP_0: GEL Output: Data 3 Sent = 0xFFFFFFFF
CS_DAP_0: GEL Output: Data 4 Sent = 0xFFFFFFFF
CS_DAP_0: GEL Output: Command execution completed.
CORTEX_M0P: GEL Output: Password Authentication executed.
CORTEX_M0P: GEL Output: Memory Map Initialization Complete

```



Debug ×

MSPM0L1306.cxml [Code Composer Studio - Device Debugging]

- Texas Instruments XDS110 USB Debug Probe/CORTEX_M0P (Suspended - HW Breakpoint)
 - main() at timx_timer_mode_periodic_sleep.c:37 0x000012C
 - _c_int00_template() at boot_cortex_m.c0 0x00001C0
 - _c_int00_noinit_noargs() at boot_cortex_m.c98 0x00001AC

Identity	Name	Condition	Count	Action
<input type="checkbox"/>	timx_timer_mode_periodic_sleep.c line 51 (DL_Timer_g) Breakpoint		0 (0)	Remain Halted

timx_timer_mode_periodic_sleep.c @ empty.c MSPM0L1306.cxml dl_sysctl_mspm0l11xx_l13xx.h 0x23a

```

15 *
16 * Neither the name of Texas Instruments Incorporated nor the names of
17 * its contributors may be used to endorse or promote products derived
18 * from this software without specific prior written permission.
19 *
20 * THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS"
21 * AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO,
22 * THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR
23 * PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT OWNER OR
24 * CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL,
25 * EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO,
26 * PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS;
27 * OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY,
28 * WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR
29 * OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE,
30 * EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
31 */
32
33#include "ti_msp_dl_config.h"
34
35int main(void)
36{
37    SYSCFG_DL_init();
38
39    NVIC_EnableIRQ(TIMER_0_INST_INT_IRQN);
40    DL_SYSCTL_enableSleepOnExit();
41
42    DL_TimerG_startCounter(TIMER_0_INST);
43
44    while (1) {
45        __WFI();
46    }
47}

```

Console ×

```

MSPM0L1306.cxml
CS_DAP_0: GEL Output: SEC_AP Disconnect
CS_DAP_0: GEL Output: SEC_AP Reconnect
CS_DAP_0: GEL Output: Send Data...
CS_DAP_0: GEL Output: Data 1 Sent = 0x00000001
CS_DAP_0: GEL Output: Data 2 Sent = 0xFFFFFFFF
CS_DAP_0: GEL Output: Data 3 Sent = 0xFFFFFFFF
CS_DAP_0: GEL Output: Data 4 Sent = 0xFFFFFFFF
CS_DAP_0: GEL Output: Command execution completed.
CORTEX_M0P: GEL Output: Password Authentication executed.
CORTEX_M0P: GEL Output: Memory Map Initialization Complete

```

Disassembly × Enter location here

```

main():
0000012c: F00F876 b1 SYSCFG_DL_init
745    __COMPILER_BARRIER();
    __NVIC_EnableIRQ():
00000130: 2001    movs    r0, #1
00000132: 0401    lsls   r1, r0, #0x10
00000134: 4A06    ldr    r2, [pc, #0x18]
746    NVIC->ISER[0U] = (uint32_t)(1UL << (((uint32_t)IRQn) & 0xF
00000136: 6011    str    r1, [r2]
747    __COMPILER_BARRIER();
00000138: 4906    ldr    r1, [pc, #0x18]
598    SCB->SCR |= SCB_SCR_SLEEPONEXIT_Msk;
DL_SYSCTL_enableSleepOnExit():
0000013a: 680A    ldr    r2, [r1]
0000013c: 2302    movs    r3, #2
0000013e: 4313    orrs   r3, r2
00000140: 6008    str    r3, [r1]
00000142: 4905    ldr    r1, [pc, #0x14]
3232    gptimer->COUNTERREGS_CTL |= (GPTIMER_CTLCTL_EN_ENABLED);
DL_Timer_startCounter():
00000144: 680A    ldr    r2, [r1]
00000146: 4302    orrs   r2, r0
00000148: 600A    str    r2, [r1]
45    __WFI():
0000014a: BF30    wfi
44    while (1) {
0000014c: E7FD    b     #0x14a
0000014e: 46C0    mov    r8, r8
00000150: E100    b     #0x354
00000152: E000    b     #0x156
00000154: ED10E000 ldc    p0, c14, [r0, #-0]
00000158: 5804    ldr    r4, [r0, r0]
-----

```

Writable

Smart Insert

37 : 1 : 1663

Other tips

- When you successfully access device with SWD password, then if **you do not reset device or re-power on**, the device will keep connected and you can do any SWD operations (like CCS load/debug, UniFlash connection) without password.
- The reason is that **only in the boot code, does the M0 device need check SWD password**, after successfully password check, then there will be no more password demand.

Useful link: https://software-dl.ti.com/msp430/esd/MSPM0-SDK/1_00_00_04/docs/english/tools/ccs_ide_guide/doc_guide/doc_guide-srcs/ccs_ide_guide.html#dssm-swd-password-mechanism