iMX6 TinyRex Development Kit

QUICK GUIDE

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About Voipac iMX6 TinyRex Development kit

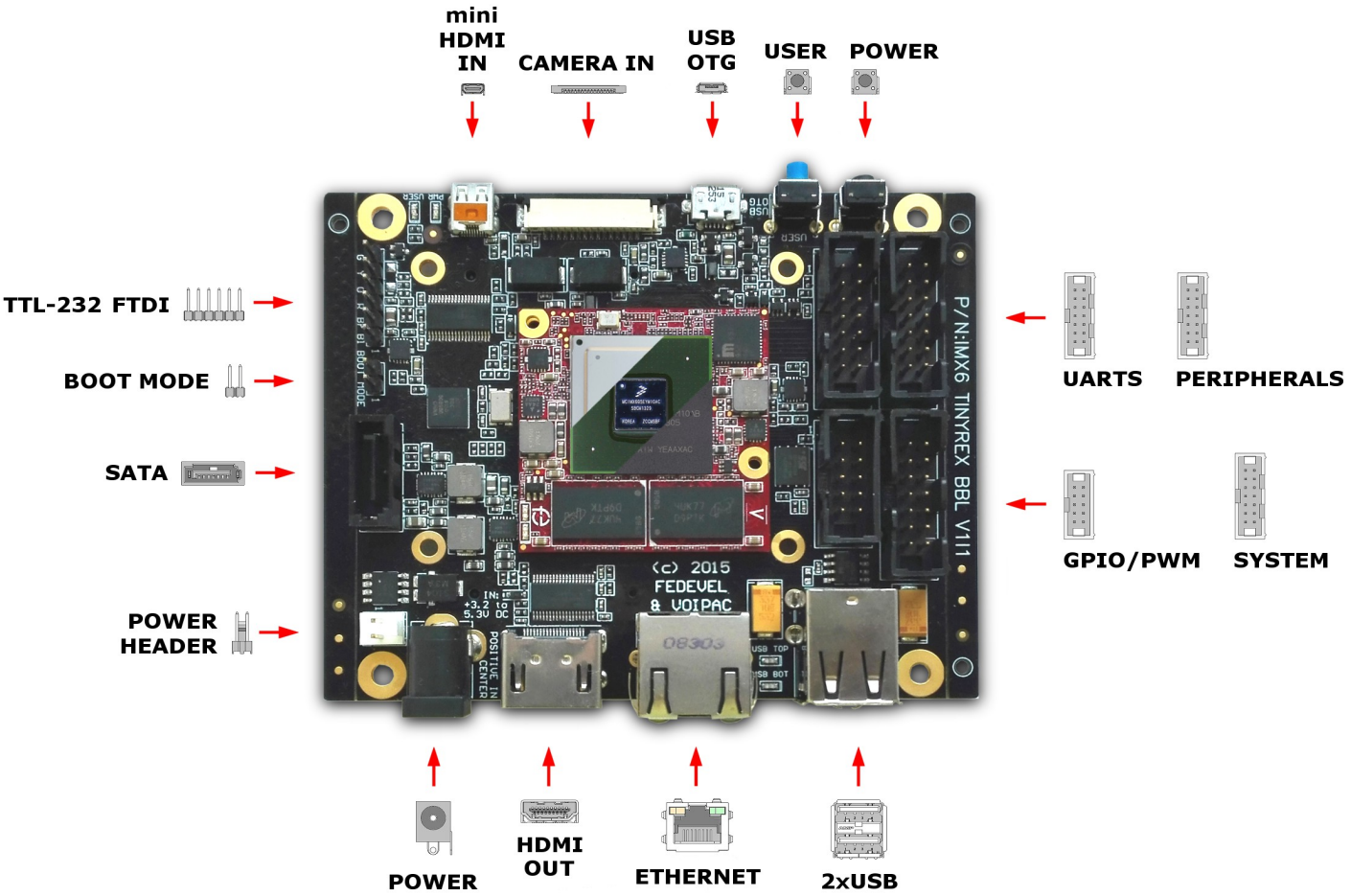
iMX6 TinyRex Development kit is a complete development environment designed to present the functionality, connectivity and performance of the iMX6 TinyRex Modules, ideal for evaluation and application development purposes. It is targeting skilled development teams building multimedia or other demanding and compact solutions.

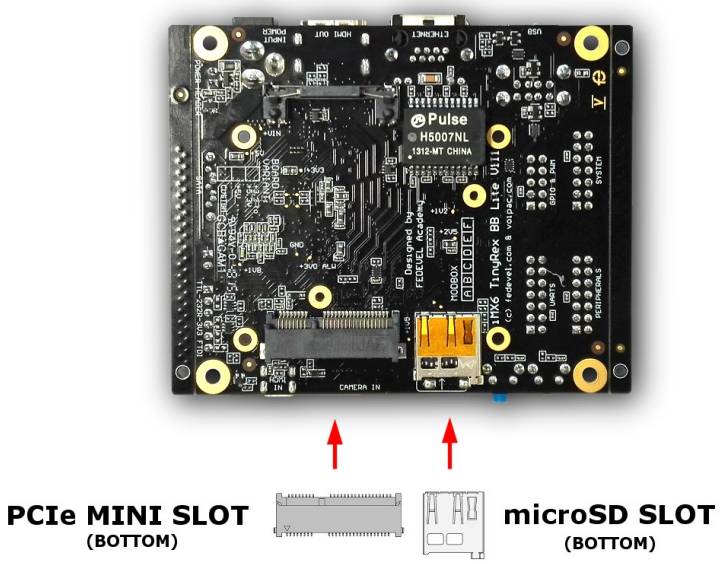
This QuickGuide shows, how to flash the module using MfgTool program, load Yocto Project Linux Image on microSD Card using USB writer. Programs run under Windows XP/7/8/10.

Packing List

COMPONENTS	QUANTITY
iMX6 TinyRex Base Board Lite	1
iMX6 TinyRex Module	1
4GB microSDHC Class 4 memory card	1
Aluminum 35 x 35 x 10mm heatsink	1
TTL-232R-3V3 Cable	1
iMX6 TinyRex Documentation on USB clip	1
Aluminium case set	1
HDMI High Speed CAT.2 Cable with Ethernet	1
SFTP CAT.6 Patch Ethernet Cable	1
5V Power Supply	1
100pin Header	3
Spacer with bolt and nut	2
Quickguide brochure	1
Yocto Project Linux OS preinstalled	

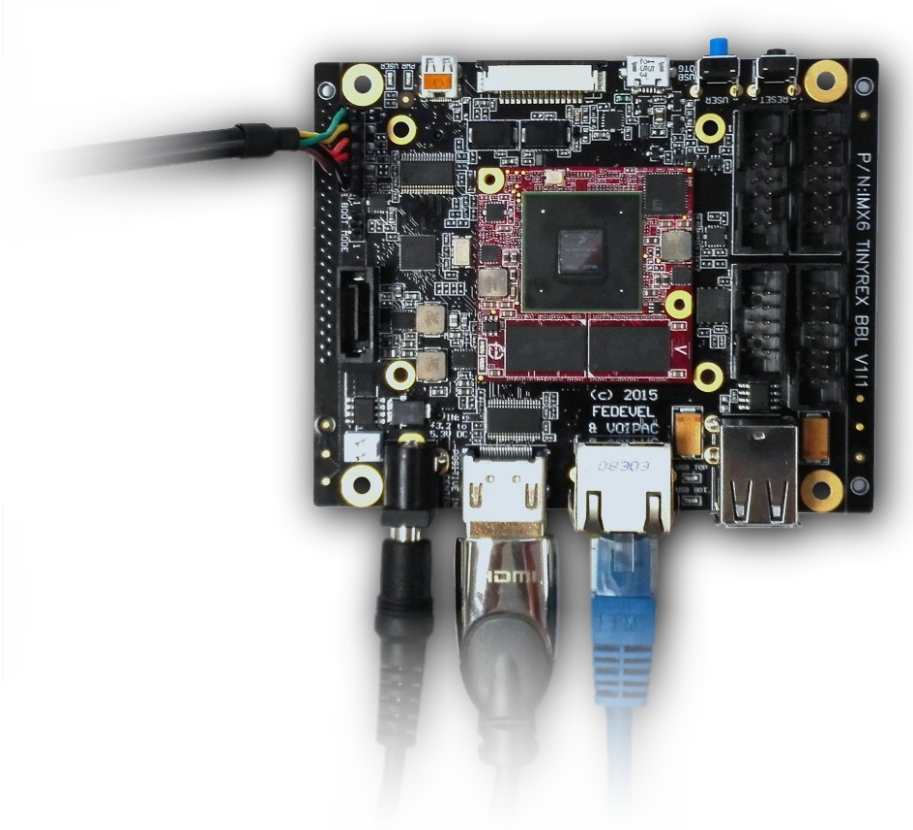
Connectors Locations



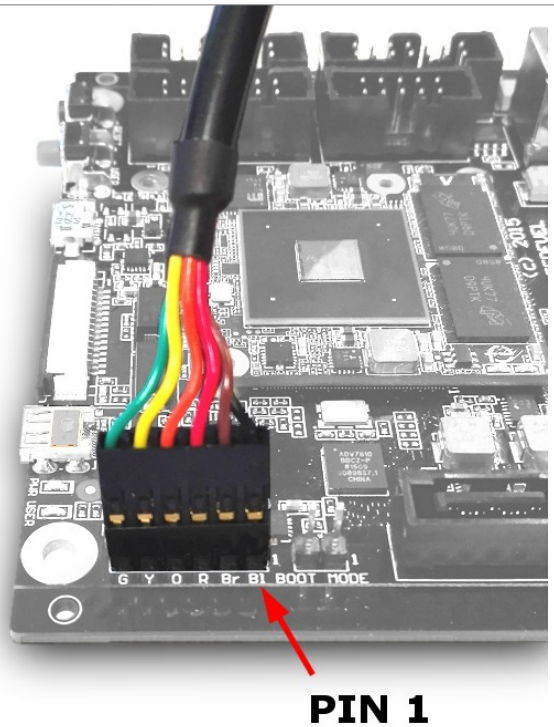


Connecting the components and cables

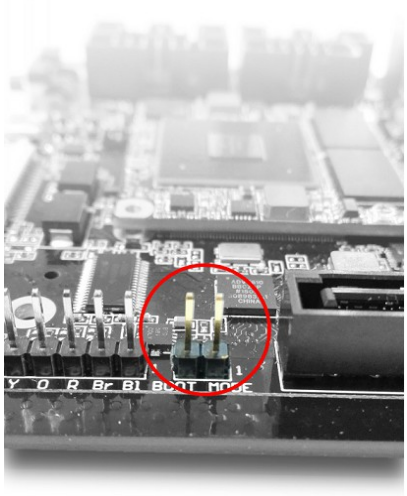
Prepare Baseboard and plug in (bootable) microSD card, TTL-232R-3V3 FTDI Cable, Ethernet Cable, HDMI Cable and other devices or interfaces you need. Plug the Power supply connector in.



IMPORTANT! Be careful when connecting TTL-232R FTDI cable to the board. Check if the cable conductor 1 (black wire) is connected to Pin 1 (Header connector J10 – TTL-232R FTDI) on the board.



To boot from microSD Card, make sure that BOOT_MODE jumper is not present.



The First Step

The development kit is supplied with bootloader and Yocto Project Linux distribution preinstalled on microSD Card. The development kit can be controlled over:

Controlling the Development Kit over serial line

Recommended HW:

a) PC with USB Port
b) Voipac iMX6 TinyRex Development Kit
c) TTL-232R-3V3 (FTDI) Cable

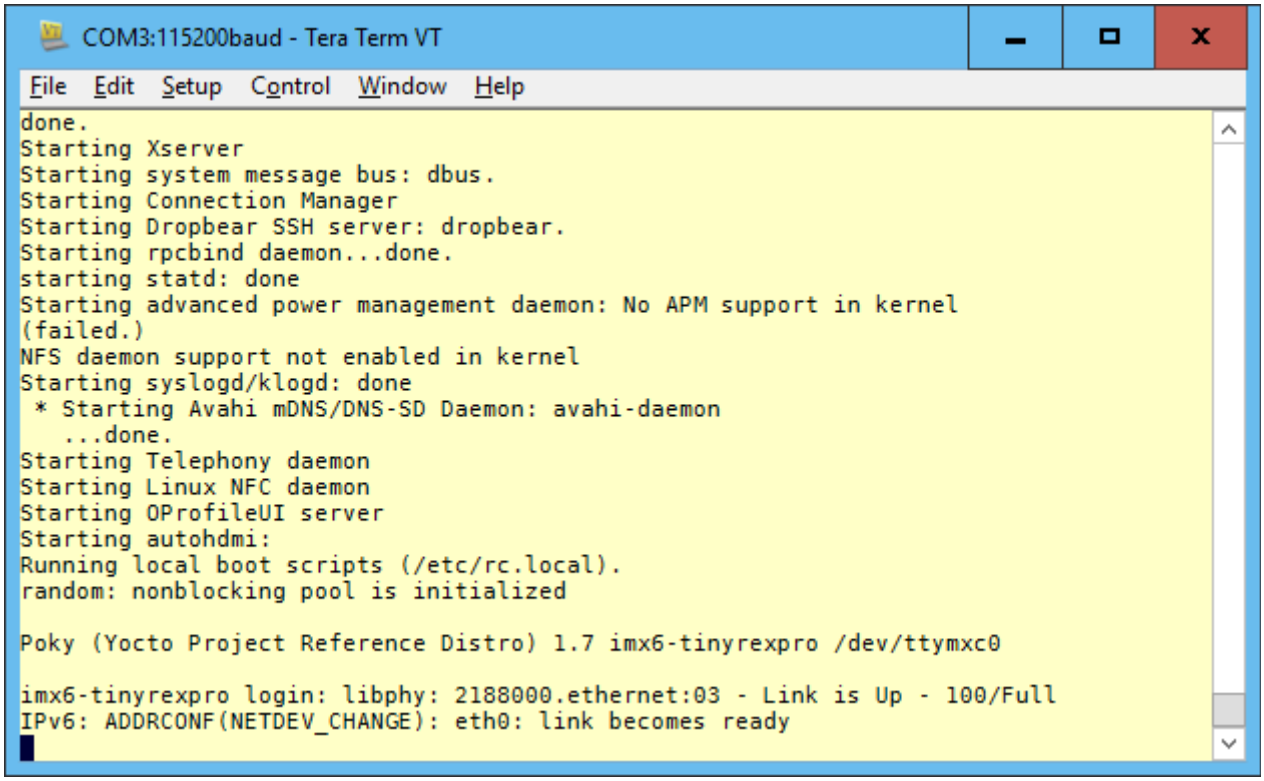
Recommended SW:

Serial line terminal (PUTTY, Minicom, Ckermit, Hyperterminal, TeraTerm, ...)

Default serial port settings:

Speed (baud):	**115200**
Data bits:	**8**
Stop bits:	**1**
Parity:	**None**
Flow control:	**None**

Controlling the development kit using TeraTerm



Using external monitor and USB Keyboard

Recommended HW:

a) External monitor with HDMI connector (use HDMI to VGA adapter for VGA monitor)
b) Voipac iMX6 TinyRex Development Kit
c) HDMI High Speed Cable
d) USB Keyboard and USB Mouse

Controlling the development kit using external monitor and USB Keyboard

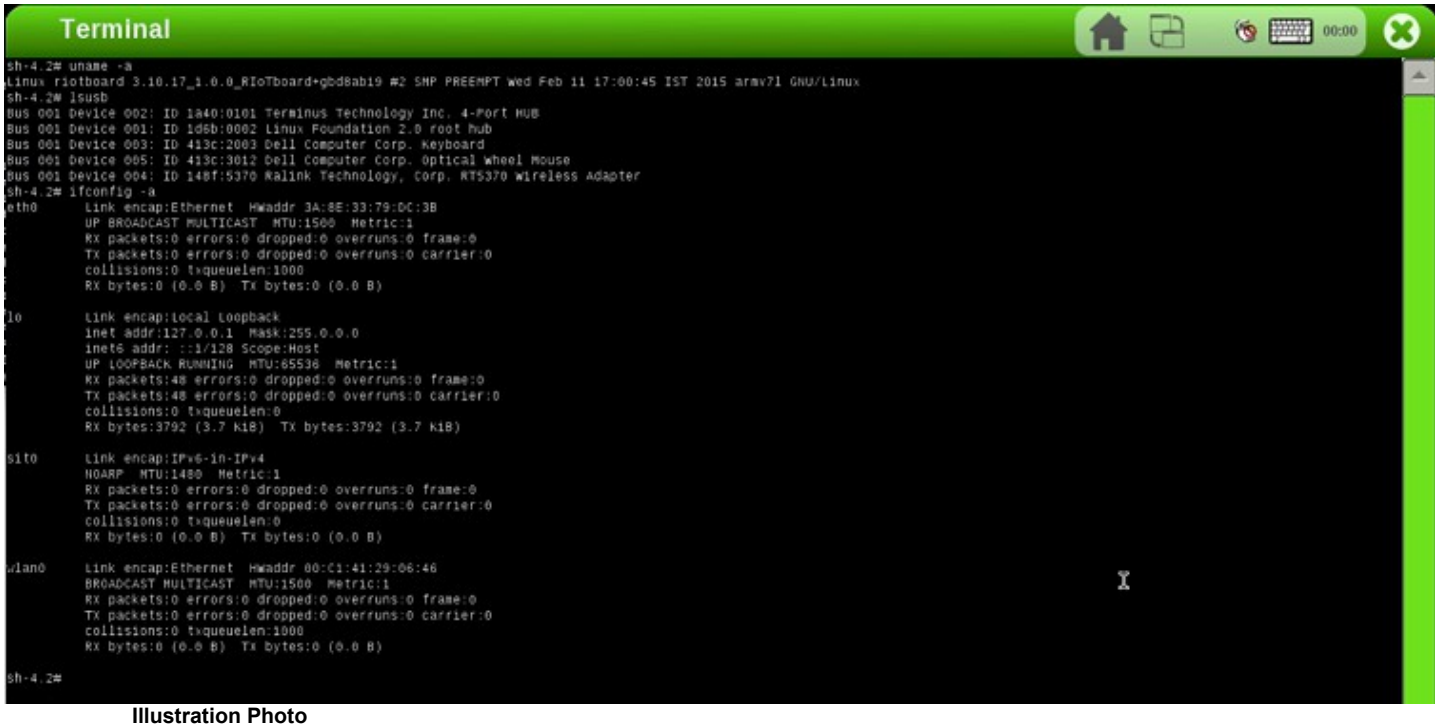


Illustration Photo

Controlling the Development Kit over Ethernet (telnet, ssh, ftp, sftp)

Recommended HW:

a) PC with Ethernet
b) Voipac iMX6 TinyRex Development Kit
c) Ethernet Cable

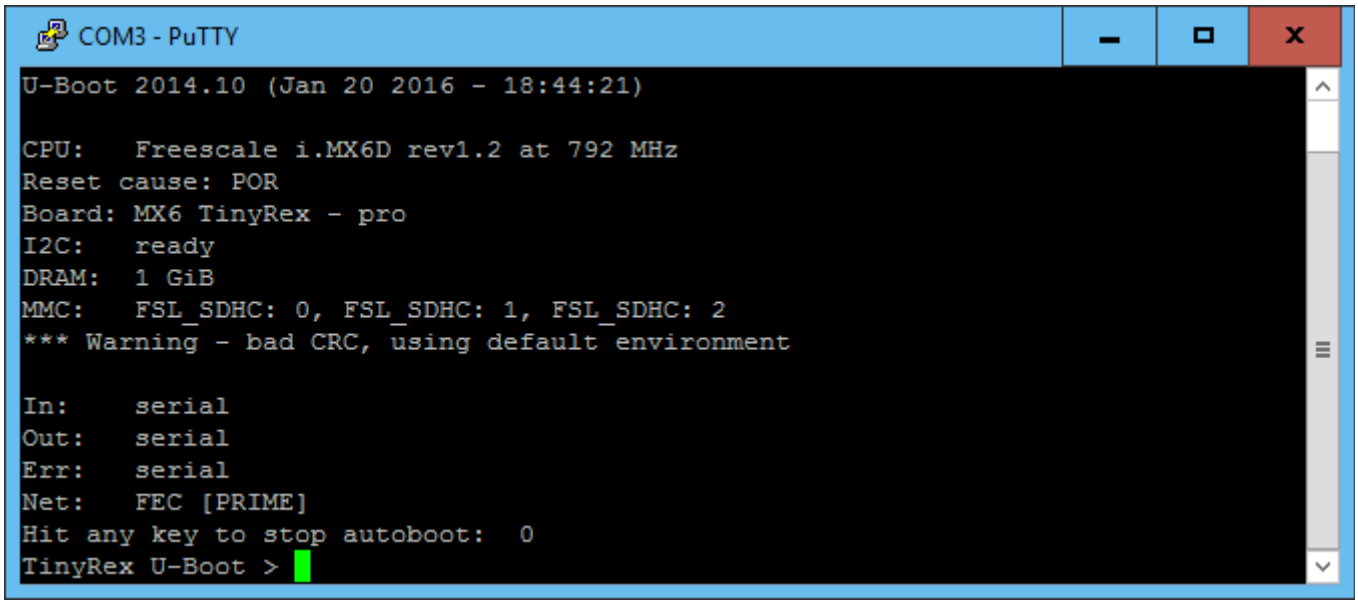
Recommended SW:

- Telnet client (Telnet, PUTTY, …)
- SSH client (SSH,PUTTY, …)
- FTP client (FTP, Filezilla, BareFTP, …)
- SFTP client (Filezilla, PUTTY, WinSCP, …)

IMPORTANT!
iMX6 TinyRex Modules are shipped with empty root password.
The default IP address is dynamic and setup by your dhcp server upon boot.

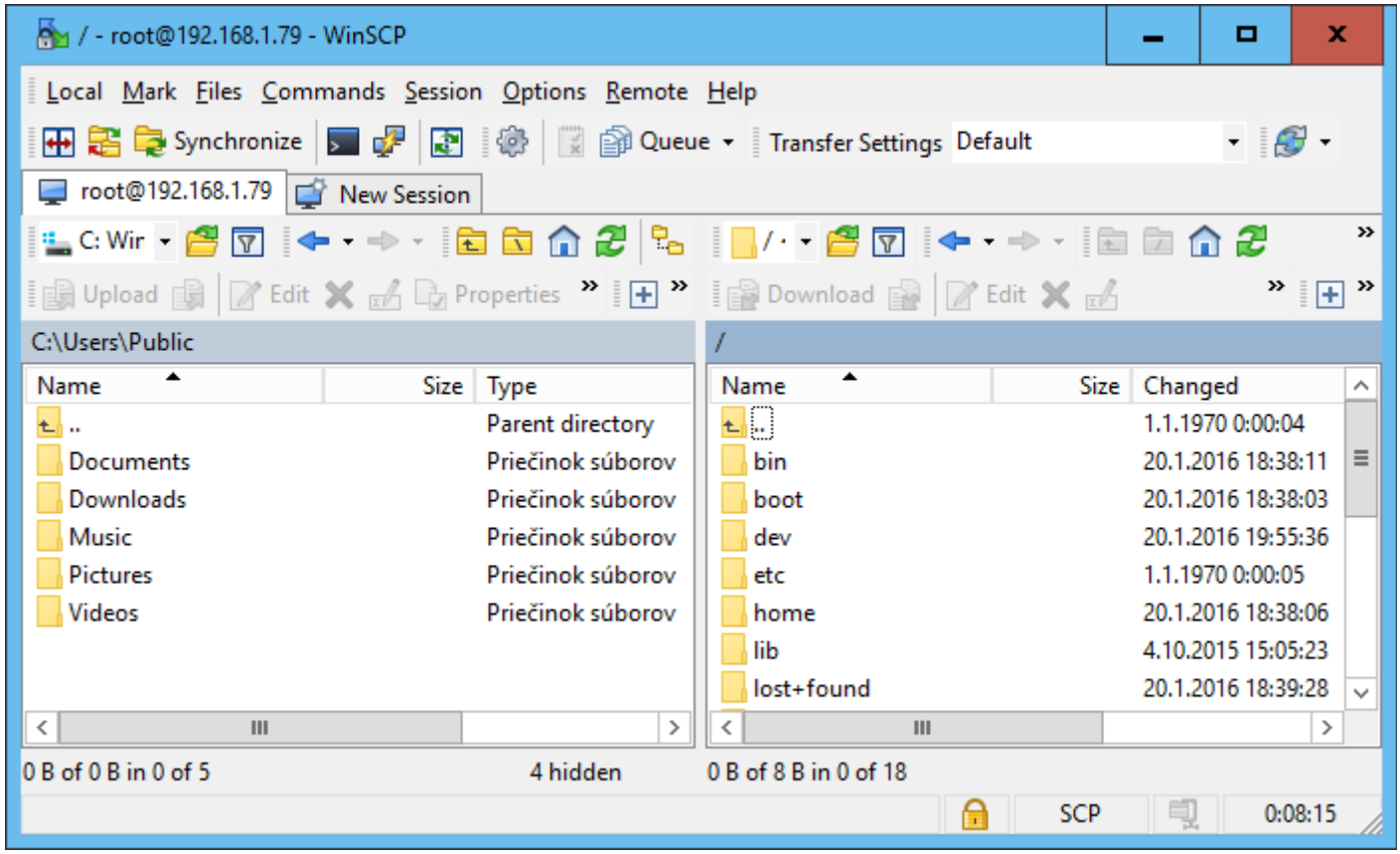
SSH, SFTP require root password to be set up. (“passwd” command)
FTP, SFTP are recommended only for data transfers. (binary mode is recommended)

Controlling the development kit using PUTTY connected to Serial Line.



Controlling the development kit using PUTTY SSH client.

Controlling the development kit using WinSCP.



MfgTool for booting by USB OTG

MfgTool

U-boot is a bootloader responsible for hardware initialization, loading and booting linux kernel. It is also used for module flashing.

Recommended HW:

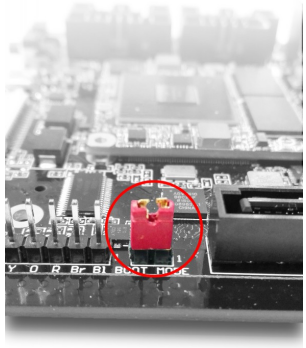
a) PC with USB Port
b) Voipac iMX6 TinyRex Development Kit
c) USB to Micro-USB Cable

Recommended SW:

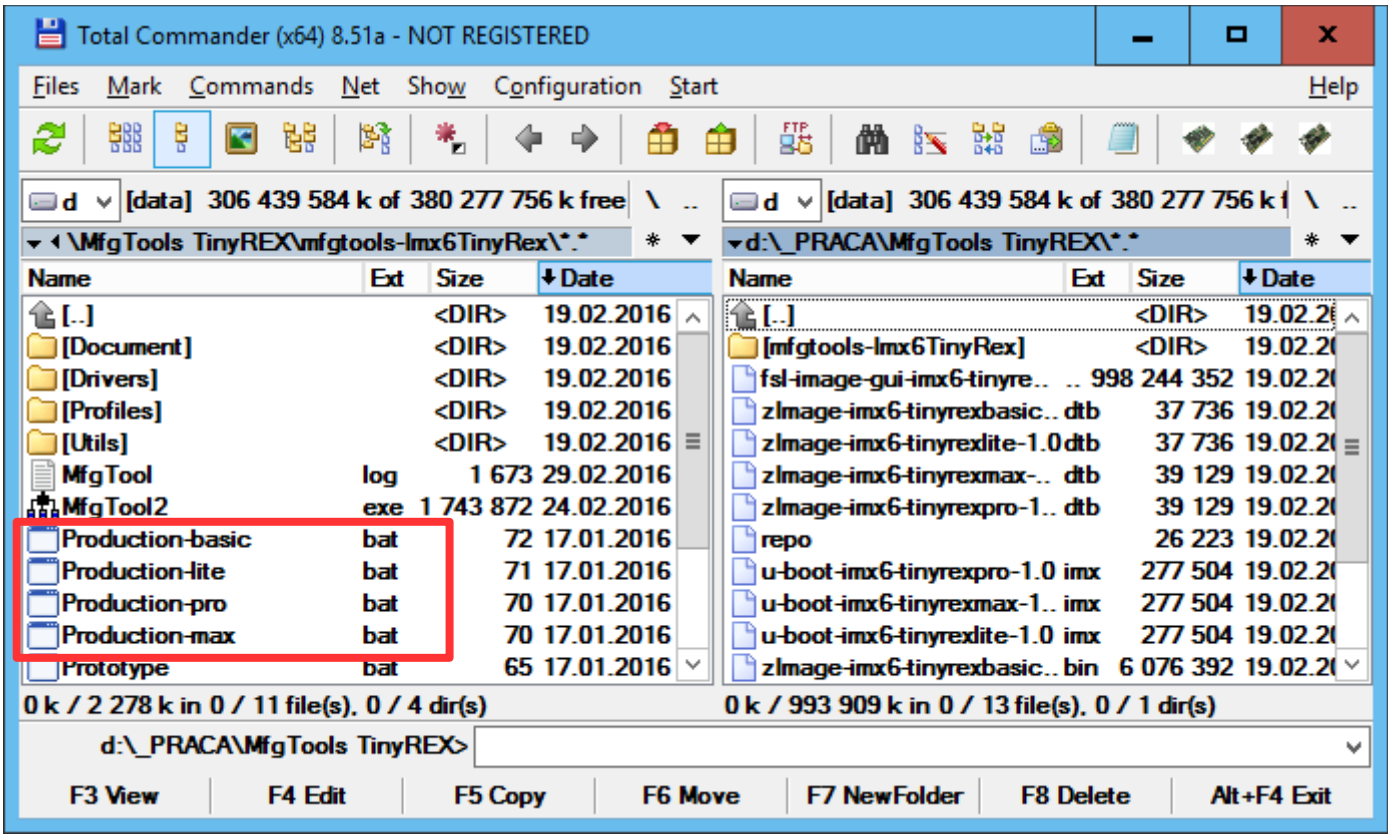
- MfgTool
- Serial line terminal

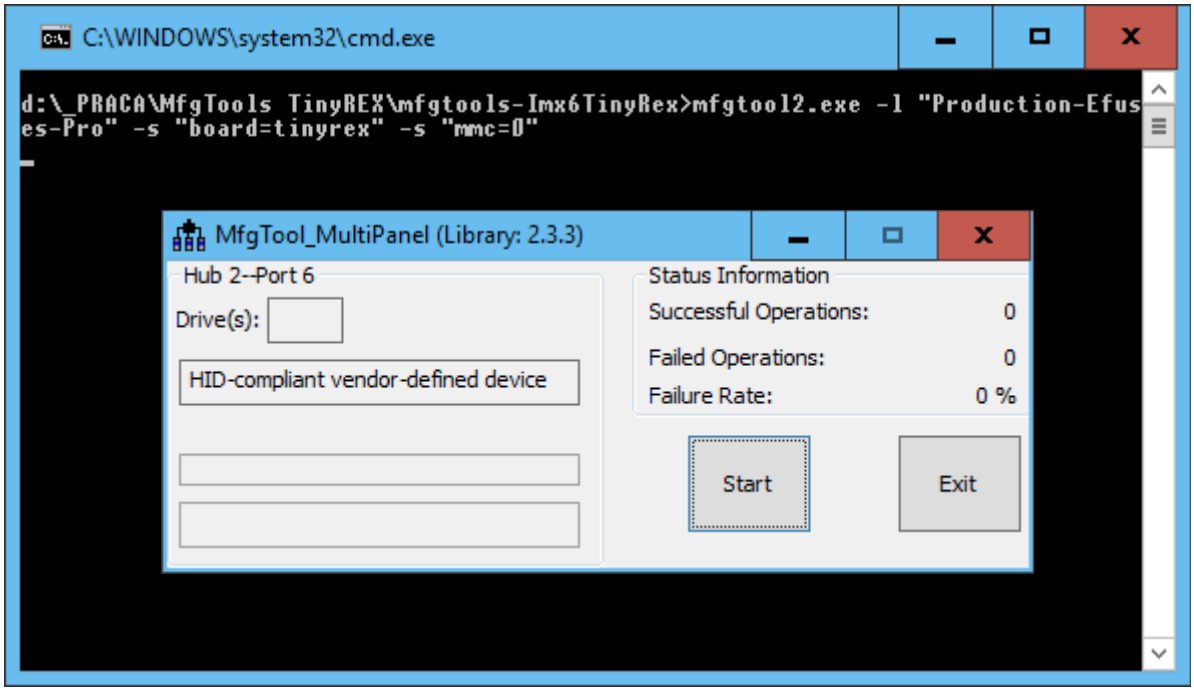
1 STEP Connect USB Cable to USB port on your computer and Development Kit USB OTG Port.

2 STEP Short BOOT_MODE jumper on iMX6 TinyRex baseboard and Power on iMX6 TinyRex Base Board.

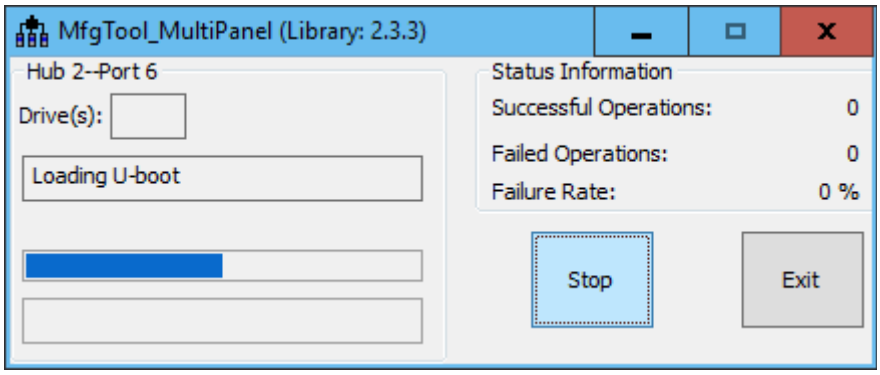


3 STEP Execute Manufacturing toolkit at host PC. Open an appropriate BAT file.

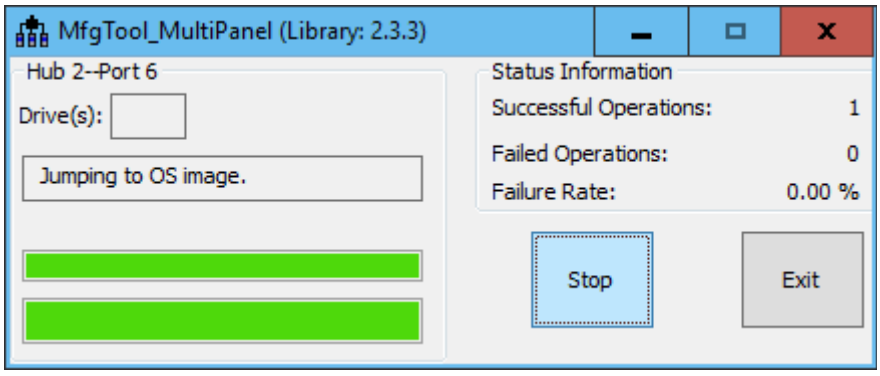


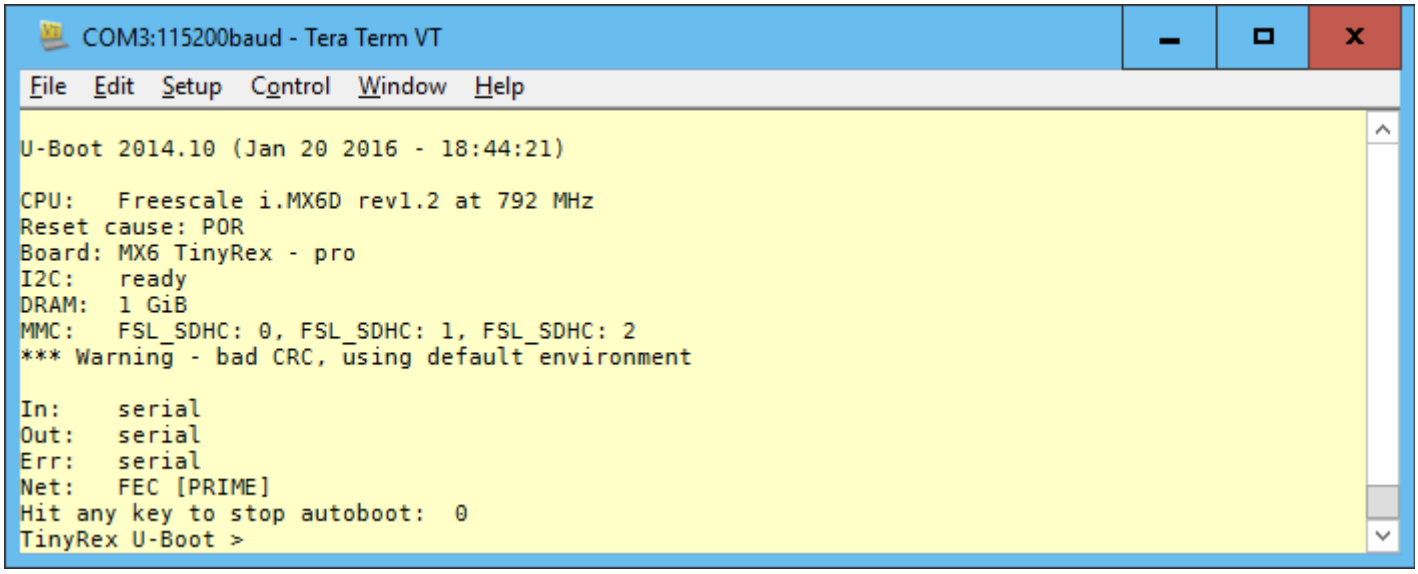


4 STEP Press Start button (The iMX6 TinyRex board will boot firmware loaded over USB).



5 STEP Wait until firmware (u-boot) is booted (serial terminal).





These additional steps are not related to the modules supplied as standard !!!

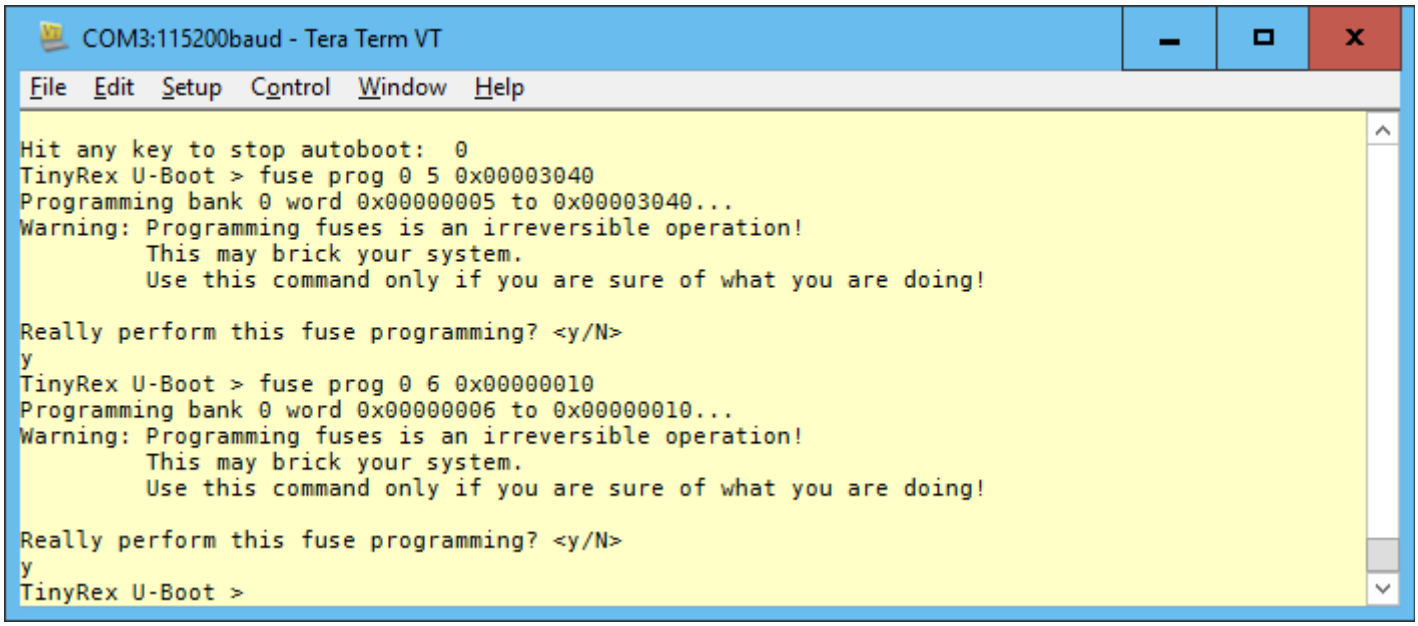
6 STEP Burn efuses over serial terminal. **Only for "VIRGIN" Modules !!!**

Boot From SD3:

```
fuse prog 0 5 0x00003040
fuse prog 0 6 0x00000010
```

MAC Address (For example 00:0D:15:00:D1:75)**:**

```
fuse prog 4 3 0x000d
fuse prog 4 2 0x1500d175
```



This operation is not reversible and should be executed carefully. The iMX6 TinyRex COM must be replaced in the case of error.

BE AWARE THAT E-FUSES PROGRAMING IS A NON REVERSAL PROCESS ! WARRANTY CLAIM CAUSED BY IMPROPER E-FUSES PROGRAMMING WILL NOT BE ACCEPTED !

7 STEP Power off iMX6 TinyRex baseboard.

8 STEP Remove BOOT_MODE jumper.

Creating Bootable microSD card

USB Writer

Following example is for iMX6 TinyRex Basic Module.

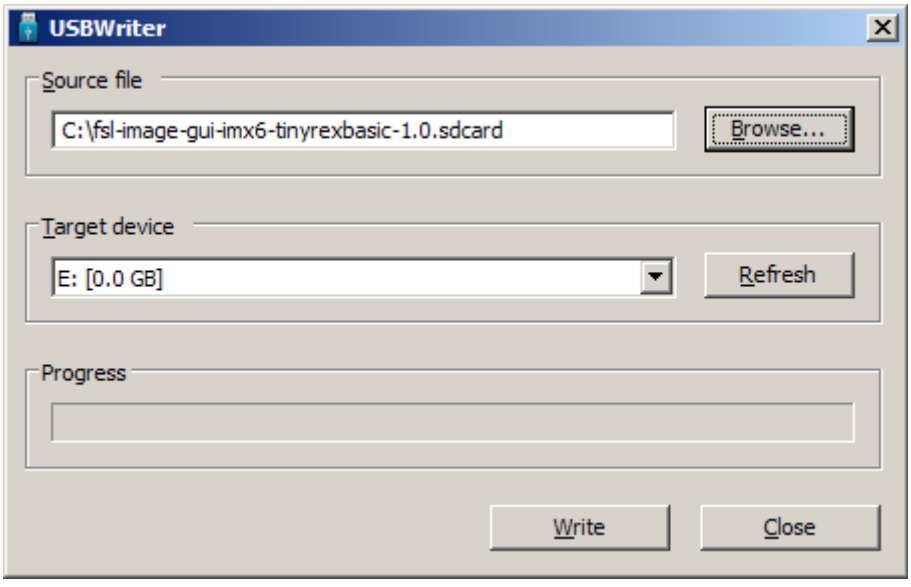
Recommended HW:

a) PC with microSD Port
b) microSD Card

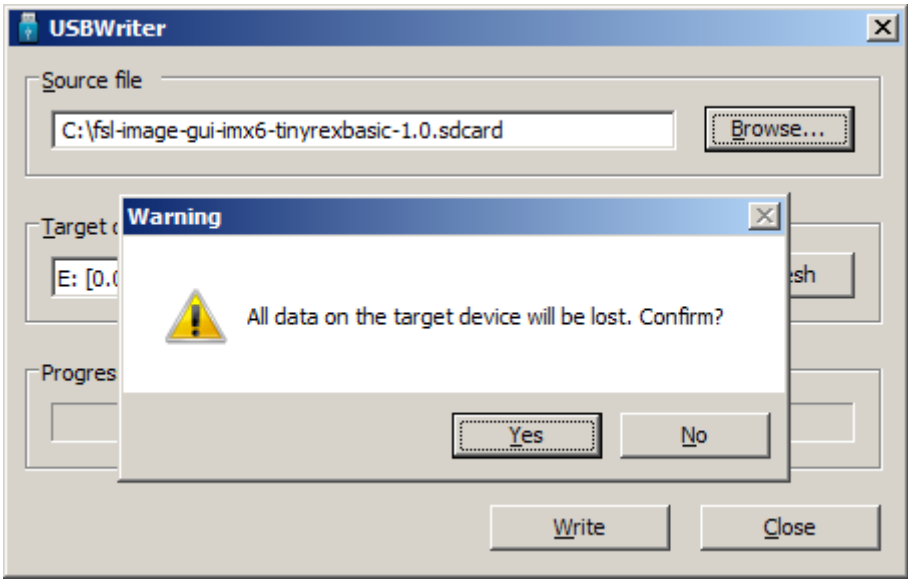
Recommended SW:

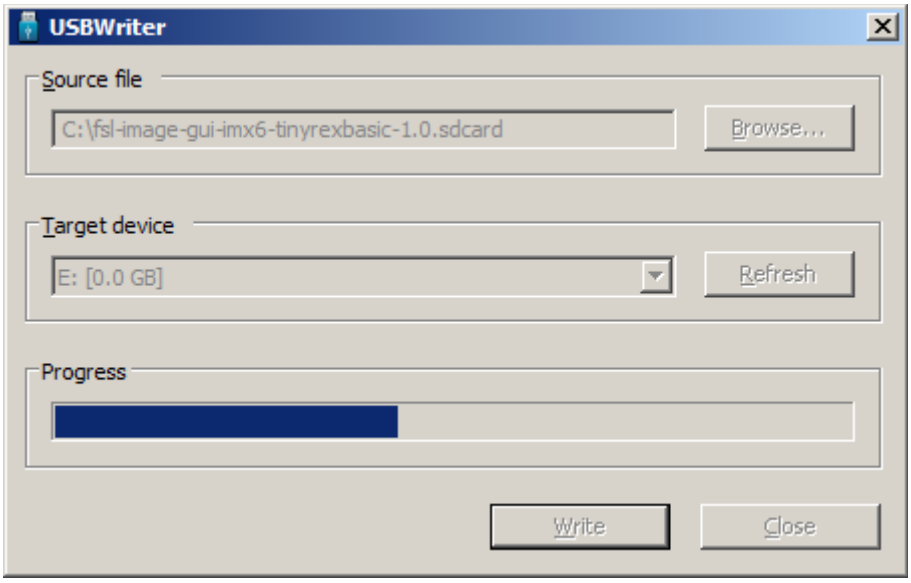
- USBWriter
- Appropriate Image files

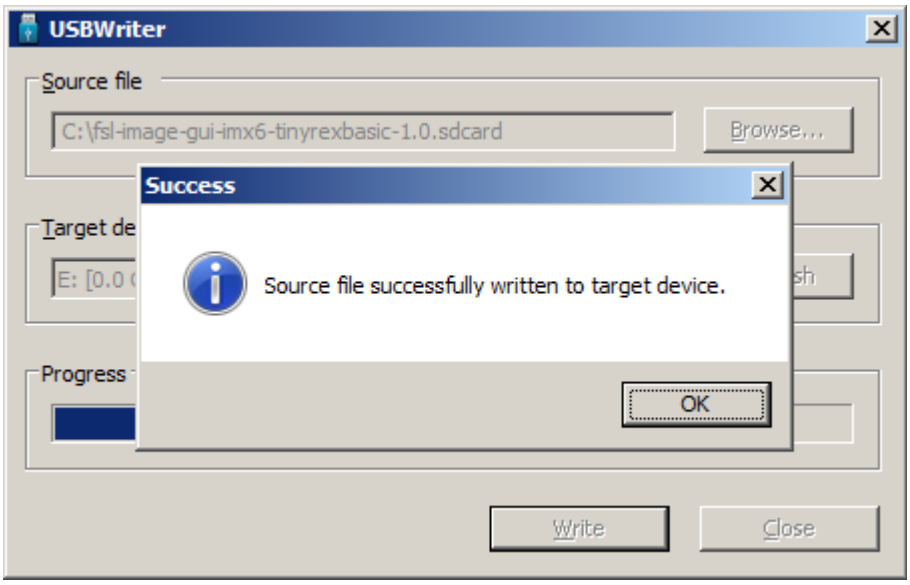
1 STEP Open USBWriter. Browse source file (appropriate fsl-image). Select target device.



2 STEP Click on Write button and confirm a procedure.







Bootable microSD Card is now created and prepared for use.

Important and Practical Information

Products` Life Cycle Phase

Voipac products are divided into 4 phases:

- **INTRODUCTION PHASE**, **approximately the first 6-12 months.**
  The last software issues are still being resolved.
  Product in this stage is the most suitable for new designs.

- **ACTIVE PHASE**, **the first 1-3 years following the product introduction.**
  Product software packages are stable, additional functions, OS and GUI are being released.
  Product in this stage is suitable for new designs.

- **MATURITY PHASE**, **approximately the first 4-6 years after the introduction.**
  Products are shipped in volumes, additional functions additions declines.
  Product in this stage is no longer recommended for new designs.

- **EOL PHASE**, **approximately 7-10 years after the introduction.**
  Used components availability decreases, although product may still be purchased under specific circumstances.
  The Last Time Buy notification is send to all product users app. 6 months prior to product discontinuation.
  Components stocking service for discontinued products and manufacturing of further production batches is available.

To find out the specific product life cycle phase, visit its product page and check the title color.

CE compliance of Voipac products

The CE label is a mandatory conformity mark for complex electronic devices placed on the market in the European Economic Area and each product sold within the EU needs a CE Certificate of Conformance that ensures that the product conforms to the essential requirements of the applicable EC directives.

However, if such complex electronic devices are produced for further processing by the industry, skilled development teams or system integrators, they do not need to observe the above mentioned CE requirements and consequently do not need any identification either. This applies to the Voipac Computers On Module, because these are not used as stand-alone devices by the general public.

To make sure that Voipac COMs can be used in CE marked devices, they are designed to obey the EC directives and the standard configuration SBCs manufactured by Voipac are tested for Electromagnetic Interference and operating temperature ranges plugged in corresponding Base Board and enclosed in a standard Aluminium case provided with Voipac development kits.

TECHNICAL SUPPORT

HW & SW support: support@voipac.com
Warranty claims: warranty.claim@voipac.com

All of the relevant communication between the customer and Voipac should be executed via e-mails preferably.
Response time is up to 48 hours, except state holidays and weekends.
Voipac working hours are: 8:00 - 17:00, Monday - Friday.

Before contacting support, please read the following for the basic information about how to work with a development kit:
www.voipac.com/#Downloads
http://www.voipac.com/downloads/imx/iMX6_TinyRex
http://wiki.voipac.com/xwiki/bin/view/imx6+tinyrex/
http://www.imx6rex.com

We provide paid support for your new designs when it comes to the special drivers for the peripherals not included in the Voipac development kits, design of your own base boards, prototyping, or even new products development.

Please contact: support@voipac.com for more info.

Warranty:

VOIPAC TECHNOLOGIES s.r.o. Does Not Bear Responsibility for the Following:

- Failure of a product resulting from misuse, accident, modification, unsuitable operating environment, or improper maintenance by user
- Unless otherwise agreed in written, a product does not include technical support and the customer may be able to purchase technical support under separate agreement
- Any technical or other support provided under warranty by VOIPAC TECHNOLOGIES s.r.o. such as assistance, set-up and installation is provided WITHOUT WARRANTY OF ANY KIND.

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