



**Kontron Linux BSP for
KTQ45/FLEX
R01.02**

1. Revision history

Revision	Date	Author	Description
0.9	03.05.2010	Vitaly Bordyug	Initial version
1.0	04.05.2010	Vitaly Bordyug	Release notes for R01.00 Corrections and more details
1.1	11.08.2010	Vitaly Bordyug	Release notes for R01.01 Corrections and updates
1.2	24.06.2011	Maxim Syrchin	Release notes for R01.02 Corrections and updates

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3. Introduction

This document describes Linux Board Support Package (BSP) for Kontron KTQ45/Flex board. It provides:

- a summary of BSP features;
- build and installation notes;
- listing of the release package contents.

4. Supported features/drivers

- Intel® Core™2 Duo desktop processor support
- Intel® High Definition Audio
- Intel® Gigabit Ethernet
- Intel® Q45 + ICH10DO
- SATA
- RAID
- Software RAID
- USB 1.1/2.0
- PCI, PCI-Express, Watchdog, RTC, ACPI, SPI, SMBus, SMBIOS, TPM
- Kontron KEAPI

5. BSP Components

File name in delivery	Description
Kontron_Linux_KTQ45_FLEX_LiveCD_R01.02.iso	LiveCD image for Kontron Linux BSP
installation_tools.zip	Utilities to make a bootable USB flash from ISO image on Linux and Windows hosts
Kontron_Linux_BSP_KTQ45_qa_delivery_R01.02_240611.zip	Testcases, QA logs, and related documents
docs/KEAPI-*.pdf	KEAPI User's Guide and software specification
RPMS/kernel-*	Linux Kernel and headers RPM
RPMS/tpm-tools* RPMS/trousers*	TPM related packages
RPMS/kontron-logos-12.2-2.fc12.noarch.rpm	Logos, graphics and themes for Kontron Linux
RPMS/keapi*	KEAPI libraries and tools
SRPMS/keapi*	KEAPI libraries and tools source package
SRPMS/kernel-2.6.32.11-99.KTQ45_050511.fc12.src.rpm	Linux Kernel source RPM package
SRPMS/tpm-tools-1.3.5-5.fc12.src.rpm SRPMS/trousers-0.3.5-14.fc12.src.rpm	TPM related source RPM packages
SRPMS/kontron-logos-12.2-2.fc12.src.rpm	Sources of Logos and themes for Kontron Linux

6. Installation and BSP set up procedures

The Kontron Linux distribution is LiveCD image, which can be burned to CDROM and then used as a boot media. It is then possible to evaluate functionality, and install it to Hard Drive or other persistent storage. There are two ways to deploy the BSP image:

- Write CDROM with appropriate OS software
- Create bootable USB stick with supplied utility

6.1 Writing BSP ISO image to CD

In Windows OS, it is recommended to use the appropriate software that is able to write ISO9660 image to CD.

In Linux host operating system, issue "cdrecord" command to burn BSP image to CD or DVD media:

```
# cdrecord Kontron_Linux_KTQ45_FLEX_LiveCD_R01.02.iso
```

Then attach CDROM to KTQ45, set up BIOS to boot from CD, insert prepared CD media into KTQ45 CDROM, and exit saving BIOS settings.

6.2 Writing BSP ISO image to USB flash/disk

6.2.1 On Linux host:

1. install USB disk of capacity more then 1G into host USB slot
2. write ISO onto disk with the command:

```
# ./livecd-iso-to-disk --noverify --format --reset-mbr  
Kontron_Linux_KTQ45_FLEX_LiveCD_R01.02.iso /dev/[your device]
```

Output will appear, similar to the below:

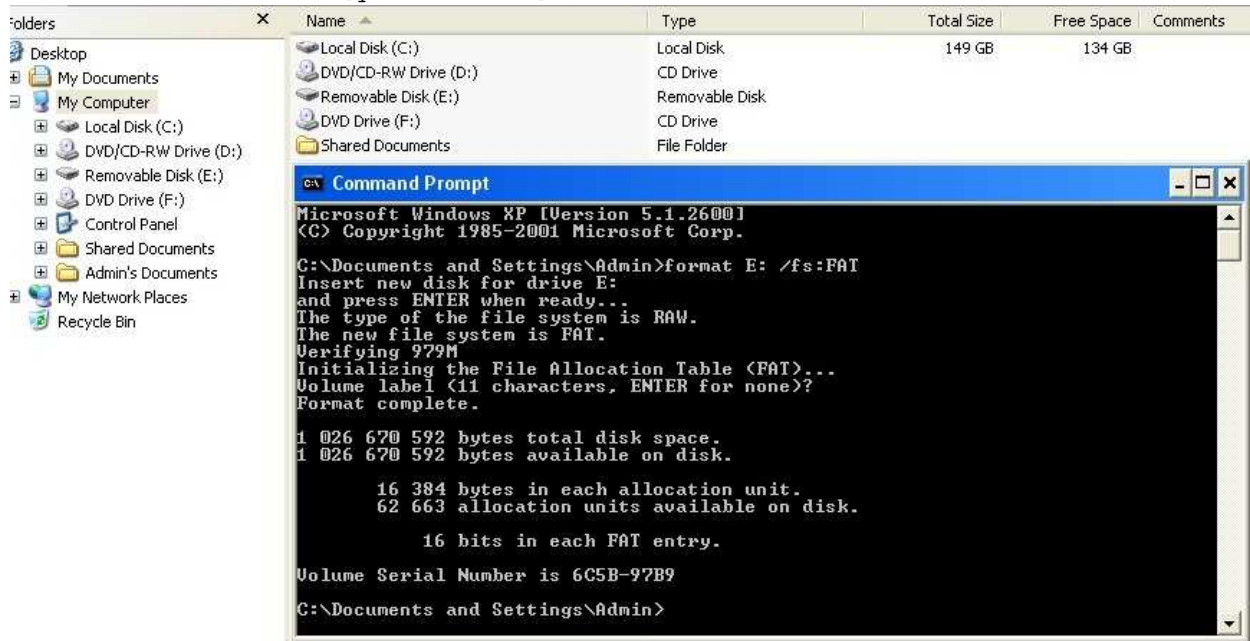
```
WARNING: THIS WILL DESTROY ANY DATA ON /dev/sdb!!!  
Press Enter to continue or ctrl-c to abort  
Waiting for devices to settle...  
mkdosfs 3.0.1 (23 Nov 2008)  
Copying live image to USB stick  
Updating boot config file  
Installing boot loader  
USB stick set up as live image!
```

To boot the Kontron Linux distribution, insert it into USB slot, enable booting from USB in BIOS, save settings and reset the board.

6.2.2 On Windows host:

1. install LiveUSB Creator(liveusb-creator-3.9.1-setup.exe) on the host;
2. install USB disk of capacity more then 1G into host USB slot;
3. run command shell as Administrator and format the USB disk:

```
> format [your device] /fs:FAT
```



4. run LiveUSB Creator: in the field "Use existing Live CD" specify Kontron_Linux_KTQ45_FLEX_LiveCD_R01.02.iso; in the field "Target Device" specify previously formatted USB disk; click on the button "Create LiveUSB".

To boot the Kontron Linux distribution, insert it into USB slot, enable booting from USB in BIOS, save settings and reset the board.

6.3 Installation of the Kontron Linux BSP to persistent storage

It is possible to install the live image to persistent storage. The HDD should have at least 2 Gb of free space for the installation to succeed. In order to install Kontron Linux, proceed with the following steps:

1. Boot the BSP image either from LiveCD or bootable USB stick
2. Authorize as "Live System User"
3. Configure display by executing: System->Preferences->Monitors .
4. Run "Install to Hard Drive" by clicking on its icon.
5. Install BSP following on-screen instructions ¹ (For full details, please refer to http://docs.fedoraproject.org/en-US/Fedora/12/html/Installation_Guide/)

¹ Make sure checkbox "Review and modify partitioning layout" is set to make control and avoid USB disk overwrite. Before re-installing BSP, remove previous installation manually.

7. Known issues

- KEApiGpioGetDirectionCaps, EapiVgaGetBacklightEnable, EApiVgaSetBacklightEnable, EApiWDogGetCap, EapiI2CProbeDevice and EapiI2CGetBusCap functions are not supported or not implemented yet (See issue <https://kdp.kontron.com/issues/890>);
- EAPI_ID_GET_EAPI_SPEC_VERSION, EAPI_ID_BOARD_PNPID_VAL, EAPI_ID_BOARD_PLATFORM_REV_VAL, EAPI_ID_BOARD_DRIVER_VERSION_VAL arguments for EapiBoardGetValue() and EAPI_ID_BOARD_PLATFORM_TYPE_STR argument for EApiBoardGetStringA() are not supported;
- EapiGPIOGetDirectionCaps fails due to lack of implementation of KEApiGpioGetDirectionCaps;
- KEApiGetStorageSize, KEApiStorageRead, KEApiStorageWrite, EApiStorageCap, EApiStorageAreaRead, EApiStorageAreaWrite – there is no EEPROM that can be safely accessed;
- KEApiGetBacklightValue, KEApiSetBacklightValue, KEApiGetBootCounter and EapiBoardGetValue(EAPI_ID_BOARD_BOOT_COUNTER_VAL,...) are not supported by hardware/BSP;
- KEApiGetBatteryInfo, KEApiGetBatteryState weren't tested due to lack of batteries;
- EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_2V5,...), EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_3V3,...) and EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_5VSB,...) fail because there are no sensors with “2.5”, “3.3” and “5V standby” labels;
- KEApiSmbusQuickCommand, KEApiSmbusSendByte, KEApiSmbusWriteWord, KEApiSmbusWriteBlock, KEApiSmbusReadBlock, KEApiI2cRead and KEApiI2cWrite there are no documented I2C/SMBus devices to test this functionality.

8. Changelog

Changes from R01.00 to R01.01:

- revamped packet manager functionality (yum)
- added support for TPM
- full validation of SMBIOS and TPM.

Changes from R01.01 to R01.02:

- added KEAPI support
- KTAPI support was removed
- installation manual was updated