Kontron Linux BSP for pITX-SP R01.00

1. Revision history

Revision	Date	Author	Description
1.0	12.07.2011	Alexander Krapivniy	Initial revision

2. Table of contents

3. Introduction

This document describes Linux Board Support Package (BSP) for Kontron pITX-SP board. It provides:

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

4. Supported features/drivers

- Intel Atom processor
- EMGD graphics core
- High Definition Audio
- Intel® Gigabit Ethernet
- SATA
- PCI, PCI-Express
- USB 1.1/2.0
- USB Client
- RTC, ACPI SMBIOS, Watchdog, GPIO, Fan
- EEPROM
- Kontron KEAPI

5. Unsupported features/drivers

- Please see “8. Known issues” for unsupported KEAPI features

6. BSP Components

File name in delivery	**Description**
Kontron_Linux_pITX_LiveCD_R01.00.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_pITX_qa_delivery_R01.00_110701	Testcases, QA logs, and related documents
RPMS/kernel-*	Linux Kernel and headers RPM
RPMS/perf-*	Performance monitoring for the Linux kernel
RPMS/kontron-logos-*.noarch.rpm	Logos, graphics and themes for Kontron Linux
RPMS/keapi*.rpm	KEAPI libraries and utilities RPM
RPMS/pITX-custom*	
RPMS/intel-emgd* RPMS/mesa-dri-intel-emgd* RPMS/xorg-x11-intel-emgd*	Intel video drivers
SRPMS/kernel-*.src.rpm	Linux Kernel source RPM package
SRPMS/kontron-logos-*.src.rpm	Sources of Logos and themes for Kontron Linux
SRPMS/keapi*.rpm	KEAPI libraries and utilities source packages
SRPMS/pITX-custom*.src.rpm	
SRPMS/intel-emgd*	Intel video drivers source package

7. 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

7.1 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_pITX_LiveCD_R01.00.iso
```

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

7.2 Writing BSP ISO image to USB flash/disk

7.2.1 On Linux host:

1. install USB disk of capacity more then 1G into host USB slot
2. make sure syslinux-4.0.2 or greater is installed . (Updated syslinux for Ubuntu can be downloaded from https://launchpad.net/)
3. write ISO onto disk with the command:

```
 # ./livecd-iso-to-disk --noverify --format --reset-mbr
Kontron_Linux_pITX_LiveCD_R01.00.iso /dev/[your device]
```

Output will appear, similar to the below:

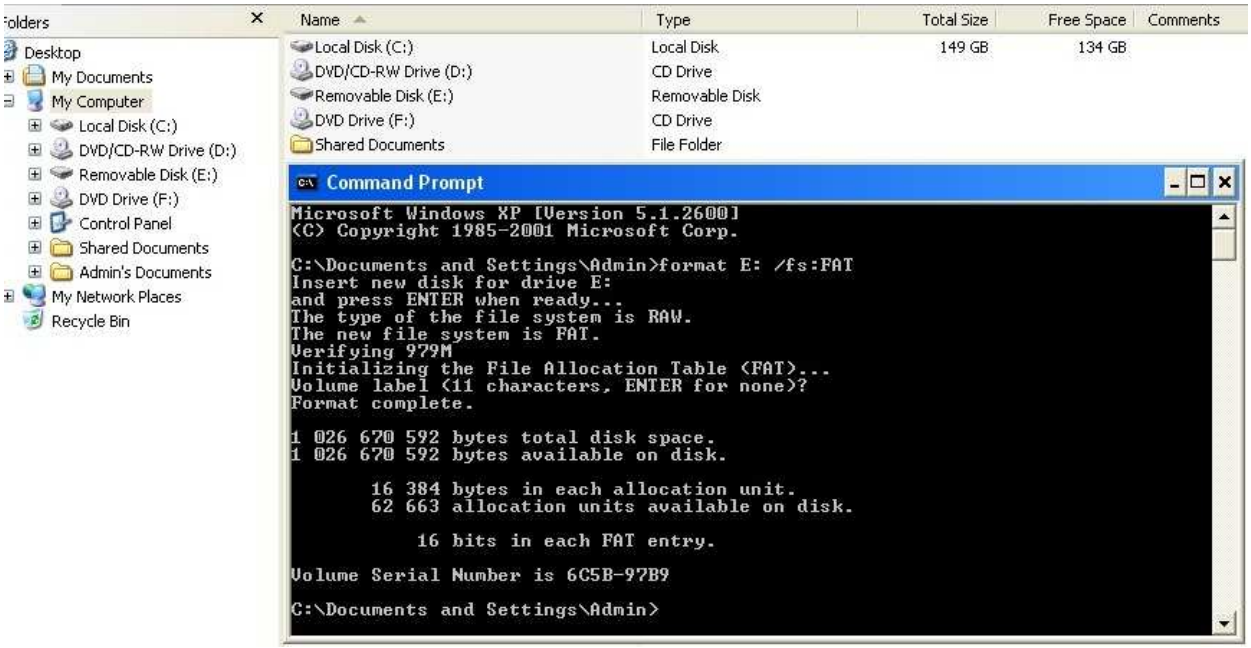
```
WARNING: THIS WILL DESTROY ANY DATA ON /dev/sdb!!!
Press Enter to continue or ctrl-c to abort
Waiting for devices to settle...
mkdosfs 3.0.1 (23 Nov 2008)
Copying live image to USB stick
Updating boot config file
Installing boot loader
USB stick set up as live image!
```

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

7.2.2 On Windows host:

1. install LiveUSB Creator(liveusb-creator-3.10.0-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_pITX_LiveCD_R01.00.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.

7.3 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

8. Known issues

- In 1Gbps mode data transfer doesn't exceed 320Mbps because the processor doesn’t have time to process packets. At the moment of data transfer, processor load is at about100 %;
- For the suspend/hibernate mode the following modules need to be unloaded: snd_seq, snd_seq_device, iusbc. pm-suspend/pm-hibernate can be used instead.
- KEAPI limitations and untested features:
  The following keapi-gui functions weren't tested as not supported by hardware: battery, I2C bus, intruder status, SMBus Quick command, Send byte, Write word, Read word,Write block and Read block commands

  The following functions keapi-tools weren't tested as not supported by hardware:
  in keapi-battery: GetBatteryInfo, GetBatteryState
  in keapi-fan:SetFanModeThermalCruise, GetCpuFanSpeed, SetCpuFanSpeed,
  in keapi-general: GetIntruderStatus, ResetIntruderStatus
  in keapi-i2c: I2cWrite, I2cRead
  in keapi-smbus: GetSmbusCount, SmbusQuickCommand, SmbusSendByte, SmbusReceiveByte, SmbusWriteWord, SmbusReadWord, SmbusWriteBlock, SmbusReadBlock
  in keapi-voltage: GetVoltageSensorList, GetVoltageSensorValue