Trouble shoot hardware compatibilities of diagnostic card with solution techniques for mother board repair
Umair Ahmed, Adeel Dilshad and M. Sulleman Memon
Department of Computer Science and Engineering, Quaid e Aawam UEST, Nawabshah, Sindh, Pakistan.

ARTICLE INFO
Article history:
Received: 3 April 2012;
Received in revised form: 13 October 2012;
Accepted: 30 October 2012;

Keywords
Bamboo,
Moisture management,
Knitted fabrics,
Areal density and
Vapour permeability.

ABSTRACT
There are millions of computer users around word but only few people have knowledge about diagnostic card, on the other hand if someone has theoretical knowledge then don’t know/understand about the language of diagnostic card. In this piece of work we have tried to resolve issues related to diagnostic card and provided much solution related to routine problems of motherboard. The objective of this research is to provide easily knowledge about the language of diagnostic card so that common user can easily knew that what type of code diagnostic card generated and can resolve the problem in motherboard at its own without consulting to hardware engineer. We have given at home simple solutions about problems related to heating issue of main chip, power supply problem, beep problem, hanging problem, red light problem and processor problem through this diagnostic card.

Introduction
Diagnostic cards are actually main component for finding the reason of failure due to a specific cause [1, 2]. They provide information even in the absence of monitor display because it is possible that failure of system happened before the event when video remained ON. Laptop PCI is supported by different types of cards but with certain constraints and may have three ports as PCI port, USB port and Parallel connector port [3]. On the other hand ISA and PCI interface ports are available on both sides on a common desktop PC card. It is very important that knowledge or details of POST codes for the requirement of BIOS must be explained/supplied to understand the meaning or purpose of codes [4]. We have used KLP16-SD Diagnostic Card which is shown in Figure 1.

Functional Characteristics of KLP16-SD Diagnostic Card
There is no need to install software. Combining advance Technology and the user’s behavioral science, humanized PC diagnostic card to be user friendly. It is easy to use. Thus it is not only applicable card technicians but also common PC users [5].

Using large-scale IC Integrated module with compact structure and testable performance, the highly quality diagnostic & stability test card can meet the high standards with more internal resources. It has more excellent anti-jamming performance and lower rate of self-failures [6].

Functional limitation of traditional PC diagnostic cards has been broken, i.e. we have created standard PCI interface and varieties of auxiliary parts that enhance the accuracy and reliability of PC diagnostic card and part of its functions depend no more on BIOS and never limits to POST contents and manners[7].
Adopting excellent control algorithm to page down the codes, which is easier in KLP16-SD than the traditional diagnostic cards. Kingnostic cards greatly decrease the rate of inappropriate operation that lead to a low accuracy in test.

All the indicator lamps (such as CLK, IRDY and FRAME) are 100% correct. They will be ON only there are signals and OFF when there are no signals, while the traditional ones will be ON once they have signals. For example take the CLK indicator, it makes the users see clearly even single 10ns impulse. It will not be ON when there is CLK signal impulse, no matter the current signal stays at HIGH or LOW level, which will not mislead the user. Therefore no pulse loss and no useless pulses [11].
The kingnostics card are even more advanced than the new generation PC diagnostic cards. They extremely eliminated wrong codes, redundant codes and will not miss any needed codes. The users can check all the failure codes by check switch. They are really the most accurate all around the word [12].

It eliminated the fault that stops test at halfway, which makes test more efficient and reliable.

It is supported by 80h, 84h and 300h ports.

Codes Generated by Diagnostic card and their Purpose

In normal conditions different diagnostic cards produce different codes. Normally codes generated by cards. For example code ‘01’ may have one purpose of meaning in one category of card but on the other hand ‘01’ in other type may have other purpose of meaning. In same way purpose generated by ‘01’ code in one card by code ‘01’ may relate to code ‘06’ in another card.

Following in Table No.1, we have given some codes in Hex by those been generated by card used by us in laboratory. The same codes have different meanings in different cards. Few of those can be found over [13-20]. The purpose of presenting these codes here is that user can easily diagnose the issue and problem of motherboard and resolve it at its own without wondering to the hardware technician.

Hardware Problems and their Solution

In this section we are presenting some problems commonly occurred while working on PC and have suggested solutions to those issues. Solutions are based on practical work conducted at laboratory.

Problem: Main IC Heat (Heat On Main Chip)

Solution: Change main IC is too much difficult because at certain conditions chips of one board didn’t match to another mother board and as result motherboard didn’t give display. Remove the Shorts and Remove Main Chip. We propose one solution of main chip that change main chip, than system will give display and also its working will be good in BIOS but didn’t goes to windows and become hang because some shorts didn’t match.

Problem: Red Light (Heat on ICS chip) Red light is given because processor became damage and processor also didn’t get heat.

Solution: One solution is to change the ICS chip and then system will be ok. For that first remove shorts of ICS chip then Remove ICS chip.

Problem: System Hanging

Solution: Change 16v transistor. For that remove Legs of capacitor from back.

Problem: System Didn’t Start (Power Problem)

Solution: Heat on SMSC chip. Change the SMSC Chip and system became Ok, for that remove the shorts of SMSC chip

Problem: Beep (Heat on shorts)

Solution: Change the RAM chip and shorts, for this remove shorts first.

Problem: BIOS IC become heat (Heat on BIOS chip )

Solution: Changed BIOS Chip. Remove Shorts of BIOS Chip first and then remove BIOS chip. We got one experience that when we remove BIOS IC than system was working without it. (Please don’t change the BIOPS setting i.e. master, slave boot order.)

Figures from Figure No.2 to Figure No.13 shows the work conducted at laboratory for discussed issues and their proposed solutions.

Conclusion:

In this piece of work we have given practical solutions of some common motherboard issues as main IC heat, system hanging, power problem, beep problem, Bios IC Heating etc. and have diagnosed those issues with diagnostic card by giving certain meaning to the codes produced by card. In future we are tending to fix some other problems of PC hardware so that daily routine problems can be resolved at home rather visiting to hardware engineer.

Acknowledgment

Authors are thankful to Department of Computer Systems Engineering and administration of Quaid e Awam UEST, Nawabshah, PAKISTAN to provide the lab facilities to conduct this piece of research.

References


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