

congatec Application Note



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| Applicable Products | All |
| Application Note Subject | Windows Installation without using USB powered ROM drive |
| Document Name | AN22_Install_Windows_Without_USB_ROM_Drive |
| Usage Designation | External |

Application Note 22

Revision 1.0

Revision History

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| 1.0 | 07.02.2012 | HHA | Initial release |

Preface

This Application Note provides information about the installation of Windows XP or Windows 7 when a USB powered CDROM does not work.

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Intended Audience

This Application Note is intended for technically qualified personnel. It is not intended for general audiences.

Symbols

The following symbols may be used in this Application Note:



Warning

Warnings indicate conditions that, if not observed, can cause personal injury.



Caution

Cautions warn the user about how to prevent damage to hardware or loss of data.



Note

Notes call attention to important information that should be observed.

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Terminology

Some of the following terms may be used throughout this document.

| Term | Description |
|--------|--------------------------------|
| GB | Gigabyte (1,073,741,824 bytes) |
| GHZ | Gigahertz (one billion hertz) |
| KB | Kilobyte (1024 bytes) |
| MB | Megabyte (1,048,576 bytes) |
| Mbit | Megabit (1,048,576 bits) |
| kHz | Kilohertz (one thousand hertz) |
| MHz | Megahertz (one million hertz) |
| N.C. | Not connected |
| N.A. | Not available |
| T.B.D. | To be determined |

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Contents

| | |
|--|---|
| 1 Introduction..... | 6 |
| 2 Installing from USB flash drive | 6 |
| 2.1 Windows 7 installation from USB flash drive..... | 6 |
| 2.2 Windows XP installation from USB flash drive..... | 7 |
| 2.3 Separate power supply for USB powered DVD drive..... | 8 |
| 3 Test setup..... | 9 |

1 Introduction

Installing Windows XP or Windows 7 normally requires a CD or DVD drive as installation source. This is no problem in systems where a SATA drive or a USB drive with a separate power supply is available. Unfortunately, some systems do not have a free SATA port to connect a DVD drive. Additionally, most of the external USB DVD drives that draw their power from the USB port exceed the current limit of a standard USB port.

This document describes some ways to overcome these limitations.

2 Installing from USB flash drive

When installing Windows, a USB flash drive can be created that contains the Windows installation files and the installation routine itself. The procedure is different for Windows XP and for Windows 7.

This can be done on any PC computer using third party software. All of the needed software can be downloaded for free. For details about how to use these software packages refer to the software vendor's documentation.

2.1 Windows 7 installation from USB flash drive

To install Windows 7 from a USB Flash drive you need a Windows 7 installation DVD and a USB drive with a minimum capacity of 4 GB.

The preparation of the USB drive must be done on a computer running Windows 7. If your workplace PC does not have Windows 7 installed a virtual machine can be created on it with Windows 7 installed there. **Virtual Box** was tested successfully for this purpose and can be installed on all common operating systems. (www.virtualbox.org)

To make the required .iso image file from the DVD, **CD Burner XP** can be used. (<http://cdburnerxp.se/>). Simply use the "Copy Media" function to copy the DVD to an image file.

To prepare the USB drive use the software "**Windows 7 USB/DVD download tool**" from Microsoft that can be downloaded here:

http://www.microsoftstore.com/store/msstore/html/pbPage.Help_Win7_usbdvd_dwnTool

Once all software is installed and the .iso image is prepared, connect the USB flash drive, start the "Windows 7 USB/DVD download tool" and follow the software's instruction prompts. The software will format the USB drive and copy all required files.

For installation, simply connect the USB flash drive to the target system and boot from it. The installation procedure is then identical as when installing from a DVD.

2.2 Windows XP installation from USB flash drive

The software "**WinToFlash**" can be used for preparing a USB flash drive to install Windows XP. It runs on Windows XP and Windows 7 and can be downloaded here:

<http://wintoflash.com/home/en/>

The Windows XP installation CD must be inserted into the CD drive or all contents of the CD must be available in a folder on the file system of the PC used.

The WinToFlash software does not need to be installed. Simply extract the downloaded package, start the WinToFlash.exe and follow the instructions of the wizard. WinToFlash will format the USB drive and copy all necessary files onto it.

On the target system the boot order in the BIOS must be changed to ensure that no available boot device is selected automatically by the boot order.

Now the USB flash drive can be connected to the target system and the installation can be started.

On the first boot select the USB flash drive manually in the Boot Selection Popup menu by pressing [F11] during POST. The system will boot to the USB flash drive and display a menu.

From the menu screen select "**1st, text mode setup...**" for the first run. This will enter the first text mode stage of installing Windows XP. If you need to have additional drivers (e. g. AHCI SATA drivers for the conga-QA6) they can be provided on a USB floppy drive after pressing [F6] when prompted to do so. This stage will end with an automatic reboot of the system.

The USB flash drive must be again selected in the Boot Selection Popup menu and started. This time "**2nd, GUI mode setup...**" must be selected to enter the second stage of installing Windows XP. Then the next stage of the standard Windows setup is entered automatically. Once this stage is finished, the system will try to reboot again.

Now the target hard disk with the Windows installation can be selected in the BIOS boot order setting. After rebooting the target the installation will be finished.

2.3 Separate power supply for USB powered DVD drive

Almost all external USB DVD drives draw their power from the USB connection. A standard USB 2.0 port is required to deliver a minimum of 5 load units, that is 500mA of current. Most of the DVD drives will exceed this when they spin up the disk and therefore draw the highest current possible. This is no problem on standard laptop computers since they can usually provide sufficient current on their USB ports. However, when connected to a standard USB 2.0 port the current limit is exceeded. This causes an overcurrent event and a momentary shutdown of the supply voltage. (see http://en.wikipedia.org/wiki/Universal_Serial_Bus#Power for more information).

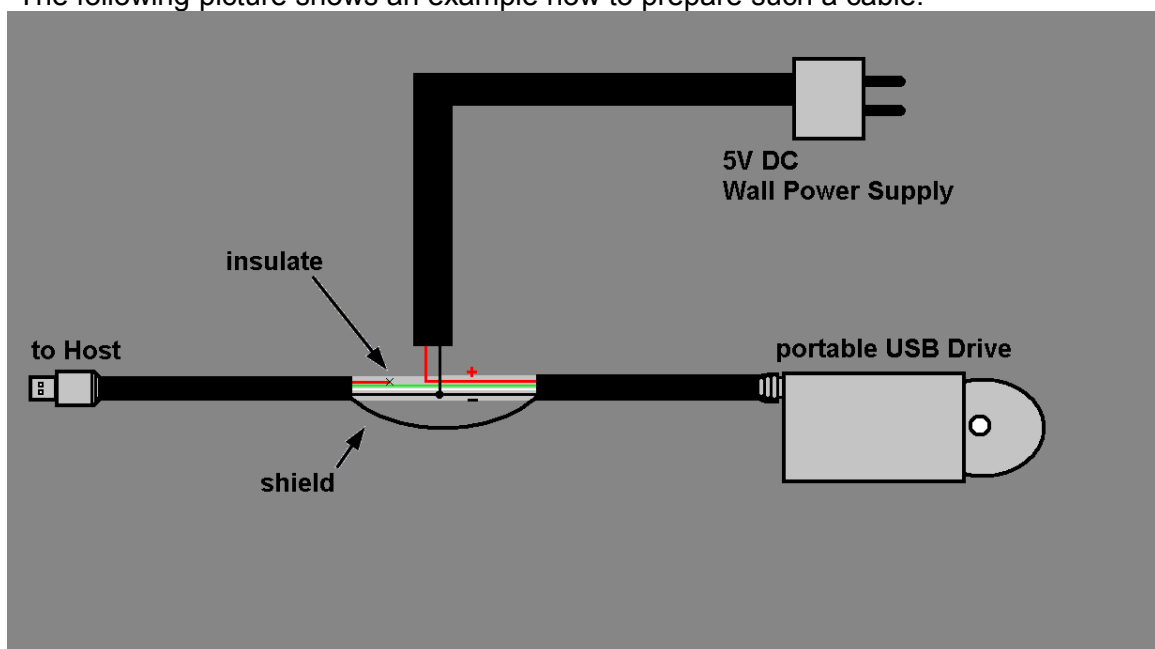
The workaround to this is to supply the DVD drive with a separate power supply. Here, a special USB cable has to be prepared where the supply voltage coming from the USB host port is disconnected and 5V from a separate power supply is utilized.



Caution

Make sure that no voltage is driven back into the USB host and that the polarity of the supply voltage is correct.

The following picture shows an example how to prepare such a cable.



3 Test setup

These installation procedures were conducted using Windows XP (SP3) and Windows 7 on a conga-QA6 with conga-QMCB and conga-QEVAL used as carrier boards.

The workplace PC was running Windows XP and had Virtual Box, including the extension pack, installed. USB 2.0 was enabled on the virtual machines. The actual preparation of the USB flash drives was done within a virtual machine running Windows 7 for the Windows 7 procedure (chapter 2.1) and a virtual machine running Windows XP for the Windows XP procedure (chapter 2.2).

The external power supply cable was tested on a Samsung SE-S084 external DVD writer with a standard 5V/2A wall power supply.