

BIOS tools for the MB's: 786LCD/mITX, 886LCD/mITX or 886LCD-M/xxxx.

Introduction

This application note describes the functions **Secure CMOS** and **OEM Failsafe Defaults** which are two exclusive customer specific BIOS setting technique.

The application note also describes how to update BIOS or load BIOS having **Secure CMOS** or **OEM Failsafe Defaults**.

For having full functionality setup control of the **Secure CMOS** and the **OEM Failsafe Defaults** functions a software package: **BIOS Tool Package** is required.

The **Secure CMOS** and the **OEM Failsafe defaults** define two different approaches for securing the CMOS / BIOS settings. What approach to be used depends on the actual application.

Secure CMOS

The 886LCD-M boards include an onboard EEPROM that can be used to store a secure CMOS image. The BIOS settings are stored in the RTC CMOS area in the chipset, but by Enabling the Secure CMOS option (in the BIOS Exit menu) a copy of the BIOS settings from the RTC CMOS area is stored into the onboard EEPROM of the 886LCD-M board.

In case the:

- RTC CMOS BIOS settings are lost,
- CMOS becomes corrupted (checksum fail)
- <Esc>-key is pressed during POST

... the BIOS settings are loaded from the EEPROM to the RTC CMOS at BIOS POST. This will secure the user from experiencing problems at battery failure or CMOS corruptions.

If the customer enters the BIOS and selects a different setting with the **Secure CMOS** enabled, the new setting will be stored in the EEPROM.

In case of battery failure, CMOS corruption or <Esc>-key is pressed during POST, the CMOS settings will be re-loaded to the RTC CMOS area.

OEM Failsafe Defaults

The **OEM Failsafe Defaults** works equivalent to the Secure CMOS; the RTC CMOS is stored in the onboard EEPROM.

In case of:

- Battery failure
- CMOS corruption
- <ESC>-key is pressed during POST,
- "Load Failsafe Defaults" is selected in the BIOS Exit menu

... the original BIOS settings located in the EEPROM will be copied to the RTC CMOS area. This secures that an end-customer has a defined set of BIOS settings that will always work.

If a customer enters the BIOS and select a different setting with the **OEM Failure Defaults** enabled, the new BIOS setting will only be stored in the RTC CMOS.

If e.g. a specific Panel is selected in the **OEM Failure Defaults** and the end-customer change the BIOS setup to no panel, the situation can be solved by the customer pressing <Esc>-key during POST to load the originally defined **OEM Failure Defaults**.

The "Load Optimal Defaults" setting in the BIOS Exit menu will continue to load the Kontron defined Optimal BIOS settings and not the OEM Setup BIOS defaults when these are Enabled.

1. a. Prepare USB Sticker

The easiest way to work with the BIOS tools is by using USB sticker, but also USB Floppy can be used.

From the page: <http://h18007.www1.hp.com/support/files/hpcpqdt/us/download/20306.html> the file SP27213.exe (1.9MB) "HP USB Disk Storage Format Tool" can be downloaded.

As an example:

Install the "HP USB Disk Storage Format Tool".

Locate in a C:\DOS directory the DOS files:

COMMAND.COM
IO.SYS
MSDOS.SYS

(These DOS files can be generated by XP by Formatting a bootable DOS Floppy Disk).

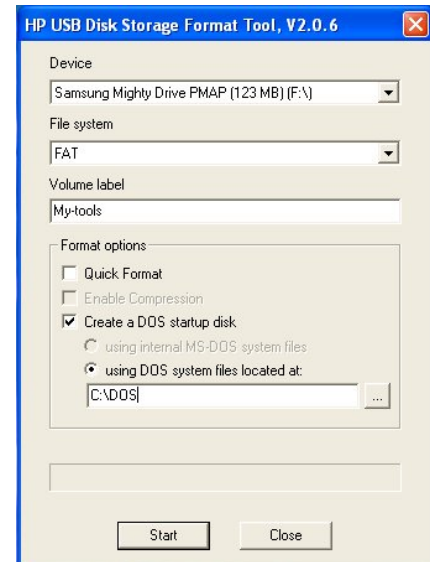
Start the "HP USB Disk Storage Format Tool".

Select device, FAT and requested Volume label.

Click on "Create a DOS startup Disk".

Select "using DOS system files located at:" and type in the directory name containing the 3 DOS files.

Click "Start".



1.b. Prepare Floppy Disk Drive

USB Floppy Drive (or standard Floppy drive) + Empty Floppy Disk 1.44 MB 3½"

Note for Floppy Drive: Recommend USB FDDs: Sony, Teac and Mitsumi.
Reported problem using FDDs: IOmega and NEC UF002.

Alternatively for 886LCD/mITX or 886LCD-M types, use standard FDD (A:)

For cable kit specification see Cable Specification KTD-00622 or KTD-00623.

Select in BIOS the "OnBoard Floppy Controller" to be enabled
and the "Floppy Configuration" to be the actual A: drive.

2. Load data to USB Sticker or Floppy Disk:

In case a BIOS without OEM Default Values and without CMOS Values shall be loaded:

Copy the following BIOS files to the sticker:

BF.EXE
Update.bat
xxxxxxx.rom (xxxxxxx is the actual name of the BIOS file).

In case a BIOS with OEM Default Values or CMOS Values shall be configured and loaded:

Copy the following BIOS files to the sticker:

BF.EXE
Read.bat
Write.bat
WriteOEM.bat
ClearOEM.bat
Patch.exe
Pick.exe

3.a. Loading BIOS without CMOS/OEM values

A simple BIOS update can be carried out on a target board right away, because no CMOS values or OEM values shall be configured. The latest BIOS version can be downloaded from www.kontron-emea.com.

Prepare target MB

Install the USB sticker or the USB Floppy Drive in the bottom USB slot.
Turn on power and enter BIOS by using the button.

Select in BIOS:

Exit>Load Optimized Defaults

and make sure that Boot> Boot Device Priority>1st Boot Device is as requested (USB Sticker etc)

Exit>Save Changes and Exit.

Load the BIOS to the target MB

Boot the target MB on the USB Memory Sticker or Floppy Drive.

When DOS is ready execute the Update.bat.

Execute BF CmosClr (If not already done by Update.bat)

(Hint: "BF CmosClr" can be included in the Update.bat)

When loading BIOS is done, reset system, enter BIOS and change values if required.

3.b. Loading BIOS with CMOS values or OEM values

If Master BIOS is not already implemented then prepare Master BIOS

Install the USB sticker (or USB Floppy Drive + Floppy Disk) in the bottom USB slot.

Turn on power and enter BIOS by using the button.

Make sure BIOS is the version you want to use (normally latest version). BIOS ID can be found in Main menu.

If BIOS version is incorrect then download etc. the requested BIOS and save it to the USB Sticker (or Floppy Disk) and continue at 3.a. (above).

Otherwise continue:

Select in BIOS:

Exit>Load Optimized Defaults

and make sure that Boot> Boot Device Priority>1st Boot Device is as requested (USB Sticker etc)

Setup all required BIOS settings including Enabling the Secure CMOS.

Exit>Save Changes and Exit.

When DOS is ready then execute the Read.bat. (This will generate MastBIOS.ROM, EPROM.BIN and SN.BIN located on the USB Sticker (Floppy Disk) and to be used when loading the Master BIOS to the target system).

Loading Master BIOS to target MB

Install the USB sticker (or USB Floppy Drive + Floppy Disk) in the bottom USB slot and turn on power.

If system do not boot on the USB Sticker (Floppy Disk) then enter BIOS and select in BIOS:

Exit>Load Optimized Defaults

and make sure that Boot> Boot Device Priority>1st Boot Device is as requested (USB Sticker etc)

Exit>Save Changes and Exit.

When DOS is ready then execute:

Write.exe, if you want to load BIOS including CMOS values.

WriteOEM.exe, if you want to load BIOS with OEM values.

Notes: The ClearOEM.bat can be used to remove **OEM Failsafe Defaults** and reinstall **Secure CMOS**.