



**Kontron Linux BSP for
MSMST
R01.00**

1. Revision history

Revision	Date	Author	Description
1.0	16.06.2011	Alexander Krapivniy	Initial revision

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3. Introduction

This document describes Linux Board Support Package (BSP) for Kontron MSMST 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 1.1/2.0/3.0
- RTC, ACPI SMBIOS, Watchdog
- EEPROM
- Kontron KEAPI

5. Unsupported features/drivers

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

6. BSP Components

File name in delivery	Description
Kontron_Linux_MSMST_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_MSMST_qa_delivery_R01.00_110518.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/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/generic*	Replacement for the trademarked release package
RPMS/intel-emgd* RPMS/ mesa-dri-intel-emgd* RPMS/xorg-x11-intel-emgd*	Intel video drivers
RPMS/msmst-custom*	Package with specific sensors configuration
SRPMS/kernel-*.src.rpm	Linux Kernel source RPM package
SRPMS/kontron-logos-*.src.rpm	Sources of Logos and themes for Kontron Linux
SRPMS/keapi*.src.rpm	KEAPI libraries and utilities source packages
SRPMS/generic*.src.rpm	Sources of replacement for trademarked release package
SRPMS/intel-emgd*.src.rpm	Intel video drivers source package
SRPMS/msmst-custom*.src.rpm	Sensors configuration source package

7. Installation and BSP set up procedures

The Kontron Linux distribution is a 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_MSMST_LiveCD_R01.00.iso
```

Then attach CDROM to MSMST, set up BIOS to boot from CD, insert prepared CD media into MSMST 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_MSMST_LiveCD_R01.00.iso /dev/[your device]
```

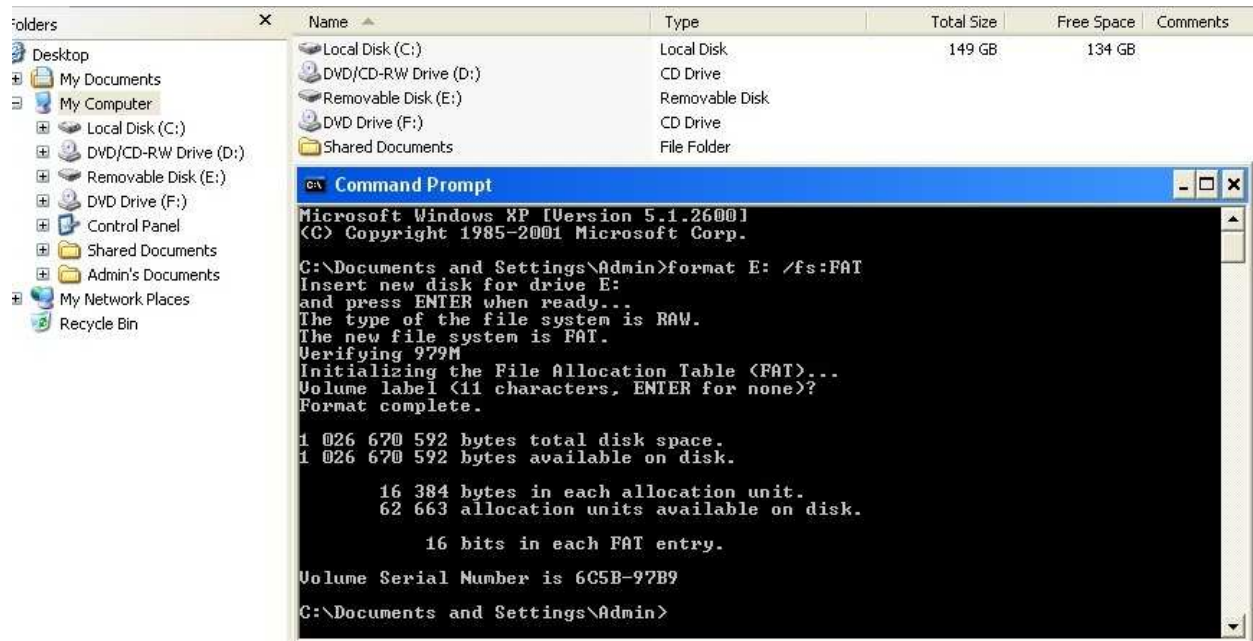
Output will appear similar to the below:

```
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_MSMST_LiveCD_R01.00.iso; in the field "Target Device" specify previously formatted USB disk; click on the button "Create LiveUSB".

To boot Kontron Linux distribution, insert USB flash 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

- PCI, SPDIF and LVDS were not tested because of lack of corresponding equipment
- Some USB Data devices are not detected by BIOS (see <https://kdp.kontron.com/issues/725>);
- Maximum Ethernet speed is 550Mbps;
- 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;
- KEApiGetBatteryInfo and KEApiGetBatteryState weren't tested because M.A.R.S interface is not supported by hardware;
- KEApiGetBacklightValue and KEApiSetBacklightValue are not supported by BSP;
- KEApiGetFanList, KEApiGetFanSpeed, KEApiGetFanMode, KEApiSetFanModeManual, KEApiSetFanModeThermalCruise, KEApiGetCpuFanSpeed, KEApiSetCpuFanSpeed, KEApiGetSystemFanSpeed, KEApiSetSystemFanSpeed, EApiBoardGetValue(EAPI_ID_HWMON_FAN_CPU, ...) and EApiBoardGetValue(EAPI_ID_HWMON_FAN_SYSTEM, ...) fail because there are no fans on MSMST board;
- KEApiGetIntruderStatus, KEApiResetIntruderStatus, KEApiGetBootCounter and EapiBoardGetValue(EAPI_ID_BOARD_BOOT_COUNTER_VAL,...) are not supported by hardware/BSP;
- KEApiGpioGetDirection, KEApiGpioSetDirection, KEApiGpioGetLevel, KEApiGpioSetLevel, EApiGPIOGetDirection, EApiGPIOSetDirection, EApiGPIOGetLevel, EApiGPIOSetLevel fail because GPIO is not supported by BSP;
- EapiGPIOGetDirectionCaps fails due to lack of implementation of KEApiGpioGetDirectionCaps;
- KEApiI2cRead and KEApiI2cWrite weren't tested due to lack of available I2C buses;
- KEApiSmbusQuickCommand, KEApiSmbusSendByte, KEApiSmbusReceiveByte, KEApiSmbusReadWord, KEApiSmbusWriteWord, KEApiSmbusWriteBlock and Test_KEApiSmbusReadBlock were not tested due to limitations of hardware sensors on SMBus;
- KEApiGetVoltageSensorList, KEApiGetVoltageSensorValue, EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_VCORE,...), EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_2V5,...), EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_3V3,...), EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_VBAT,...), EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_5V,...), EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_5VSB,...) and EapiBoardGetValue(EAPI_ID_HWMON_VOLTAGE_12V,...) fail because there are no available voltage sensors on MSMST board;
- KEApiGetMemoryInfo returns 0x0010 because MSMST doesn't provide information about memory speed.