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Th-series HMI USER'S GUIDE 092 | TechNexion



Th-series

Th-series Human Machine Interfaces

and its Baseboard

User's Guide

Rev 0.92

1 Contents

2	Car	are and maintenance				
	2.1 General		6			
	2.2	Regulatory information	6			
3	Intr	roduction8				
4	Get	t started9				
	4.1	Mounting the HMI in a wall	9			
	4.1.	.1 Mounting the HMI in a hollow wall with clamps from the back	9			
	4.1.	.2 Mounting the HMI in a hollow wall from the front	14			
	4.1.	.3 Mount as an open frame option	19			
	4.2	Mount the HMI on a VESA mount (Flat Display Mounting Interface)	21			
	4.3	Connecting the cables and power on the HMI	22			
	4.4	Inserting a micro SD card for update, storage or installing software	23			
	4.4.	.1 Updating the system software of the HMI with a SD card and the dipswitch	24			
5	Exp	planation of the HMI				
6	Exp	lanation of the Thb-3517 Baseboard	29			
	6.1	Explanation of the touch panel PCB	32			
	6.2	Explanation of the optional button PCB	33			
	6.3	Explanation of the optional antenna	34			
	6.4	Resetting the HMI	35			
7	7 Mechanical Dimensions		36			
	7.1	Thb-3517 dimensions	36			
	7.2	Back Cover Dimensions	37			
	7.3	Th-0735W Dimensions	38			
	7.4	Th-1035W Dimensions	39			
	7.5	Th-0635 Dimensions	40			
	7.6	Th-0835 Dimensions	41			
	7.7	Th-1035 Dimensions	42			
	7.8	Th-1235 Dimensions	43			
	7.9	Th-1535 Dimensions	44			
8	Dov	wnloads and drivers	45			

9	9 Software - Android			46
9	9.1	Inst	alling an Android éclair image in a Linux environment	46
	9.1.	.1	Step1 - Making a SD-card with the image on your computer	46
	9.1.2		Step 2 – Using the SD-card to install an image in the NAND Flash of your Board	48
9	9.2	Inst	alling an Android éclair image in a Windows environment	50
9.2.1 9.2.2		.1	Step1 - Making a SD-card with the image on your computer	50
		.2	Step 2 – Using the SD-card to install an image in the NAND Flash of your board	56
9	9.3	Воо	ting from the SD-card	57
10	S	oftwa	are – Angstrom (Linux)	58
	10.1	Inst	alling an Angstrom (Linux) image in a Linux environment	58
	10.3	1.1	Step1 - Making a SD-card with the image on your computer	58
	10.3	1.2	Step 2 – Using the SD-card to install an image in the NAND Flash of your board	60
	10.2	Inst	alling an Angstrom (Linux) image in a Windows environment	62
	10.2	2.1	Step1 - Making a SD-card with the image on your computer	62
	10.2	2.2	Step 2 – Using the SD-card to install an image in the NAND Flash of your board	68
	10.3	Воо	ting from the SD-card	69
11	S	oftwa	are – Windows CE	70
	11.1	Wa	rning	70
	11.2	Con	necting a null-modem cable	70
	11.3	Upc	late to Windows Embedded CE6.0 R3	73
	11.4	Get	the BSP	73
	11.4	4.1	Download the BSP from the web-Site	73
	11.4	4.2	Install BSP to "Platform Builder for CE 6.0"	73
	11.5	Crea	ate a SD card	76
	11.6	Hov	v to put the WinCE image in the NAND Flash	87
	11.6	6.1	Write the Bootloader and OS image to the NAND Flash.	87
11.		6.2	Boot from NAND flash	99
12	А	Apper	ndix - Pin outs	. 107
	12.1	Mo	dule connector	. 107

	12.3	GPIO Switch (SW3)	12
	12.3	Auto Update Procedure	13
	12.4	UART 1/UART 3	14
	12.5	LVDS connector	16
	12.6	GPIO Switch (SW4)	19
	12.7	CANBUS	20
	12.8	GPIO connector	21
	12.9	RS-232, RS-232/422/RS-485	22
	12.10	Touch panel PCB connector	24
	12.11	Speaker connector	25
	12.12	Microphone connector	25
	12.13	Battery connector	25
	12.14	RS-232 cable12	26
1	3 S	chematics12	27
	13.1	Schematics of Thb-351712	27
	13.2	Schematics of Touch Panel PCB	36
	13.3	Schematics of Keypad PCB	38

2 Care and maintenance

2.1 General

Your device is a product of superior design and craftsmanship and should be treated with care. The following suggestions will help you.

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that will corrode electronic circuits. If your device does get wet, allow it to dry completely.
- Do not use or store the device in dusty, dirty areas. Its moving parts and electronic components can be damaged.
- Do not store the device in hot areas. High temperatures can shorten the life of electronic devices, damage batteries, and warp or melt certain plastics.
- Do not store the device in cold areas. When the device returns to its normal temperature, moisture can form inside the device and damage electronic circuit boards.
- Do not attempt to open the device.
- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and fine mechanics.
- Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the device.
- Do not paint the device. Paint can clog the moving parts and prevent proper operation.
- Unauthorized modifications or attachments could damage the device and may violate regulations governing radio devices.

These suggestions apply equally to your device, battery, charger, or any enhancement. If any device is not working properly, take it to the nearest authorized service facility for service.

2.2 Regulatory information

Disposal of Waste Equipment by Users in Private Household in the European Union



This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is

recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.



We hereby declare that the product is in compliance with the essential requirements and other relevant provisions of European Directive 1999/5/EC (radio equipment and telecommunications terminal equipment Directive).

Federal Communications Commission (FCC) Unintentional emitter per FCC Part 15



This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may

cause harmful interference to radio or television reception. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver

Connect the equipment to an outlet on a different circuit from that to which the receiver is connected

• Consult the dealer or an experienced radio/TV technician for help.



WARNING! To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC

adapter to contact the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

3 Introduction

The Th-series Human Machine Interface (HMI) is a small computer with a touch screen. The HMI is based on the System on Module TAM-3517

(For more details on the TAM-3517, the software or the PCB, please download the TAM3517 user guide from the TechNexion website)

Anybody can buy a HMI, TAM-3517 and a Baseboard from our website.

The Th-series of HMI's come in different versions, the user's guide is meant as a general guide for all these versions. Pictures and details of the device can differ from the actual purchased product. All specifications are subject to change without notice.

One can always check our website (<u>www.technexion.com</u>) for more details, to download this user guide or to see other information.

4 Get started

4.1 Mounting the HMI in a wall

This guide describes four mounting options of how to mount the HMI in a wall.

- 1. Mounting in a hollow wall with clamps from the back
- 2. In a hollow wall mounted from the front
- 3. Mount as an open frame option
- 4. Mount on a VESA (Flat Display Mounting Interface) mount.

HMI	Cut out dimension in mm (w x h)
Th-0735w	192 x 132
Th-1035w	247 x 149.5
Th-0635	169 x 125.5
Th-0835	222 x 149
Th-1035	257 x 194
Th-1235	289 x 219
Th-1535	335 x 264

NOTE: These dimensions are the **minimum** dimensions; it is advised to make the cut-out 1 or 2 <u>mm</u> bigger, for easier mounting, and to make it easy to insert the clamps.

4.1.1 Mounting the HMI in a hollow wall with clamps from the back.

This paragraph describes how to mount the HMI with Clamps into a wall.



Clamp for mounting the HMI



Step 1: First you will need to cut a hole in a hollow wall, following the dimensions given in the table above (at the start of this chapter).



Step2: For Clamp mounting we need to open the holes on the back (<u>see number 11</u>). First use a screw driver to move the metal piece to the outside (Do not let the metal piece drop inside the HMI).

NOTE: For 7" and 6.5" these metal pieces are placed on the backcover



Step 3: One can also use a plier afterward to take out the metal piece



Step 2: Place the HMI in the hole.

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Step 3: Insert the clamps in the holes on the side of the HMI-

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Step 4: Fix the clamp-screws. Avoid applying too much force on the screws.

4.1.2 Mounting the HMI in a hollow wall from the front.

This mounting option uses an optional, patent pending, front bezel with magnets. Please mention the need of this option, when you order your HMI.



First remove the screws that hold the front bezel. Remove the front bezel (It will feel a little sticky because of magnets that hold the front bezel in place).



View of HMI without the front bezel



For mounting the HMI you will need screws that look like this (countersunk)



Place the HMI in the right orientation in the cutout (for size of the cut out please checks the table at the beginning of this chapter) and fix the screws from the front in the **<u>chamfered</u>** holes (do not use the other holes).



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Make sure that after mounting the screws are flush with the surface (do not stick out), one can check the flatness with a ruler.



Mount the small headless screws with a T6 TORX screwdriver in the front bezel

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Mount at least 3 headless screws in different corners of the front bezel. They are meant to prevent the front bezel from moving to the sides. They also help to position the front bezel when it is snapped on the HMI.



The top of the front bezel is where the most magnets are, or where the magnets are most spread out.

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Snap the front bezel carefully in place (do not scratch the touchscreen).



4.1.3 Mount as an open frame option

First remove the screws that hold the front bezel. Remove the front bezel (It will feel a little sticky because of magnets that hold the front bezel in place).



View of HMI without the front bezel



Fix the HMI behind the surface of your choice.

4.2 Mount the HMI on a VESA mount (Flat Display Mounting Interface)

Connecting HMI to a VESA mount (Flat Panel Mounting Interface) can be done with the four holes at the back of the HMI. The M4 holes are placed in a square of 75 mm by 75 mm.



VESA mount: Use the four holes in the circles.





Example of a HMI with an optional VESA mounted stand



4.3 Connecting the cables and power on the HMI

After mounting the display, all cables can be plugged in (make sure there is <u>no power</u> on the power cable yet).



Only after plugging in the cables, switch on the power to the HMI.



The HMI are delivered with a converter that can be put on the plug of the regular power adapter to change it into a Phoenix Combicon MSTB 2.5 connector.

4.4 Inserting a micro SD card for update, storage or installing software



Insert the micro SD card in the orientation as shown above



Card inside the unit and ready to use for storage and installing software



4.4.1 Updating the system software of the HMI with a SD card and the dipswitch

For updating the system on should first insert the SD-card then put switch number 3 on the dipswitch to ON (to check setting see the label on the back of the HMI) then switch the power to the unit off and then on again (restart).



HMI with the dipswitch (number 3) in the update position (ON). After the update is finished TAKE OUT THE SD-CARD and put the Dipswitch (number 3) back to OFF. Restart the HMI

5 Explanation of the HMI







- 1 Product Label with regulatory information, the product model and dipswitch settings
- 2 Power connector 12 V DC (Phoenix Combicon MSTB 2.5)
- 3 RJ45 Ethernet connector (LAN)
- 4 2x USB Host
- 5 2x USB Host
- 6 RS-232 / 422 / 485 (switchable with dipswitch 8) (COM2)
- 7 MicroSD card slot
- 8 Dipswitch SW4
- 9 CAN Bus
- 10 RS-232 (COM1)
- 11 Mounting hole for wall mount Clamps
- 12 M4 Screw hole (4x) for FDMI (VESA) mounting
- 13 Hole to access reset button
- 14 Button 1: Home
- 15 Button 2 : Enter / Select
- 16 Button 3 : Back
- 17 Button 4 : Menu
- 18 Button 5 : Brightness up
- 19 Button 6 : Brightness down
- 20 Button 7 : Volume up
- 21 Button 8 : Volume down
- 22 LCD with touch screen

23 Aluminum front bezel

- 24 Back
- 25 Backcover





6 Explanation of the Thb-3517 Baseboard





- B1 Connector to the TAM-3517 CPU module
- 1 Connector to the TAM-3517 CPU module
- 2 Dipswitch SW3
- 3 touch panel PCB connector
- 4 Reset button
- 5 <u>UART1 / UART 3</u>
- 6 <u>UART2</u>
- 7 Switch betweenUART1 and UART3
- 8 <u>SPI</u>
- 9 <u>RS-232</u>

- 10 <u>GPIO connector</u> (can be connected to a button-PCB)
- 11 <u>CAN Bus</u>
- 12 speaker Left
- 13 Speaker Right
- 14 Dipswitch SW4
- 15 <u>RS-232 / 422 / 485</u> (also marked as RS-xxx)
- 16 USB Host (2x)
- 17 USB Host (2x)
- 18 LAN
- 19 12 VDC Power connector with screws (Phoenix Combicon MSTB 2.5)
- 20 RTC Battery (CR-1220)
- 21 Switch LVDS settings
- 22 LVDS connector
- 23 Micro SD card slot
- 24 Microphone (optional)





- 1 Connector to Thb-3517
- 2 Connector to touch panel of connected LCD

The Thb-3517 can be connected to many different touch panels with this PCB. The wire connection between Thb-3517 and this PCB allows flexible placement of the touch panel PCB wherever it is needed. One can also use other touch panel PCBs, for example, for 5 wire touch panels with the Thb-3517.

6.2 Explanation of the optional button PCB



- 1 Buttons
- 2 Connector to Thb-3517

The Thb-3517 can have an optional button PCB connected to the GPIO connector, programmed with several functions.

In the HMI it has the following functions (numbers according back cover):

- 1 Home
- 2 Enter / Select
- 3 Back
- 4 Menu
- 5 Brightness up
- 6 Brightness down
- 7 Volume up
- 8 Volume down

6.3 Explanation of the optional antenna

The HMI can be fitted with an optional antenna in the back cover. However this is only useful if the SOM on the PCB has WIFI.

6.4 Resetting the HMI



Resetting the HMI (shown here, done with the plastic filling of a pen) (see the first page of this chapter: the reset button is number 4)

7 Mechanical Dimensions

7.1 Thb-3517 dimensions





Dimensions in mm
7.2 Back Cover Dimensions

The back cover (indicated in orange circle) is standard on most HMIs (7", 8.4" 10.4", 12.1") and has the same dimension.



The dimension is 189 mm wide by 116.5 high and 26.5 mm deep. Please keep in mind that space is needed for the cables in the connectors.





7.5 Th-0635 Dimensions



Note: The 6.5" HMI has a different construction than the other models.







7.8 Th-1235 Dimensions



7.9 Th-1535 Dimensions

44

8 Downloads and drivers

Drivers and other download can be found at the TechNexion community webpage (www.technexion.com/service and support/downloads)

TechNexion			Putting Hug	e Things in Tiny Spaces
About Us Products	Service and Support	Solution Partners	Contact	
Home > Service and Support > Downloads		Support	Prod	ucts
😮 Share 🛃 ጅ 🖶 🚼		Downloads Warranty RMA Procedures		CPU Modules MAP3530
TechNexion - Downloa	d Center		Infe Thu Tsu	erno Inder nami
Folder: public			TI Si TAN Twi	ara AM3517 4-3517 ster
Sub-Folders:			TI DF TDI Bliz Tr	43730 4-3730 zard CM-500A
TI CPU Modules			HMI	
Contains all files for: TAO-3530 + Inferno / Thunder TAM-3517 + Twister TDM-3730 + Blizzard	/ Tsunami		Th-04 Th-05 Th-07 Th-10 Th-10	135P Coming Soon 335P Coming Soon 735W 335W 335
HMI Th Series : Th-0635, Th-07350 Th-1535	W, Th-0835, Th-1035, Th-1035W	η, Th-1235,	Th-08 Th-10 Th-12 Th-12	335 135 235
			Touc	sh Panel PC
Embedded Boards Contains all drivers and docum 3.5" fromfactor : TIM-5450, DIN-A5 formfactor : TIM-5450,	ientation for: TIM-5510, TIM-5525, TIM-5780		AMD Tm Tm Emb	-1500 -1700 edded Mainboards
Fanless Systems	aptation for		TIM-: TIM-: TIM-:	3525 5450 5510
Orca-2450, Orca-2510, Orca-2	780		Fanl	ess Systems -2450
Multimedia Touch Panel P Contains all drivers and docum	C nentation for:		Orca- Orca- Devi	-2510 -2780 elopment Kits
III-1300, III-1700			Infer	nopack

Figure 16: Download center at TechNexion.com

9 Software - Android

9.1 Installing an Android éclair image in a Linux environment

This Chapter will explain how to install the Android OS on your board.

If you wish to install your HMI with Angstrom; then follow the instruction in the next chapter.

9.1.1 Step1 - Making a SD-card with the image on your computer



Figure 17: Download the image (tam3517-sd-android.img.bz2), decompress and install the image writer on your computer

(This Image writer can also be found at: http://packages.ubuntu.com/lucid/usb-imagewriter)



Figure 18: Start image writer

🚯 Applications Places System 🏫 🥹 🗿 📾 😨 🚰 🚬	
ImageWriter	
ubuntu ImageWriter	
Write Image: 🖺 tsunamixl_eclair 📄 to Generic- Multi-Card (/dev/sdb) 🔻	
+ Details	
Close 🛞 Write to device	

Figure 19: (plug the SD-card with an adapter into your computer). Select image and destination (SD-card), click write to device

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Figure 20: Confirm OK

9.1.2 Step 2 – Using the SD-card to install an image in the NAND Flash of your Board



Warning! This procedure will erase all the data that is present in the NAND Flash.



Warning! Be patient: The following procedure will take 5 minutes to complete.

Set the dipswitch on your HMI (SW4) as follows:

3	Operation:
ON	Auto update

Put the SD-card in your HMI and plug in the power cable. LED2 on the TAM-3517 module will turn on and start to flash and after **5 minutes** will switch off, which means the software is installed.

Take out the SD card, set the dipswitch 3 back to OFF and then reboot again. It will now show Android.

9.2 Installing an Android éclair image in a Windows environment

This Chapter will explain how to install the Android OS on your board.

If you wish to install your HMI with Angstrom; then follow the instruction in the next chapter.

🕑 Desktop _ | # | X File Edit View Favorites Tools Help 🌏 Back 🝷 🕞 D Folders Search - 111 Address 🞯 Desktop 💌 🔁 Go * 2 File and Folder Tasks My Documents My Computer My Network Recycle Bin Internet tao3530_eclair 🗐 Rename this file Places Explorer _2010122 Open 🔯 Move this file Search... Copy this file Explore 🔕 Publish this file to the Web Extract All. 🙈 E-mail this file Open With... 🗙 Delete this file Send To ۲ * Cut Other Places Сору My Documents Create Shortcut 🛅 Shared Documents Delete 📢 My Network Places Rename Properties * Details 🛃 start 🛅 6 Windows Explorer 🕲 🥘 🗞 🧐 😵 💱 - 12:28 AM -

9.2.1 Step1 - Making a SD-card with the image on your computer

Figure 21: Download the image (tam3517-sd-android.img.bz2) and extract it on your computer





Figure 22-24: After extraction, click finish



Figure 25: Browse to the folder on your computer

😂 tao3530_eclair_20101224		- 7 🛛
File Edit View Favorites Tools	s Help	A
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X Delete this file		Send To
Other Places		Cut Copy
Desktop My Documents		Create Shortcut Delete Rename
Shared Documents		Properties
Section 2 My Network Places		
Details 😵		
🛃 start 🛛 😂 🙆 🖿 🖬 6	Windows Explorer 🔹	😼 🧐 😵 😼 12:31 AM

Figure 26: Extract the disk imager folder

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File Edit View Favorites Tools	Help	
🕞 Back - 🕥 - 🏂 🔎	search 🎼 Folders 🔛 -	
Address 🛅 C:\Documents and Settings	\Administrator\Desktop\tao3530_eclair_20101224\win32diskimager-RELEA5E-0.2-r23-win3	32 🛛 🔁 Go
File and Folder Tasks	GPL-2 File 18 KB	
 Marke a new rolder Publish this folder to the Web Share this folder 	mingwm10.dll QtCore4.dll	
Other Places 🛞	QtGui4.dll 4.5.0.0	
 tao3530_eclair_20101224 My Documents Shared Documents 	Win32DiskImager DiskImag	
My Network Places	File Version: 0.0.0.1 Date Created: 4/28/2009 2:45 AM Size: 92.5 KB	
Details		
🛃 start 🛛 😂 🙆 🖿 7 v	Windows Explorer 👻	🏂 🧐 😵 😵 12:31 AM

Figure 27: Run the disk imager (this disk imager can also be found at: <u>https://launchpad.net/win32-image-writer/+download</u>)



Figure 28-29: Select the SD-card as device

	win32diskimager	r-RELEASE-0.2-	23-win32				_ 7 🗙
File	👒 Win32 Disk I	lmager					<i></i>
C	Select a disk in	nage			? 🛛		
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	My Recent Documents Desktop My Documents My Computer My Network Places	Control in ux Control in ux Control in units of the un	er-RELEASE-0.2+r23-win32 r_20101224.img Type: IMG File Date Modified: 12/22/2011 Size: 400 MB	D 11:56 PM ▼	Save Cancel		
1	start 🧷 😂	🕑 🛅 8 Win	dows Explorer 🕞 🛄 Com	outer Manage	👒 Win32 Disk Imager	S 0, 0	9 😵 12:55 AM

Figure 30: Browse to the image file

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Win320iskimager-KCLCASC-0.2-723-Win32 File Image File sclair_20101224/tao3530_eclair_20101224.img Progress	_eclair_20101224\win32diskimager-RELEASE-0.2-r23-win32 ♥ ➡ Go
Cancel Read Write Exit Write data in 'Image File' to 'Device'	QtCore4.dll 4.5.0.0 README Text Document 2 KB
Other Places Win32DiskImager Image: DiskImager DiskImager Image: Dimager DiskImager	
Details	
🛃 start 🖉 🧭 🖻 8 Windows Explorer 🔹 🖳 Com	nputer Manage 👒 Win32 Disk Imager 😽 🧐 😵 💈 12:56 AM

Figure 31: (plug the SD-card with an adapter into your computer). Click write to write the image to your SD-card

9.2.2 Step 2 – Using the SD-card to install an image in the NAND Flash of your board



Warning! This procedure will erase all the data that is present in the NAND Flash.



Warning! Be patient: The following procedure will take **5 minutes** to complete.

Set the dipswitch on your HMI (SW4) as follows:

3	Operation:
ON	Auto update

Put the SD-card in your HMI and plug in the power cable. LED2 on the TAM-3517 module will turn on and start to flash and after **5 minutes** will switch off, which means the software is installed.

Take out the SD card, set the dipswitch 3 back to OFF and then reboot again. It will now show Android.

9.3 Booting from the SD-card

One can also directly boot from the SD-card that was made in the previous paragraphs.

- Insert the SD-card
- Switch on the power to the power cable or reboot
- It will now boot from the SD-card with the operating system of your choice.

10 Software – Angstrom (Linux)

10.1 Installing an Angstrom (Linux) image in a Linux environment

This Chapter will explain how to install the Angstrom OS on your HMI.

If you wish to install your HMI with Android; then follow the instruction in the previous chapter.

10.1.1 Step1 - Making a SD-card with the image on your computer



Figure 32: Download the image (tam3517-sd-angstrom.img.bz2) decompress it and install the image writer on your computer

(This Image writer can also be found at: http://packages.ubuntu.com/lucid/usb-imagewriter)



Figure 33: Start image writer

ImageWriter Ubuntu	
ImageWriter Write Image: Image Is to Generic- Multi-Card (/dev/sdb)	
+ Details	
Close & Write to device	

Figure 34: (plug the SD-card with an adapter into your computer). Select image and destination (SD-card), click write to device

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Figure 35: Confirm OK

10.1.2 Step 2 – Using the SD-card to install an image in the NAND Flash of your board



Warning! This procedure will erase all the data that is present in the NAND Flash.



Warning! Be patient: The following procedure will take **5** minutes to complete.

Set the dipswitch (SW4) on your HMI as follows:

3	Operation:
ON	Auto update

Put the SD-card in your HMI and plug in the power cable. LED2 on the TAM-3517 module will turn on and start to flash and after **5 minutes** will switch off, which means the software is installed.

Take out the SD card, set the dipswitch 3 back to OFF and then reboot again. It will now show Angstrom Linux.

10.2 Installing an Angstrom (Linux) image in a Windows environment

This Chapter will explain how to install the Angstrom OS on your HMI.

If you wish to install your HMI with Android; then follow the instruction in the previous chapter.

10.2.1 Step1 - Making a SD-card with the image on your computer

🕼 Desktop				- 7 🛛
File Edit View Favorites Tools	Help			🥂 (III)
🚱 Back 🔹 🕥 👘 🔎 S	earch 😥 Folders 🛄 🔹			
Address 🚱 Desktop				💙 🄁 Go
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Other Places				Cut Copy Create Shortcut Delete Rename
Details				Properties
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Figure 36: Download the image (tam3517-sd-angstrom.img.bz2) and extract it on your computer





Figure 37-39: After extraction, click finish

🖆 tao3530_eclair_20101224	_ @ 🛛
File Edit View Favorites Tools Help	an 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19
Search Enders	
Address 🛅 C:\Documents and Settings\Administrator\Desktop\tao3530_eclair_20101224	💙 ラ Go
File and Folder Tasks Image: Constraint of the state of the sta	
Other Places	
 Desktop My Documents Shared Documents My Computer My Network Places 	
Details	
🛃 start 🖉 🙆 🛅 7 Windows Explorer 🕞	🕉 🧐 🦁 💱 12:29 AM

Figure 40: Browse to the folder on your computer

🗀 ta	io 353()_ecla	ir_20101	224									. 7 🗙
File	Edit	View	Favorites	Tools	Help								1
0	Back	• 🕤) - 🎓	<i>,</i> s	earch 🙀	5 Folders	•						
Addre	ess 🛅	C:\Docu	uments and s	5ettings)	Administr	ator\Desktoj	p\tao3530_ecla	air_201012	24			~	🔁 Go
F	ile and Ren Mov Cop Publ E-ma Cole	Folder ame this e this file y this file ish this fi ail this fil te this fi	Tasks : file e : ile to the Wo le ile	eb		tao3530, IMG File 409,600	_eclair_201012 KB	:24.img		win32diskimager 5,722 KB windows	-RELEASE-0 Si E: 0 E: 0 Si Si 0	.2 pen aarch xplore ktract All pen With	-
	ther P	laces		٢							C	opy	
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D	etails			۲									
2	star	1	00	🗀 6 V	/indows E:	xplorer	-					80,08	12:31 AM

Figure 41: Extract the disk imager folder



Figure 42: Run the disk imager (this disk imager can also be found at: <u>https://launchpad.net/win32-image-writer/+download</u>)



Figure 43-44: (plug the SD-card with an adapter into your computer). Select the SD-card as device

C v	vin32diskimageı	-RELEASE-0.2-	r23-win32					_ ð 🗙
File	👒 Win32 Disk I	mager						
C	Select a disk in	nage				? 🗙		
Ado	Save in:	tao3530_ecl	air_20101224	• 4	- 🗈 💣 🎟 -		?-r23-win32	💙 ラ Go
	My Recent Documents Desktop My Documents My Computer My Network Places	File name: Save as type:	er-RELEASE-0.2-r23-v r_20101224.img Date Modified: 12, Size: 400 MB	vin32 /22/2010 11:56 PM] 	Save Cancel		
2	start 🧷 🥴	🕝 🛅 8 Win	dows Explorer 👻	🖳 Computer Mana	ge 👒 W	/in32 Disk Imager	608	🧏 12:55 AM

Figure 45: Browse to the image file

🗅 win 32 diskimager - REL EASE-0. 2- r 23- win 32	_ 7 🗙
E S Win32 Disk Imager	A*
Image File Device	
edair_20101224/tao3530_edair_20101224.img	
Progress	G G
Cancel Read Write Exit	
Write data in 'Image File' to 'Device'	
Copy dising	
Contract E-mail this file QtGui4.dll	
X Delete this file	
Other Places	
🛅 tao3530_eclair_20101224	
My Documents School Documents	
Shared bocuments Q My Computer	
🧐 My Network Places	
Details	
🐉 Start 👌 🙆 🗀 8 Windows Explorer 🕞 🛄 Computer Manage 👒 Win32 Disk Imager 🛛 😵 🤊 🕏) 😼 12:56 AM

Figure 46: Click write to write the image to your SD-card

10.2.2 Step 2 - Using the SD-card to install an image in the NAND Flash of your board



Warning! This procedure will erase all the data that is present in the NAND Flash.



Warning! Be patient: The following procedure will take 5 minutes to complete.

Set the dipswitch on your HMI (SW4) as follows:

3	Operation:
ON	Auto update

Put the SD-card in your HMI and plug in the power cable. LED2 on the TAM-3517 module will turn on and start to flash and after **5 minutes** will switch off, which means the software is installed.

Take out the SD card, set the dipswitch 3 back to OFF and then reboot again. It will now show Angstrom Linux.

10.3 Booting from the SD-card

One can also directly boot from the SD-card that was made in the previous paragraphs.

- Insert the SD-card
- Switch on the power to the power cable or reboot
- It will now boot from the SD-card with the operating system of your choice.

11 Software – Windows CE

11.1 Warning



Warning! To install Windows CE, you will need to open the back cover: This will void the warranty on the product.



Warning! Installing software is not easy. Finish the procedure completely and be patient to let the compilation and installation finish.



Important! To install Windows CE, you need a null modem to see what is going on.

11.2 Connecting a null-modem cable



Figure 47: The null modem (to USB) connected to the UART1 connector (see arrow for position of the white dot)

• Start PuTTY on your computer and make sure the "Options controlling local serial lines" are as in figure 48:

🔀 PuTTY Configuration		? ×
Category:		
Category: 	Options controlling Select a serial line Serial line to connect to Configure the serial line Speed (baud) Data bits Stop bits Parity Elow control	COM1
Enet Rlogin ⊡ SSH Serial About <u>H</u> elp	i	pen <u>C</u> ancel

Figure 48: Settings

- Go to Session and check if "specify the destination you want to connect to " is on Serial (See figure 49)
- Push open and a window will pop up (see figure 50)

⊡- Session	Basic options for your PuTTY	' session
 Logging Terminal Keyboard Bell Features Window Appearance Behaviour Translation Selection Colours Connection Proxy Telnet Rlogin SSH Serial 	Specify the destination you want to con Serial line COM1 Connection type: Raw I telnet Rlogin I Saved Sessions COM1_115200 Default Settings COM1_115200 Com1_115200	nnect to Speed 115200 SSH © Serial Load Save Delete

Figure 49: check if serial is selected and then select open

Putty	
	-

Figure 50: PuTTY terminal window
- You will now be able to see what is going on during the installation.
- If nothing happens then please check the settings and check if the cable is correctly connected to the UART1 pin header. Sometimes cables are not inverted, which can be solved by turning around the connector to the UART1 pin header (white dot turns 180 degrees).

11.3 Update to Windows Embedded CE6.0 R3

Make sure you have downloaded all R3 patches for Windows Embedded 6.0. The Patches can be found at Windows Embedded CE6.0 R3 on the Microsoft website

11.4 Get the BSP

11.4.1 Download the BSP from the web-Site

- Go to www.technexion.com/ service and support/ downloads
- Click "HMI" and then download "TAM3517_CE6.0 versionnumber"".

11.4.2 Install BSP to "Platform Builder for CE 6.0".

• Decompress the downloaded file. (See figure 1)

🕌 Temp				<u>- 0 ×</u>
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組合管理 ▼ 加入至媒體	櫃 ▼ 共用對象 ▼ 新增資料夾		=	= 🛨 🔲 🔞
☆ 我的最愛	名稱 🔺	修改日期	類型	大小
📜 下載	01.00 00	2011/7/20 下午 01:58	檔案資料夾	
🧾 点面 📴 最近的位置	TAM3517_CE6.0_01.00.00.zip	2011/7/7 下午 05:02	WinRAR ZIP 壓縮檔	36,793 KB
院 媒體櫃 ○ 文件 ● 音樂 ● 調 ● 副片				
♥♥ 電腦				
2個項目				



 After entering the "01.00.00\BSP" (version number) folder, copy the "TAM3517" folder to "C:\WINCE600 \ PLATFORM \". (See figure 2 and figure 3)

🕌 BSP				<u>- 🗆 ×</u>
😋 🕞 🗸 🖡 - Temp + C	11.00.00 + BSP +	▼ 🐼 捜	2	
組合管理 🔻 📜 開啟	加入至媒體櫃 🔻 共用對象 🔻 新增資料夾			:= - 🗔 🔞
🕎 我的最愛	名稱 🔺	修改日期	類型	大小
🚺 下載	14M3517	2011/1/17 下午 04:41	檔案資料夾	
	Installation bit	2010/12/27 下午 07	文字文件	1 KB
	📄 ReadMe.txt	2011/7/7 下午 04:43	文字文件	4 KB
□ 媒體 櫃 ○ 文件 ○ 音樂 ■ 視訊 ■ 圖片	Version.txt	2011 <i>川 </i>	文字文件	3 KB
▶️ 電腦 ▲ 本機磁碟 (C:) → 本機磁碟 (D:) → 本機磁碟 (E:) ↓ 網路				
TAM3517 修 檔案資料夾	攻日期: 2011 777 下午 04:41			

🕌 PLATFORM								
G → L → 電腦 → 本機磁碟 (C:) → WINCE600 → PLATFORM → 授尋 PLATFORM → 授尋 PLATFORM								
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■ 点面	\mu CEPC	2011/5/11 下午 04:02	檔案資料夾		SYSTEM			
置 最近的位置	📙 COMMON	2011/7/20 下午 01:15	檔案資料夾		SYSTEM			
🍃 媒體櫃	퉬 DEVICEEMULATOR	2011/5/11 下午 04:03	檔案資料夾		SYSTEM			
📑 文件	퉬 H4SAMPLE	2011/5/11 下午 04:03	檔案資料夾		SYSTEM			
● 音樂	퉬 MAINSTONEIII	2011/5/11 下午 04:03	檔案資料夾		SYSTEM			
■ 祝訊	<u>III T5538</u>	2011/5/11 下午 04:33	檔案資料夾		SYSTEM			
	📔 TAM3517	2011/7/20 下午 02:03	檔案資料夾		Libra-Desktop\Libi	ra		
🖳 電腦	VOIP_PXA270	2011/5/11 下午 04:33	檔案資料夾		SYSTEM			
🏭 本機磁碟 (C:)								
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📬 網路								
TAM3517 修 檔案資料夾	。 改日期: 2011 <i>1/1/</i> 20 下午 02:03							



 Go back to the decompressed folder "01.00.00" folder, and copy the "OSDesigns" folder to "C:\ WINCE600 \". (See figure 4 and figure 5)

🕌 01.00.00					
	01.00.00 +	▼ 🐼 搜報	2		
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📜 下載	🌗 BSP		2011/7/7 下午 04:41	檔案資料夾	
■ 点面	퉬 OSDesigns		2011/7/7 下午 04:48	檔案資料夾	
1 最近的位置					
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□ 17.513					
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🐌 WINCE600					<u>_ </u>			
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10000000000000000000000000000000000000	\mu 3rdParty	2011/7/15 下午 03:46	檔案資料夾					
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🏭 最近的位置	🎴 OSDesigns	2011/7/20 下午 02:05	檔案資料夾					
📄 媒體櫃	OTHERS	2011/5/11 下午 04:36	檔案資料夾					
📄 文件	퉬 PLATFORM	2011/7/20 下午 02:03	檔案資料夾					
● 音樂	🍌 PRIVATE	2011/5/11 下午 04:03	檔案資料夾					
開 祝計	퉬 PUBLIC	2011/7/15 下午 03:47	檔案資料夾					
	퉬 SDK	2011/5/11 下午 04:01	檔案資料夾					
👰 電腦	퉬 Updates	2011/5/11 下午 05:37	檔案資料夾					
🏭 本機磁碟 (C:)	pass1.txt	2011/7/20 下午 01:19	文字文件	4 KB				
本機磁碟 (D:) ★機磁碟 (C)	pass2.txt	2011/7/20 下午 01:19	文字文件	4 KB				
	📄 build.log	2011/7/20 下午 01:18	文字文件	9,478 KB				
📬 網路	📄 build.wm	2011/7/20 下午 01:18	WRN 檔案	19 KB				
OSDesigns 修 檔案資料夾	祝日期: 2011/7/20 下午 02:05							



11.5 Create a SD card

This chapter describes making a SD card.

- Open "Microsoft Visual Studio 2005". If that already open, Please reopen it.
- Click "File \rightarrow Open \rightarrow Project Solution" (See figure 6)



Figure 6

• Go into the folder and open the SLN-file of your HMI (As example in this manual we use "TH0735W") (See figure 7)

Open Project		?×
Look in:	🕒 OSDesigns 💽 🚱 - 🔟 🔍 🗙 📷 - Tools -	
Desktop My Projects My Computer	名稱 • 修改日期 • 操型 • 大小 • EVM_3530 Thunder_DVI_1280x720 Thunder_LCD_LB043WQ2 Infermo_DVI_1280x720 Tsunami_DVI_1280x720 Infermo_SVideo_NTSC Tsunami_LCD_AT070TN94 Picard_LCD_6.4inch Tsunami_LCD_LB043WQ2 temp Workspace Tsunami_SVideo_NTSC TH0635 Twister_DVI_1280x720 TH0635 Twister_LCD_4.3inch TH0835 Twister_LCD_7inch TH1035 TH1235 TH1535 TH1535	
Open Project Look in:	File name: ▼ Files of type: All Project Files (*.sln;*.dsw;*.vcw;*.csproj;*.vbproj;*.vbp;*.vjsproj ▼ Image: Thomas and the state of the	Open Cancel
Desktop My Projects	TH0735W.sh	
My Computer	File name: Files of type: All Project Files (*.sln;*.dsw;*.vcw;*.csproj;*.vbproj;*.vbproj;*.vbproj	Open Cancel

Figure 7

• In the menu click "build/advanced build command/Clean Sysgen" (See figure 8) This will take approximately 20 minutes, after which you will see "build complete" (see figure 9)



Warning! Be patient: let "clean sysgen" finish, this will take 20 minutes





Figure 9

• Plug an microSD in your computer (with for instance a USB card reader)



- Open "active@partition manager" (freeware)
- Right click on removable disk and choose "new partition" (see figure 10)

File Distant	LCD)_AT070TN94 -	Microsoft Visual Studio						al								_ & ×
100	emp								의								
	E	Active@ Partit	ion Manager 1.3.012													_ 🗆 🗵	- 4 ×
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E	1	🛞 🎲 Hitschi HDl	725025GLA380 (80h)	Hard Disk	Ready	Pue system	Segment	OII381 III 38CIDIS	488395055	4.03 MB	DIN CONE	232 GB					
E		🗉 🧼 Hitachi HDl	725025GLA380 (81h)	Hard Dink	Ready				488397168	2.49 MB		232 GB					
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	2	🕫 🥥 PIONEER I	OVD-ROM DVD-130P (7Fh)	CDRom Drive	Not Ready				0								
6	3	H S WACP 4 IE	156917 (7EN)	CDRom Drive	not Keaty				U								
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	RL S	Device: 80h															
		Hard Disk [232 GB]	1. 79.9 GB Primary NTFS				1	80.0 GB Primary NTF	2				38.1 GB Logical Unknown	30.9 GB Logice	Unknown	3.81 GB Logica	
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9	# # #	Hard Disk	Local Disk (D:) 232 GB Primary NTPS														
		[[]]]															
	-	Removable Disk		and Manufactor													
	1	[244 MB]	243 MB Unallocated	Scan for De	leted Partitions												
	107	Device: 7Fh															
		[Not Ready]		Properties					DEVICE I	S NOT RE	EADY						
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Catalog I	herner																
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ENTRA I	00 m													DR 3303		0	TA: 00.02
1921	0														E .	· · · ·	PT 02:23

Figure 10

 In the menu mark "partition as active", press OK, it will then show "successful" (see figure 11)

eate Partition	×	
elect the partition you w	ant to create and other settings:	
Primary Partition	C Extended Partition C Logical Drive	
Partition geometry		
Default partition geo	ometry	
Size, MB:	243 Maximum: 243 MB	
C Exact partition geom	netry	
Offset:	3 with size: 499649	
Min offset: 6	3 space available: 499649	
	measured in: C megabytes 🕫 sectors	
Drive Attributes		
Assign the following	drive letter: H: 💌	
Mark Partition as Ac	tive	
Volume Label: File System: Allocation unit size Perform a quick	FAT32	
	OK Cancel	
ocessing completed		
New partition bas	been created successfully	
	Deen created successfully	
1.4		the second se



• Right click again and choose format, Click OK, finished (see figure 12)

Format		
Volume Label:		
File System:	FAT	
Allocation unit size	Default	
🔽 Perform a quic	< format	
	OK Cancel	
Processing completed		×
Partition has b	en formatted successfully	
Details >>	Close this dialog when execution completes	

Figure 12

 Go to C:\WINCE600\OSDesigns\TH0735W" and open the folder "TAM_3517_ARMV4I_release" (See figure 13). The folder contains files named: MLO, EBOOTSD.nb0, NK.bin

(These files are needed for booting from a SD-card)

🕌 RelDir					
電腦 • ス	本機磁碟 (C:) ▼ WINCE600 ▼ OSDesigns ▼ TH0735W	⋆ RelDir ⋆		▼ 🛂 搜尋 RelDir	<u></u>
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■ 下載	Debug TAM3517_ARMV4I_Debug	2011/7/20 下午 02:19	檔案資料夾		
■ 泉面 9月 最近的位置	뉄 TAM3517_ARMV4I_Release	2011/1/20 下午 03:08	檔案資料夾		
□ 媒體櫃 □ 文件					
→ 音樂					
₩ 視訊					
▲ 雷腦					
🏭 本機磁碟 (C:)					
本機磁碟 (D:)					
A-DATA UFD (H:)					
👊 網路					
TAM3517_ARI 檔案資料夾	MV4I_Release 修改日期: 2011/7/20 下午 03:08				

Figure 13

- <u>First</u> copy "MLO" to the microSD card (the order is important)
- Then copy "EBOOTSD.nb0" and "NK.bin" in the microSD card (See figure 14)
- Remove the MicroSD card



Figure 14

- Open a terminal (Hyperterminal or PuTTY). In this manual we use PuTTY.
- Make sure the terminal cable is connected
- Select a com port (for example COM1) and check that the settings are OK:

Baud rate	115200
Data bit	8
Stop bits	1
Parity	none
Flow control	none

- Press "Load"
- Now insert the microSD in your Baseboard
- Insert the power cable
- It will boot from SD

COM1 - PRTTY

- You'll see "Hit space to enter configuration menu 5..." in PuTTY. Please push space key on the keyboard of PC. You'll see "Main Menu" in PuTTY.
- In the terminal choose option Select Boot Device (See figure 15)

TI AM3517 Version OxO (Hawkeye Oxb868 / manufacturer ID Ox17) System ready!	
Preparing for download	
INFU: Fredownioad	
WARW. Boot coning wash e found, using defaults	
>>> Forcing cold boot (non-persistent registry and other data will be wiped) <<<	
Hit space to enter configuration menu 5	
Hit space to enter configuration menu 4	
Hit space to enter configuration menu 3	
Nain Menu	
[1] Show Current Settings	
[2] Select Boot Device	
[3] Select KITL (Debug) Device	
[4] Network Settings	
[5] SDCard Settings	
[6] Set Device ID	
[3] Flash Management	
[9] Enable/Disable OAL Retail Messages	
[a] Select Display Resolution	
[0] Exit and Continue	
Selection: 2	
Select Boot Device	
[1] Internal EMAC	
[2] LAN9311 MAC	
[3] USBFn RNDIS	
[4] NK Trom SDCard FLLE	
[0] Exit and continue	
Selection (actual Internal EMAC):	_
Figure 15	



- Select Exit and Continue
- It will start to load the image into the memory (see figure 17) and the base board will show Windows CE.
- FINISHED

COMI - PUTTY	<u> </u>
[6] Set Device ID	
[7] Save Settings [8] Flash Management	
[9] Enable/Disable OAL Retail Messages	
[a] Select Display Resolution	
[0] Exit and Continue	
Selection: O	
Init HW: controller RST	
SDCARD: regested speed 1000000, actual speed 1000000	
SDHC: Command response timeout CIO:	
INC:: MCCommandatesponse: Command Response Fro	
Card size is = 499712 512 byte sectors	
SDCARD: regested speed 25000000, actual speed 19200000	
BLSDCardReadLogo: cannot open Logo.bmp	
Turning on the LCD	
BL_IMAGE_TYPE_BIN	
Download file information:	
[0]: Address=0x80002000 Length=0x01d05a2c Save=0x80002000	
Download file type: 1	
ImageStart = 0x80002000, ImageLength = 0x1D05A2C, LaunchAddr = 0x80010E70)x0.
Completed file(s):	
[0]: Address=0x80002000 Length=0x1D05A2C Name="" Target=RAM	
ROMHDR at Address 80002044h	
Launch Windows CE image by jumping to 0x80010e70	
Windows CE Kernel for ARM (Thumb Enabled) Built on Nov 3 2010 at 07:30:04	
****Profiler Build****	
High Performance Frequency is 12999914 hz	
	<u> </u>

11.6 How to put the WinCE image in the NAND Flash

In the previous section we showed how to boot from a SD card. Now we explain how to put the image in the NAND Flash so you can boot without the SD card.

11.6.1 Write the Bootloader and OS image to the NAND Flash.

- Format the SD Card with the USB Card Reader in the computer, using "Active@ Partition Manager" or another utility.
- Mark "partition as active"
- This needs "MLO", "EBOOTSD.nb0", "fldr.raw" or "fldrlogo.raw" and "nk.nb0". These are in "C:\WINCE60\OSDesigns\Project Name\ RelDir\TAM3517_ARMV4I_Release\".
- You can choose between "fldr.raw" or "fldrlogo.raw" (the end result will be the same).
- First copy only the "MLO" file to the SD card. (the order is important) See figure 22)
- Then copy "EBOOTSD.nb0", "fldr.raw" or "fldrlogo.raw" and "nk.nb0" files to the SD card. (see figure 23)
- Connect the UART cable. Open terminal setting: Chose Serial port: COM1 or other

Speed:	115200
Data bits:	8
Stop bits:	1
Parity:	None
Flow Control:	None

- Insert SD Card into the target board. Then connect the power cable.
- When it shows "Hit space to enter configuration menu". Please push space button on the keyboard.
- It will show "Main Menu" in the terminal. (See figure 24)

電腦 -	NO NAME (H:)	- 😰	搜尋 NO NAME (H:)	
[案(E) 編輯(E) 檢視(V 注合管理 ▼ _ 開敬	7) 工具(T) 說明(H) 新增資料夾			III - 🗔 🔞
🚖 我的最愛	名稱 🔺	修改日期	大小 類型	
下載	MLO	2010/10/27 下午 02	49 KB 檔案	
🔙 泉面 🗐 最近的位置				
☐ 保證値 〕 文件				
→ 音樂				
■ 倪計 ■ 圖片				
▶ 电脑 🏭 本機磁碟 (C:)				
本機磁碟(D:)				
600 C				
איונים איינים				

Figure 22



₽ COM1 - PuTTY	
SDHC: command response timeout CTO!	_
MMC::MMCCommandResponse: MMCSendCommand error, command = 8	
MMC::MMCCommandResponse: Command Response Error	
Card size is = 499712 512 byte sectors	
SDCARD: regested speed 25000000, actual speed 19200000	
read ebootsd.nb0 file	
jumping to ebootsd image	
Microsoft Windows CE Bootloader Common Library Version 1.4 Built Jul 20 2011 14:32:59	
Texas Instruments Windows CE EBOOT for AM35x, Built Jul 20 2011 at 14:38:58	
EBOOT Version 1.2, BSP 1.00.00.14	
TI AM3517 Version OxO (Hawkeye Oxb868 / manufacturer ID Ox17)	
System ready!	
Preparing for download	
INFO: Predownload	
WARN: Boot config wasn't found, using defaults	
INFO: SW4 boot setting: 0x2f	
The second	
With ensets to enter configuration menu 5	
hit space to enter configuration menu 3	
The space of check contrigued on mena tree	
Main Menu	
[1] Show Current Settings	
[3] Select KITL (Debug) Device	
[4] Network Settings	
[5] SDCard Settings	_
[6] Set Device ID	
[7] Save Settings	
[8] Flash Management	
[9] Enable/Disable O&L Retail Messages	
[a] Select Display Resolution	
[0] Exit and Continue	
a la se la s	

• Chose "Flash Management". (See figure 25)

🚰 COM1 - Putty	
INFO: Predownload WARN: Boot config wasn't found, using defaults INFO: SW4 boot setting: Ox2f	•
>>> Forcing cold boot (non-persistent registry and other data will be wiped) <<< Hit space to enter configuration menu 5 Hit space to enter configuration menu 4	
Main Menu	
<pre>[1] Show Current Settings [2] Select Boot Device [3] Select KITL (Debug) Device [4] Network Settings [5] SDCard Settings [6] Set Device ID [7] Save Settings [8] Flash Management [9] Enable/Disable OAL Retail Messages [a] Select Display Resolution [0] Exit and Continue Selection: 8</pre>	
Flash Management	
 Show flash geometry Dump flash sector Erase flash Frase block range 	
 [5] Reserve block range [6] Set bad block [7] Format flash [8] Write bootLoader from SDCard to flash [9] Write NK image from SDCard to flash [0] Exit and Continue 	
Selection:	-



- Chose "Show flash geometry". (See figure 26)
- It will show:

Flash Type:	NAND
Blocks:	4096
Bytes/block:	131072
Sectors/block:	64
Bytes/sector:	2048

- Chose "Erase block range". (See figure 27)
- It will show "First Block Number:" Input "0". Then enter.
- It will show "Last Block Number:" Input "(Blocks 1)". For example "4096-1=4095", so type 4095 then enter.
- It will show "Do you want erase block 0-4095 [-/y]?" Input "y" (See figure 28) (You might need to repeat this step, until all blocks are erased)

R COM1 - Putty	
	
Flash Management	
[1] Show flash geometry	
[2] Dump flash sector	
[3] Erase flash	
[4] Erase block range	
[5] Reserve block range	
[6] Set bad block	
[7] Format flash	
[8] Write bootLoader from SDCard to flash	
[9] Write NK image from SDCard to flash	
[U] Exit and Continue	
Selection: 1	
Flash Type: NAND	
Blocks: 4096	
Bytes/block: 131072	
Sectors/block: 64	
Bytes/sector: 2048	
reserved] 0 1 2 3 4 5 one	
Flash Management	
[1] Show flash geometry	
[2] Dump flash sector	
[3] Erase flash	
[4] Erase block range	
[5] Reserve block range	
[6] Set bad block	
[7] Format flash	
[0] write Buckbadder from SDCard to flash	
[0] Filt and Continue	
Selection:	-



COMI - PuTTY	
[1] Show flash geometry	
[2] Dump flash sector	
[3] Erase flash	
[4] Erase block range	
[5] Reserve block range	
[6] Set bad block	
[7] Format flash	
[8] Write bootLoader from SDCard to flash	
[9] Write NK image from SDCard to flash	
[0] Exit and Continue	
Selection: 1	
Flash Type: NAND	
Blocks: 4096	
Bytes/block: 131072	
Sectors/block: 64	
Bytes/sector: 2048	
Flash Management	
[1] Show flash geometry	
[2] Dump flash sector	
[3] Erase flash	
[4] Erase block range	
[5] Reserve block range	
[6] Set bad block	
[7] Format flash	
[8] Write bootLoader from SDCard to flash	
[9] Write NK image from ShCard to flash	
[0] Exit and Continue	
Selection: 4	
First Block Number: 0	
Last Block Number: 4095	•
Figure 27	



Figure 28

- Chose "Write Bootloader from SD-Card to flash". (See figure 29)
- It will show "Do you want to write Bootloader to flash [-/y]?" Input "y"
- Then it will show "Bootloader Image written". (See figure 30)

🛃 C	OM1 - PuTTY
• • • •	
• • • •	Done
 Flε	ash Management
[1]	Show flash geometry
[2]	Dump flash sector
[3]	Erase flash
[4]	Erase block range
[5]	Reserve block range
[6]	Set bad block
[7]	Format flash
[8]	Write bootLoader from SDCard to flash
[9]	Write NK image from SDCard to flash
[0]	Exit and Continue
_	
Sel	lection: 8
Do	you want to write bootloader to flash [-/y]? 🗾

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🛃 COM1 - PuTTY		
DLL Last	: 0x4001c001	_
Physical First	: 0x40200000	
Physical Last	: 0x40206158	
Num Modules	: 1	
RAM Start	: 0x40209000	
RAM Free	: 0x4020b000	
RAM End	: 0x4020c000	
Num Copy Entries	: 1	
Copy Entries Offset	: 0x40205a68	
Prof Symbol Length	: 0x0000000	
Prof Symbol Offset	: 0x0000000	
Num Files	: 0	
Kernel Flags	: 0x0000000	
FileSys RAM Percent	: 0x80808080	
Driver Glob Start	: 0x0000000	
Driver Glob Length	: 0x00000000	
CPU	: 0x01c2	
MiscFlags	: 0x0002	
Extensions	: 0x0000000	
Tracking Mem Start	: 0x00000000	
Tracking Mem Length	: 0x00000000	
BootLoader Image writt	ten	
Flash Management		
[1] Show flash geomet	try	
[2] Dump flash sector	r	
[3] Erase flash		
[4] Erase block range	e	
[5] Reserve block ran	nge	
[6] Set bad block		
[7] Format flash		
[8] Write bootLoader	from SDCard to flash	
[9] Write NK image fr	rom SDCard to flash	
[0] Exit and Continue	ê	
Selection:		•

- Take the microSD card out of the Baseboard.
- Reboot from NAND Flash by pushing the reset button on the baseboard (See figure 31).
- It will make a partition and format and then show "Flash format complete!"





- Put the microSD card back into the baseboard. Unplug the power and insert the power again (=reboot from SD Card) (See figure 32), or push the reset button.
- When it shows "Hit space to enter configuration menu". Please push space button on the keyboard.



- Chose "Flash Management". (See figure 33)
- Chose "Write NK image from SD-Card to flash". (See figure 33)
- It will show "Do you want to write NK image to flash [-/y]?" Input "y".
- Wait until it will show "NK image written". (See figure 34)

Patty	
WARN: Boot config wasn't found, using defaults INFO: SW4 boot setting: Ox2f	
>>> Forcing cold boot (non-persistent registry and other data will be wiped) <<< Hit space to enter configuration menu 5 Hit space to enter configuration menu 4	
Main Menu	
<pre>[1] Show Current Settings [2] Select Boot Device [3] Select KITL (Debug) Device [4] Network Settings [5] SDCard Settings [6] Set Device ID [7] Save Settings [8] Flash Management [9] Endolo/Disable OAL Retail Messages [a] Select Display Resolution [0] Exit and Continue Selection: 8</pre>	
Flash Management	
 [1] Show flash geometry [2] Dump flash sector [3] Erase flash [4] Erase block range [5] Reserve block range [6] Set bed block 	
 [7] Format flash [6] Write bootLoader from SDCard to flesh [9] Write NK image from SDCard to flash [8] Exit and Continue 	
Selection: 9 Do you want to write NK image to flash [-/y]?	-

🛃 COM1 - PuTTY		- D ×
RAM End :	: 0x8f800000	_
Num Copy Entries :	: 2	
Copy Entries Offset :	: 0x814c3f88	
Prof Symbol Length :	: 0x0000000	
Prof Symbol Offset :	: 0x0000000	
Num Files :	: 79	
Kernel Flags :	: 0x0000000	
FileSys RAM Percent :	: 0x40404040	
Driver Glob Start :	: 0x0000000	
Driver Glob Length :	: 0x0000000	
CPU :	: 0x01c2	
MiscFlags :	: 0x0002	
Extensions :	: 0x80004128	
Tracking Mem Start :	: 0x0000000	
Tracking Mem Length :	: 0x0000000	
Legîrhys: Legical Ox1 - NK image written	-> Physical 0x301	
Flash Management		
 Show flash geometr Dump flash sector Erase flash Erase block range Reserve block range Set had block 	ge ge	
[7] Format flash		
[8] Write bootLoader f	from SDCard to flash	
[9] Write NK image fro [0] Exit and Continue	om SDCard to flash	
Selection:		•



11.6.2 Boot from NAND flash.

- Take out the MicroSD Card from the Baseboard
- Press the reset button on the baseboard
- When it shows "Hit space to enter configuration menu". Please push space button on the keyboard. (See figure 35)

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```
🚰 COM1 - PuTTY
                                                                                                                _ 🗆 🗡
Texas Instruments Windows CE NAND X-Loader for AM35x
                                                                                                                    ٠
Built Jul 20 2011 at 14:39:05
Version BSP_WINCE_ARM_A8 1.00.00.14
Jumping to bootloader
Microsoft Windows CE Bootloader Common Library Version 1.4 Built Jul 20 2011 14:32:59
Texas Instruments Windows CE EBOOT for AM35x, Built Jul 20 2011 at 14:38:41
EBOOT Version 1.2, BSP 1.00.00.14
TI AM3517 Version OxO (Hawkeye Oxb868 / manufacturer ID Ox17)
System ready!
Preparing for download...
INFO: Predownload...
Checking bootloader blocks are marked as reserved (Num = 12)
WARN: Boot config wasn't found, using defaults
INFO: SW4 boot setting: Ox2f
IsValidMBR: MBR sector = 0x300 (valid MBR)
OpenPartition: Partition Exists=0x1 for part 0x20.
   Forcing cold boot (non-persistent registry and other data will be wiped) <<<
Hit space to enter configuration menu 5...
        _____
                                                              _____
 Main Menu
 [1] Show Current Settings
 [2] Select Boot Device
 [3] Select KITL (Debug) Device
 [4] Network Settings
 [5] Flash Management
 [6] Set Device ID
[7] Save Settings
 [8] Enable/Disable OAL Retail Messages
 [9] Select Display Resolution
 [0] Exit and Continue
 Selection:
```



- Chose "Select Boot Device". (See figure 36)
- Then chose "NK from NAND" (see figure 37)

PCOM1 - PuTTY	- 🗆 🗙
Network:	
KITL state: enabled	
KITL type: active	
KITL mode: interrupt	
DHCP: enabled	
IP address: 0.0.0.0	
IP mask: 0.0.0.0	
IP router: 0.0.0.0	
Internal Eth MAC Addr: 00:1f:7b:15:06:90	
External Eth MAC Addr: 00:1f:7b:15:06:91	
VMINI: enabled	
Note: USBFN RNDIS MAC Addr cannot be changed.	
Main Menu	
11 Show Current Settings	
[2] Select Boot Device	
31 Select KITL (Debug) Device	
[4] Network Sectings	
[5] Flash Management	
[6] Set Device ID	
[7] Save Settings	
[8] Enable/Disable OAL Retail Messages	
[9] Select Display Resolution	
[0] Exit and Continue	
Selection: 2	
Select Boot Device	
[3] HARFN DANTA	
[4] SDEAT FIF	
[5] NK from NAND	
[0] Exit and Continue	
Selection (actual Internal EMAC):	•

Figure 36

🚰 COM1 - PuTTY	- U ×
[2] Select Boot Device	_
[3] Select KITL (Debug) Device	
[4] Network Settings	
[5] Flash Management	
[6] Set Device ID	
[7] Save Settings	
[0] Endoley Disable Okl. Ketali messages	
[3] Select Display Resolution	
Selection: 2	
[1] Internal EMAC	
[2] LAN9311 MAC	
[3] USBFn RNDIS	
[4] SDCard FILE	
[5] NK from NAND	
[O] Exit and Continue	
Selection (actual Internal EMAC): 5	
Boot device set to NK from NAND	
Nain menu	
[1] Show Current Settings	
[2] Select Boot Device	
[3] Select KITL (Debug) Device	
[4] Network Settings	
[5] Flash Management	
[6] Set Device ID	
[7] Save Settings	
[8] Enable/Disable OAL Retail Messages	
[9] Select Display Resolution	
[U] Exit and Continue	
Selection:	-

	COM1 - PUTTY	- 🗆 🗵
	[3] Select KITL (Debug) Device	
	[4] Network Settings	
	[5] Flash Management	
	[6] Set Device ID	
	[7] Save Settings	
	[8] Enable/Disable OAL Retail Messages	
	[9] Select Display Resolution	
	UJ EXIT ANA CONTINUE	
	Selection: 2	
-		
	5616CT BOOT DEVICE	
	[1] Internal ENAC	
	[2] LAN9311 MAC	
	[3] USBFn RNDIS	
	[4] SDCard FILE	
	[5] NK from NAND	
	[0] Exit and Continue	
	Kelention (actual Internal EWAC). 5	
	Setevice set to NK from NIND	
-		
_	Main Menu	
	[1] Show Current Settings	
	[2] Select Boot Device	
	[3] Select KITL (Debug) Device	
	[4] Network Settings	
	[5] Flash Management	
	6] Set Device ID	
\triangleleft	(/] Save Settings	
	to, Shaniya Jinsayin oki ketali nessages	
	[5] Select Display Resolution	
	Selection: 7	
	Do you want save current settings [-/y]?	-

Figure 38: Select save settings

PCOM1 - PuTTY	
[4] SDCard FILE	
[5] NK from NAND	
[0] Exit and Continue	
Selection (actual Internal EMAC): 5	
Boot device set to NK from NAND	
[1] Show Current Settings	
[2] Select Boot Device	
[3] Select KITL (Debug) Device	
[4] Network Settings	
[5] Flash Management	
[6] Set Device ID	
[7] Save Settings	
[8] Enable/Disable OAL Retail Messages	
[9] Select Display Resolution	
[0] Exit and Continue	
Selection: 7	
Do you want save current settings [-/y]? y	
Current settings has been saved	
Main Menu	
[1] Show Current Settings	
[1] Select Boot Device	
[3] Select KITL (Debug) Device	
[4] Network Settings	
[5] Flash Management	
[6] Set Device ID	
[7] Save Settings	
[8] Enable/Disable OAL Retail Messages	
[9] Select Display Resolution	
[0] Exit and Continue	
Selection:	•
Linuxe 20. Confirm colocition ""	

Figure 39: Confirm selection "y"

• Chose "Exit and Continue". (See figure 40)



Figure 40

• Now it will start booting WinCE. (See figure 41)

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🚰 COM1 - PuTTY		
BP SetDataPointer at OxO		▲
ReadData: Start = 0x0, Le	ength = 0x1000.	
Log2Phys: Logical Ox1 ->	Physical 0x301	
ReadData: Start = 0x1000,	, Length = 0x1d02388.	
Log2Phys: Logical Ox3 ->	Physical 0x303	
ROMHDR (pTOC = 0x81d05334	4)	
DLL First : 0	0x4001c001	
DLL Last : 0	0x4196c0c6	
Physical First : 0	0x80002000	
Physical Last : 0	0x81d07a2c	
Num Modules :	240	
RAM Start : 0	0x81d10000	
RAM Free : 0	0x81d27000	
RAM End : 0	0x8f800000	
Num Copy Entries :	2	
Copy Entries Offset : (0x814c3f88	
Prof Symbol Length : (0x0000000	
Prof Symbol Offset : (0x0000000	
Num Files :	79	
Kernel Flags : (0x0000000	
FileSys RAM Percent : (0x40404040	
Driver Glob Start : 0	0x0000000	
Driver Glob Length : (0x0000000	
CPU :	0x01c2	
MiscFlags :	0x0002	
Extensions : 0	0x80004128	
Tracking Mem Start : (
Tracking Mem Length : U	02000000	
$PaadData \cdot Start = 0v1d033$	328 Length = $0x26a4$	
Log2Phus: Logical 0x3a07	-> Physical 0x307	
NK Image Loaded	> Thysical oxeden	
Launch Windows CF image b	by jumping to 0x80002000	
hadnen «Indewo er indge k	y jamping to choose the second	
Windows CE Kernel for AR	M (Thumb Enabled) Built on Nov 3 2010 at 07:30:04	
****Profiler Build****	· ····································	
High Performance Frequ	uency is 12999897 hz	
		-

Figure 41

• FINISHED.

12 Appendix - Pin outs

12.1 Module connector

)	1				
Pin 001 -	Pin 003	((Pin 004	Pin 002
Pin 005 -	Pin 007	 () (/		Pin 008	Pin 006
Pin 009	Pin 011	(<pre>/</pre>)		Pin 012	Pin 010
Pin 013 -	Pin 015) (Pin 016	Pin 014
Pin 017 -	Pin 019	()		Pin 020	Pin 018
Pin 021 -	Pin 023) (- Pin 020	Pin 022
Pin 025 -	Pin 023	()			Pin 026
Pin 029 -	Pin 021	/) (Pin 030
Pin 033 -	Pin 031	()		— Pin 032	Pin 034
Pin 037 -	Pin 035	/) (Pin 036	Pin 038
	Pin 039 —	-				Pin 040	
5. 044		\mathcal{I}	<pre>/</pre>				D : 040
Pin 041 -	Pin 043	F) (-		Pin 044	Pin 042
Pin 045	Pin 047	R (B		Pin 048	Pin 046
Pin 049	Pin 051	0) (A			Pin 050
Pin 053	Pin 055	N (ĸ		Pin 056	Pin 054
Pin 057	Pin 059	T) (S		Pin 060	Pin 058
Pin 061	Pin 063	S	1	1		Pin 064	Pin 062
Pin 065	Din 067	1	('n			Pin 066
Pin 069	Pin 007	D (1	F		- Fill 000	Pin 070
Pin 073	PIII 07 1	E	(-			Pin 074
Pin 077 -	Pin 075	() (Pin 076	Pin 078
Pin 081	Pin 079	(<pre>/</pre>)		Pin 080	Pin 082
Pin 085	Pin 083) (Pin 084	Pin 086
Pin 089	Pin 087	()		Pin 088	Pin 090
Pin 093	Pin 091) (_	— Pin 092	Pin 094
Pin 097	Pin 095	()	_	— Pin 096	Pin 098
Pin 101 -	Pin 099	/) (— Pin 100	Pin 102
Pin 105 -	Pin 103	(. /)		— Pin 104	Pin 106
Din 100 -	Pin 107	1) (— Pin 108	Din 110
Din 112 -	Pin 111	(1)		— Pin 112	Din 114
Din 117 -	Pin 115	((— Pin 116	Din 114
Pin 117	Pin 119	(1	/		Pin 120	Pin 118
Pin 121 -	Pin 123	(<pre>/</pre>)		Pin 124	Pin 122
Pin 125 -	Pin 127	() (Pin 128	Pin 126
Pin 129	Pin 131	()			Pin 130
Pin 133 -	Pin 135) (Pin 136	Pin 134
Pin 137 -	Pin 139	()	_	— Pin 140	Pin 138
Pin 141	Pin 143	/) (Pin 144	Pin 142
Pin 145	Pin 147	()		- Pin 148	Pin 146
Pin 149	- III 147	1) (Pin 150
Pin 153	Din 155	(. /)		 Dia 156	Pin 154
Pin 157	Pin 155	1) (— Pin 150	Pin 158
Pin 161	Pin 159	(1			Pin 160	Pin 162
Pin 165	Pin 163	((Pin 164	Pin 166
Pin 169	Pin 167	() (Pin 168	Pin 170
Pin 173	Pin 171	()		— Pin 172	Pin 174
Pin 177	Pin 175) (— Pin 176	Pin 178
Pin 181 -	Pin 179	()		Pin 180	Pin 182
Pin 185 -	Pin 183) (— Pin 184	Pin 186
Din 190 -	Pin 187	()		Pin 188	Din 100
Din 103	Pin 191	/) (Pin 192	- Din 104
Din 107	Pin 195	(1)		Pin 196	Din 100
Pin 197 -	Pin 199	1	(Pin 200	PIN 198
				/			

1	DC 5V	2	DC 5V
3	GND	4	VRTC
5	CODEC1 RLINEOUT	6	DC 5V
7	CODEC1 LLINEOUT	8	DC 5V
9	CODEC1 MICBIAS	10	DC 5V
11	CODEC1 MICIN	12	DC 5V
13	USB0 VBUS	14	DC 5V
15	CODEC1_RLINEIN	16	PWR_ON
17	CODEC1_LLINEIN	18	3V3
19	GND	20	IDMO
21	USB_5V	22	IDPO
23	I2C2_SCL	24	I2C3_SDA
25	I2C2_SDA	26	CAN_RX
27	SYS_nIRQ	28	nRESPWARM
29	CAN_TX	30	UART3_RX
31	DVI_nDISABLE	32	UART3_TX
33	GPIO_26	34	UART3_RTS
35	USB_RESET	36	UART3_CTS
37	GPIO_29	38	I2C3_SCL
39	GPIO_28	40	SYS_nRESPWRON
41	ETHER_TX-	42	CAM_PCLK
43	ETHER_TX+	44	CAM_WEN
45	ETHER_RX-	46	CAM_HD
47	ETHER_RX+	48	CAM_VD
49	CAM_FLD	50	CAM_D0
51	CAM_D1	52	CAM_D4
53	CAM_D3	54	CAM_D5
55	CAM_D7	56	CAM_D2
57	CAM_D6	58	ETHER_SPEED_LED
59	MMC1_CLK	60	ETHER_LINK_ACT_LEDn
61	MMC1_DAT2	62	MMC1_DAT1
63	MMC1_DAT0	64	MMC1_CMD
65	MMC1_DAT3	66	AGND
67	GND	68	GPIO_127
69	GPIO_128	70	LCD_PON
71	MMC1_DAT4	72	LCD_ENVDD
73	MCBSP3_FSX	74	GPIO_137
75	MCBSP3_CLKX	76	TS_nPEN_IRQ
77	MCBSP3_DR	78	GPIO_176
79	TV_SVIDEO_Y	80	3V3
81	TV_SVIDEO_C	82	MCSPI1_CLK
83	3V3	84	3V3
-----	-------------	-----	-------------
85	MCSPI1_SOMI	86	GPIO_177
87	GPIO_175	88	MCSPI1_SIMO
89	MCSPI1_CSO	90	MCSPI2_CS1
91	MCSPI2_CLK	92	MCSPI2_SOMI
93	MCSPI2_SIMO	94	MCSPI2_CS0
95	DSS_PCLK	96	DSS_D11
97	DSS_HSYNC	98	DSS_D2
99	DSS_ACBIAS	100	DSS_D18
101	DSS_VSYNC	102	DSS_D12
103	DSS_D0	104	DSS_D13
105	DSS_D1	106	DSS_D20
107	DSS_D3	108	DSS_D7
109	DSS_D4	110	DSS_D17
111	DSS_D5	112	DSS_D14
113	DSS_D10	114	DSS_D15
115	DSS_D6	116	DSS_D22
117	DSS_D16	118	DSS_D19
119	DSS_D21	120	DSS_D23
121	DSI_DX1	122	DSI_DX2
123	DSS_D8	124	DSI_DX0
125	DSS_D9	126	DSI_DY2
127	MCBSP3_DX	128	GPIO_170
129	UART1_CTS	130	DSI_DY0
131	UART1_RTS	132	DSI_DY1
133	UART2_RX	134	B_GPMC_nCS0
135	UART2_TX	136	USB0_ID
137	CPEN	138	USB0_DP
139	uP_OBSCLK	140	USB0_DM
141	GPMC_WAIT2	142	GPMC_WAIT1
143	GPIO_55	144	LDC_ENBKL
145	GPIO_54	146	GPMC_A4
147	GPMC_A10	148	GPMC_nCS5
149	GPMC_A8	150	GPMC_A7
151	GPMC_A5	152	GPMC_A1
153	GPIO_42	154	GPMC_A6
155	GPMC_A2	156	GPMC_A3
157	GPMC_CLK	158	GPMC_WAIT3
159	GND	160	GPMC_nBE1
161	GPIO_116	162	UART1_TX
163	GPIO_119	164	UART1_RX

165	GPIO_118	166	UART2_CTS
167	GPIO_117	168	UART2_RTS
169	GPIO_152	170	B_GPMC_CLE
171	GPIO_153	172	B_GPMC_ALE
173	HOST_nOC	174	B_GPMC_nWP
175	GPIO_155	176	B_GPMC_WAIT0
177	GND	178	GND
179	GPMC_D9	180	GND
181	GPMC_D12	182	GPMC_nOE
183	GPIO_52	184	GPMC_nWE
185	GPMC_D13	186	GPMC_D8
187	GPMC_D14	188	GPMC_D7
189	GPMC_D10	190	GPMC_D5
191	GPMC_D0	192	GPMC_D3
193	GPMC_D2	194	GPMC_D15
195	GPMC_D4	196	GPMC_D1
197	GPMC_D11	198	GPMC_D6
199	GND	200	GND

12.2 SPI1



Marking on main board: SPI1

1	+3.3V	2	GPIO_117
3	MCSPI2_CLK	4	GPIO_118
5	MCSPI2_SIMO	6	GPIO_119
7	MCSPI2_SOMI	8	GPIO_116
9	MCSPI2_CS0	10	GPIO_175
11	MCSPI2_CS1	12	GPIO_176
13	I2C2_SCL_3V	14	GPIO_177
15	I2C2_SDA_3V	16	GPIO_170
17	GND	18	SYS_nIRQ
19	GND	20	uP_OBSCLK

NOTE: SPI1 @3.3V

12.3 GPIO Switch (SW3) ස Ξ р С ~

Marking on main board: SW3

4	3	2	1	Function: Display settings
Off	Off	Off	Off	Panel LG LB043WQ2 (4.3")
Off	Off	Off	ON	Panel Innolux AT070TN93 (7")
Off	Off	ON	Off	LVDS AUO-B089
Off	Off	ON	ON	DVI/ HDMI/ VGA 1280x720@60
Off	ON	Off	Off	TV out NTSC
Off	ON	Off	ON	TV out PAL
Off	ON	ON	Off	LVDS auo-g065vn01
Off	ON	ON	ON	LVDS promate-97g121s1n4f
ON	Off	Off	Off	LVDS auo-g150xg01
ON	Off	Off	ON	LVDS auo-g070vw01
ON	Off	ON	Off	LVDS promate-97g084s5n5f
ON	Off	ON	ON	LVDS promate-97g104s2n2f
7	6	5		Reserved
Reserved	Reserved	Reserved		Reserved
Reserved	Reserved	Reserved		Reserved

10	9	Functio	n: Root file system path
Off	Off	NAND	
Off	ON	MMC	
ON	Off	NFS (re 192.168 192.168	emote server, default host IP 3.1.5, default server IP 3.1.4)(can change in u-boot)

12.3.1 Auto Update Procedure

It is possible to automatically update the system that is in the NAND Flash. Chapter 9 to 10 describes how to update. (THIS IS AN INTERNAL SWITCH, Please use $\underline{SW4}$ as described in chapter 9 to 10)

8	Function: Auto update mode	
Off	Normal operation	
ON	Auto update from MMC	

12.4 UART 1/UART 3



Marking on main board: UART1

1	RS232_RX3
2	GND
3	RS232_TX3

Note: RS-232 serial console cable might need a gender changer when connected to, for example, a null-modem. One can also reverse the connected cable (pin 1 becomes 3 and pin 3 becomes 1)



Marking on main board: UART2

- 1 3.3V
- 2 UART3 TX
- 3 UART3 RX
- 3 GND

Switch between UART1 and UART3



Marking on main board: SW2

1&2 on,	3&4 off	UART1 (debug port)		
1&2 off,	3&4 on	UART3		

12.5 LVDS connector



Data connector is 40 pin

Marking on main board: LVDS1

1	Vcc12V	2	DC_5VM
3	Vcc12V	4	DC_5VM
5	LCD Enable @5V	6	Backlight on @5V
7	LCD Enable @3.3V	8	Backlight on @3.3V
9	GND	10	GND
11	SEL68	12	3.3V
13	TXD0-	14	3.3V

15	TXD0+	16	REV
17	GND	18	R/L
19	TXD1-	20	U/D
21	TXD1+	22	LVDS_I2C_SCL
23	GND	24	LVDS_I2C_SDA
25	TXD2-	26	LED Enable @3.3V
27	TXD2+	28	LVDS_LED+ (Backlight Power +)
29	GND	30	LVDS_LED+ (Backlight Power +)
31	TXC-	32	LVDS_LED+ (Backlight Power +)
33	TXC+	34	LVDS Enable @3.3V
35	GND	36	LVDS_LED- (Backlight Power -)
37	TXD 3-	38	LVDS_LED- (Backlight Power -)
39	TXD 3+	40	LVDS_LED- (Backlight Power -)



Marking on main board: SW5

1	R/L
2	U/D
3	REV
4	SELECT 6 / 8 bit

Default setting SW5:

HMI screen size	1	2	3	4
6.5"	Off	Off	Off	ON
7"	Off	Off	Off	Off
8.4"	Off	Off	Off	ON
10.4"	Off	Off	Off	ON
12.1"	Off	Off	Off	ON
15"	Off	Off	Off	Off

12.6 GPIO Switch (SW4)



Marking on main board: SW4

NOTE: Switch 7 is reserved and should be off

Function: Root file system path	Boot from NAND	Boot from MMC	Boot from NFS
1	OFF	OFF	ON
2	OFF	ON	OFF
Function: Auto update mode	Normal mode	Auto update mode	
3	OFF	ON	
Function: RS-xxx select (COM2)	RS-xxx=RS-232	RS-xxx=RS-485	RS-xxx=RS-422
4	ON	OFF	OFF
5	OFF	ON	OFF
6	OFF	OFF	ON
7			
Function: CAN bus terminal	Normal mode	Terminal	
8	OFF	ON	

12.7 CANBUS



Marking on motherboard: CANBus1

1	Reserved	2	CAN LOW
3	CAN GND	4	Reserved
5	CAN Shield	6	Optional GND
7	CAN HIGH	8	Reserved
9	DC 5VM	10	Х



1	Reserved	2	CAN LOW
3	CAN GND	4	Reserved
5	CAN Shield	6	Optional GND
7	CAN HIGH	8	Reserved
2			

9 DC 5VM

12.8 GPIO connector



Marking on motherboard:J2

1	DC 5VM	2	GPIO1
3	GPIO2	4	GPIO3
5	GPIO4	6	GPIO5
7	GPIO6	8	GPIO7
9	GPIO8	10	GND

NOTE: J2 @5V

12.9 RS-232, RS-232/422/RS-485



Marking on motherboard: COM1

1	JDCD1#	2	JSIN1
3	JSOUT1	4	JDTR1#
5	GND	6	JDSR1#
7	JRTS1#	8	JCTS1#
9	JRI1#	10	Х



Marking on motherboard:COM1 (RS-232) & COM2 (RS-232/422/485)

PIN	RS-232	RS-422	RS-485
1	DCD	TxD – (A)	Data – (A)
2	RxD	TxD + (B)	Data + (B)
3	TxD	RxD + (B)	Х
4	DTR	RxD – (A)	Х
5	GND	GND	GND
6	DSR	Х	Х

7	RTS	Х	х
8	СТЅ	х	х
9	RI	х	Х

12.10 Touch panel PCB connector



Marking on motherboard: J1

- 1 DC 5VM
- 2 LCD 3V3
- 3 MCSPI1 CLK
- 4 MCSPI1 CS0
- 5 MCSPI1 SIMO
- 6 MCSPI1 SOMI
- 7 TS nPEN IRQ
- 8 GND

12.11 Speaker connector



Marking on motherboard: RIGHT & LEFT

- 1 OUT +
- 2 OUT -

12.12 Microphone connector



Marking on motherboard: MIC1

- 1 CODEC1 MIC IN
- 2 GND

12.13 Battery connector



Marking on motherboard: J4

- 1 +
- 2 -

12.14 RS-232 cable



Accessory



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				_	

3

5

2

1	(white dot)	

2			
3			

13 Schematics









129

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130

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131











135

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139