# Developer Kit for Windows CE 6.0 R3 with DIMM-SH7723

## Release Notes for kernel revision 9

This document contains important information which were available only after printing of the manual.

IMPORTANT NOTE: The DIMM-SH7723 modul was formerly known as HiCO.DIMM7723.

Contents



Revision History

| | | | |
|---|---|---|---|
| Notes 1 → | Kernel V1 | Date: | 12.03.2009 |
| | Initial revision | | |
| Notes 2 → | Kernel V2 | Date: | 30.06.2009 |
| | - Improving stabilisation and performance of NAND<br>- Synchronising of AUDIO<br>- Replacing of USBH driver with DMA support<br>- Supporting additional display UMSH8272<br>- Reset of the hardware can be triggered from software<br>- Graphical hardware accelerator<br>- Multimedia<br>- Supporting Repeated Start Condition on I2C<br>- QFEs followed up to 2009M05 | | |
| Notes 3 → | Kernel V2 | Date: | 21.07.2009 |
| | - Information to SDCard | | |
| Notes 4 → | Kernel V2 | Date: | 07.08.2009 |
| | - Information to SDCard | | |
| Notes 5 → | Kernel V3 | Date: | 11.09.2009 |
| | - Update information to USBH<br>- QFEs followed up to 2009M08<br>- Update information to SDCard<br>- New multimedia demo application based on .NET Compact Framework 3.5. Available as | | |

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|---|---|
| | .msi-file<br>- Update video decoder. New revision supported<br>- Some small improvements<br>- Hardware Conditions: HiCO.DIMMBase |
| Notes 6 → | Kernel V4 Date: 01.12.2009 |
| | - Support SDHC → SDCards up to 8GB<br>- QFEs followed up to 2009M09<br>- Bad Block Table(BBT) for Nand Device. Using requires UBoot revision higher than 2009.01em3-svn400<br>- Video Out-Driver → PAL timings adapted<br>- Supporting display table, touch information updated<br>- USB: Some improvements, information updated |
| Notes 7 → | Kernel V5 Date: 07.06.2010 |
| | - Update USB Host driver for better enumeration of USB devices<br>- QFEs followed up to 2010M03<br>- Hive-Based Registry support |
| Notes 8 → | Kernel V6 Date: 07.07.2010 |
| | - Bugfix in I²C driver (detection of no acknowledge in communication) |
| Notes 9 → | Kernel V7 Date: 21.01.2011 |
| | - added support of new touch controller Microchip AR1020, which is used on DIMM-SH7723 modules starting with module revision 4 (please see remarks about how to switch between the touch drivers)<br>- Fixed bug in Ethernet driver which caused crash of driver on high network traffic |
| Notes 10 → | Kernel V8 Date: 19.08.2011 |
| | - BugFix: Now the USB driver supports also BULK transfers which are terminated on the USB bus with a short packet before the requested byte count was reached.<br>- BugFix: Now KITL is started again during initialization if this is configured. |
| Notes 11 → | Kernel V9 Date: 29.04.2013 |
| | - added support for NAND flashes on DIMM-SH7723 hardware revision R6D |
| | |

Overview about supported hardware components

The following table gives an overview about the hardware components which are currently supported by the provided Windows CE Kernel.

| Component | Supported Yes/No | Remarks |
|---|---|---|
| Displays | | |
| - TFT, NEC NL6448BC20 | Yes | currently used<br>colors: 16bpp resolution: 640x480 |
| - TFT, TX14D11VM1CBA | Yes | using can be specified by the bootloader<br>colors: 16bpp resolution: 320x240 |
| - TFT, UMSH8272 | Yes | using can be specified by the |

| | | |
|---|---|---|
| | | bootloader<br>colors:16bpp rsolution 800x480 |
| Touch | Yes | Internal and external |
| RTC | Yes | |
| USB Host | Yes | Full speed |
| USB client driver for USB keyboards | Yes | |
| USB client driver for USB mouse | Yes | |
| USB client driver for USB storage (USB memory) | Yes | |
| USB client driver for USB printers | Yes | needs additonal printer support; currently only driver for PCL3 compatible printer included |
| USB Function (Device) | | |
| serial interface to use with ActiveSync | Yes | |
| Serial ports (COM1: ... COM5:) | Yes | COM2 to COM4 support TxD, RxD and COM1 additional RTS/CTS |
| I²C | Yes | |
| Ethernet | Yes | DM9000B controller<br>100/10MBit full- and half-duplex, full-duplex flow control,<br>HP Auto-MDIX, Auto-negotiation |
| Storage Devices<br>NAND Flash File System<br>SDCard | <br>Yes<br>Yes | <br><br>See below → Remarks on SDCard |
| AUDIO | Yes | Currently playing is possible |
| Graphic hardware accelerator | Yes | Accesible by<br>- Direct Draw Interface<br>- API |
| Multimedia<br>- Video IN<br>- Video OUT<br>- Video Decoding<br>- Blending | Yes | <br>PAL, NTSC, digital<br>PAL, NTSC<br>MPEG4<br>PIP |

Remarks on the touch interface

The calibration data is taken from the display table in the bootloader. If the touch differs too much to the touched object you are free to make new calibration data. This can be done with the calibration applet “Stylus” in the control panel of WINCE. After this work, make the new calibration data persistent by using the tool writereg.exe.

Switching between the touch controller drivers:
Starting with ADK revision 7 the touch controller of the “new” DIMM-SH7723 modules (module revision 4 and onwards) is supported and integrated as default in the Windows CE Image.
If you want to use the new ADK Image with an older module featuring the old touch controller, you have to change following registry key like this:

```
[HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\TOUCH]
"DriverName"="tsc2007.dll"
```

To switch back to the new controller use:

```
[HKEY_LOCAL_MACHINE\HARDWARE\DEVICEMAP\TOUCH]
"DriverName"="ar1020.dll"
```

You can change registry values by booting up the device and connecting to it via ActiveSync (for further information see the ADK Manual). Then you can use the Remote Registry Editor provided from Microsoft's Visual Studio. After changing the values use our WriteReg Tool to make sure the changes are made persistent.

## Remarks on USBH

Due to the hardware restrictions on the USBH controller of SH7723 only one HUB with max 8 Ports is allowed to connect. This issue reflects on the available BASE boards from emtrion as follow.

HICO.DIMM-Base:
Due to one HUB already exists on HICO.DIMM-Base no further HUB may be connected at the BASE.

HICO.DIMM-ECO-Base:
Due to no HUB exists on the base, one HUB may be connected at the BASE.

General
Putting or removing of an USB storage device sometimes causes in disconnection state of a different USB device. In this case remove the affected device and plug it.

## Remarks on SDCard

Proper working of the SDCard is dependent on the BASE board and its revision. Since a wrong level on the write protect line and detect line has some influence. To minimise this issue the write protect state of the SDHI0 and SDHI1 is ignored by the software per default. This is adjusted within the registry keys of the driver.

HICO.DIMM-ECO-Base:
With the registry settings above, there are no restrictions up to the current revision R2B. Please note, write protect is not declared in the specification for microSD.

HICO.DIMM-Base:
Regarding the Revision there are the following restrictions.

- R2B … R2C → No restrictions. As mentioned above write protect is disabled as default. But the function write protect is also allowed, especially for the SDHI0, while connected to the SDCard- Socket. Enable the write protect function by changing the corresponding registry key.
- R2A → Both SDHIs are only run without the function write protect. For that don't make any changes on the registry.

## Contact information

You can contact us at:


emtrion GmbH
Alter Schlachthof 45
76131 Karlsruhe
Germany

phone: +49 / 721 / 62725-0
Fax: +49 / 721 / 62725-19
eMail: mail@emtrion.de
Web: http://www.emtrion.com
http://www.emtrion.de