

➤ **Kontron Technical Manual**

➤ **Kontron Windows XPE Solution Pack**

Document Revision 1.9

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

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In this document Kontron^o Embedded Modules GmbH will also be referred to by the short form "Kontron^o".

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General

For the circuits, descriptions and tables indicated no responsibility is assumed as far as patents or other rights of third parties are concerned.

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^o** product is warranted against defects in material and workmanship for the warranty period from the date of shipment. During the warranty period **Kontron^o** 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^o**.

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^o will not be responsible for any defects or damages to other products not supplied by **Kontron^o** that are caused by a faulty **Kontron^o** product.

Introduction

The **Kontron^o** Windows XPE Solution Pack is an add-on to Microsoft Windows XP Embedded and its primary tool Target Designer. It contains everything to use the Windows XP Embedded operating system on **Kontron^o** boards easily and efficiently.

This solution pack supports for the XPE Target Designer's visual configuration and build environment.

It contains Component Definitions in SLD file with all necessary drivers required by **Kontron^o** boards like video and network adapters.

It also includes pre-configured configurations for **Kontron^o** boards so that you have a solid and tested base from where to start your own XPE projects.

Support is provided for the **JIDA32 Library API** for XPE to access the **Kontron^o** specific onboard hardware features like watchdog, LCD backlight, EEPROM, and the I2C bus.

The **Kontron^o** Windows XPE Solution Pack is free and updates can be downloaded from our Website.

The Solution Pack includes:

- Video Drivers
- Ethernet Drivers
- Audio Drivers
- JIDA32 Library API

Supported Boards

- ETX-P1
- ETX-P3
- ETX-C3
- ETX-P3E
- ETX-C3E
- ETX-P3m
- ETX-C3m
- ETX-VE
- ETX-PM
- ETX-P3T
- ETX-MGX
- ETX-CN8 (MODC)
- ETX-CD (MCAL)
- littleMONSTER2
- coolMONSTER
- coolMONSTER/Sound
- coolMONSTER/P3
- coolMONSTER/C3
- coolMONSTER/VE/VC
- coolMONSTER/PM
- JRex-GX1
- JRex-P3
- JRex-C3
- JRex-VE
- JRex-PM
- JRex-CE
- MOPSIcd6
- MOPSIcd7
- MOPS/686+
- MOPSIcdGX1
- speedMOPSIcdCE
- X-board<861>
- EPIC/CE
- EPIC/PM
- VNS-786
- VNS-786L
- Neptune-P3
- 786LCD
- AGP-SPRINT-7
- PCI-SPRINT-6B
- PCI-SPRINT-6A
- ETX-LX
- MOPSIcxLX
- ETXexpress-PM (EEA1)
- ETXexpress-CD (CCAL)
- ETXexpress-MC (EEC1)
- ETXexpress-690 (C690)
- ETXexpress-PC (CNTG)
- microETXexpress-PC (UNTG)
- microETXexpress-PM (EEB1)
- microETXexpress-SP (EEP1)
- nanoETXexpress-SP (NOW1)
- ETX-PM3 (MPM3)
- MOPS-PM (PDOT)

- ETX-DC (MNP1)
- JReplus-LX (BLX8)
- JReplus-690 (B690)
- JReplus-DC (BDC)
- piTX-SP (PITX)

Requirements

To run the **Kontron[®]** Windows XPE Solution Pack must install the following products:

- Windows XP Embedded 5.1, SP1, SP2, or SP3 (aka "Windows Embedded Standard")

Installation

Please make sure the Windows XP Embedded 5.1 or Target Designer has been installed properly.

To install the **Kontron[®]** Windows XPE Solution Pack you must perform the following steps:

- Open the "Component Database Manager"
- In the "Database" tab press the "Import..." button
- Select "Kontron.sld" as an SLD file
- Make sure the "Copy repository files to repository root" is checked
- Press the "Import" button

Uninstall

To remove the **Kontron[®]** Windows XPE Solution Pack you must perform the following steps:

- Open the "Component Database Manager"
- In the "Package" tab select the "**Kontron[®]** Windows XPE Solution Pack"
- Press the "Delete Package" button

Image Build

After installation you are now ready to create a Windows XP Embedded image for your target system.

- Open "Target Designer"
- Select File|New from the menu
- In the component tree open the nodes "Hardware" and then "Platforms"
- Double click on your **Kontron^o** board.
- In the component tree open the node "Design Templates"
- Double click on your preferred **Kontron^o** Basic Template or other design template.
- Run a Dependency Check and then a Build
- Use **Kontron^o** JERTS or other method to transfer the image

After the build process the finished product will be in the "C:\Windows Embedded Images" subdirectory. This contains everything that needs to be placed on the target systems boot drive.

NOTE that in JERTS you need to select "Windows NT Embedded" as an operating system and enter the "C:\Windows Embedded Images" as source path.

Available Kontron CPU Board Configurations

- Kontron CPU Board ETX-P1
- Kontron CPU Board ETX-P3/C3
- Kontron CPU Board ETX-P3E/C3E
- Kontron CPU Board ETX-P3m/C3m
- Kontron CPU Board ETX-VE
- Kontron CPU Board ETX-PM
- Kontron CPU Board ETX-P3T
- Kontron CPU Board ETX-MGX
- Kontron CPU Board coolMONSTER/P3/C3
- Kontron CPU Board coolMONSTER/S
- Kontron CPU Board coolMONSTER/littleMONSTER2
- Kontron CPU Board coolMONSTER/VE/VC
- Kontron CPU Board coolMONSTER/PM
- Kontron CPU Board JRex-GX1
- Kontron CPU Board JRex-P3/C3
- Kontron CPU Board JRex-VE
- Kontron CPU Board JRex-PM
- Kontron CPU Board JRex-CE
- Kontron CPU Board MOPSlcd6
- Kontron CPU Board MOPSlcd7
- Kontron CPU Board MOPSlcdGX1
- Kontron CPU Board speedMOPSlcdCE
- Kontron CPU Board X-board<861>
- Kontron CPU Board EPIC/CE
- Kontron CPU Board EPIC/PM
- Kontron CPU Board VNS-786
- Kontron CPU Board VNS-786L
- Kontron CPU Board Neptune-P3
- Kontron CPU Board 786LCD
- Kontron CPU Board ETX-LX
- Kontron CPU Board MOPSlcxLX
- Kontron CPU Board ETX-CN8
- Kontron CPU Board ETX-CD

- Kontron CPU Board ETXexpress-690
- Kontron CPU Board (micro)ETXexpress-PC
- Kontron CPU Board microETXexpress-PC
- Kontron CPU Board ETX-DC
- Kontron CPU Board JReplus-LX
- Kontron CPU Board JReplus-690
- Kontron CPU Board JReplus-DC
- Kontron CPU Board pITX-SP

For the MOPS/686+ use the MOPSlcd6 configuration.

Available Kontron Design Templates

- Kontron Basic Template Without Network [14 MB total file size]
- Kontron Basic Template With Network [38 MB total file size]
- Kontron Basic Template With Network and Sound [42 MB total file size]

Adding more features quickly increases the footprint to a 100 MB. Adding Internet Explorer, Windows Explorer Shell and Media Player results in 250 MB.

These templates are intended for small footprint systems. With increasing disk sizes this is no longer a design goal.

Kontron therefore recommends using the Microsoft supplied "Information Appliance" design template.

General Windows XP Embedded Issues

A minimum of 64 MB RAM on the target board is required!!!!

With more elaborate configurations you should enable Page File support. This can be done by selecting the "Standard PC" or "Advanced Configuration and Power Interface (ACPI) PC" Settings. Failure to do so might lock up the FBA.

With some video drivers the screen will be switched off for a few seconds when the First Boot Agent (FBA) enumerated PnP devices. This is the standard behavior.

If for some reason the First Boot Agent FBA locks up under some configurations then just reboot to see if the problem persists.

Configurations and Components

Video Drivers

The appropriate video drivers have been selected for each board.

Please note that for headless boards the "Save Mode VGA" is required for development.

To create a truly headless system the "VGA" driver can be removed and replaced by the "Headless VGA Driver" driver component in Target Designer under "Hardware : Devices : Display adapters".

If you have a board equipped with a Chips and Technology graphics chip and have NO flat panel connected and want to use a resolution other than 640*480 then you need to include the "Kontron Enable Chips CRT Only Mode" component in Target Designer under "Hardware : Devices : Display adapters". Otherwise the monitor cannot synch on the generated video signal.

For the Kontron^o add-in graphics cards you need to select the correct configuration for the motherboard and then add the following graphics driver component in Target Designer under "Hardware : Devices : Display adapters".

| Board | Display Driver Component |
|---------------|--|
| AGP-SPRINT-7 | ATI RAGE MOBILITY AGP (Kontron) |
| PCI-SPRINT-6B | Chips and Technologies (Asilant) 69000 |
| PCI-SPRINT-6A | Chips and Technologies (Asilant) 65554 |

Ethernet Driver

The appropriate Ethernet drivers have been selected for each board.

Floppy Disk Driver

A floppy driver is added for all configurations except for the ETX.boards.

Serial Driver

The Kontron^o board configurations include the serial ports.

If available COM3: and COM4: usually use these values:

| Port | I/O | IRQ |
|-------|-----|-----|
| COM3: | 3E8 | 10 |
| COM4: | 2E8 | 11 |

JIDA32 Library API

Most **Kontron**[®] PC boards are equipped with unique hardware features that cannot be accessed with standard API. The JIDA32 Library API interface allows you to access these features in a hardware independent manner under many operating systems.

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

To include the JIDA32 Library Interface you need to add the "Kontron JIDA32 Library API" component in Target Designer under "Software : System : OEM System Extensions".

Bootable Windows XPE Configuration

If you have the **Kontron**[®] Remote Target Setup (JERTS) tool (available separately) then you can set up your target conveniently thru Ethernet from your development workstation. (See JERTS documentation for details)

NOTE that in JERTS you need to select "Windows NT Embedded" as an operating system and enter the "C:\Windows Embedded Images" as source path.

If you don't have JERTS then here is how to manually create a bootable Windows XPE on your target system. Just follow these steps after building and XPE configuration:

- Connect a **Kontron**[®] chipDISK or second hard disk to any PC where Windows NT 4.0/2000/XP is installed.
 - Boot up the Windows NT 4.0/2000/XP PC.
 - Open the disk administrator and format the chipDISK with a FAT file system.
 - Copy all files from "C:\Windows Embedded Images" that belong into the root to that drive first (boot.ini, ntldr, ntdetect.com)
 - Then copy the other directories
 - Shutdown the machine and connect the chipDISK to the **Kontron**[®] board
 - Turn it on.
 - The XPE command prompt should come up.
-
- If you have the network setup properly you can do a "ipconfig /all" to verify the IP addresses.
 - TCP/IP tools and NET.EXE are included by default so you can do a "net use X: \\server\share" to connect to a file server.

Hints

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

Document Revision History

| Filename | Date | Edited by | Revision | Alteration to preceding revision |
|-------------|------------|-----------|----------|--|
| JWINXPE.DOC | 2002.02.14 | DP | 1.0 | Initial version for XPE 5.1 |
| JWINXPE.DOC | 2003.06.15 | DP | 1.1 | Changed to Kontron Added Boards (JREx, X-board, ETX-P3/C3/VE, MOPSIcd7, 786LCD) |
| JWINXPE.DOC | 2004.07.17 | DP | 1.2 | Support for ETX-PM and JREx-PM Updates for ETX-P1, ETX-VE, ETX-P3m- Updates for Geode (GX) Audio Updated JIDA32 Library |
| JWINXPE.DOC | 2004.10.06 | DP | 1.3 | Support for ETX-P3T Updated JIDA32 Library |
| JWINXPE.DOC | 2005.11.02 | DP | 1.4 | Support for coolMONSTER/VE/VC Support for coolMONSTER/PM Support for speedMOPSIcdCE Support for JREx-CE Support for EPIC/CE Support for EPIC/PM Updated Intel 815 display driver Updated JIDA32 Library |
| JWINXPE.DOC | 2007.02.10 | DP | 1.6 | Support for ETX-LX Support for MOPSIcdLX Updated JIDA32 Library API Improved XPE SP2 Support |
| JWINXPE.DOC | 2008.08.11 | DP | 1.7 | Support for ETXexpress-PM (EEA1) Support for ETXexpress-CD (CCAL) Support for ETXexpress-MC (EEC1) Support for microETXexpress-PM (EEB1) Support for microETXexpress-SP (EEP1) Support for nanoETXexpress-SP (NOW1) Support for ETX-PM3 (MPM3) Support for MOPS-PM (PDOT) Updated JIDA32 Library API |
| JWINXPE.DOC | 2008.12.11 | DP | 1.8 | Support for ETX-CN8 (MODC) Support for ETX-CD (MCAL) Support for ETXexpress-690 (C690) Support for ETXexpress-PC (CNTG) Support for microETXexpress-PC (UNTG) Updated JIDA32 Library API |

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|-------------|------------|----|-----|--|
| JWINXPE.DOC | 2009.03.25 | DP | 1.9 | Support for ETX-DC (MNP1) Support for JReplus-LX (BLX8) Support for JReplus-690 (B690) Support for JReplus-DC (BDC) Support for pITX-SP (PITX) Added JMicron JMB36X Controller Added Realtek RTL8169/8110 Family Gigabit Ethernet NIC Added Realtek AC'97 Audio Added JIDA32 Demo Application (JidaDemo.exe) Updated JIDA32 Library API Updated Realtek RTL8168/8111 Family Gigabit Ethernet NIC |
|-------------|------------|----|-----|--|