

Future Design Systems, Inc.	FDS-TD-2018-03-001

# CON-FMC User Manual

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## Abstract

CON-FMC is an USB3.0 interface board complying with ANSI/VITA 57.1-2008, FPGA Mezzanine Card (FMC) standard.

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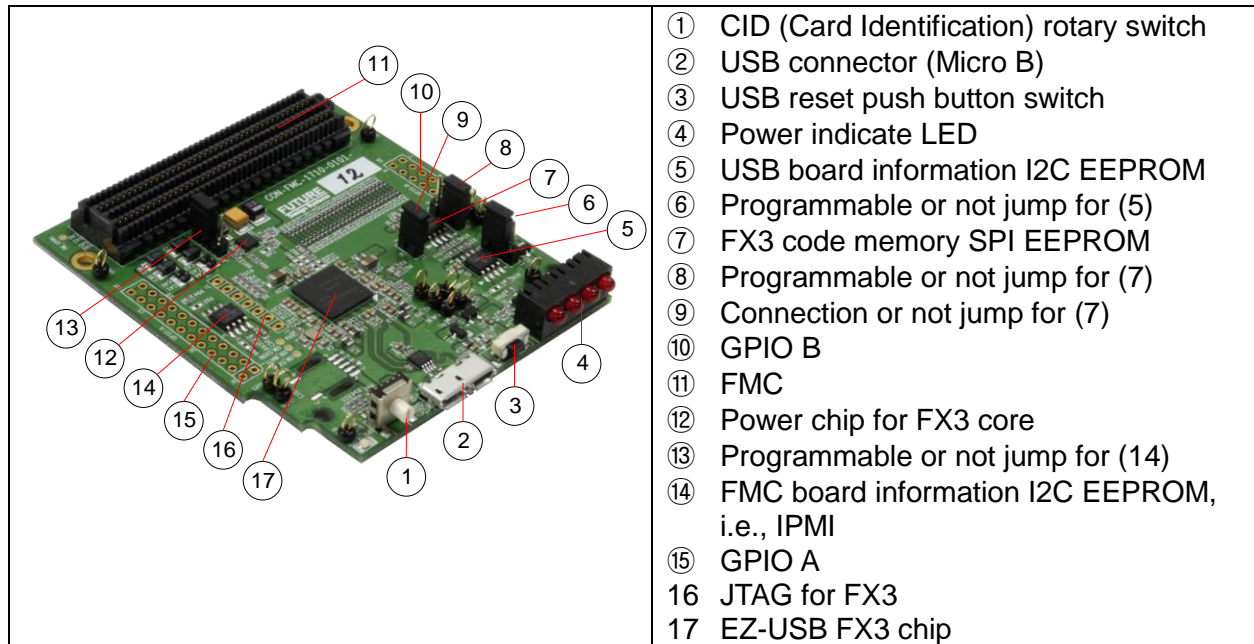
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## 1 Overview

CON-FMC is an USB3.0 interface board complying with ANSI/VITA 57.1-2008, FPGA Mezzanine Card (FMC) standard.

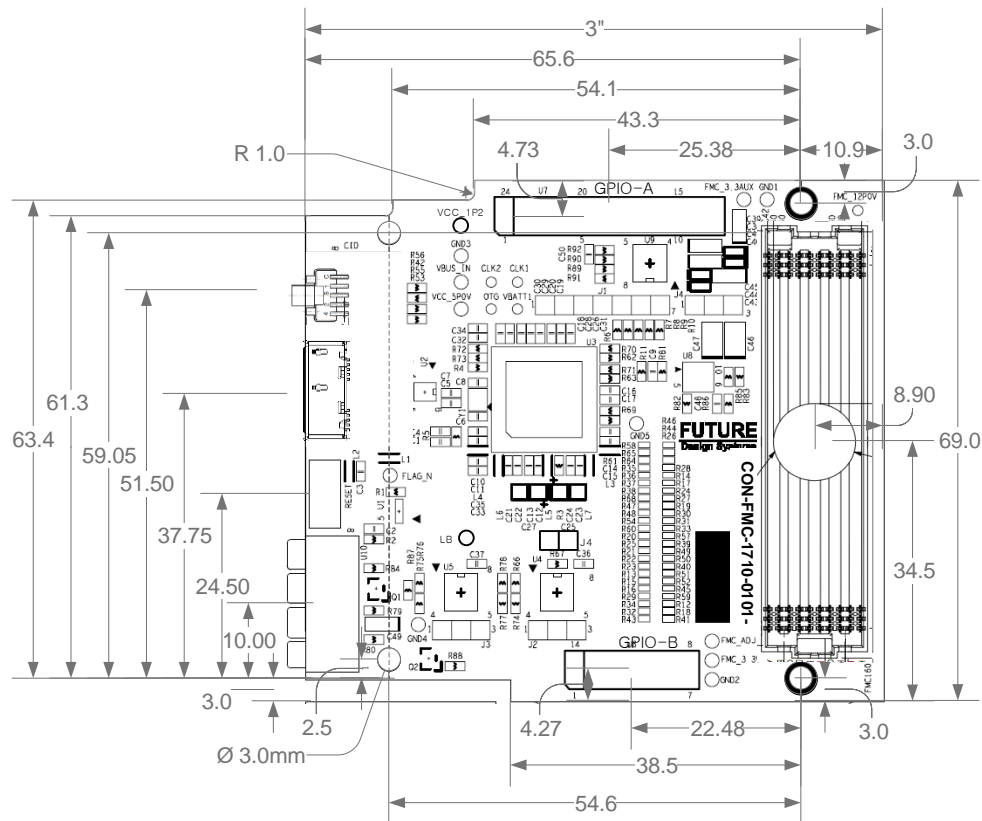
### 1.1 CON-FMC board

Figure 1 shows CON-FMC PBA (Printed Board Assembly) Version 1710-0101.



**Figure 1: CON-FMC PBA board**

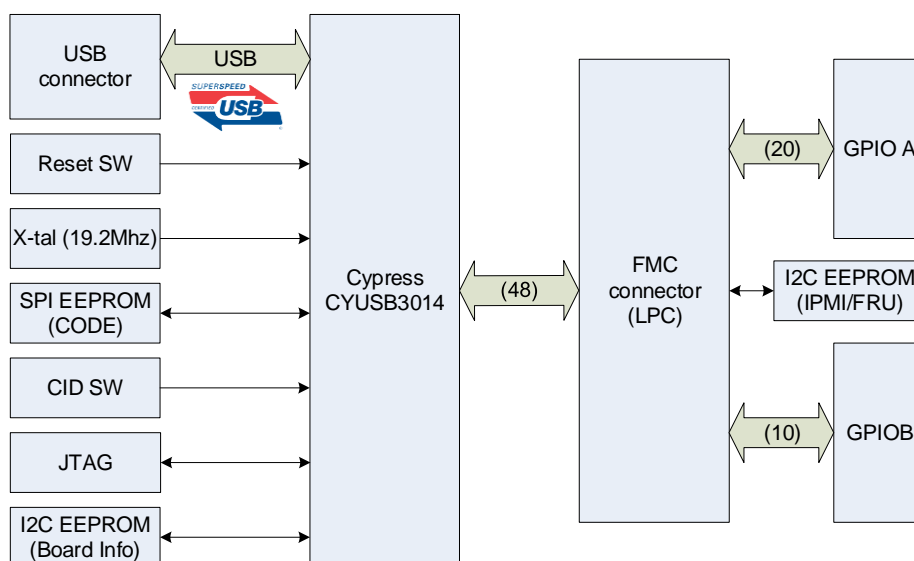
Figure 2 shows mechanical dimension of CON-FMC and it complies with ANSI/VITA 57.1 standard.



**Figure 2: CON-FMC mechanical dimension**

## 1.2 Block diagram

Figure 3 shows block diagram of CON-FMC.



**Figure 3: CON-FMC block diagram**

## 1.3 Supporting environment

### 1.3.1 Host computer

CON-FMC supports industry standard platforms including Windows, Linux, and Android.

- Linux
  - ✧ Ubuntu Release 16.04, Kernel 4.15.0-24-generic, x86\_64<sup>1</sup>
  - ✧ Ubuntu Release 16.04, arm7l<sup>2</sup>
  - ✧ Raspbian, arm7l<sup>3</sup>
- Windows
- Android

### 1.3.2 FPGA board (Carrier board)

CON-FMC can be used with FMC supporting FPGA board, which includes LPC, HPC, and HPC+. Refer to 'Section 11 Carrier board constraints' for more details,

## 2 Hardware

### 2.1 Power

CON-FMC uses two DC power sources; one from USB and the other from FMC. As a result, there is no need to additional power for CON-FMC.

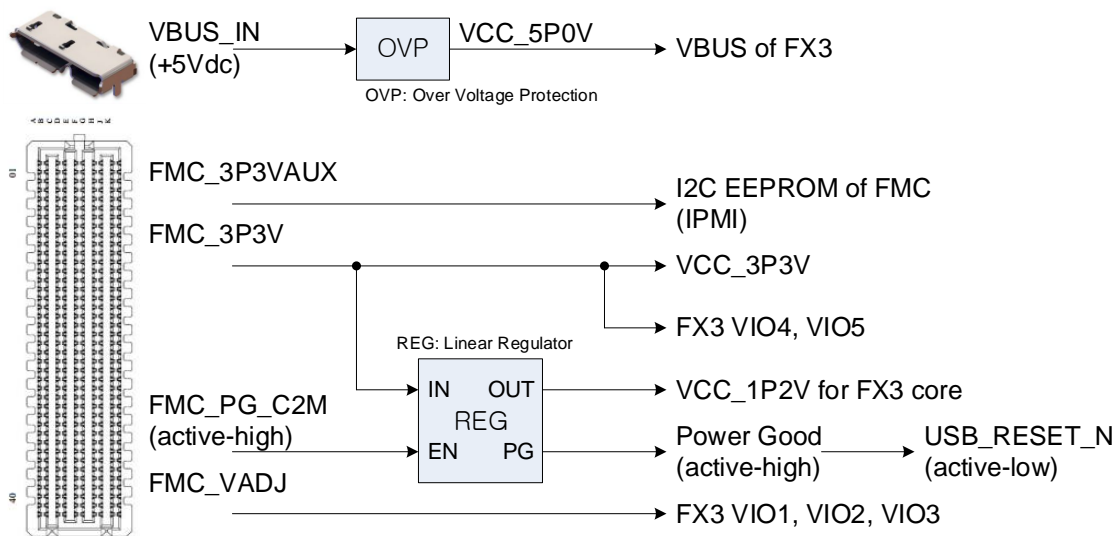
- The former (5Vdc from USB) is fed to FX3 for USB connection
- The latter (from FMC) is divided further in to three
  - ✧ 3.3V for FMC board information EEPROM
  - ✧ 3.3V fixed for not FMC connected pins of FX3 including FX3 core
  - ✧ FMC VADJ for FMC connected pins of FX3
    - ✓ Actual voltage is determined by the value of certain field of FMC board information EEPROM that contains IPMI/FRU.

---

<sup>1</sup> Intel PC

<sup>2</sup> Odroid

<sup>3</sup> Raspberry Pi

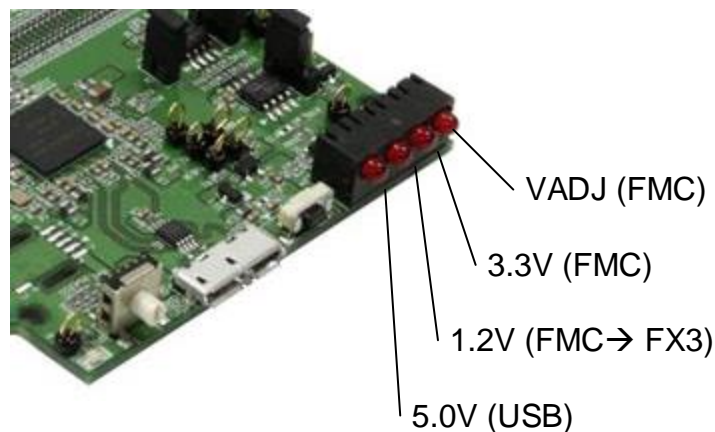


**Figure 4: CON-FMC power plan**

## 2.2 LED

Figure 5 shows LEDs, which indicate status of power.

- VADJ (FMC): FMC main power for most FMC signal pins
- 3.3V (FMC): FMC 3.3V power
- 1.2V (FMC → FX3): FX3 core 12V voltage derived from FMC 3.3V
- 5.0V (USB): User bus power



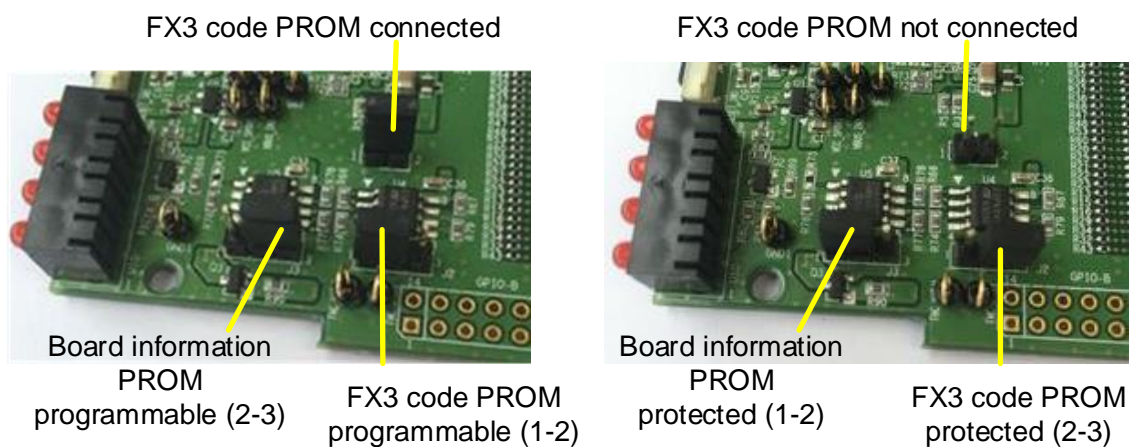
**Figure 5: LED indicating power status**

## 2.3 Switches and jumps

Location of switches and jumps can be found from Figure 6.

- CID rotary switch (1)
  - ✧ It provides 3-bit binary to FX3 GPIO (52, 51, 50).

- USB reset switch (3)
  - ✧ It causes reset to FX3 and makes initialize FX3.
- USB board information PROM program jump (6)
  - ✧ See Figure 6
- FX3 code PROM program jump (8)
  - ✧ See Figure 6
- FX3 code PROM connection jump (9)
  - ✧ It connects MISO signal lines in order to boot FX3 from PROM.
  - ✧ It should be removed to boot FX3 from internal code.
  - ✧ See Figure 6
- FMC board information PROM program jump (13)
  - ✧ This jump should remain in protected. (1-2 connected)

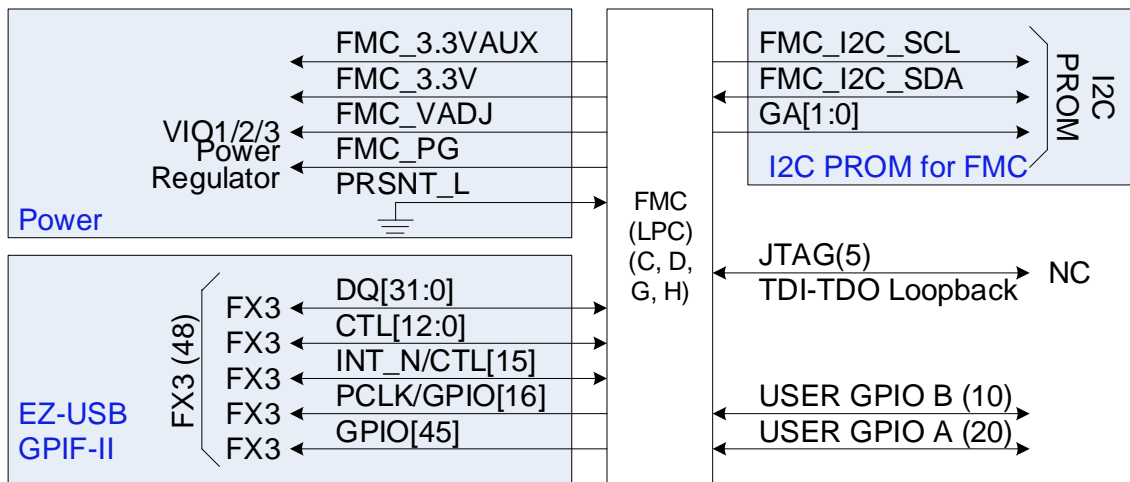


**Figure 6: Jump settings**

## 2.4 FMC connector

FMC pins are divided in to groups as shown in Figure 7.

- Power group
- EZ-USB FX3 GPIF II group: 48 pins are connected to EX-USB FX3 chip
- Board information PROM group+
- USERGPIO group
- JTAG loop from carrier board (not connected to any in the FMC board)

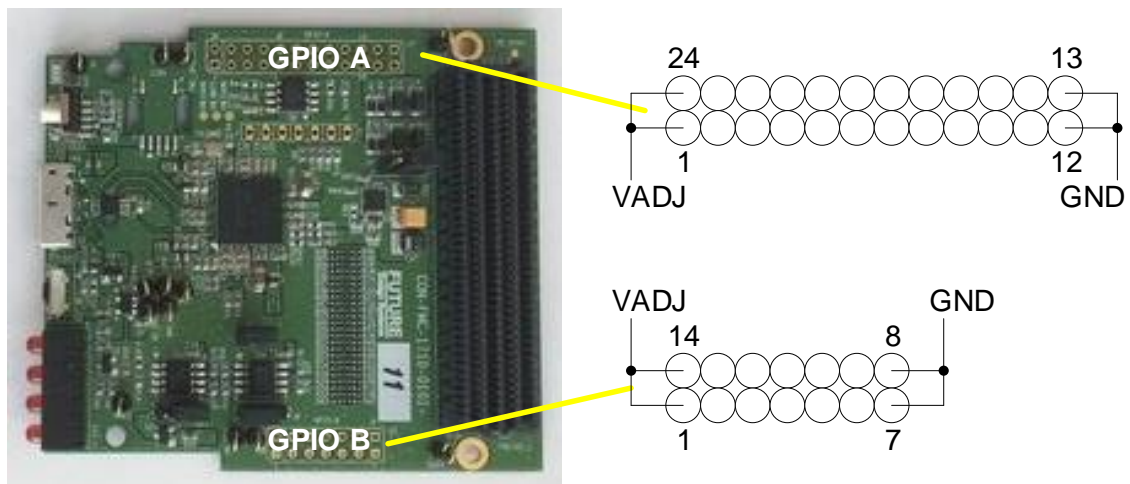


**Figure 7: FMC pins**

Details of pin assignment is given in 'Section 7 FMC pin assignment'.

## 2.5 USER GPIO A and B

GPIO A provides 20 pins from FMC to CON-FMC and GPIO B provides 10 pins from FMC to CON-FMC. The signal voltage is determined by FMC\_VADJ.



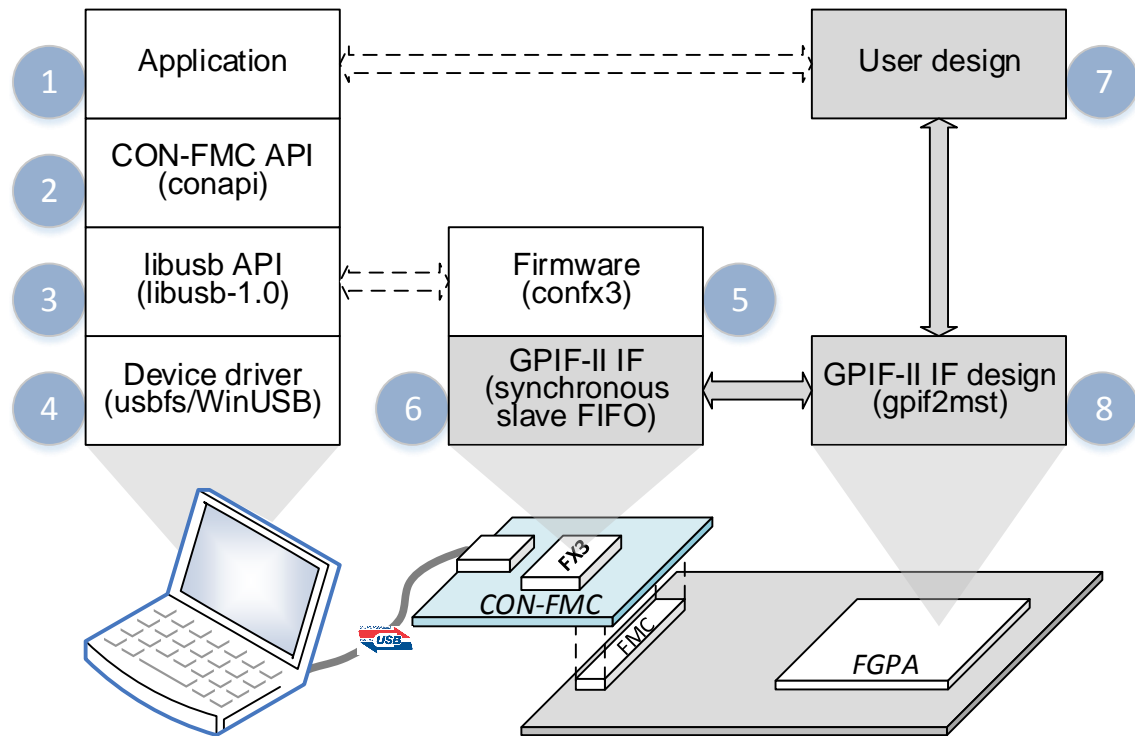
**Figure 8: GPIO A and B**

## 3 Software installation

Figure 9 shows conceptual structure of how 'user application' interacts with 'user design' in the FPGA through CON-FMC, where CON-FMC connects the



host computer and the FPGA through USB3.0 using Cypress EZ-USB FX3 chipset<sup>4</sup>.



**Figure 9: CON-FMC software environment**

This section is about installing LIBUSB API (3), and CON-FMC API (2).

### 3.1 Ubuntu for Intel x86 64-bit

#### 3.1.1 Installing LibUsb

It requires 'LibUsb<sup>5</sup>' and if it is not ready<sup>6</sup> then install it as follows.

```
$ dpkg -l libusb-1.0*
// if libusb is not installed, then install
$ sudo apt-get install libusb-1.0.0-dev
// or $ sudo apt-get install libusb-1.0
```

#### 3.1.2 Installing confmc

<sup>4</sup> Cypress Semiconductor, EZ-USB FX3 SuperSpeed USB Controller, CYUSB301X, 2012.

<sup>5</sup> LibUSB is a user-space USB library.

<sup>6</sup> Try "\$ ldconfig -p | grep libusb" to figure out if LibUSB is installed or not.

Get CON-FMC package such as 'confmc.x86\_64.linux.tgz'. Untar it and run 'coninstall.sh' with root permission.

```
$ tar xzf confmc.x86_64.linux.tgz
$ cd confmc.x86_64.linux
$ sudo ./coninstall.sh
// follow on-screen instructions
// re-boot the system if required.
```

By default, the CON-FMC package is installed at '/opt/confmc/2018.05'.

Run following script before using CON-FMC.

```
$ ./opt/confmc/2018.05/settings.sh
// this set 'CONFMC_HOME' environment variable
```

## 3.2 CentOS for Intel x86 64-bit

### 3.2.1 Installing LibUsb

It requires 'LibUsb' and if it is not ready then install it as follows.

```
$ rpm -qa | grep -i libusb
// if libusb1-1.0.* and libusb1-devel-1.0.* are missing, then install
$ sudo yum install libusb-1.0.0-dev
// or $ sudo yum install libusb1-devel
```

### 3.2.2 Installing confmc

Get CON-FMC package such as 'confmc.x86\_64.linux.tgz'. Untar it and run 'coninstall.sh'.

```
$ tar xzf confmc.x86_64.linux.tgz
$ cd confmc.x86_64.linux
$ sudo ./coninstall.sh
// follow on-screen instructions
// re-boot the system if required.
```

By default, the CON-FMC package is installed at '/opt/confmc/2018.05'.

Run following script before using CON-FMC.

```
$ ./opt/confmc/2018.05/settings64.sh
// this set 'CONFMC_HOME' environment variable
```

## 3.3 Ubuntu for ARMv7 32-bit

### 3.3.1 Installing LibUsb

This is about ARM-based platforms including Raspberry Pi, Odroid, and ARTIK.

It requires 'LibUsb<sup>7</sup>' and if it is not ready<sup>8</sup> then install it as follows.

```
$ dpkg -l libusb-1.0*  
// if libusb is not installed, then install  
$ sudo apt-get install libusb-1.0.0-dev
```

### 3.3.2 Installing confmc

Get CON-FMC package such as 'confmc.armv7l.ubuntu\_16.04.tgz'. Untar it and run 'coninstall.sh' with root permission.

```
$ tar xzf confmc.armv7l.ubuntu_16.04.tgz  
$ cd confmc.armv7l.ubuntu_16.04  
$ sudo ./coninstall.sh  
// follow on-screen instructions  
// re-boot the system if required.
```

By default, the CON-FMC package is installed at '/opt/confmc/2018.05'.

Run following script before using CON-FMC.

```
$ ./opt/confmc/2018.05/settings.sh  
// this set 'CONFMC_HOME' environment variable
```

## 3.4 Windows

CON-FMC uses LibUsb that requires system-level USB driver and "WinUSB" is used for it.

### 3.4.1 Installing WinUSB driver

More details can be found in <https://github.com/pbatard/libwudi/wiki/Zadig>.

#### 3.4.1.1 First time install

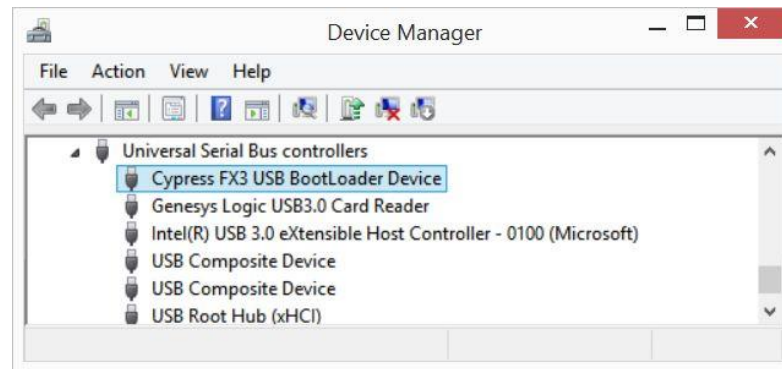
Below is an overview for a typical driver installation:

1. Plug CON-FMC or you can also plug CON-FMC device after Zadig is running. When possible, we recommend that you leave only the device you want to install a driver for, and unplug any other USB device. As shown below, CON-FMC will be listed in 'Device Manager' as 'Cypress FX3 USB BootLoader Device'.

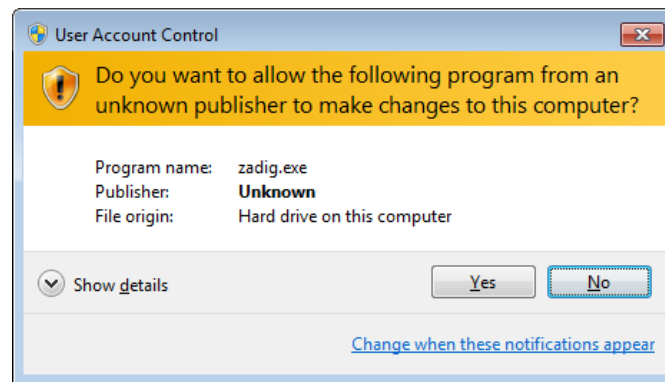
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<sup>7</sup> LibUSB is a user-space USB library.

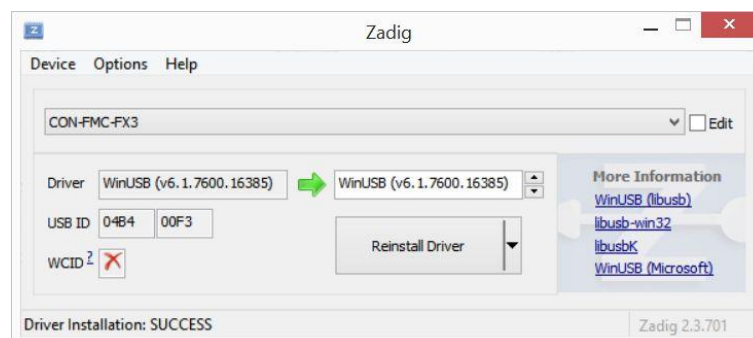
<sup>8</sup> Try "\$ ldconfig -p | grep libusb" to figure out if LibUSB is installed or not.



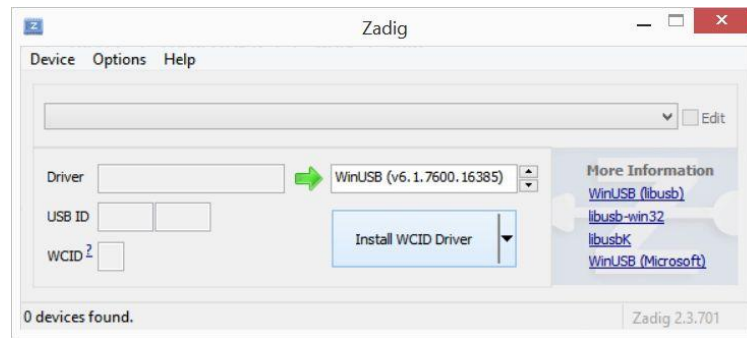
2. The first screen you will see when launching Zadig is the User Account Control prompt displayed below. This is because the application needs to run with administrative privileges. To be able to install a driver, you should answer Yes.



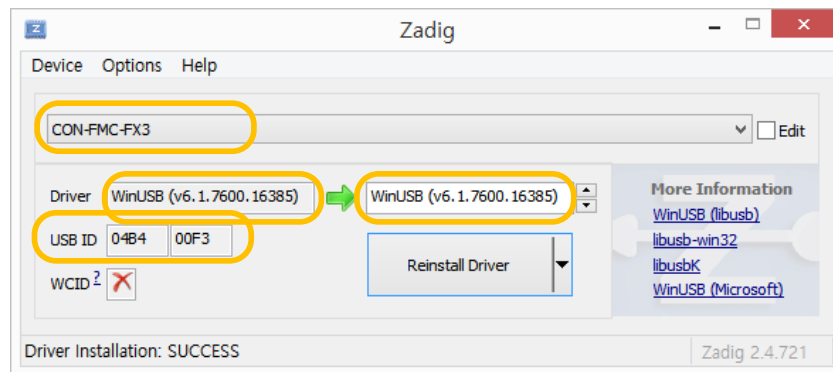
3. You should see CON-FMC USB device appear in the dropdown list (click on the dropdown to see all devices). When the left part of 'Driver' is 'CYUSB3' something, 'WinUSB' should be reinstalled.



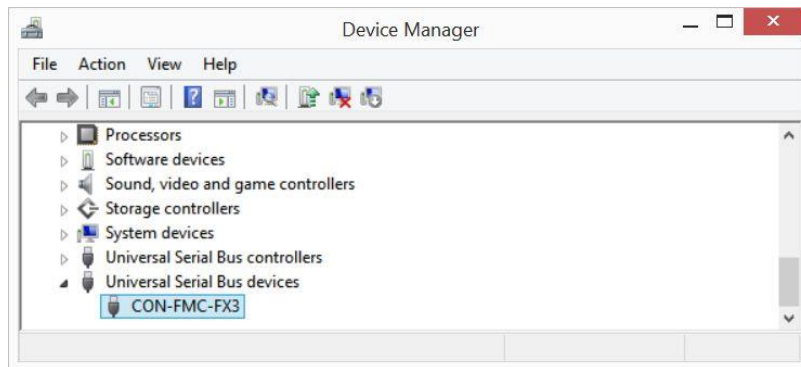
If CON-FMC is not listed as follows. This means that it already has a driver installed. To see USB devices that already have a driver installed, go to the Options menu and select List All Devices.



4. A window should pop up saying "Installing Driver..." and then be replaced by one saying "The driver was installed successfully." Close that window and then the Zadig program.



5. See as follows.



At any time, you can check to be sure that your CON-FMC is recognized by the operating system by going to the Start menu and choosing Computer Management. In the left pane, click on Device Manager. In the center pane, under the libusb (WinUSB) devices category, you should see the USBasp entry, without any exclamation mark or yellow warning sign

### 3.4.2 Installing libusb-1.0.22.win

Prebuild binary is available at <https://github.com/libusb/libusb/wiki/Windows><sup>9</sup>.  
This prebuild binaries are located at following directories.

- \$CONFMC\_HOME/conapi/libusb-1.0.22.win/MinGW32: 32-bit for MinGW
- \$CONFMC\_HOME/conapi/libusb-1.0.22.win/MinGW64: 64-bit for MinGW
- \$CONFMC\_HOME/conapi/libusb-1.0.22.win/MS32: 32-bit for Microsoft Visual Studio and DDK/WDK
- \$CONFMC\_HOME/conapi/libusb-1.0.22.win/MS64: 64-bit for Microsoft Visual Studio and DDK/WDK

### 3.5 Android

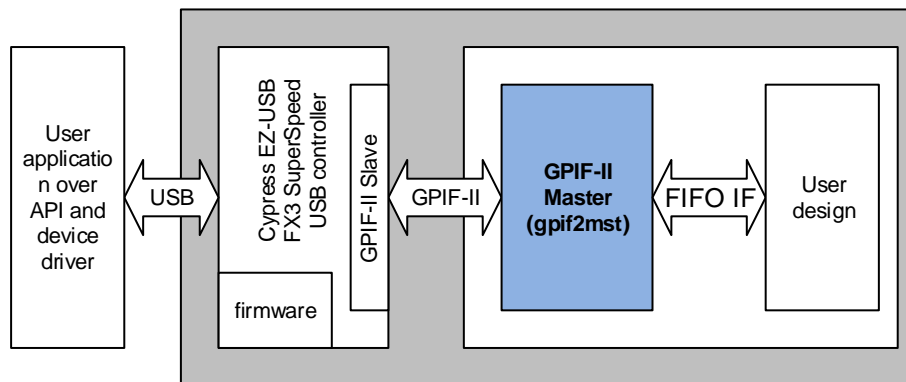
To be added

## 4 Software API

Refer to 'CON-FMC API based on LIBUSB'.

## 5 FPGA design tips

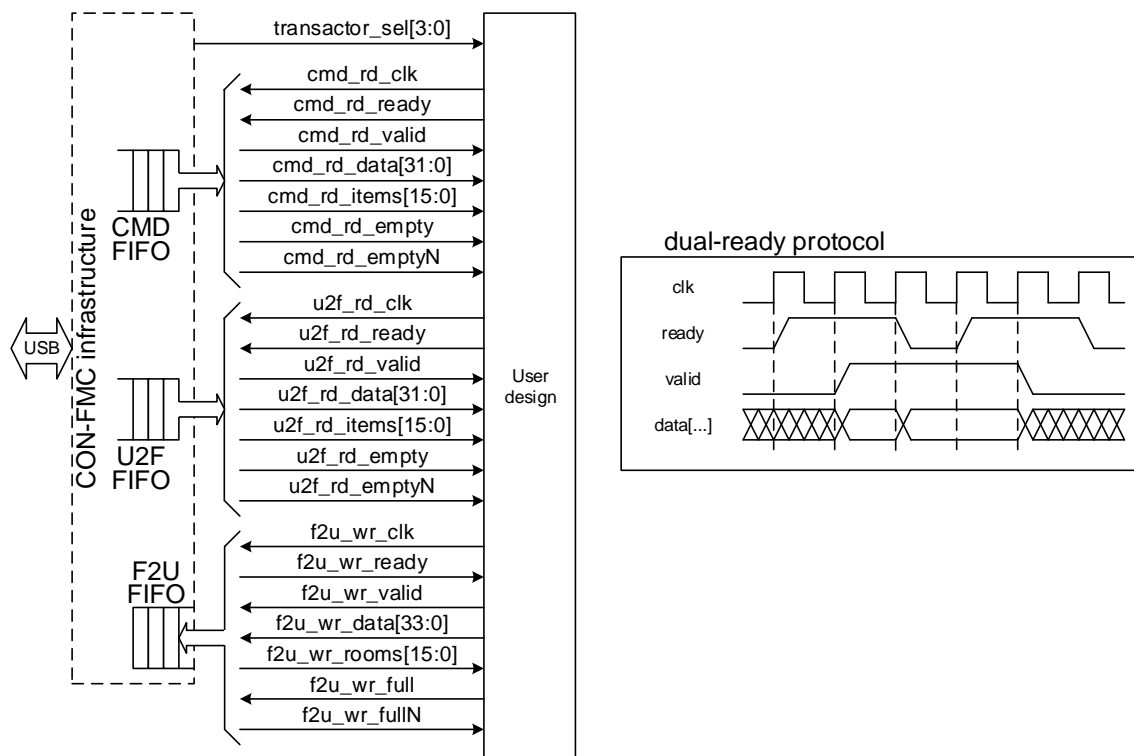
Figure 10 shows an interface of EZ-USB FX3 GPIF-II. In terms of 'user design', this interface does not matter since 'user design' only uses FIFO IF.



**Figure 10: GPIF-II interfaces**

Figure 11 shows conceptual interface for 'user design', which uses dual-ready FIFO interface such as data in 'data[...]' is moved at the rising edge of 'clk' when both 'ready' and 'valid' are one.

<sup>9</sup> <https://sourceforge.net/projects/libusb/files/> or <https://github.com/libusb/libusb/releases>



**Figure 11: User side interface**

It should be noted that 'items[...]' and 'rooms[...]' indicate guaranteed value not exact value, where 'items[...]' reflects the number of items can be read and 'rooms[...]' reflects the number of rooms ca be written.

'f2u\_data[33:32]' are used to control end-of-packet or zero-length-packet. If you are not familiar with USB protocol, just tie them 0.

It is highly recommended to copy example design in '\$CONFMC\_HOME/examples' directory<sup>10</sup> and then modify it as you need.

- use 'fex\_0001\_loopback' for FIFO interface

## 5.1 AMBA buses

There are many on-chip bueses and AMBA family is one of most popular industrial standard bues. CON-FMC supports the AMBA bus.

It is highly recommended to copy example design in '\$CONFMC\_HOME/examples' directory<sup>11</sup> and then modify it as you need.

<sup>10</sup> 'CONFMC\_HOME' is a default macro indicating the directory where CON-FMC package reside, e.g., /opt/confmc/2018.05.

<sup>11</sup> 'CONFMC\_HOME' is a default macro indicating the directory where CON-FMC package reside, e.g., /opt/confmc/2018.05.

- use 'fex\_0002\_amba\_ahb\_mem' for AMBA AHB interface
- use 'fex\_0003\_amba\_axi\_mem' for AMBA AXI interface

## 6 FX3 pin assignment

(If you need more details, please contact at [contact@future-ds.com](mailto:contact@future-ds.com)).

Name	Ref name	Remarks
GPIO0_DQ0	SL_DT[0]	
GPIO1_DQ1	SL_DT[1]	
GPIO2_DQ2	SL_DT[2]	
GPIO3_DQ3	SL_DT[3]	
GPIO4_DQ4	SL_DT[4]	
GPIO5_DQ5	SL_DT[5]	
GPIO6_DQ6	SL_DT[6]	
GPIO7_DQ7	SL_DT[7]	
GPIO8_DQ8	SL_DT[8]	
GPIO9_DQ9	SL_DT[9]	
GPIO10_DQ10	SL_DT[10]	
GPIO11_DQ11	SL_DT[11]	
GPIO12_DQ12	SL_DT[12]	
GPIO13_DQ13	SL_DT[1]3	
GPIO14_DQ14	SL_DT[1]4	
GPIO15_DQ15	SL_DT[1]5	
GPIO16_PCLK	SL_PCLK	
GPIO17_CTL0		
GPIO18	SL_WR_N	
GPIO19	SL_OE_N	
GPIO20	SL_RD_N	
GPIO21	SL_FLAGA	
GPIO22	SL_FLAGB	
GPIO23	SL_FLAGC	
GPIO24	SL_PKTEND_N	
GPIO25	SL_FLAGD	
GPIO26	SL_RST_N	
GPIO27	SL_MODE[0]	
GPIO28		
GPIO29_CTL12		
GPIO30	PMODE0	1
GPIO31	PMODE1	Float
GPIO32	PMODE2	0
GPIO33	SL_DT[16]	
GPIO44	SL_DT[27]	
GPIO45	SL_MODE[1]	
GPIO46	SL_DT[28]	
GPIO47	SL_DT[29]	
GPIO48	SL_DT[30]	
GPIO49	SL_DT[31]	
GPIO50	CID[0]	
GPIO51	CID[1]	
GPIO52	CID[2]	
GPIO53	SPI_SCK	FX3 code PROM



GPIO54	SPI_SSN	FX3 code PROM
GPIO55	SPI_MISO	FX3 code PROM
GPIO56	SPI_MOSI	FX3 code PROM
GPIO57	LB_LED	
GPIO58	I2C_SCLK	Board information PROM
GPIO59	I2C_SDA	Board information PROM
GPIO60	N.C	

## 7 FMC pin assignment

FMC Pin	Signal Name	GPIF-II Signal		GPIO A pin	GPIO B pin
C1	GND				
C2	FMC_DP0_C2M_P				2
C3	FMC_DP0_C2M_N				13
C4	GND				
C5	GND				
C6	FMC_DP0_M2C_P				3
C7	FMC_DP0_M2C_N				12
C8	GND				
C9	GND				
C10	USB_GPIO12	SL_DT[12]			
C11	USB_GPIO13	SL_DT[13]			
C12	GND				
C13	GND				
C14	USB_GPIO20	SL_RD_N			
C15	USB_GPIO21	SL_FLAGA			
C16	GND				
C17	GND				
C18	USB_GPIO28	SL_AD[1]			
C19	USB_GPIO29	SL_AD[0]			
C20	GND				
C21	GND				
C22	USB_GPIO39	GPIO39			
C23	USB_GPIO40	GPIO40			
C24	GND				
C25	GND				
C26	FMC_LA27_P				6
C27	FMC_LA27_N				9
C28	GND				
C29	GND				
C30	FMC_SCL				
C31	FMC_SDA				

C32	GND				
C33	GND				
C34	FMC_GA0				
C35	FMC_12P0V				
C36	GND				
C37	FMC_12P0V				
C38	GND				
C39	FMC_3P3V				
C40	GND				
D1	FMC_PG_C2M				
D2	GND				
D3	GND				
D4	FMC_GBTCLK0_M2C_P				4
D5	FMC_GBTCLK0_M2C_N				11
D6	GND				
D7	GND				
D8	USB_GPIO02	SL_DT[2]			
D9	USB_GPIO03	SL_DT[3]			
D10	GND				
D11	USB_GPIO10	SL_DT[10]			
D12	USB_GPIO11	SL_DT[11]			
D13	GND				
D14	USB_GPIO18	SL_WR_N			
D15	USB_GPIO19	SL_OE_N			
D16	GND				
D17	USB_GPIO26	SL_RST_N			
D18	USB_GPIO27	SL_MODE[0]	LA13_N		
D19	GND				
D20	USB_GPIO37	GPIO37			
D21	USB_GPIO38	GPIO38			
D22	GND				
D23	USB_GPIO49	GPIO49			
D24	USB_INT_N	USB_INT_N			
D25	GND				
D26	FMC_LA26_P				5
D27	FMC_LA26_N				10
D28	GND				
D30	FMC_TDI				

D31	FMC_TDO				
D32	FMC_3P3VAUX				
D35	FMC_GA1				
D36	FMC_3P3V				
D37	GND				
D38	FMC_3P3V				
D39	GND				
D40	FMC_3P3V				
G1	GND				
G2	FMC_CLK1_M2C_P			3	
G3	FMC_CLK1_M2C_N			22	
G4	GND				
G5	GND				
G6	USB_GPIO00	SL_DT[0]			
G7	USB_GPIO01	SL_DT[1]			
G8	GND				
G9	USB_GPIO06	SL_DT[6]			
G10	USB_GPIO07	SL_DT[7]			
G11	GND				
G12	USB_GPIO16	SL_PCLK			
G13	USB_GPIO17	GPIO17			
G14	GND				
G15	USB_GPIO24	SL_PKTEND_N	LA12_P		
G16	USB_GPIO25	SL_FLAGD			
G17	GND				
G18	USB_GPIO35	GPIO35			
G19	USB_GPIO36	GPIO36			
G20	GND				
G21	USB_GPIO43	GPIO43			
G22	USB_GPIO44	GPIO44			
G23	GND				
G24	USB_GPIO47	GPIO47			
G25	USB_GPIO48	GPIO48			
G26	GND				
G27	FMC_LA25_P			5	
G28	FMC_LA25_N			20	
G29	GND				
G30	FMC_LA29_P			7	

G31	FMC_LA29_N			18	
G32	GND				
G33	FMC_LA31_P			9	
G34	FMC_LA31_N			16	
G35	GND				
G36	FMC_LA33_P			11	
G37	FMC_LA33_N			14	
G38	GND				
G39	VCC_VADJ				
G40	GND				
H2	GND				
H3	GND				
H4	FMC_CLK0_M2C_P			2	
H5	FMC_CLK0_M2C_N			23	
H6	GND				
H7	USB_GPIO04	SL_DT[4]			
H8	USB_GPIO05	SL_DT[5]			
H9	GND				
H10	USB_GPIO08	SL_DT[8]			
H11	USB_GPIO09	SL_DT[9]			
H12	GND				
H13	USB_GPIO14	SL_DT[14]			
H14	USB_GPIO15	SL_DT[15]			
H15	GND				
H16	USB_GPIO22	SL_FLAGB			
H17	USB_GPIO23	SL_FLAGC			
H18	GND				
H19	USB_GPIO33	GPIO33			
H20	USB_GPIO34	GPIO34			
H21	GND				
H22	USB_GPIO41	GPIO41			
H23	USB_GPIO42	GPIO42			
H24	GND				
H25	USB_GPIO45	SL_MODE[1]	LA21_P		
H26	USB_GPIO46	GPIO46			
H27	GND				
H28	FMC_LA24_P			4	
H29	FMC_LA24_N			21	

H30	GND				
H31	FMC_LA28_P			6	
H32	FMC_LA28_N			19	
H33	GND				
H34	FMC_LA30_P			8	
H35	FMC_LA30_N			17	
H36	GND				
H37	FMC_LA32_P			10	
H38	FMC_LA32_N			15	
H39	GND				
H40	VCC_VADJ				

## 8 Board information

CON-FMC has an I2C EEPROM (Figure 1 component 5) that contains board information, which is accessed through USB channel. *It is not recommended user to modify its contents.*<sup>12</sup>

## 9 Code memory

CON-FMC has an SPI EEPROM (Figure 1 component 7) that contains code, which is accessed by the USB controller. *It is not recommended user to modify its contents.*<sup>13</sup>

## 10 IPMI (Intelligent Platform Management Interface)

CON-FMC has an I2C EEPROM (Figure 1 component 14) that contains board information supporting Field Replaceable Unit (FRU) Information, which is accessed through FMC channel. *It is not recommended user to modify its contents.*<sup>14</sup>

## 11 Carrier board constraints

UCF or XDC are available in the example directory. Consult with Future Design Systems for additional boards.

### 11.1 Xilinx SP605: Spartan-6 xc6slx45t

\$CONFMC\_HOME/examples/fex\_0001\_loopback/hw.single/pnr/ise.sp605.lpc/ucf

<sup>12</sup> CON-FMC API may not work when its contents altered.

<sup>13</sup> CON-FMC may not be detected by the host computer when its contents altered.

<sup>14</sup> FPGA carrier board may not work when its contents altered.

### 11.2 Xilinx ML605: Virtex-6 xc6vlx240t

\$CONFMC\_HOME/examples/fex\_0001\_loopback/hw.single/pnr/ise.ml605.lpc/ucf

### 11.3 Xilinx ZC706: Zynq-7000 xc7z045

\$CONFMC\_HOME/examples/fex\_0001\_loopback/hw.single/pnr/vivado.zc706.lpc/xdc

### 11.4 Xilinx VCU108: Virtex UltraScale xcvu095

\$CONFMC\_HOME/examples/fex\_0001\_loopback/hw.single/pnr/vivado.vcu108.hpc0/xdc

### 11.5 Xilinx ZC702: Zynq-7000 xc7z020

\$CONFMC\_HOME/examples/fex\_0001\_loopback/hw.single/pnr/vivado.zc702.lpc0/xdc

### 11.6 Avnet ZedBoard: Zynq-7000 xc7z020

\$CONFMC\_HOME/examples/fex\_0001\_loopback/hw.single/pnr/vivado.zed.lpc/xdc

## 12 Trouble shooting

### 12.1 undefined reference to 'libusb\_strerror'

- Symptom: Compiler exits with following error.

undefined reference to `libusb\_strerror'
- Reason: LibUSB version is lower than required since 'libconapi.a' needs LibUSB version 1.0.22 or higher.
- Solution: Install latest LibUSB.

The version of LibUSB of CON-FMC library can be found from 'libusb\_version.txt' in \$CONFMC\_HOME/include directory. The version of LibUSB of system can be found from 'libusb.h' in '/usr/include/libusb-1.0' directory, where 'LIBUSB\_API\_VERSION'

### 12.2 /usr/bin/ld: cannot find -lusb-1.

- Symptom: Compiler exits with following error.

```
/usr/bin/ld: cannot find -libusb-1.
```

- Reason: linker cannot find the location of 'libusb-1.0.so'
- Solution: check the location of "libusb-1.0.so"

```
$ /sbin/ldconfig -p | grep "libusb-1.0.so"
```

and add '-L path'

```
-L /usr/lib64 -libusb-1.0
```

### 12.3 undefined reference to `\_\_ms\_vsnprintf'

- Symptom: MinGW32 gcc compiler exits with following error.

```
undefined reference to `__ms_vsnprintf'
```

- Reason: '\_\_ms\_vsnprintf' function is missing
- Solution: add following code in your source

```
#include <stdio.h>
#include <stdarg.h>

int __cdecl __ms_vsnprintf(char * __restrict__ d, size_t n, const char *
__restrict__ format
, va_list arg)
{
    return vsnprintf(d, n, format, arg);
}
```

### 12.4 cannot initialize CON-FMC

- Symptom:

```
cannot initialize CON-FMC
```

- Checking on Linux (1/2)

✧ 'lsusb' does not list as follows and which means CON-FMC is not recognized yet.

```
$ lsusb
....
Bus 005 Device 003: ID 04b4:00f3 Cypress Semiconductor Corp.
....
```

- Checking on Linux (2/2)

✧ 'dmesg' does not list as follows and which means CON-FMC is not recognized yet.

```
$ dmesg | tail
....
[25162.333730] usb 5-2: new high-speed USB device number 3 using xhci_hcd
[25162.933960] usb 5-2: New USB device found, idVendor=04b4, idProduct=00f3
```

```
[25162.933964] usb 5-2: New USB device strings: Mfr=1, Product=2, SerialNumber=3
[25162.933966] usb 5-2: Product: CON-FMC-FX3
[25162.933968] usb 5-2: Manufacturer: Future Design Systems
[25162.933970] usb 5-2: SerialNumber: 0
....
```

- Reason: Linux system did not recognize CON-FMC yet
- Solution1: just wait a few minutes
- Solution2: type following

```
$ udevadm trigger
```
- Solution3: turn off and then turn on CON-FMC
- Solution4: disconnect CON-FMC while turned on and then connect it again
- Reason: CON-FMC is not turned on yet
- Solution: turn on the power
- Reason: CON-FMC package is not installed yet
- Solution: install CON-FMC package

## 12.5 cannot get gpif2mst info

- Symptom:

```
cannot get gpif2mst info
```
- Reason: FPGA does not have CON-FMC related design yet
- Solution: program FPGA using the correct bit-stream.

## 12.6 Errors while compiling CON-FMC related program

Refer to 'Trouble shooting' section in the reference [1].

## Wish list



## Related documents

- [1] Future Design Systems, CON-FMC API based on LIBUSB, FDS-TD-2018-04-004.
- [2] Future Design Systems, Board information format for I2C PROM, FDS-TD-2018-04-001. (Internal document)
- [3] Future Design Systems, Cypress EZ-USB FX3 GPIF-II firmware for CON-FMC, FDS-TD-2018-04-003. (Internal document)



[4] Future Design Systems, IPMI handling program user guide, FDS-TD-2017-12-001. (Internal document)

## Revision history

- ☐ 2018.08.14: '12. Trouble shooting' added by Ando Ki.
- ☐ 2018.07.13: 'Related documents' added by Ando Ki.
- ☐ 2018.06.06: LED picture added by Ando Ki.
- ☐ 2018.03.15: Document started by Ando Ki (adki@future-ds.com)

– End of document –