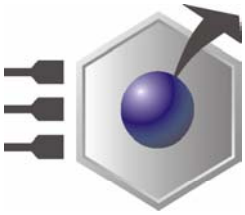
EmbeddedDNA®



EuroTecH

An0002

POST Code description

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ABOUT THIS MANUAL

This application note describes the POST Codes generated by Eurotech's CPU's

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NOTICE

Conventions

The following table lists conventions used throughout this application note.

Icon	Notice Type	Description
	**Information note**	Important features or instructions
	**Warning**	Information to alert you to potential damage to a program, system or device or potential personal injury

Hexadecimal numbers are given a suffix letter “h”, for example:

Decimal 100 will be shown as 64h in hexadecimal

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Contents

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Introduction

The **POST** (**P**ower **O**n **S**elf **T**est) is a series of diagnostic test routines that run automatically when a computer is turned on, after a hardware reset or software reboot (i.e. pressing CTRL+ALT+DEL).

These routines check and initialise the computers hardware (motherboard and peripheral adapter boards for example PCI devices, HD controllers, Serial Interface & keyboard)

When a generic POST routine starts, it writes a hexadecimal code on the I/O port at address 80h (of the ISA/PCI bus). Therefore, when an error occurs and the routine stops you are able to easily read the current POST Code and therefore easily identify the error.

The definition of the individual POST Codes are described in the section: *How to read the POST Code*.

> ***Important Note:*** every manufacturer uses different codes for the POST. This Application Note only describes the codes as used by Eurotech.

POST Code Groups

The POST Codes are divided into groups, as shown in the following table:

Codes used	Group description
00h – 3Fh	System Components
40h - 5Fh	System Memory
70h - 8Fh	PCI Bus
A0h – BFh	Interface Device
C0h – CFh	Configuration
D0h – DFh	Disk and SSD (Solid State Disk)
E0h – FFh	Miscellaneous Operations

POST Code Definitions

Table 2 describes the POST routines used for testing a Eurotech PC system, the table is sorted in ascending numerical order, but be care should be taken as some similar routines use the same POST Code, so sometimes it is necessary check the displays chronological order before reading the description.

The following symbols are used in the code descriptions:

Symbol	Definition
Hw	Hardware Signal
#	Number

System Components

POST Code	Short Name	Description
00	POST Errors	Generic POST error
20	Refresh Signal	Check if the Refresh signal (Hw) changes its status properly
21	Keyboard Controller	Test the 8742 keyboard controller
22	BIOS Memory	Perform a ROM BIOS memory checksum
23	Timer Channel #2	Test 8254 timer controller, channel #2 (timer #0, counter #2)
24	DMA Channel #1	Test 8237 DMA controller, channel #1
25	DMA Channel #2	Test 8237 DMA controller, channel #2
26	DMA Page	Test DMA page registers
27	INT Controller Ch#1	Test 8259 channel #1 (Master Interrupt Controller)
28	INT Controller Ch#2	Test 8259 channel #2 (Slave Interrupt Controller)
29	Shutdown Byte	Test the shutdown byte in Real Time Clock CMOS memory
2A	IRQ 0 Line	Test the IRQ 0 signal (Hw)
2B	Coprocessor	Test the 80x87 math coprocessor device
2C	RTC	Test the Real Time Clock device

System Memory

POST Code	Short Name	Description
40	First 64 Kbytes	Test the first 64 Kbytes memory area
42	Base Memory Test	Test the system memory from 64 Kbytes to 640 Kbytes
42	Extended Memory	Test the 2nd, the 3rd and the 4th Mbytes of system memory area
44	Protected Mode	Test the Protected Mode entry
46	Memory Size	Check system memory size
47	Extended Memory	Test the extended memory area
49	L2 Cache Memory	Test the L2 cache memory

PCI

POST Code	Short Name	Description
70	PCI Device Disable	Disable all the PCI device on PCI bus 0

Devices

POST Code	Short Name	Description
A1	Keyboard Test	Check keyboard presence
A2	Parallel Port	Check parallel port presence
A3	Serial Port	Check serial port presence
A5	Mouse	Check mouse presence

Configuration

POST Code	Short Name	Description
C3	Memory Size	Check the system memory size
C6	HD Detect	Hard Disk detection

Storage Media

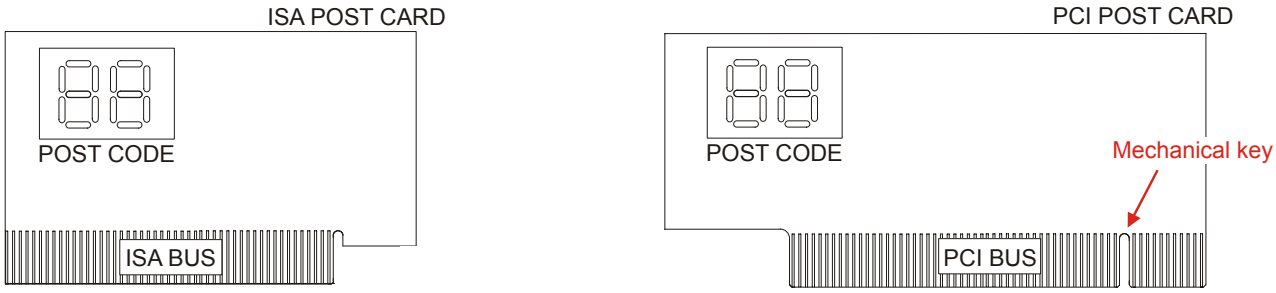
POST Code	Short Name	Description
D0	Floppy Disk	Floppy disk test
D1	Hard Disk	Hard disk test

How to read the POST Code using a POST Card

During system initialisation, every POST routine writes its POST Code on the I/O port 80h (on the ISA/PCI bus). It is possible by using a standard POST Card to read the code (sometimes the commercial POST Cards are also called Mini-Error Test Cards or PC-Error Test Cards).

The POST Card is a printed circuit board with two-digit display screen and is provided with an ISA (or PCI) bus interface. Codes are displayed in hexadecimal format.

The following figures show two examples of POST Cards left is an ISA card and right is a PCI card



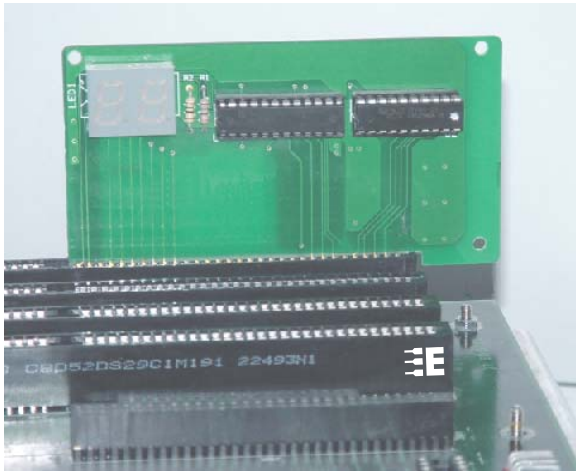
How to install the POST Card in the Eurotech development kit

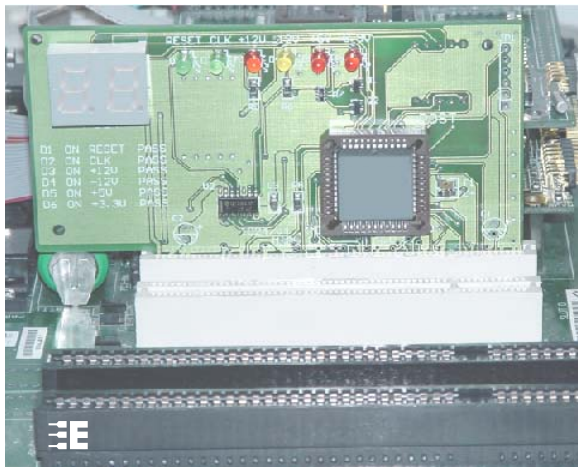
The POST Card is the easily installed for troubleshooting, just plug it into the same type of extended bus slot (PCI or ISA) on the Eurotech development kit.

NOTE: POST Cards are suitable not only for Eurotech development kits but also for other types of PC motherboards. However the generated POST Codes depends on which BIOS you are using. For this reason if you plug a POST Card into a PC motherboard slot, the generated codes would probably be different. This Application Note describes the codes as used by Eurotech only, if you need to use the POST Card in a non Eurotech motherboard refer to the original manufacturer for POST code definitions.

WARNING! Please take care when installing the POST Card to insure that the direction is correct: WRONG DIRECTION WILL DAMAGE THE CARD! PCI POST Card, only one insertion direction is possible (look at the mechanical key: the PCI interface is divided into two parts). ISA POST Card, its component side must face the CPU slots. DO NOT INSTALL A PCI POST CARD INTO THE ISA SLOT. THIS MAY CAUSE DAMAGE.

The following pictures show the correct insert direction, left is the ISA Card and right is the PCI card.





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