

GM8136

WATCHDOG

User Guide

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For Faraday Technology Corp
(24611)

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GM8136 Watchdog User Guide

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Chapter 1

Watchdog Configuration

This chapter contains the following sections:

- 1.1 Watchdog Overview
- 1.2 Build Watchdog Module and Use it

1.1 Watchdog Overview

Watchdog timer is a mechanism to prevent the system from hanging forever due to some unexpected conditions. Its operation is easy to understand. Once users start a watchdog timer and set a countdown number into the register, it would begin to decrease the counter. When the counter reaches zero, the system will restart. The only way to stop that is to kick the watchdog before it reaches zero. Every time when users kick the watchdog, the value of the counter would be the value set at the first time.

GM8136 provides a watchdog IP for this job. Users can simply get the function by following the descriptions of the following sections.

1.2 Build Watchdog Module and Use it

The Grain Media hardware watchdog is FTWDT010. The watchdog module is built-in in the Linux kernel image. Users can use menu configuration (make menuconfig) to choose items for FTWDT010.

In Figure 1-1, it shows the items which should be chosen in menu configuration of Linux kernel.

The steps are Device Drivers ---> Watchdog Timer Support ---> FTWDT010 watchdog

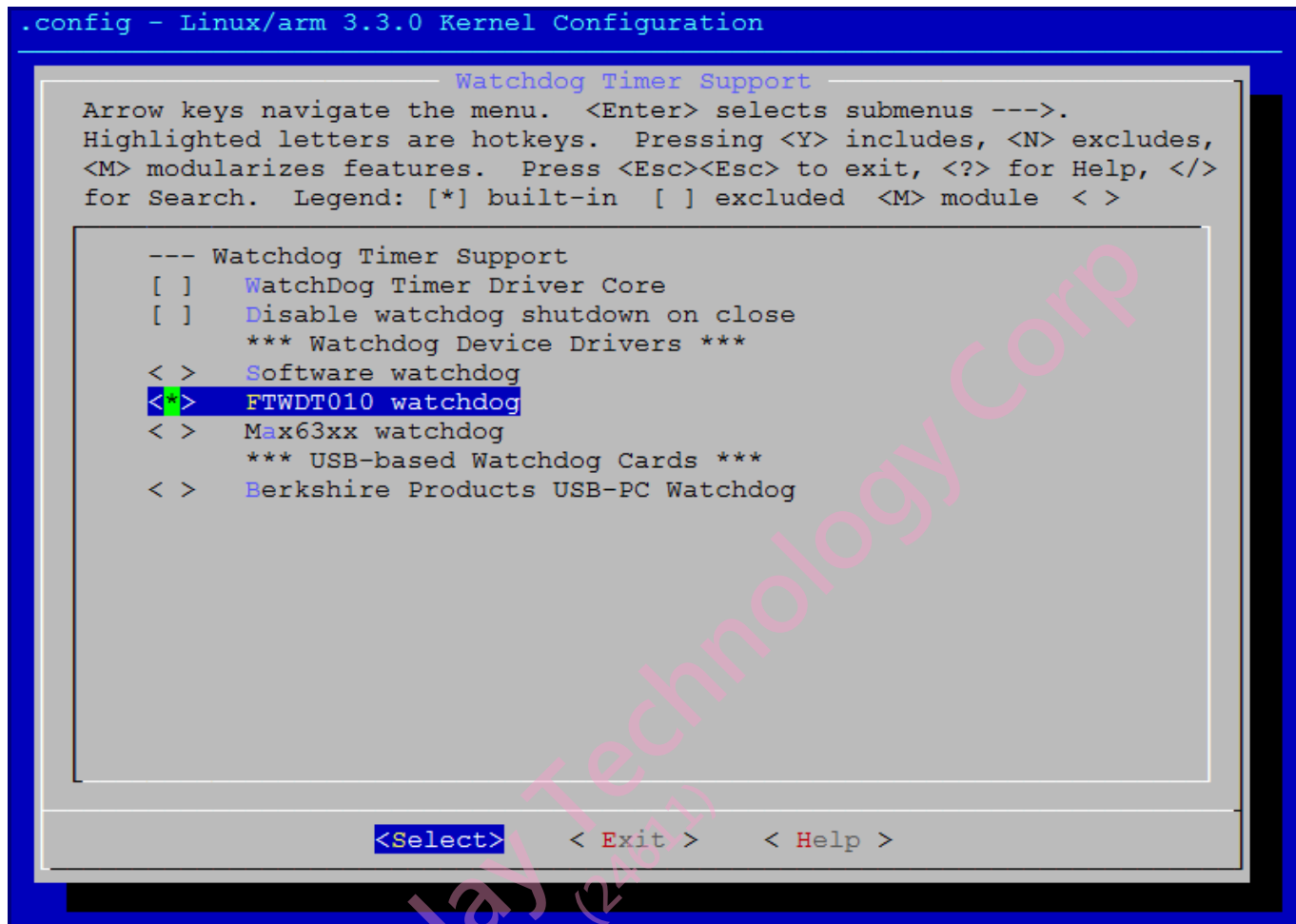
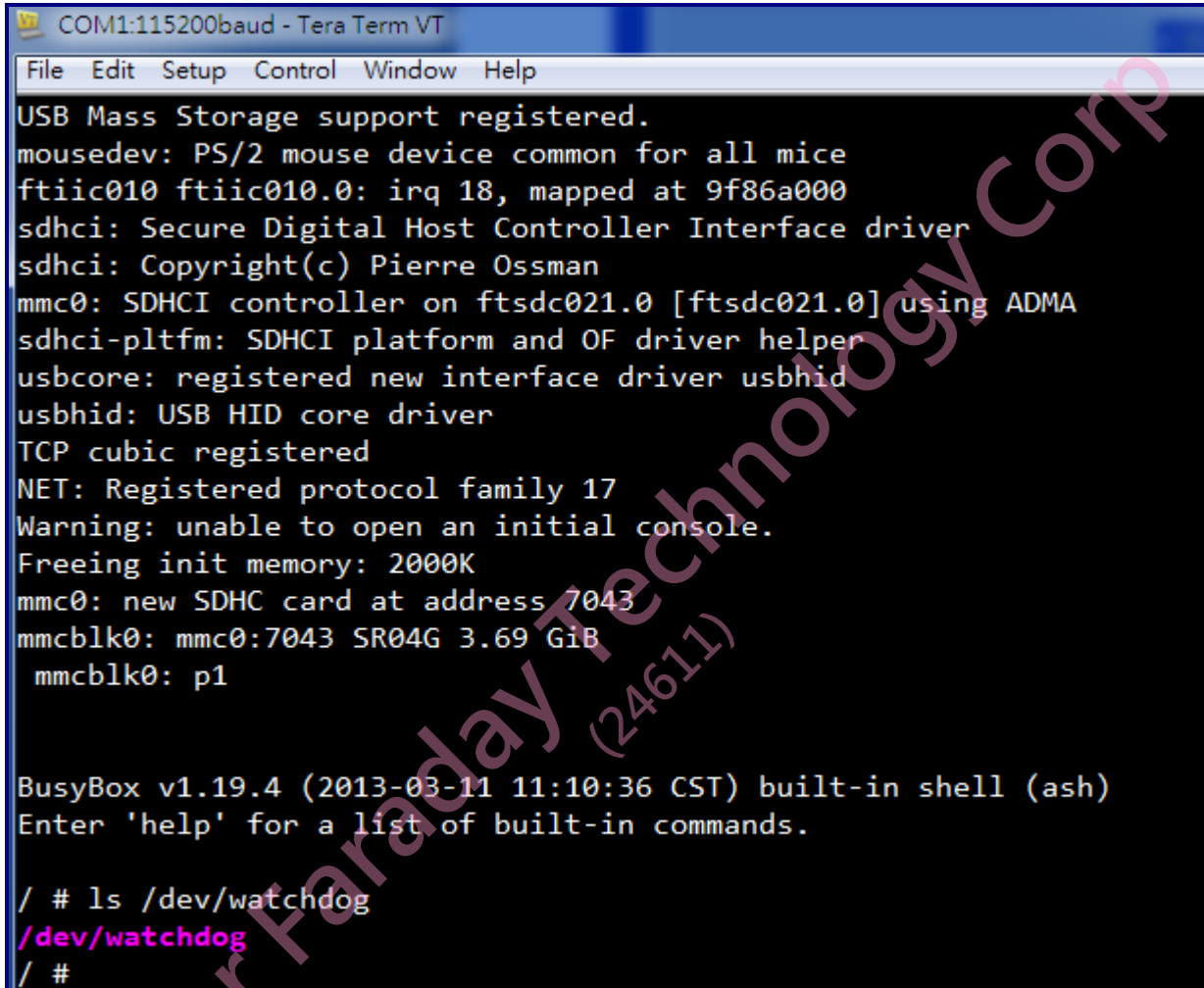


Figure 1-1. Build FTWDT010

After building the watchdog module in the kernel image, users can boot Linux and find the device node of FTWDT010 whose path is "/dev/watchdog". In Figure 1-2, users can find the device node to insert the watchdog driver into kernel.



```
COM1:115200baud - Tera Term VT
File Edit Setup Control Window Help
USB Mass Storage support registered.
mousedev: PS/2 mouse device common for all mice
ftiic010 ftiic010.0: irq 18, mapped at 9f86a000
sdhci: Secure Digital Host Controller Interface driver
sdhci: Copyright(c) Pierre Ossman
mmc0: SDHCI controller on ftssdc021.0 [ftssdc021.0] using ADMA
sdhci-pltfm: SDHCI platform and OF driver helper
usbcore: registered new interface driver usbhid
usbhid: USB HID core driver
TCP cubic registered
NET: Registered protocol family 17
Warning: unable to open an initial console.
Freeing init memory: 2000K
mmc0: new SDHC card at address 7043
mmcblk0: mmc0:7043 SR04G 3.69 GiB
mmcblk0: p1

BusyBox v1.19.4 (2013-03-11 11:10:36 CST) built-in shell (ash)
Enter 'help' for a list of built-in commands.

/ # ls /dev/watchdog
/dev/watchdog
/ #
```

Figure 1-2. Insert Watchdog Driver into Kernel

Now, users can write the sample codes to use the watchdog module. Figure 1-3 is the sample code for triggering watchdog for reboot.

```

1  /* standard C headers */
2  #include <stdlib.h>
3  #include <stdio.h>
4
5  /* POSIX's headers */
6  #include <fcntl.h>
7  #include <string.h>
8  #include <unistd.h>
9  #include <sys/time.h>
10 #include <sys/ioctl.h>
11
12 /* for Linux watchdog ioctl */
13 #include <linux/watchdog.h>
14
15 #define WDT_DEVICE_FILE      "/dev/watchdog"
16
17 int main() {
18     int sec = -1, fd = -1, timeout = 0;
19
20     fd = open(WDT_DEVICE_FILE, O_RDWR);
21     if (!fd) {
22         perror("open WDT device");
23         return -1;
24     }
25
26     ioctl(fd, WDIOC_GETTIMEOUT, &timeout);
27     printf("default timeout %d sec.\n", timeout);
28
29     printf("We reset timeout as 20 sec.\n");
30     timeout = 20;
31     ioctl(fd, WDIOC_SETTIMEOUT, &timeout);
32     ioctl(fd, WDIOC_GETTIMEOUT, &timeout);
33     if (timeout != 20) {
34         printf("WDT timeout reset error.\n");
35         return -1;
36     }
37
38     printf("system reboot after 20 sec.\n");
39     while (1) {
40         ioctl(fd, WDIOC_KEEPAWAKE, 0);
41         sleep(1);
42         printf("keep alive!!\n");
43     }
44 }

```

Figure 1-3. Sample Code for Triggering Watchdog for Reboot

Currently, the watchdog restart system is set to five seconds if it is not kicked.