FT.S-GPIO

User guide

Rev 0.1 -Preliminary

CompuLab Ltd.
17 HaYetsira Street
Moradot HaCarmel Industrial Park
Yokneam Ilite, Israel 20692

Contents

Introduction

About This Document

This document is reference document and usage instructions for FT.S-GPIO tell intended for Compulab Tensor line of add on boards.

Product description

Based on STM32F Cortex M0 CPU, Emulates COM port and enables the user to control routed GPIO's.

Overview

Highlights

- Implementation of USB to GPIO without the need for special drivers or deep system knowledge.
- Enables fast prototyping and fast time to market.
- Can be used with popular coding language's like Python
- Open software and Hardware for even more flexibility
- Build in bidirectional isolation based on ADM3260 chip.
- Build in 4 Isolated GPIO's expandable up to 20 with FT.V-TERM4

Software

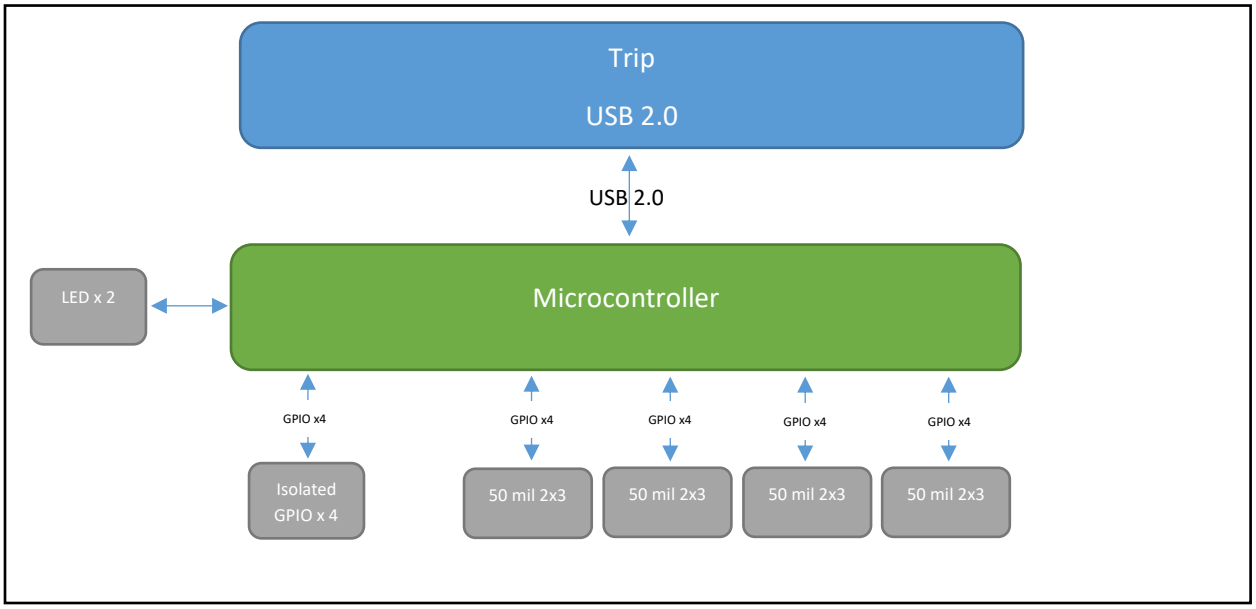
Software based on Mbed OS 5, Binary and source is available here:

https://github.com/Andrew-tesler/FT.S_GPIO

Hardware

Schematics and Gerber files are available in the GitHub Repository.

Block Diagram



Usage instructions

GPIO table

Signal Name (SW)	Pin # (MCU)	Type	Description
GPIO_1	PA0	I/O GPIO	On Board I/O GPIO
GPIO_2	PA1	I/O GPIO	On Board I/O GPIO
GPIO_3	PA2	I/O GPIO	On Board I/O GPIO
GPIO_4	PA3	I/O GPIO	On Board I/O GPIO
GPIO_5	PA4	I/O GPIO	Extension I/O GPIO
GPIO_6	PA5	I/O GPIO	Extension I/O GPIO
GPIO_7	PA6	I/O GPIO	Extension I/O GPIO
GPIO_8	PA7	I/O GPIO	Extension I/O GPIO
GPIO_9	PA8	I/O GPIO	Extension I/O GPIO
GPIO_10	PA9	I/O GPIO	Extension I/O GPIO
GPIO_11	PA10	I/O GPIO	Extension I/O GPIO
GPIO_12	PA15	I/O GPIO	Extension I/O GPIO
GPIO_13	PB0	I/O GPIO	Extension I/O GPIO
GPIO_14	PB1	I/O GPIO	Extension I/O GPIO
GPIO_15	PB2	I/O GPIO	Extension I/O GPIO
GPIO_16	PB3	I/O GPIO	Extension I/O GPIO
GPIO_17	PB4	I/O GPIO	Extension I/O GPIO
GPIO_18	PB5	I/O GPIO	Extension I/O GPIO
GPIO_19	PB6	I/O GPIO	Extension I/O GPIO
GPIO_20	PB7	I/O GPIO	Extension I/O GPIO
LED1	PB14	LED(Green)	On board LED
LED2	PB15	LED(Green)	On board LED

Usage

Each GPIO can be programed for Output or input direction.

- Output - The GPIO Can be controlled for High or LOW output state.
- Input - The user can read if the GPIO is now in HIGH state or LOW, state.

Note: GPIO initial state is Output low.

Commands table

Command	Description	Notes
#n	Set “n” GPIO High or low	
@n	Set “n” GPIO direction Input Output	
$n	Read “n” GPIO state (High or Low, for Input direction)*1	

* 1. If command issued on Output GPIO, Programed state will be returned

Using FT.S-GPIO Windows

Using FT.S-GPIO from Terminal

- Open a terminal utility program Like Tera Term or Putty.
- Establish new connection to the serial port assigned to FT.S-GPIO (In TeraTerm -> New connection -> Serial (Select COMn USB device))
- Type a command

Note: There is no command editing (No Backspace / delete). If you mistype press enter and start new command.

Using FT.S-GPIO from command line

```
echo [command] > \\.\[com port]
```

- [command] - the command sent to fit-statUSB over serial
- [com port] - the COM port assigned to fit-statUSB

Example: Assuming fit-statUSB is on COM10 the following command will set fit-statUSB color to red:

Power shell

```
powershell "$fitstatUSB= new-Object System.IO.Ports.SerialPort [com port];
$fitstatUSB.open(); $fitstatUSB.WriteLine('[command]');
$fitstatUSB.Close()"
```

- [command] - the command sent to fit-statUSB over serial

- [com port] - the COM port assigned to fit-statUSB

Example: Assuming fit-statUSB is on COM10 the following command will set fit-statUSB color to red:

```
powershell "$fitstatUSB= new-Object System.IO.Ports.SerialPort COM10;
$fitstatUSB.open(); $fitstatUSB.WriteLine('#FF0000'); $fitstatUSB.Close()"
```

Locating com port

- Open device manager
- Open ports tab
- find USB to COM, add Picture and notation what to look for

Using FT.S-GPIO Linux

Using FT.S-GPIO from Terminal

- Install your favorite terminal application (Mincom, Kermit….)
- Establish new connection

Using FT.S-GPIO from Command Line

Detect FT.S-GPIO Serial Port

- Run dmesg command (Some distro will require sudo)
- Locate Product string “FT.S-GPIO”
- Locate assigned TTY port

Sample Python Code

Note: Python dependencies: pyserial

```
import serial

ser = serial.Serial("/dev/ttyACM0")
ser.write(b"B#FF0000-500#00FF00-500#0000FF-500\n")
ser.close()
```

Troubleshooting’s

Common problems

- TBA

Contact information

- TBA

Revision Notes

Revision Notes table

Date	Description
April 2020	Initial Revision