

## ➤ **Kontron Technical Manual**

## ➤ **Kontron Windows CE Solution Pack**

Document Revision 2.8

Computer On Modules	Blades & Mezzanines	CPU Boards	Systems	Mobile Rugged	Custom Solutions
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## User Information

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## General

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The information in the Technical Descriptions describes the type of the boards and shall not be considered as assured characteristics.

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## Warranty

Each board is tested carefully and thoroughly before being shipped. If, however, problems should occur during the operation, please check your user specific settings of all boards included in your system. This is often the source of the fault. If a board is defective, it can be sent to your supplier for repair. Please take care of the following steps:

1. The board returned should have the factory default settings since a test is only possible with these settings.
2. In order to repair your board as fast as possible we require some additional information from you. Please fill out the attached Repair Form and include it with the defective board.
3. If possible the board will be upgraded to the latest version without additional cost.
4. Upon receipt of the board please be aware that your user specific settings were changed during the test.

Within the warranty period the repair is free of charge as long as the warranty conditions are observed. Because of the high test expenditure you will be charged with the test cost if no fault is found. Repair after the warranty period will be charged.

This **Kontron<sup>®</sup>** product is warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period **Kontron<sup>®</sup>** will at its option either repair or replace defective products.

For warranty service or repair the product must be returned to a service facility designated by **Kontron<sup>®</sup>**.

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance or handling by buyer, unauthorized modification or misuse, operation outside of the product's environmental specifications or improper installation or maintenance.

**Kontron<sup>®</sup>** will not be responsible for any defects or damages to other products not supplied by **Kontron<sup>®</sup>** that are caused by a faulty **Kontron<sup>®</sup>** product.

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## Introduction

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The **Kontron<sup>®</sup>** Windows CE Solution Pack is an add-on to the Windows CE Embedded Toolkit or Platform Builder. It contains essential components that you need to deliver your Windows CE based solution to your customers right away.

It allows you to immediately create a Windows CE 4.2, 5.0, or 6.0 (.NET) operating system that runs on all current **Kontron<sup>®</sup>** CPU boards while utilizing the available PC-compatible hardware to the fullest.

This documentation covers Windows CE version 6.0. Please refer to older documentation for previous CE versions.

The current version of the Solution Pack includes:

- IDE Driver
- Bootloader
- Memory Handler
- Video Drivers
- Serial Driver Configuration
- Ethernet Drivers
- Audio Drivers
- JIDA32 Library API
- JStart Flash/Hard Disk Application Launcher
- Registry Persistence
- Ethernet Download and Kernel Debugging

## IDE Driver

Allows read and write access to a maximum of four IDE-compatible hard and flash disk drives. The drives can contain a regular MS-DOS FAT file system. Without this driver Windows CE applications have no way of saving configuration or program data on a PC compatible platform. The root directory of the first hard disk will appear as "\Storage Card" in the root directory of the Windows CE file system and can be accessed with regular Win32 file API. Additional hard disk are numbered "\Storage Card2" and so on.

"Kontron Generic ATAPI" (jatapi.dll) should be used.

**NEVER** use "ATAPI PCI/IDE Storage Block Driver" (atapi.dll), "Promise Controller ATAPI driver" (atapi.dll), or "Compact Flash / PC Card Storage (ATADISK)"

**NEVER** mix IDE/ATAPI drivers. They all access the same hardware.

## Bootloader

Allows you to boot Windows CE directly from a BIOS (INT 13h) compatible hard or flash disk drive. Only the FAT 16 file system is supported. The loader can handle the NK.BIN file images that are generated by the Windows CE Embedded Toolkit. Without this loader you would need to boot MS-DOS prior to booting Windows CE and additional MS-DOS licenses would be required. Note that the IDE driver is not required for using the boot loader.

## Memory Handler

Allows you to utilize an additional 800 Kilobytes of memory under Windows CE that would otherwise be wasted. Includes support for more than 32 MB. The maximum memory that CE can support is 512 MB.

## Video Drivers

Adds support for the graphics controllers that are used on **Kontron<sup>®</sup>** boards. Supported resolutions include:

- 320\*200
- 640\*480 VGA
- 320\*240 Quarter VGA
- 800\*600 (most drivers)
- 1024\*768 (most drivers)
- 1280\*1024 (most drivers)
- Other resolutions on request (they may already be available, please ask)

Flat VGA Driver Support:

If you want to use the Flat VGA driver ddi\_flat then prepare the boot drive with

JSYSCE C: F640\*480

Please note that if you use LOADCEPC you MUST add the /L switch like this:

LOADCEPC /L:640x480x8

For ALL other video drivers NEVER add the /L switch. Setting the video mode with JSYSCE is sufficient in these cases. The Flat VGA driver can be used for all boards with a PCI graphics card and VESA support in the BIOS that do not have a dedicated display driver.

This is the case for VIA based boards like ETX-P3E and ETX-C3E.

To set 16 bit color modes add "\*"16". Example: JSYSCE C: F800\*600\*16

Topro Display Driver:

For Topro based cards like the DIMM/PC-VGA2 include the ddi\_jump (Kontron Cirrus Logic Display Driver)

Then prepare the boot drive with

JSYSCE C: TP640\*480

LX800 Display Driver:

For LX based prepare the boot drive with MGX like:

JSYSCE C:MGX640\*480

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## Ethernet Drivers

Adds support for the Ethernet controllers that are used on **Kontron<sup>®</sup>** boards.



## Audio Drivers

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Adds Audio support for the chips that are used on **Kontron<sup>®</sup>** boards.

## JIDA32 Library API

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Most **Kontron<sup>®</sup>** PC boards are equipped with unique hardware features that cannot be accessed with standard API. The JIDA interface allows you to access these features in a hardware independent manner under any Win32 based and other operating systems.

The interface DLL works under any flavor of Win32. The DLL communicates with a platform dependent driver. At the present time drivers are available for Windows 9x, Windows NT/2000, Windows CE, Linux, and VxWorks.

The Windows CE drivers have been included in the Windows CE Solution Pack for your convenience. To use JIDA32 Library in your application you must download the JIDA32 Library driver and development pack available as a separate archive. Please refer to the JIDA32.DOC manual for further information.

## JStart Flash/Hard Disk Application Launcher

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This component launches an application called "START.EXE" located in the root directory of the flash or hard disk. Under CE this location is mapped to the "Storage Card" folder. If the file is not present no action is taken. This requires the IDE driver.

A sample "START.EXE" is provided in the JCEPCTools directory.

Please note that this name is nationalized so the current version of JStart only works on the US version of CE or if the localized "Storage Card" string is set to "Storage Card" again.

## Registry Persistence

Registry Persistence provides support for saving and restoring the Windows CE registry on an external drive such as an IDE compatible flash disk.

### **Method 1:**

To enable the Hive Based Registry Support simply set the variables J\_CEPC\_BOOTHIVE and J\_CEPC\_BOOTHIVE\_DRIVE0 (for the primary master) to 1.

That is all that is required.

### **Method 2:**

To use the legacy registry persistence feature make sure the drive has been processed with JSYSCE with the -r switch. Example:

```
JSYSCE C: ATI640*680 -r
```

This loads the registry from a CEREGBIN file located in the directory of the CE boot drive. The registry restore/save feature is **not available when using LOADCEPC**.

To save the registry you must call the Standard Windows CE API function

```
RegFlushKey(HKEY_LOCAL_MACHINE);
```

You can also run the included FLUSHREG.EXE sample program.

The default volume folder name is "Storage Card". It can be changed by calling `KernelIoControl()` and passing `IOCTL_JHAL_SET_REGISTRY_VOLUME` and a Unicode string containing the new name. This also enables registry saves (not restores) when the image was loaded with LOADCEPC.

**CAUTION: NEVER mix Method 1 and 2!**

## Ethernet Download and Kernel Debugging

**PLEASE NOTE: In order to use Ethernet Kernel Debugging you MUST remove the NDIS Ethernet Driver for that card!!!**

This involves creating a PostWinCE.bat (refer to important notes in the beginning of this document) and setting J\_CEPC\_ETHER\_INTEL, J\_CEPC\_ETHER\_INTEL1000, or J\_CEPC\_ETHER\_DAVICOM (depending on your boards Ethernet chip) to an empty string. Otherwise two different drivers would access the same chip.

The preferred Ethernet Download and Kernel Debugging option is to use a dedicated NE2000 compatible Ethernet card (ISA or PC/104) or RTL8139 PCI Ethernet card..

However if this is not an option you can now use the on-board Ethernet. This package contains support for on-board Davicom 9102A and Intel 8255x(ER) Ethernet chips.

The Ethernet bootloader also includes support for NE2000 compatible ISA cards (like RTL8019, DM9008, FP9601) or RTL8139 PCI Ethernet card.

Copy the file EBOOT.BIN from the JCEPC\Tools directory your target's boot disk.

Launch with the Kontron Version of Loadcepc:

```
loadcepc /E:1:<io>:<irq> /B:38400 eboot.bin
```

Specify the correct values for <io> and <irq> for example:

```
loadcepc /E:1:1400:11 /B:38400 eboot.bin
```

To pick the first PCI Ethernet chip specify:

```
loadcepc /E:1:1:1 /B:38400 eboot.bin
```

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## What's new

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### **CESPI128:**

- Updated Intel Gigabit 8257x Ethernet (set J\_CEPC\_ETHER\_INTEL1000 to 1)
- Updated Intel Embedded Graphics Driver 8.0 (9.1.1 for Atom SCH, optional for others)
- Updated JATAPI
- Updated JINITUSB
- Updated JINITIG
- Updated Kontron Flat Display Driver
- Updated JSYSCE
- Updated EBOOT.BIN
- Updated JIDA Driver
- Added HD Audio Driver
- Added Intel Gigabit 8257x Ethernet Debug Driver (EBOOT & KITL)
- Added Intel Gigabit 82574L Driver (set J\_CEPC\_ETHER\_INTEL1000 to 1)
- Added Intel SD Host Controller Driver (set J\_CEPC\_SD, SYSGEN\_SDHC\_STANDARD, SYSGEN\_SD\_MEMORY to 1)
- Added Intel USB Function Driver (set J\_CEPC\_USBFN, SYSGEN\_USBFN\_STORAGE to 1)
- Added VIA Chrome Display Driver
- Added VIA High Definition Audio

### **CESPI127:**

- Updated Intel Gigabit 8257x Ethernet (set J\_CEPC\_ETHER\_INTEL1000 to 1)
- Updated Intel Embedded Graphics Driver
- Updated JSYSCE
- Added TCP/IP Connect Transport (set J\_CEPC\_CONMAN to 1)
- Changed EPIC-PM second Ethernet from Davicom to Intel

### **CESPI126:**

- Added Intel Gigabit 8254x Ethernet (set J\_CEPC\_ETHER\_INTEL1000B to 1)
- Added Realtek Gigabit 811x Ethernet (set J\_CEPC\_ETHER\_REALTEK1000 to 1)
- Updated JATAPI
- Updated Intel Embedded Graphics Driver
- Updated Davicom Ethernet Driver
- Updated JSYSCE

### **CESPI125:**

- Ported to Windows CE 6.0
- Removed EOL boards
- Added Intel Gigabit 8257x Ethernet (set J\_CEPC\_ETHER\_INTEL1000 to 1)

### **CEPSI124:**

- Updated JATAPI
- Updated Intel Embedded Graphics Driver
- Updated Crystal Ethernet Driver
- Updated JIDA Driver
- Updated JInitGX (LX support)
- Updated ICH4 Audio Driver (ICH6 support)
- Added LX Video Driver

- Added LX Audio Driver
- Added JApMOff for power button support on Intel and Via boards.

**CESPI123:**

- Added USB Legacy Support
- Updated JATAPI
- Updated Intel Ethernet Kernel Debugging
- Increased maximum memory to 512 MB, the top limit for CE

**CESPI122:**

- Updated Intel Embedded Graphics Driver
- Added PCI Bus Master Driver

**CESPI121:**

- Updated Boot Loader, JSYSCE & EBOOT.BIN
- Updated VIA Display Driver
- Updated Intel Ethernet Driver
- Updated JIDA Driver
- Updated JInitIP
- Updated VIA Ethernet
- Added SMI LynxEM+ Display Driver
- Added Intel Embedded Graphics Driver
- Added CMI Audio Driver
- Added ICH4 Audio Driver

**In 2.1:**

- Support for Windows CE 5.0
- The BSP is now under Platform\JCEPC

**In 2.0:**

- Support for Windows CE 4.2
- Added Ethernet Download and Kernel Debugging for Davicom and Intel Ethernet chips.
- Added Audio Drivers
- Added new boards
- Added VIA Drivers
- Updated JIDA

**In 1.9:**

- Support for Windows CE 4.1

**In 1.8:**

- Support for Windows CE 4.0
- Added Serial Mouse Driver again.
- Replaced serial drivers with configurations based on MS serial.
- Removed obsolete components: Touch and Webserver
- No support in this initial CE 4.0 version for Floppy and 386, partial support for InitIP

**In 1.7:**

- Added Registry Persistence
- Updated Davicom Network Driver

- Updated IDE Driver
- Updated JIDA

**In 1.6:**

- MGX Display Driver
- Updated Davicom Network Driver
- Added OrigName to enable SMB client by default
- Updated JIDA
- Corrected typos
- JStart

**In 1.5:**

- Support for Windows CE 3.0
- ATI Rage Mobility Driver
- Davicom Network Driver
- AMD PCNet Network Driver
- ELOtouch and MicroTouch Panel Drivers
- Init IP Address from EEPROM Driver

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## Requirements

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To run the **Kontron<sup>®</sup>** Solution Pack must install the following products:

- Windows XP SP2 or later
- Microsoft Windows CE Platform Builder 6.0

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## Installation

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Please make sure the Windows CE Embedded Toolkit or Platform Builder has been installed properly.

**WARNING:** The **Kontron<sup>®</sup>** Solution Pack should be installed into a clean Windows CE ETK. Any files you might have modified could be overwritten. So please make a backup of any changes you might have made.

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## Windows CE 6.0

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To install support for Windows CE 6.0 simply double click the following file located on the distribution disk:

\\WinCE600\\Setup.exe

Please note the BSP is now located in its own WINCE600\\Platform\\JCEPC directory. The BSPs are then immediately available in PB.

All Kontron components appear under the "Third Party" node.

## Bootloader and LOADCEPC

To install the **Kontron<sup>®</sup>** Bootloader Configuration Program (JSYSCE) and the **Kontron<sup>®</sup>** version of LOADCEPC follow these steps:

- Create a bootable floppy disk with MS-DOS 6.2 or Windows 9x
- Copy the two files JSYSCE(V).EXE and LOADCEPC.EXE contained in the C:\Wince\*\Platform\JCEPC\Tools directory to the root directory of the bootable floppy

If you use any components of the **Kontron<sup>®</sup>** Solution Pack then you must use the **Kontron<sup>®</sup>** version of LOADCEPC. It has the added advantage that you do not need HIMEM.SYS.

You must use JSYSCE to change the desired screen resolution prior to running LOADCEPC. The /d option of LOADCEPC does not work.

**IMPORTANT:** The current drive from where you launch LOADCEPC must have been prepared with JSYSCE. If you don't want to create a bootable Windows CE drive then use the -k option to prepare a drive.

If you have purchased the **Kontron<sup>®</sup>** Bootloader then please use only JSYSCE.EXE.

If have **not** purchased the boot loader then you can use JSYSCEV.EXE to change the video mode for LOADCEPC.EXE. However this version does not allow you to create a bootable Windows CE system. The command line parameters are the same.

See the next chapter for details.



## Bootable Windows CE Configuration

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To create a bootable Windows CE on your target system follow these steps:

- Boot MS-DOS
- Partition disk
- Format disk
- Run the **Kontron<sup>®</sup>** CE Boot Configuration Utility
- Copy NK.BIN
- Reboot

### Screen shot:

```
A:\>fdisk
A:\>format c:

A:\>jsysce c: CTF640*480

Kontron Windows CE boot configuration program
Using base video configuration: Chips & Tech 640*480
Setting up Windows CE on drive C:
Drive has been prepared successfully.
Please copy the Windows CE image file NK.BIN to C:\

A:\>_
```

**Help Screen:**

```

A:\>jsysce

Kontron Windows CE boot configuration program 3.9 (2008.11.20)
usage: jsysce[ <drive>][ <video>]{ <switch>}
  <drive>: Windows CE boot drive (i.e. C:)
    Turn the given drive into a Windows CE boot drive.
    If the drive is omitted the boot configuration is updated.
  <video>: video configuration name
    320*200      any VGA
    CIR640*480  Cirrus Logic 640*480
    CIR320*240  Cirrus Logic 320*240
    CT320*240   Chips & Tech 320*240 (obsolete)
    CTF640*480  Chips & Tech 640*480 (fast driver F!)
    ATI640*480  ATI Rage 640*480
    MGX640*480  MGX 640*480
    TP640*480   Topro 640*480
    F640*480    VESA Flat 640*480
  <switch>:
    -s          no "Starting Windows CE..." sign-on
    -p          no progress periods
    -k          keep boot sector (just create configuration)
    -m          pressing shift boots MS-DOS (dual boot)
    -c:<num>    debug COM port (0=none)
    -i          enable DIMM IO card serial COM3/4
    -r          restore registry from CEREG.BIN (FlushRegKey(HKLM) to save)
    -z          zero extended memory before loading CE
  example: jsysce c: CTF640*480
A:\>_

```

The -m switch allows you to boot the operating system that was previously present on the boot drive before running JSYSCE for the first time. This might be MS-DOS. To boot the previous OS simply press and hold the Shift key or press the CAPS LOCK key before the "Starting Windows CE..." message appears.

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## Windows CE Image Configuration

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### Visual Platform Builder Components

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In Windows CE Platform Builder 6.0 you can and should use two other methods **instead** of setting the environment variables in your *project.bat* file.

#### Component Catalog

You can use drag and drop to simply add components from the Component Catalog to your current project. Please refer to the installation section on how to add all Kontron<sup>®</sup> components contained in the Solution Pack to the Component Catalog.

The Kontron components are available in the component catalog under "Third Party\Device Drivers" and then "Display", "Network", "Serial", and "Kontron". The disk drivers are under "\CoreOS\Hardware Support\Storage Devices". Choose the with the Kontron Generic ATAPI if your board requires IDE support. Please note that you should remove "Audio" and "PCMCIA" keys as well as the ddi\_flat driver if that's added to you project by default.

BSPs (Board Support Packages) are provided for some boards. They usually select the appropriate Display and Ethernet drivers. For other boards choose "Kontron All Boards" JCEPC and select the required driver manually.

#### Setting Environment Variables Visually

You can also define the variables by choosing the "Settings..." menu item from the "Platform" menu. The Platform Settings dialog appears. In the upper left combo box under "Settings for" choose "All Configurations". Select the "Environment" tab. Add the name of the desired environment variable and the set the value to 1 to activate the option.

**PLEASE DO \*\*\*NOT\*\*\* USE THESE COMPONENTS \*\*\*AND\*\*\* DEFINE THE CORRESPONDING ENVIRONMENT VARIABLE AT THE SAME TIME IN THE ABOVE DIALOG OR PROJECT.BAT FILE. THIS IS UNNECESSARY AND CAUSES CONFUSION.**

## Important Notes

Platform Builder prevents drivers that are chosen by a BSP from being removed in the GUI projects catalog items tree. A message: "This build environment is always including the selected item" appears. To remove individual drivers or components, create a file called WINCE600\OSDesigns\<ProjectName>\WINCE600\JCEPC\_x86\PostWinCE.bat and set the corresponding J\_CEPC\_\* environment variable to a blank value. In PB right click on the refresh button on top of the Catalog Items View for the changes to take effect.

### **DO NOT MODIFY THE JCEPC.BAT FILE!**

To change to a different Kontron BSP in an existing project, copy the file WINCE600\OSDesigns\<ProjectName>\WINCE600\JCEPC\_x86\\_setbsp.bat to setbsp.bat (no leading underscore) and modify the BSP name to any Kontron BSP name as it appears in the Component Catalog (EXACT case and spelling).

## Hardware Notes

If the BIOS option is available then always set **"PNP OS installed" to "No" in the BIOS** setup.

On boards with PCI please make sure the IRQ 9 is not assigned to the Ethernet chip. To achieve this, mark IRQ 9 as "Reserved" in the BIOS setup under "Advanced", "PCI Configuration", "PCI/PNP ISA IRQ Resource Exclusion". Then reboot. Later you can mark the IRQ 9 as available again if you need it for other devices.

On both the development workstation and the target enable the parallel port and set it to EPP or BIDIR (and not ECP or Normal). If possible set the port to 378h and IRQ7.

Here is a table that lists the required drivers:

Board	Display	Network	Audio	USB	JSYSCE	PCI
DIMM/PC-520	ddi_jump	Crystal			CIR/TP	
MOPS/520	ddi_flat	Intel			F	X
Xboard<861>	ddi_gx	Intel	jwavegx	OHC	MGX	X
ETX-PM, ETX-P3T ETXexpress-PM EPIC-PM, EPIC-CE JReX-PM, JReX-CE speedMOPSIcdPM speedMOPSIcdCE PCI-951 CV-Server, microETXexpress- PM, ETX-CD, ETXexpress-CN8, coolMONSTER PM, ETX-PM3, MOPS- PM	ddi_igd	Intel	waveich4	UHC	F	X
ETX-DC	ddi_igd	Intel	jwavehda	UHC	F	X
ETXexpress-MC	ddi_igd	Intel1000		UHC	F	X
ETX-P3Tx	ddi_flat	Intel	waveich4	UHC	F	X
microETXexpress- SP, nanoETXexpress- SP, ETXexpress- PC, microETXexpress- PC	ddi_igd9	Intel1000	jwavehda	UHC	F	X
ETX-LX, MOPSIcdLX	ddi_agx	Intel	ngxuamaud	OHC	MGX	X
Jrexplus-LX	ddi_agx	Realtek1000	ngxuamaud	OHC	MGX	X
Jrexplus-690	ddi_flat	Realtek1000		OHC	F	X
ETXexpress-690	ddi_flat	Intel1000	jwavehda	OHC	F	X
ETX-CN8	ddi_viac	Via	uamhda	UHC	F	X

## BSP Variable Definitions

Variable Name	If set to 1 this includes/means
<b>Ethernet</b>	
J_CEPC_ETHER_INTEL	All 100 MB/s Intel
J_CEPC_ETHER_INTEL2	Add support for second Intel chip
J_CEPC_ETHER_INTEL1000	1000 MB/s Intel 8257x
J_CEPC_ETHER_INTEL1000B	1000 MB/s Intel 8254x (Backplane)
J_CEPC_ETHER_DAVICOM	Davicom 9102A
J_CEPC_ETHER_DAVICOM2	Add support for second Davicom chip
J_CEPC_ETHER_REALTEK1000	1000 MB/s Realtek 811x
J_CEPC_ETHER	Crystal CS8900
J_CEPC_ETHER_VIA	VIA Rhine
J_CEPC_ETHER_CRYSTAL_NOIRQ	Don't assign any IRQ (Need assignment in project.reg)
J_CEPC_ETHER_CRYSTAL_IRQ5	Use IRQ 5 instead of 10
J_CEPC_ETHER_FIXED_IPADDR	Use a fixed IP on any Ethernet (Need assignment in project.reg)
J_CEPC_ETHER_FIXED_IPADDR_DEMO	Use a demo IP of 89.0.0.222
<b>Audio</b>	
J_CEPC_WAVE_ICH4	All Intel AC97
J_CEPC_WAVE_LX	AMD LX800
J_CEPC_WAVE_HDA	All HD Audio RTL Codec
J_CEPC_WAVE_HDA_VIA	HD Audio VIA Codec
<b>Display</b>	
J_CEPC_DDI	Automatically set on any Kontron Display driver
J_CEPC_DDI_IEGD	Intel 815
J_CEPC_DDI_IEGD_X	Any other Intel 8xx, 9xx
J_CEPC_DDI_IEGD9	Any other newer Intel like SCH, BM45
J_CEPC_DDI_IEGD_NOMINI	Don't include port drivers like lvds.dll in the image
J_CEPC_NOINITIG	Don't automatically initialize resolution based on JSYSCE for Intel
J_CEPC_DDI_JIGD	Use wrapper driver for Intel to restore BIOS/JILI display settings.
J_CEPC_DDI_LX	Via Chrome
J_CEPC_DDI_LX	AMD LX800
J_CEPC_NOINITGX	Don't automatically initialize resolution based on JSYSCE for LX800
J_CEPC_DDI_JUMP	DIMM Topro
J_CEPC_GWES_ANIMATE	Slow down system with window open/close animations
J_CEPC_DDI_NOCURSOR	Hide mouse cursor if display driver supports it (Requires wrapper driver on Intel)
<b>Disk Support</b>	
J_CEPC_ATAPI	Basic ATAPI hard disk, CD/DVD driver.
J_CEPC_ATAPI_NO_0	Don't detect primary master
J_CEPC_ATAPI_NO_1	Don't detect primary slave
J_CEPC_ATAPI_NO_2	Don't detect secondary master
J_CEPC_ATAPI_NO_3	Don't detect secondary slave
J_CEPC_BOOTHIVE	Allow support for hive based registry
J_CEPC_BOOTHIVE_DRIVE0	Primary master contains the hive registry
J_CEPC_BOOTHIVE_DRIVE1	Primary slave contains the hive registry
J_CEPC_BOOTHIVE_DRIVE2	Secondary master contains the hive registry

J_CEPC_BOOTHIVE_DRIVE3	Secondary slave contains the hive registry
J_CEPC_NOSTORAGECARD	Don't rename disk drive folder to "Storage Card"
<b>Serial</b>	
J_CEPC_COM0	Include logical COM0 (physical COM1)
J_CEPC_COM1	Include logical COM1 (physical COM2)
J_CEPC_COM2	Include logical COM2 (physical COM3)
J_CEPC_COM3	Include logical COM3 (physical COM4)
J_CEPC_SERIAL_115K	Set baud rate to 115200 (instead of 19200) baud
<b>JIDA</b>	
J_CEPC_JIDA	Include JIDA
J_CEPC_JIDA_PRELOAD	Preload the JIDA when the CE is booted
J_CEPC_JIDA_TEST	Include the JidaTst.exe sample program
<b>Misc</b>	
J_CEPC_INITIP	Initialize IP address from EEPROM
J_CEPC_NOINITBM	Don't set PCI bus master bits on all PCI devices
J_CEPC_APMOFF	Add power down support for Intel/VIA
J_CEPC_JSTART	\Storage Card\Start.exe launcher
J_CEPC_CONMAN	TCP/IP Connect Transport
J_CEPC_USBFN	Intel USB Function Driver

These variables are obsolete/untested/unsupported and are simply retained for legacy reasons (They still may work):

J\_CEPC\_PCMCIA\_TI1410  
 J\_CEPC\_IDEDISK  
 J\_CEPC\_IDEDISKANY  
 J\_CEPC\_IDEDISKNOBOOT  
 J\_CEPC\_FLOPPY  
 J\_CEPC\_TOUCH  
 J\_CEPC\_TOUCH\_EPANEL  
 J\_CEPC\_ELTOUCH  
 J\_CEPC\_MICROTOUCH  
 J\_CEPC\_MICROTOUCHPS2  
 J\_CEPC\_MICROTOUCH\_M  
 J\_CEPC\_TOUCHNOCOM1  
 J\_CEPC\_JDEMODLG  
 J\_CEPC\_WEBSERVER  
 J\_CEPC\_WEBSERVER\_DONT\_LOAD  
 J\_CEPC\_SERIAL  
 J\_CEPC\_SERMOUSE  
 J\_CEPC\_WAVE\_GX  
 J\_CEPC\_WAVE\_S1  
 J\_CEPC\_WAVE\_GXU  
 J\_CEPC\_WAVE\_VIA  
 J\_CEPC\_WAVE\_CMU  
 J\_CEPC\_ETHER\_AMDPCNET  
 J\_CEPC\_ETHER\_INTEL\_OLD  
 J\_CEPC\_ETHER\_DAVICOM\_OLD  
 J\_CEPC\_DDI\_JFLAT  
 J\_CEPC\_DDI\_FASTCT  
 J\_CEPC\_DDI\_ATI  
 J\_CEPC\_DDI\_GX  
 J\_CEPC\_DDI\_SMI  
 J\_CEPC\_DDI\_VIA  
 J\_CEPC\_TVIN  
 CEPC\_DDI\_FLAT

J\_CEPC\_NOINITUSB  
J\_CEPC\_JDEMODLG  
J\_CEPC\_NOORIGNAME



## Configuration Options

### Display driver

To hide the mouse cursor

```
set J_CEPC_DDI_NOCURSOR=1
```

Many display drivers support this option.

### Serial driver

To default all serial drivers to 115200 baud

```
set J_CEPC_SERIAL_115K=1
```

To enable the specified COM port

```
set IMGCOM0=1
set IMGCOM2=1
set IMGCOM3=1
```

Notes on COM numbering:

The logical device name is one less than the physical port so:

COM0: under CE refers to the physical COM1: (Port 03f8h, IRQ 4)  
COM1: under CE refers to the physical COM2: (Port 02f8h, IRQ 3)  
COM2: under CE refers to the physical COM3: (Port 03e8h, IRQ 10)  
COM3: under CE refers to the physical COM4: (Port 02e8h, IRQ 11)

Interrupt lines cannot be shared between ports.

By default COM0: is shared as debugging port if you use LOADCEPC to launch Windows CE and exclusively available to the application if Windows CE is launched using the boot loader.

To configure the port addresses or add additional ports check the file  
PLATFORM\JCEPC\FILES\PLATFORM.REG

**IMPORTANT:** If you are using a Windows CE Services serial debugging connection then REPLLOG.EXE will pick the first available COM port in that order: COM3:, COM2:, COM0:, COM1:.

### Ethernet driver

To enable a demo IP address of 89.0.0.222 set these variables:

```
set J_CEPC_ETHER_FIXED_IPADDR=1
set J_CEPC_ETHER_FIXED_IPADDR_DEMO=1
```

If you are planning to work without DHCP and would like to use a fixed TCP/IP address then make the following additions:

```
set J_CEPC_ETHER_FIXED_IPADDR=1
```

In any \*.reg file set:

```
[HKEY_LOCAL_MACHINE\Comm\CRYSTAL1\Parms\TcpIp]
    "IpAddress"="89.0.0.222"
    "Subnetmask"="255.255.255.0"
    "EnabledDHCP"=dword:0
```

Replace 89.0.0.222 with your TCP/IP address.

Interrupts under Windows CE 6.0 are detected automatically with most drivers.

For the Crystal Ethernet under CE 6.0 you need to set the interrupt for which the card has been configured. The default is IRQ10. To set the driver to IRQ5 you need to set the environment variable J\_CEPC\_ETHER\_CRYSTAL\_IRQ5 to 1. For all other IRQs you need to manually change the setting in PLATFORM.REG

You can use the DOS based SETUP program to view or change the current IRQ.

### Demo Options

To include a JIDA test application

```
set J_CEPC_JIDA_TEST=1
```

To include a the graphical Kontron demo application JDemoDlg (if available)

```
set J_CEPC_JDEMODLG=1
```

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## Hints

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Attending one of our Windows CE Seminars helps you avoid many of the pitfalls of getting started with Windows CE.

## Document Revision History

Filename	Date	Edited by	Revision	Alteration to preceding revision
JWINCE.DOC	1998.11.01	DP	1.0	Initial version for CE 2.0 and 2.10
JWINCE.DOC	1999.03.26	DP	1.1	Updated for CE 2.11
JWINCE.DOC	1999.05.11	DP	1.2	Updated for new setup, merged in Ethernet and Floppy, added Serial
JWINCE.DOC	1999.08.16	DP	1.3	Updated for CE 2.12
JWINCE.DOC	1999.10.27	DP	1.3	Updated for fast CT display driver, new Intel Ethernet driver, JIDA, serial touch screen driver, JSYSCEV
JWINCE.DOC	1999.12.08	DP	1.4	Added WebServer and Platform Builder Component Catalog (CEC), fixed Slave IDE Only configuration
JWINCE.DOC	2000.08.21	DP	1.5	Updated for CE 3.0, added support for ATI Rage Mobility, various Touch Panel and Network Drivers and Init IP.
JWINCE.DOC	2001.03.08	DP	1.6	Added support for MGX, updated Davicom, changed JIDA Win32 API to JIDA32 Library API, added hardware section, JStart.
JWINCE.DOC	2001.11.23	DP	1.7	Added registry persistence, updated Davicom, IDE Driver, and JIDA32 Library API.
JWINCE.DOC	2002.04.11	DP	1.8	Updated for CE 4.0. Removed obsolete drivers.
JWINCE.DOC	2002.10.27	DP	1.9	Updated for CE 4.1. Updated Kontron brand name.
JWINCE.DOC	2003.06.17	DP	2.0	Updated for CE 4.2.
JWINCE.DOC	2003.10.02	DP	2.0	Added VIA drivers and new boards.
JWINCE.DOC	2004.03.15	DP	2.0	Added ePanel.
JWINCE.DOC	2004.08.06	DP	2.1	Updated for CE 5.0
JWINCE.DOC	2006.08.22	DP	2.4	Added new boards. Added and updated drivers.
JWINCE.DOC	2007.02.09	DP	2.5	Updated for CE 6.0. Added new boards. Removed EOL Boards. Updated drivers.
JWINCE.DOC	2007.08.07	DP	2.7	Added new boards. Updated drivers.
JWINCE.DOC	2009.04.14	DP	2.8	Added new boards. Updated drivers.