

# Starterkit-iMX6

## Quick Start Guide

Doc Number: DX06\_QSG01

Issue 3



### Introduction

Starterkit-iMX6 is an all in one evaluation kit allowing you to begin the development of your product quickly and easily.

The embedded platform comprises a choice of high-performance PCAP multi-touch TFT displays pre-integrated with a Freescale i.MX6 quad-core Cortex-A9 CPU module.

The evaluation kit contains all the necessary accessories you need meaning you can get off to a flying start.

### Key Features

Quad-core ARM Cortex-A9 CPU, 1.2GHZ

7.0", 10.1" or 12.1" Display choice

Projected Capacitive Touchscreen Displays

Integrated 2D/3D GPU and 1080p VPU

Multiple I/O, Communications

## Document History

Date	Revision	ECN	Description	Authored	Approved
18/1/2017	A	N/A	Document created	C. Madella	Product Manager
20/3/2017	B	N/A	SW section added	C. Madella	Product Manager
20/3/2017	C	N/A	Finalized for Release	C. Madella	Product Manager
14/3/2017	1	N/A	First Release	C. Madella	Product Manager
30/3/2017	2	N/A	Added detailed pictures of connectors for different screens	C. Madella	Product Manager
28/04/17	3	N/A	Product name changed Cover Page updated Layout updated Display features added Mechanical Information added Support links changed	G. Losito	Product Manager

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## 1 Introduction

### 1.1 Purpose

This document is an introduction to the use of our Starterkit-iMX6 product range.

### 1.2 Scope

This document is intended for all users that receive the platform for the first time.

### 1.3 Technical Assistance

For more technical details, please visit the Starterkit-iMX6 Product Wiki Page:

<https://andersdx.atlassian.net/wiki/display/PRODFX6/Starterkit-iMX6+Home>

or access our Customer Support portal for any issues and queries:

<https://andersdx.atlassian.net/servicedesk/customer/dxsup>

### 1.4 Reference

None

## 2 Package Description

The Starterkits-iMX6 is an all in one embedded solution with multi-touch display. The platform comprises high-performance PCAP multi-touch TFT displays pre-integrated with a Freescale i.MX6 quad-core Cortex-A9 CPU module and it supports 3 display variants:

Size	Features					
	Resolution	Touch	Orientation	Viewing Angle (T/B/L/R)	Contrast Ratio	Brightness
7"	800 x 480 (WVGA)	PCAP	Landscape	80/80/80/80	400:1	400 cd/m2
10.1"	1280 x 800 (WXVGA)	PCAP	Landscape	85/85/85/85	800:1	290 cd/m2
12.1"	1024 x 768 (XGA)	PCAP	Landscape	80/80/80/80	700:1	420 cd/m2

The evaluation kit contains all the necessary accessories and offers an easy start base for the development of your product.

*Note: Please, ensure you observe ESD precautions when handling this product.*

### 2.1 Package Content

Common content:

Package content	Part Number
DX-6 Base board	SB-FX6-[Y]-[Z]-[EVAL]
IMX6 Quad Core Module	CM-FX6-Dx-Cx-[Nx]-[NDx]-[E]-[A]-[I]-Ux-[Wx]-[H]-[Tx]
Accessory Package for DX6 range	AC06-001A
This Quick Start Guide	DX6A_QSG01

7" display specific content:

Package content	Part Number
7" WVGA PCAP TFT Display	SCF0700XXXGGU05
Interface Kit required to Integrate 7.0" WVGA (SCF0700XXXGGU05) Display	IK06-001A

10.1" display specific content:

Package content	Part Number
10.1" WXGA IPS PCAP TFT Display	SCX1001XXXGGU33
Interface Kit required to Integrate 10.1" WXGA (SCX1001XXXGGU33) Display	IK06-002A

12.1" display specific content:

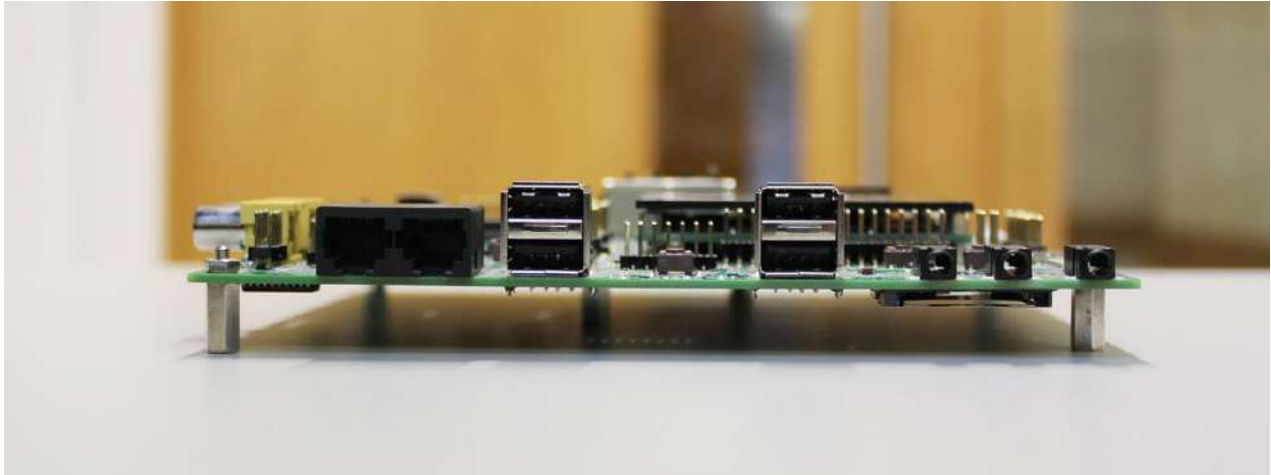
Package content	Part Number
12.1" XGA PCAP TFT Display	SCF1201300FGC03
Interface Kit required to Integrate 12.1" XGA (SCF1201300FGC03) Display	IK06-003A

*Note: Please, make sure to have both the Part Number and the Serial Number handy when you contact Anders DX for provisioning and issue support.*

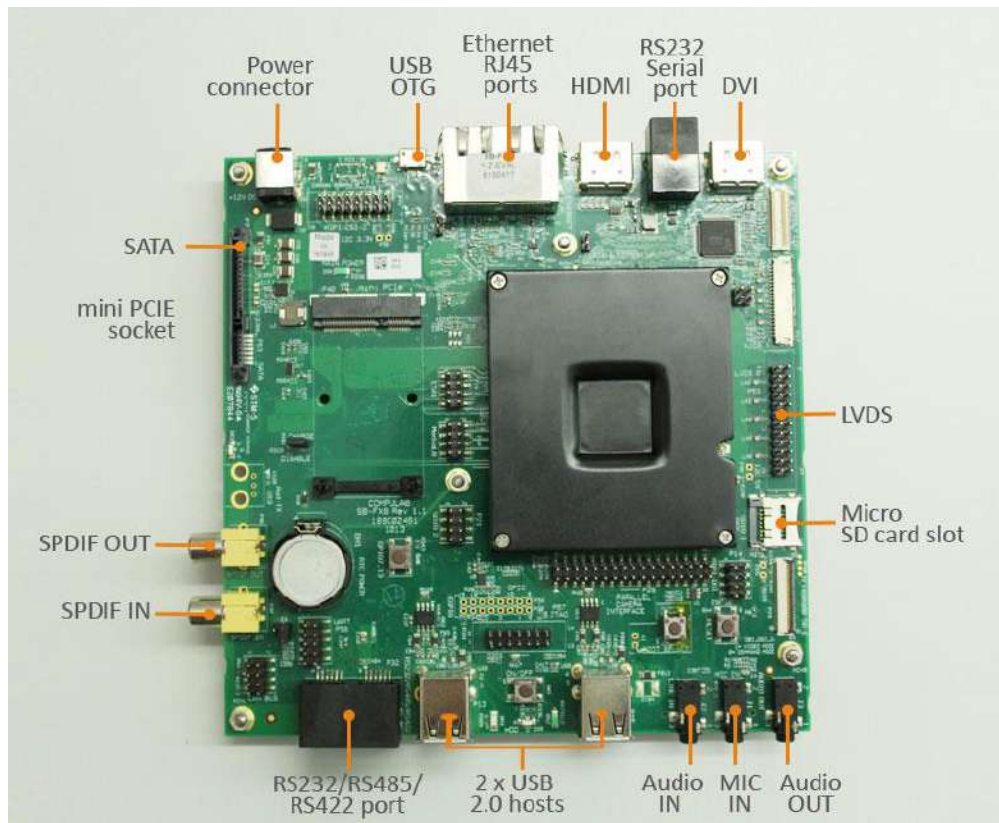
### 3 Mechanical information

#### 3.1 Carrier Board

##### Rear IO panel



##### Front Side Diagram



## 4 Assembly and Basic Set-Up

### 4.1 Preliminary Boards Checks

Depending on the Display variant you have received, before connecting the boards and powering it up, make sure the personality board contains the jumper settings described in below table:

<p><b>7.0" and 10.1" Kits</b></p> <p>Applicable to following display's part numbers:</p> <p>SCF0700XXXGGU05, SCX1001XXXGGU33</p>	<p><b>Set the jumper as placed in the picture</b>, shorting the central pin with the +5V pin in order to supply the display backlight with the required 5V.</p>  <p><i><u>NOTE: supplying the 7" or 10.1" screens with other jumper settings will damage them irreversibly!</u></i></p>
--	--

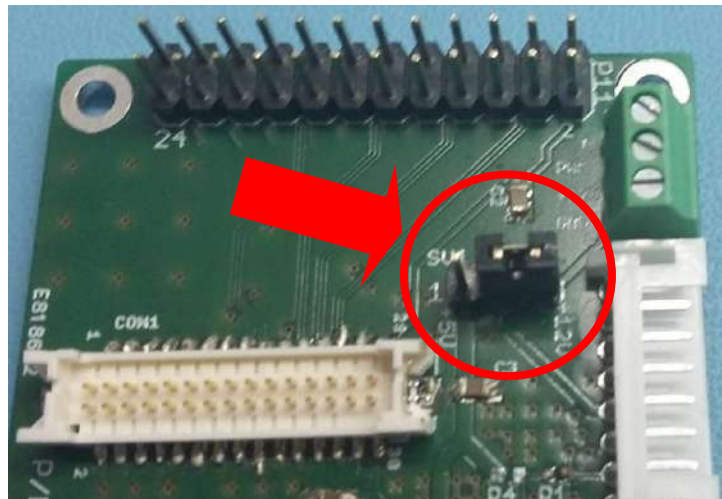


### 12.1" Kits

Applicable to following part numbers:

SCF1201300FGC03

**Set the jumper as placed in the picture**, shorting the central pin with the +12V pin in order to supply the display backlight with the required 12V.

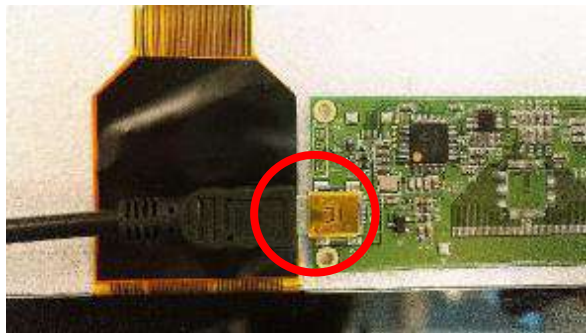


*NOTE: supplying the 12.1" screen with other jumper settings may unexpectedly damage them.*

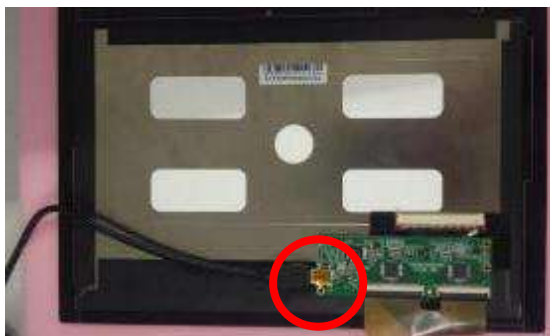
## 4.2 Boards Connections

### A. Connect the touch Panel USB connector:

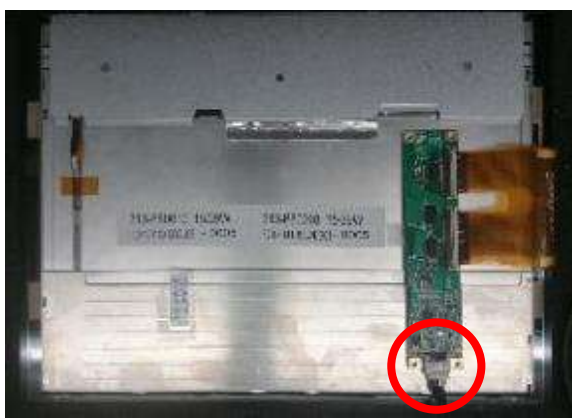
#### 7.0" Kit (Applicable to: SCF0700XXXGGU05)



#### 10.1" Kit (Applicable to: SCF0700XXXGGU05)

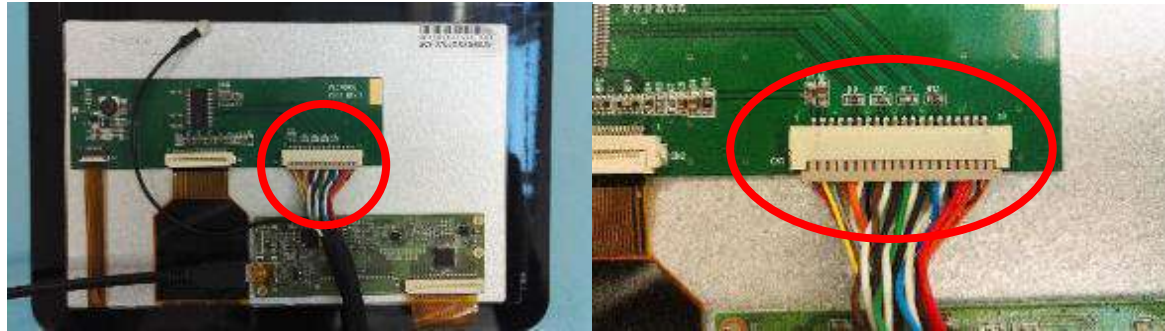


#### 12.1" Kits (Applicable to: SCF1201300FGC03)



**B. Connect the Ivds cable to the panel:**

**7.0" Kit (Applicable to: SCF0700XXXGGU05)**



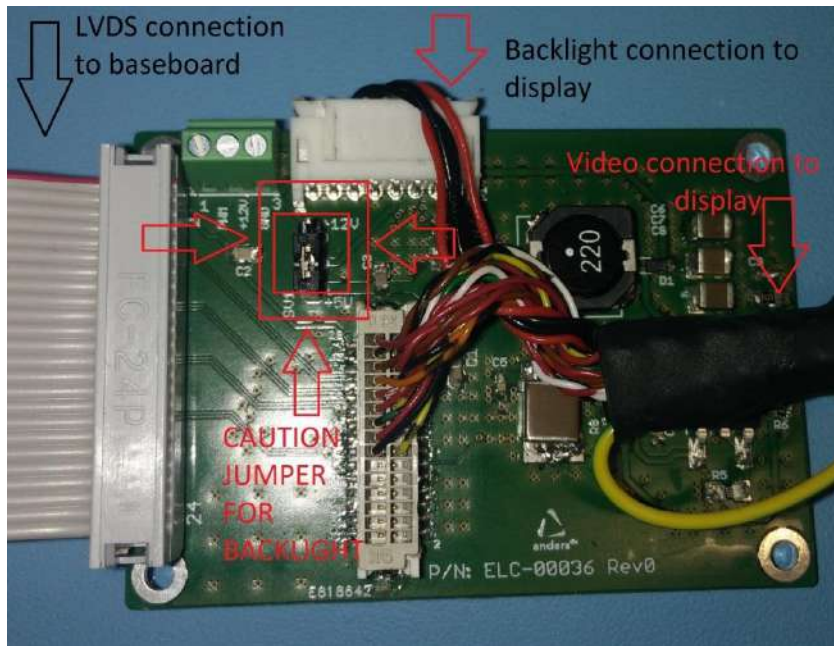
**10.1" Kit (Applicable to: SCF0700XXXGGU05)**



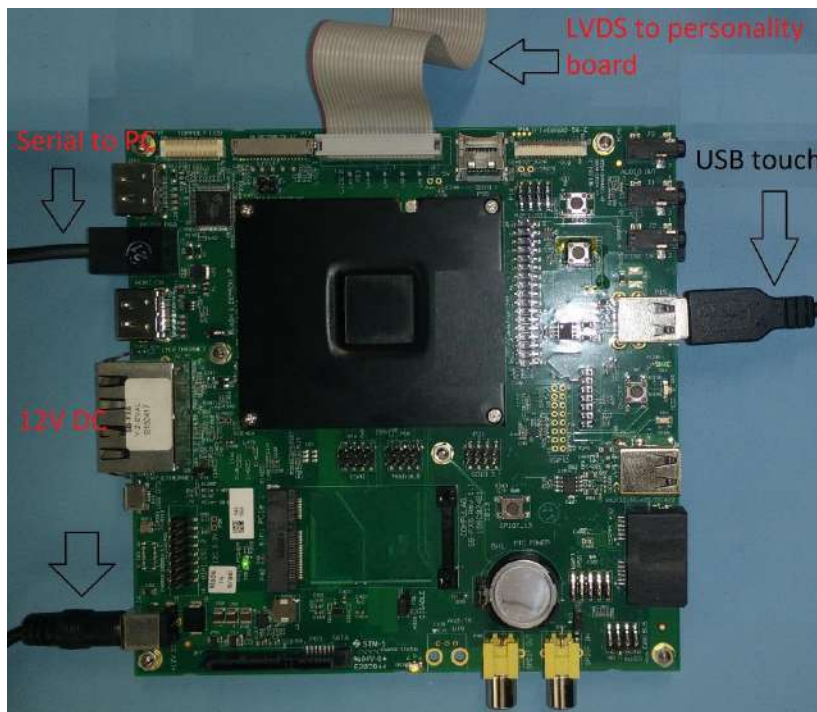
**12.1" Kits (Applicable to: SCF1201300FGC03)**



C. *Connect the personality board as follow:*



D. *Connect the motherboard as follow:*



*E. Final assembled unit reference*



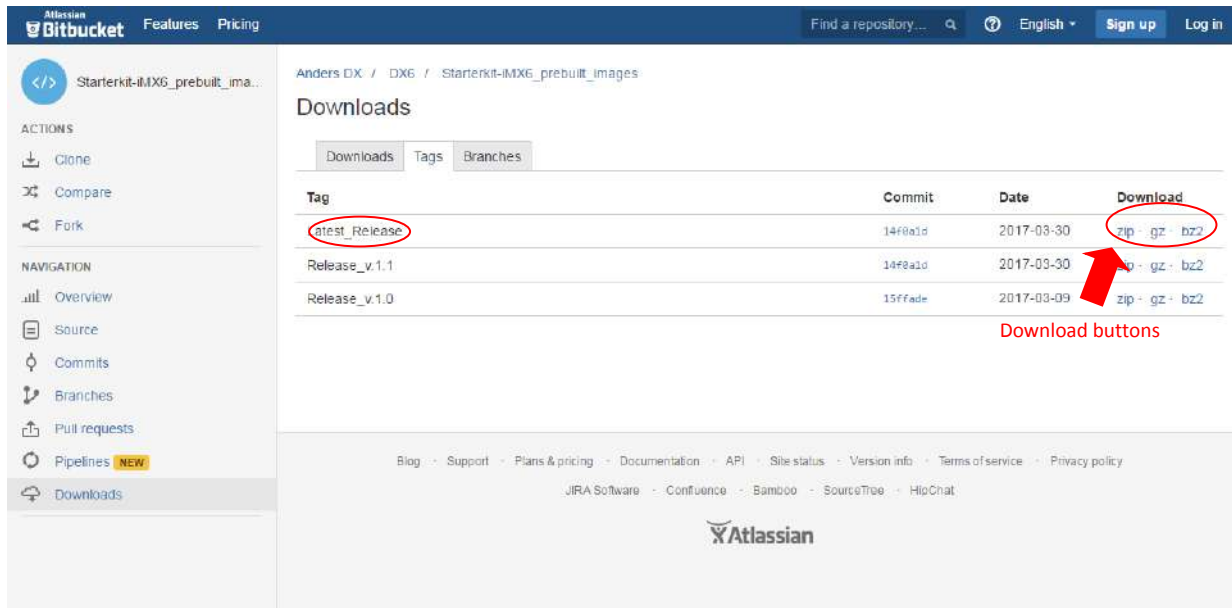
## 5 Installing Software Image

### 5.1 Download Images

Starterkit-iMX6 Pre-built Images for all variants can be found at below link:

[https://bitbucket.org/andersdx/starterkit-imx6\\_prebuilt\\_images/downloads/?tab=tags](https://bitbucket.org/andersdx/starterkit-imx6_prebuilt_images/downloads/?tab=tags)

It's always advisable to download the latest release which will have a correspondent label "Latest\_Release". You can choose among .zip, .gz or .bz2 file format.



*NOTE: Anders default image has been configured and tweaked for loading from SD-card into core modules with 1GB NAND flash. Other SW loading options are available on a custom basis*

### 5.2 Place the content on SD Card










Unzipping the downloaded file locally, the content should look like in the picture below and the Release\_notes.txt will give you additional information on the content and the changes for the specific revision:

Name	Date modified	Type	Size
common_binaries	09/03/2017 12:22	File folder	
dx6_7.0_config	09/03/2017 12:22	File folder	
dx6_10.1_config	09/03/2017 12:22	File folder	
dx6_12.1_config	09/03/2017 12:22	File folder	
RELEASE_NOTES.txt	09/03/2017 12:22	TXT File	1 KB

Then format a standard SD-Card as FAT16 or FAT32 file system if not yet done and copy the content of the “common\_binaries” folder in the root of the SD-Card.

Finally, pick the specific configuration script “boot.scr” from the corresponding folder of your Display size “dx\_XXX\_config”. (7.0”, 10.1” or 12.1”) and place it in the SD-Card along with the common files.

The root folder of your SD-Card should contain the files as pictured below:

Name	Date modified	Type	Size
 boot.scr	08/03/2017 15:47	Screen saver	2 KB
 install.sh	08/03/2017 12:14	SH File	2 KB
 anders-image.tar.gz	06/03/2017 16:24	GZ File	226,552 KB
 imx6dl-sbc-fx6.dtb	26/12/2016 08:00	DTB File	43 KB
 imx6q-sbc-fx6.dtb	26/12/2016 08:00	DTB File	46 KB
 kernel.img	26/12/2016 08:00	Disc Image File	6,254 KB
 ramdisk.img	26/12/2016 08:00	Disc Image File	6,381 KB
 bootscr.img	09/07/2015 15:20	Disc Image File	1 KB
 ulImage-cm-fx6	09/07/2015 14:34	File	4,009 KB

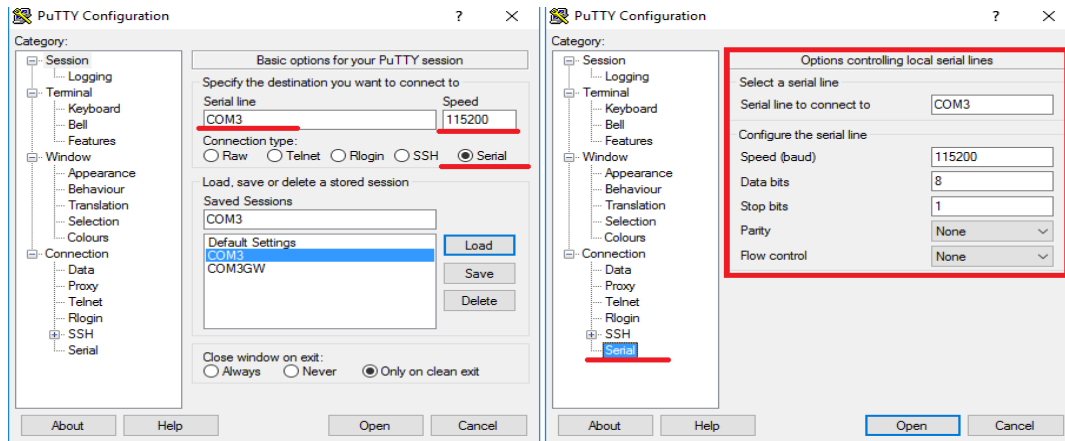
### 5.3 Install the Image onto the device

To install the SW into the device, place the pre-loaded SD-Card into the SBC slot while the unit is off and then power it on.

The automatic installation will run and the board will be fully programmed and configured in about 2 minutes. After installation is completed, remember to extract the SD-Card and power cycle the device.

You can follow the installation process details through the debug port [P60]:

1. Connect the serial cable provided to a RS232\* port on your host PC and the other end to the [P60] connector.
2. Open a terminal emulator session from the host PC to access the COM port you attached the device to and apply following settings: 115200, 8, N, 1 and No HW/SW Flow Control (Putty emulator is pictured below as reference)



*NOTE: \*Some PC may not have a RS232 port available. Use commercially available RS232 to USB converter instead.*

- The terminal emulator will display bootloader debug traces while installing. The installation will be completed once the following messages are displayed:

```

=== Anders Installation Script Executing. Please wait... ===

* Installing Kernel Files
Erasing 512 Kibyte @ 780000 -- 100 % complete
Writing data to block 0 at offset 0x0
Writing data to block 1 at offset 0x80000
Writing data to block 2 at offset 0x100000
Writing data to block 3 at offset 0x180000
Writing data to block 4 at offset 0x200000
Writing data to block 5 at offset 0x280000
Writing data to block 6 at offset 0x300000
Writing data to block 7 at offset 0x380000

* Installing OS
Erasing 512 Kibyte @ 3f780000 -- 100 % complete
ubiformat: mtd4 (nand), size 1065353216 bytes (1016.0 MiB), 2032 eraseblocks of 524288 bytes (512.0 KiB), min. I/O size 4096 bytes
libscan: scanning eraseblock 2031 -- 100 % complete
ubiformat: 2032 eraseblocks are supposedly empty
ubiformat: formatting eraseblock 2031 -- 100 % complete
UBI device number 0, total 2032 LEBs (1048707072 bytes, 1000.1 MiB), available 1988 LEBs (1025998848 bytes, 978.5 MiB), LEB size 516096 bytes (504.0 KiB)
Set volume size to 1025998848
Volume ID 0, size 1988 LEBs (1025998848 bytes, 978.5 MiB), LEB size 516096 bytes (504.0 KiB), dynamic, name "rootfs", alignment 1

Extracting user space. Please Wait...
Done Extracting

=====

* Anders Installation Script COMPLETED!

* Please remove installation sd card
* and reboot the board.

=====

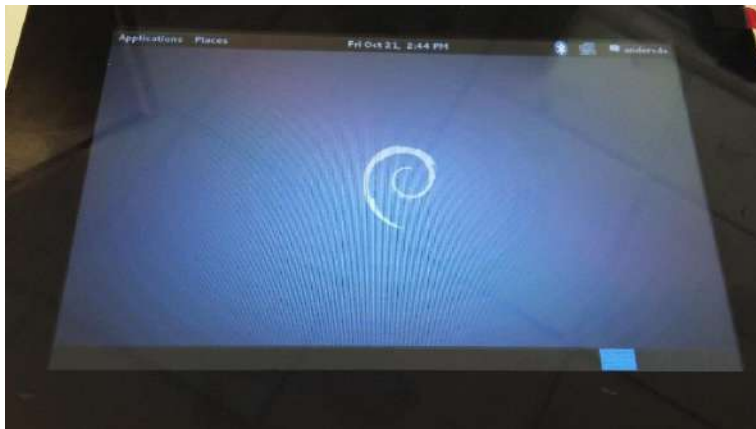
login[167]: root login on 'ttymxc3'
root@cl-randisk:~#

```



## 6 Boot Up and Device Control

1. Plug in the power supply. A green LED close to the power connector on the motherboard will indicate the system is properly powered.
2. The device with Anders SW image installed will load automatically displaying a penguin boot logo first and then switching to the main Debian Desktop. A basic Demo application may run to show off some of the features of the touchscreen and display.



3. The SW image includes a preconfigured bootloader and a preconfigured Linux distribution. A Linux console access is available through the same debug serial port described in section 5.3.
4. The terminal emulator will display kernel messages while loading and the console access will then be provided with default user and password:

*Login: root*

*Password: 111111*

```
modem-manager[3921]: <info> Loaded plugin Samsung
modem-manager[3921]: <info> Loaded plugin Linktop
[ ok ] Starting Common Unix Printing System: cupsd.
vgaarb: this pci device is not a vga device
vgaarb: this pci device is not a vga device
Debian GNU/Linux 7 cm-debian ttyxc3
cm-debian login: eth0: Freescale FEC PHY driver [Generic PHY] (mii_bus:phy_addr=1:00, irq=-1)
warning: process `colord-sane' used the deprecated sysctl system call with 8.1.2.
Debian GNU/Linux 7 cm-debian ttyxc3
cm-debian login: root
Password: █
```

## 7 Support Resource

For more technical information and detailed user-guides, please check our Starterkit-iMX6 Product Wiki Page:

<https://andersdx.atlassian.net/wiki/display/PRODFX6/Starterkit-iMX6+Home>

or access our Customer Support portal for any issues and queries:

<https://andersdx.atlassian.net/servicedesk/customer/dxsup>