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congatec Application Note

Applicable Products	All congatec modules
Application Note Subject	Force module to load BIOS default settings
Document Name	AN13_Load_BIOS_Setup_Defaults
Usage Designation	External

Application Note #13

Revision 1.0

Revision History

Revision	Date (dd.mm.yy)	Author	Changes
1.0	22.12.06	HCH	Initial release

Preface

This Application Note is intended to explain how the embedded BIOS of the congatec CPU modules can be forced to load the BIOS defaults settings (manufacturer settings) when the BIOS setup was changed in a way that the module is not able to boot anymore.

Disclaimer

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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.

Terminology

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

Term	Description
BIOS	BIOS: Basic Input Output System. BIOS is actually firmware, the software that is programmed into a Flash Memory chip built onto the motherboard of a computer.
BIOS Setup	A program provided by the BIOS where user can change parameters that affect the BIOS & system configuration. Also known as CMOS Setup. The BIOS Setup program on congatec modules can be entered by pressing the delete key 'Del' during BIOS POST.
Flash	A special type of EEPROM (Electrically Erasable Read Only Memory) that can be erased and reprogrammed in blocks instead of one byte at a time. Many modern PCs have their BIOS stored on a flash memory chip so that it can easily be updated if necessary.
POST	Power-on Self Test. A diagnostic testing sequence run by a computer's BIOS as the computer's power is initially turned on. The POST will determine if the computer's RAM, disk drives, peripheral devices and other hardware components are properly working.
CGUTIL	congatec System Utility. Universal tool for BIOS updates and BIOS modifications.
CGOS	congatec Operating System API. Software driver for the congatec Embedded Features.

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Contents

1 Introduction

During the development process it's possible that the BIOS CMOS settings of the module are changed in a way so that the module is no longer able to boot or that some functions that are required for further control of the module are disabled (for example CRT monitor has been switched off and no other display device is available in the system). The following sections detail two scenarios that can be used for both the Insyde XpressROM based BIOSes and the AMIBIOS based BIOSes to force the module to load the congatec BIOS default settings. The first scenario, called the <End> Key Method, describes how to use the <End> Key in combination with the <Del> Key in order to load the congatec BIOS default settings that are stored in the onboard BIOS Flash. In this case the changes are visible on the attached display device.

In some instances it's possible that the display device has been disabled as a result of an unwanted BIOS setting. When this has occurred it is advised to switch to the second scenario, called 'Blind' Method. This shows how to enter the BIOS setup of the CPU module and load the congatec BIOS default settings without using a display device. To follow these instructions a POST code card is necessary. The result here will be that the congatec BIOS default settings are loaded, which are stored in the onboard BIOS Flash Memory chip, during the boot procedure.

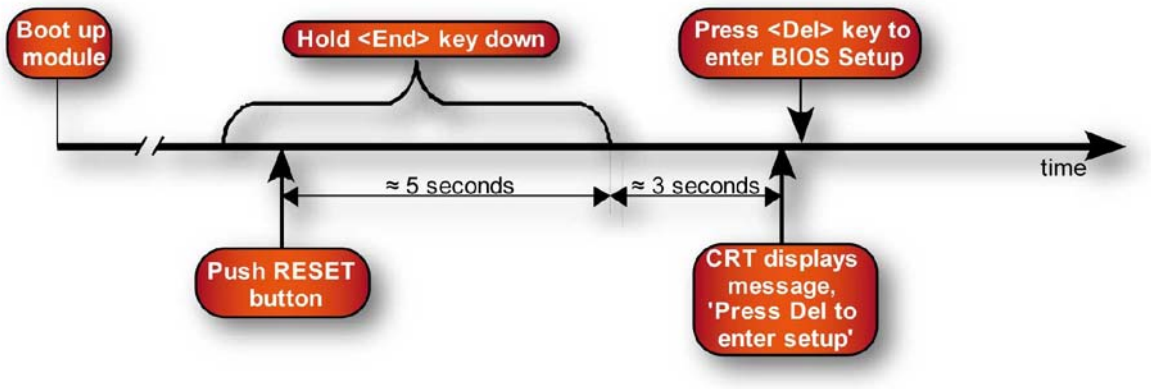
Refer to the respective products User's Guide to determine if your CPU module is equipped with either an AMIBIOS or an Insyde XpressROM BIOS core.

1.1 Loading setup defaults on modules with Insyde XpressROM based congatec BIOSes

congatec BIOSes based on the Insyde XpressROM BIOS support two possibilities for forcing the BIOS default settings to load during the boot procedure.

1.1.1 <End> Key Method

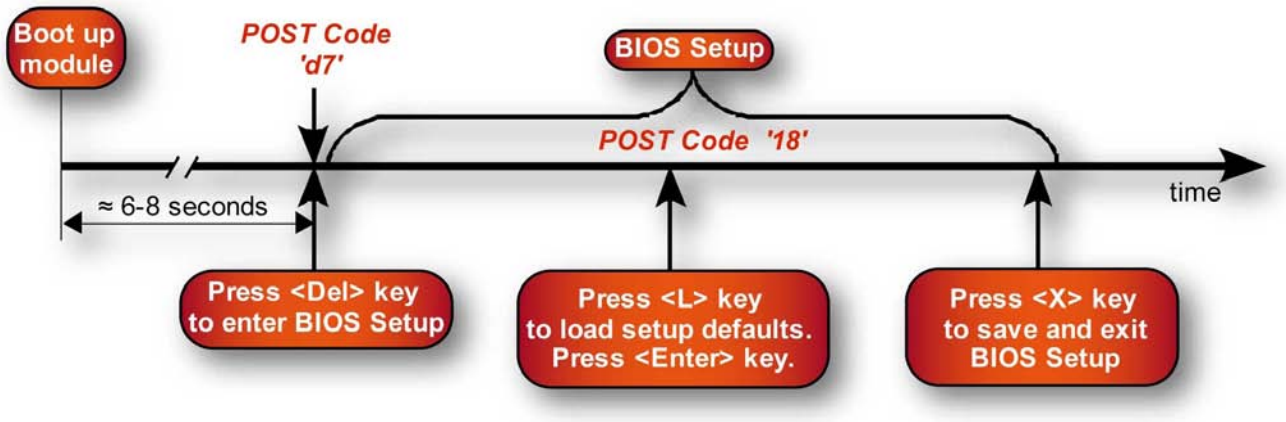
First boot the module. Press the <End> key and hold it down while pushing the RESET Button on your baseboard. Keep holding the <End> for a further 3 seconds before releasing it. The CRT monitor will display the 'Press DEL for setup' string (approximatively 3 seconds after you have released the <End> key). Now push the <Del> key to enter the BIOS Setup. Load the default settings using the <L> key then hit the <Enter> key. Save the changes and exit the BIOS setup by pressing the <X> key.



1.1.2 'Blind' Method

A second possibility is to enter the BIOS setup 'blind' and load the default settings. In this case you should have a POST code display available in your system in order to tell at what point of time the necessary actions must be performed.

Boot up the module. After 6-7 seconds (at POST code 'd7') press the <Del> key a few times to enter the BIOS setup. When in the BIOS Setup the POST display will show code '18'. Now press the <L> key to load setup defaults and then the <Enter> key. To save the changes and exit the BIOS setup press the <X> key.



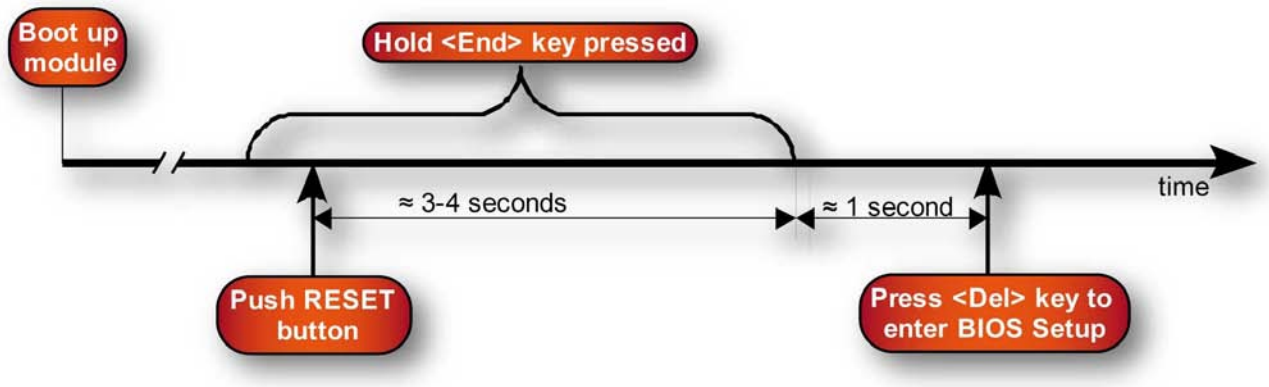
1.2 Loading setup defaults on modules with AMIBIOS based congatec BIOSes

Additionally, the AMIBIOS based congatec CPU modules support the two methods described in the previous sections. Only the keys that have to be pressed and the POST Codes differ from the previous description.

With some newer AMI BIOSes it's possible to disable the <End> Key Method ('End-Key Loads CMOS Defaults'). By default the node is set to [Yes], which equals enabled. If it has been disabled by the user then this scenario does will not work and the only way to get the congatec BIOS default settings loaded during the boot procedure is to perform the 'Blind' Method described in this section.

1.2.1 <End> Key Method

First boot the module. Press the <End> key and hold it down while pushing the RESET Button on your baseboard. Keep holding the <End> for a further 3 seconds before releasing it. After approximatively 1 second press the <Del> key to enter the BIOS Setup. Load the default settings and save the changes and exit the BIOS.



1.2.2 'Blind' Method

When using this method, the system should be equipped with a POST code display so that you can see at what point in time the necessary actions must be performed.

Boot up the module. After 4-5 seconds (at POST code '2A') press the <Del> key a few times to enter the BIOS setup. When in the BIOS Setup the POST display will show code '87'. Now press the <F9> key to load setup defaults and then the <Enter> key. To save the changes and exit the BIOS setup press the <F10> key.