Freescale MQX FTM Quaddec Driver Example Guide

FTM Quaddec Driver example

This document explains the FTM Quaddec example, what to expect from the example and a brief introduction to the API.

Note

This Example is available on AutoEVB Vybrid A5 BSP only in MQX 4.1.0 release.

The example

The FTM Quaddec example code is used to demonstrate how to use the FTM Quaddec driver in applications.

Running the example

Start HyperTerminal on the PC (Start menu->Programs->Accessories->Communications).
Make a connection to the serial port that is connected to the board (usually will be COM1).

Set it for 115200 baud, no parity, 8 bits and click OK.
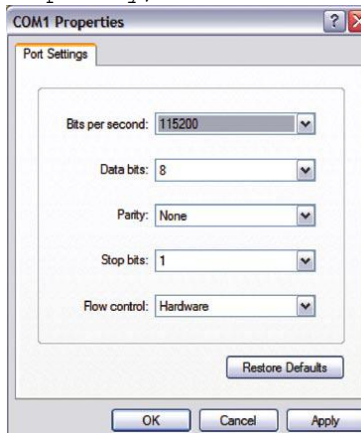
Then we compile the project FTM.

After successful build, user can download created image to the target
board.
The sample code of the FTM Quaddec driver provides a simple UI:
The user should select FTM device between FTM1 and FTM2:

See the FTM example log:

Explanation of the example

Main example flowchart:

```
                        ╭─────────────╮
                        │  Main Task  │
                        ╰─────────────╯
                               │
        ┌──────────────────────▼──────────┐
        │                  ┌───────────────┐
        │                  │ Output the FTM│
        │                  │ dev list,     │
        │                  │ prompt user to│
        │                  │ select one,   │
        │                  │ waits for     │
        │                  │ user inputting│
        │                  └───────────────┘
        │                          │
        │              No    ◇ Is user choice ◇
        └──────────────────◇    valid?       ◇
                               ◇           ◇
                                   │ Yes
                          ┌───────────────┐
                          │ Open the      │
                          │ specific FTM  │
                          │ device        │
                          └───────────────┘
                                  │
                     No     ◇  Success?  ◇
              ┌────────────◇            ◇
              │                 │ Yes
              │         ┌───────────────┐
              │         │ Get channel   │
              │         │ number        │
              │         └───────────────┘
              │                 │
              │    No    ◇  Success?  ◇
              ◄─────────◇            ◇
              │                 │ Yes
              │         ┌───────────────┐
              │         │ Get inquiring │
              │         │ mode          │
              │         └───────────────┘
              │                 │
              │    No    ◇  Success?  ◇
              ◄─────────◇            ◇
              │                 │ Yes
              │         ◇ Synchronous ◇   No
              │         ◇   mode?     ◇───────┐
              │              │ Yes            │
              │    ┌───────────────┐  ┌───────────────┐
              │    │ Sync inquiring│  │ Async inquiring│
              │    │ mode example  │  │ mode example  │
              │    │ functiont     │  │ function      │
              │    └───────────────┘  └───────────────┘
              │            │                  │
              │        ╭─────────────╮        │
              └───────►│    Exit     │◄───────┘
                        ╰─────────────╯
```
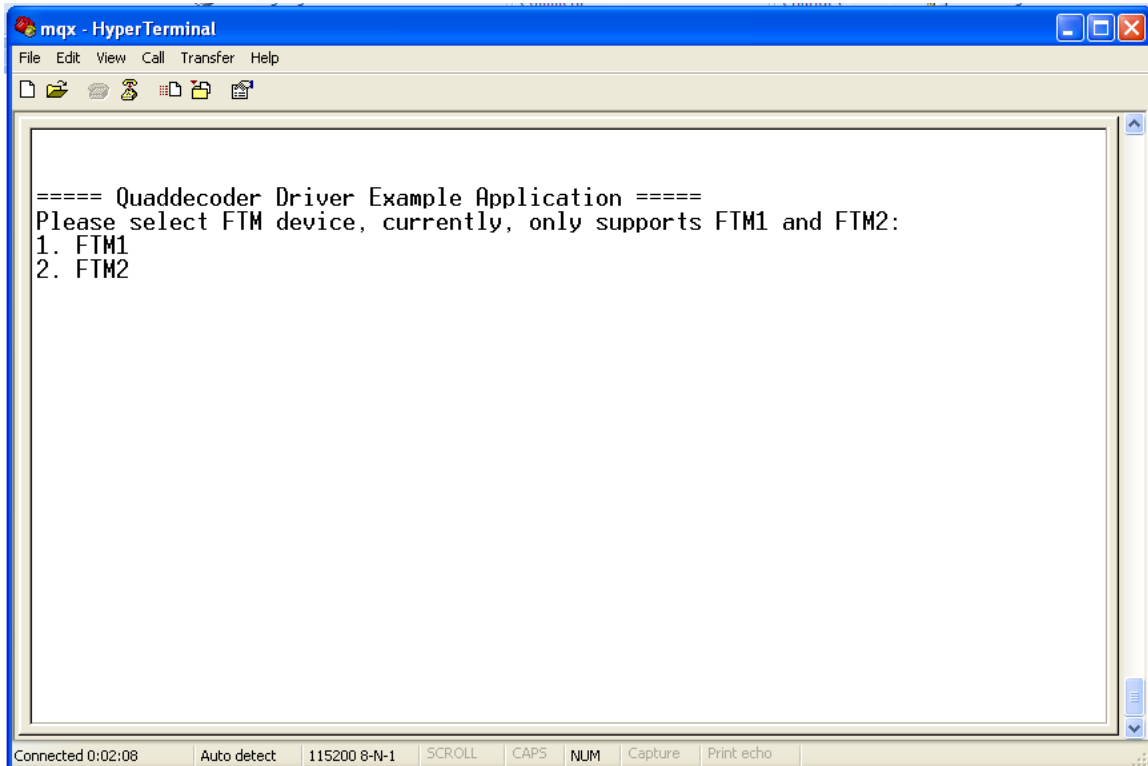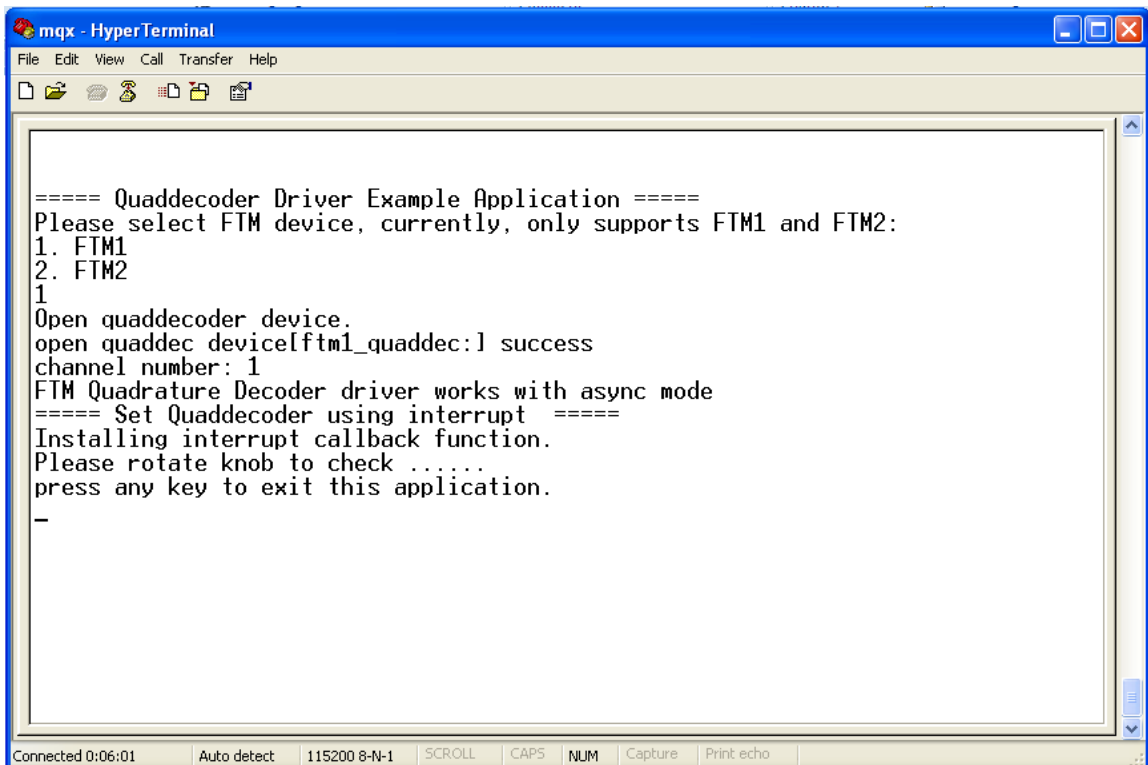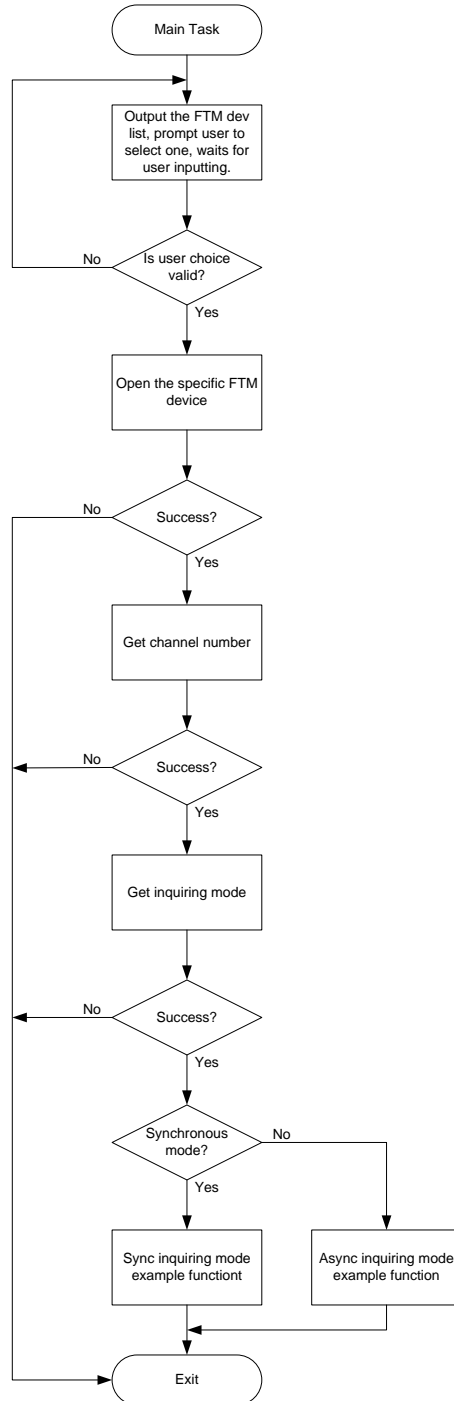
1. Sync inquiring mode example
   a. The sync inquiring mode example function flowchart:

```
         ┌─────────────────────┐
         │  Sync inquiring mode │
         │   example function   │
         └─────────────────────┘
                    │
                    ▼
         ┌─────────────────────┐
         │ Create a task for sync│
         │  inquiring mode test │
         └─────────────────────┘
                    │
                    ▼
      No          ◇ Success? ◇
     ◄────────────
                    │ Yes
                    ▼
         ┌─────────────────────┐
         │  Prompt user "press  │
         │ any key to exit this test│
         │   case", and waiting │
         └─────────────────────┘
                    │
                    ▼
         ┌─────────────────────┐
         │ Call scanf() to wait for│
         │     user input       │
         └─────────────────────┘
                    │
                    ▼
              ( Exit )
```
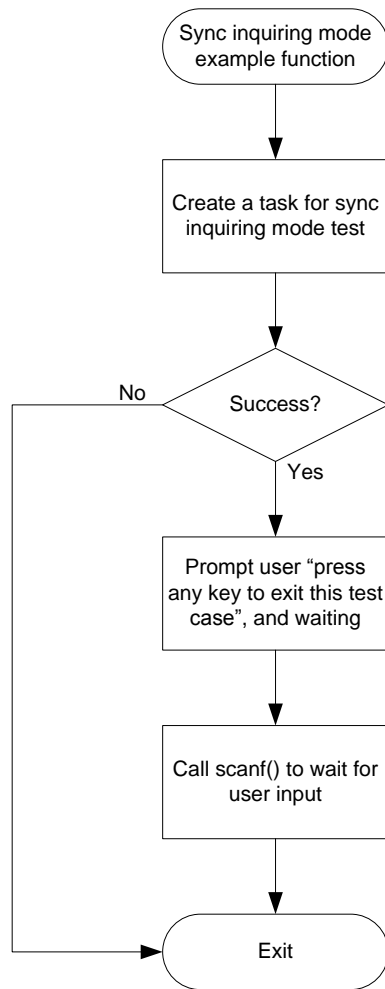
b. The sync inquiring mode example task flowchart:

```
                    ┌─────────────────┐
                    │  Sync inquiring mode  │
                    │   example task   │
                    └─────────────────┘
                             │
                             ▼
                    ┌─────────────────┐
                    │ Prompt user: "Please │
                    │  rotate knob to  │
                    │     check..."    │
                    └─────────────────┘
                             │
                             ▼
         No              ◇ Is the running flag ◇ ◄──────────┐
    ◄────────────────────◇      set?         ◇              │
    │                        ◇             ◇                 │
    │                             │                          │
    │                             ▼                          │
    │                    ┌─────────────────┐                 │
    │                    │       Call       │                 │
    │                    │ IO_IOCTL_FTM_QUADDEC_GET_EVEN │    │
    │                    │ T to read event from FTM drv │    │
    │                    └─────────────────┘                 │
    │                             │                          │
    │          No                 ▼                          │
    │  ◄──────────────────── ◇   Success?   ◇                │
    │                             │                          │
    │                            Yes                         │
    │                             │                          │
    │                             ▼                          │
    │                    ◇ Is there any event ◇ ── No ──────►│
    │                             │                          │
    │                            Yes                         │
    │                             │                          │
    │                             ▼                          │
    │                    ┌─────────────────┐                 │
    │                    │  Output result   │                 │
    │                    └─────────────────┘                 │
    │                             │                          │
    │                             ▼                          │
    │                    ┌─────────────────┐                 │
    │                    │   Sleep 20 ms    │─────────────────┘
    │                    └─────────────────┘
    │
    │                    ┌─────────────────┐
    └───────────────────►│  Close FTM driver │
                         └─────────────────┘
                                  │
                                  ▼
                         ┌─────────────────┐
                         │       Exit       │
                         └─────────────────┘
```

2. Async inquiring mode example

```
        ┌─────────────────────┐
        │  Async inquiring mode │
        │   example function   │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────────────┐
        │            Call             │
        │ IO_IOCTL_FTM_QUADDEC_SET_CB │
        │  to register callback to    │
        │           driver            │
        └─────────────────────────────┘
                  │
                  ▼
              ◇ Success? ◇
                  │
                  ▼
        ┌─────────────────────┐
        │ Prompt user: ""Please│
        │   rotate knob to     │
        │      check...""      │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │  Prompt user: "press │
        │ any key to exit this │
        │     test case"       │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │ Use scanf() to wait  │
        │   for user input     │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │   Close FTM driver   │
        └─────────────────────┘
                  │
                  ▼
              (  Exit  )
```