Intel® Desktop Board D850EMD2 Specification Update

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The Intel® Desktop Board D850EMD2 may contain design defects or errors known as errata, which may cause the product to deviate from published specifications. Current characterized errata are documented in this Specification Update.

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The Intel® desktop board D850EMD2 may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

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REVISION HISTORY

Date of Revision	Version	Description
June 2002	-001	This document is the first Specification Update for the Intel® Desktop Board D850EMD2.
August 2002	-002	Added Specification Change 1. Removed Printed Board Assembly (PBA) information from the document, as this reference is no longer valid.
September 2002	-003	Updated Legal Disclaimer Section.
October 2002	-004	Added Specification Change 2. Added Erratum 1.
December 2002	-005	Added Erratum 2.
May 2003	-006	Added Specification Change 3.
November 2003	-007	Added Specification Clarification 1.

PREFACE

This document is an update to the specifications contained in the *Intel® Desktop Board D850EMD2 Technical Product Specification* (Order Number A94395). It is intended for hardware system manufacturers and software developers of applications, operating systems, or tools. It will contain Specification Changes, Errata, Specification Clarifications, and Documentation Changes.

Refer to the *Intel® Pentium® 4 Processor Specification Update* (Order number 249199) for specification updates concerning the Intel Pentium 4 processor and that may apply to the desktop board D850EMD2. Unless otherwise noted in this document, it should be assumed that any processor errata for a given stepping are applicable to the Altered Assembly (AA) revision(s) associated with that stepping.

Refer to the *Intel®* 82850*ChipsetFamily:* 82850/82850E *Memory Controller Hub (MCH) Specification Update* (Order Number 298247) for specification updates concerning the 82850/82850E MCH Controller and that may apply to the desktop board D850EMD2. Unless otherwise noted in this document, it should be assumed that any MCH errata for a given stepping are applicable to the Altered Assembly (AA) revision(s) associated with that stepping.

Refer to the *Intel® 82801BA I/O Controller Hub 2 (ICH2) and Intel® 82801BAM I/O Controller Hub 2 Mobile (ICH2-M) Specification Update* (Order Number 298242) for specification updates concerning the 82801BA I/O Controller Hub and that may apply to the desktop board D850EMD2. Unless otherwise noted in this document, it should be assumed that any 82801BA I/O Controller Hub (ICH) errata for a given stepping are applicable to the Altered Assembly (AA) revision(s) associated with that stepping.

Nomenclature

Specification Changes are modifications to the current published specifications. These changes will be incorporated in the next release of the specifications.

Errata are design defects or errors. Characterized errata may cause the desktop board D850EMD2's behavior to deviate from published specifications. Hardware and software designed to be used with any given Altered Assembly (AA) and BIOS revision level must assume that all errata documented for that AA and BIOS revision level are present on all desktop boards.

Specification Clarifications describe a specification in greater detail or further highlight a specification's impact to a complex design situation. These clarifications will be incorporated in the next release of the specifications.

Documentation Changes include typos, errors, or omissions from the current published specifications. These changes will be incorporated in the next release of the specifications.

Specification Update for the Intel® Desktop Board D850EMD2

GENERAL INFORMATION

Basic Desktop Board D850EMD2 Identification Information

AA Revision	BIOS Revision	Notes
A87940-501	MV85010A.86A.0025.P10	1-5
A87948-501	MV85010A.86A.0025.P10	1-5
A88847-501	MV85010A.86A.0025.P10	1-5
A88849-501	MV85010A.86A.0025.P10	1-5

NOTES:

1. The AA number is found on a small label on the component side of the board.
2. The 82850E Chipset kit used on this AA revision consists of three components as follows:

Device	Stepping	S-Spec Numbers
82850E MCH	A3	SL64X
82801BA ICH	B4	SL59Z
82802AB 4Mbit FWH	A1	SB48

3. Refer to the *Intel® Pentium® 4 Processor Specification Update* (Order Number 249199) for errata related to the Pentium 4 processor and that may apply to the desktop board D850EMD2.
4. Refer to the *Intel®* 82850 *Chipset Family:* 82850/82850E *Memory Controller Hub (MCH) Specification Update* (Order Number 298247) for errata related to the 82850/82850E MCH that may apply to the desktop board D850EMD2.
5. Refer to the *Intel® 82801BA I/O Controller Hub 2 (ICH2) and Intel® 82801BAM I/O Controller Hub 2 Mobile (ICH2-M) Specification Update* (Order Number 298242) for errata related to the 82801BA I/O Controller Hub that may apply to the desktop board D850EMD2.

Summary Table of Changes

The following table indicates the Specification Changes, Errata, Specification Clarifications, or Documentation Changes that apply to the desktop board D850EMD2. Intel intends to fix some of the errata in a future revision of the desktop board, and to account for the other outstanding issues through documentation or specification changes as noted. This table uses the following notations:

CODES USED IN SUMMARY TABLE

Doc:	Document change or update that will be implemented.
PlanFix:	This erratum may be fixed in a future revision of the desktop board, driver, or BIOS.
Fixed:	This erratum has been previously fixed.
NoFix:	There are no plans to fix this erratum.
Shaded:	This erratum is either new or modified from the previous version of the document.

NO.	PLANS	SPECIFICATION CHANGES
1	Doc	Change to description of Table 14, Section 1.14.2.2, Fan Connectors
2	Doc	Support for faster Pentium® 4 processors
3	Doc	Support For Faster Intel® Pentium 4 Processors to Table 5 of Section 1.6 Processor
NO.	**PLANS**	**ERRATA**
1	Fixed	Wake from an ACPI sleep state using wake methodologies may fail
2	No Fix	System boot time may be excessive when using ECC memory
NO.	**PLANS**	**SPECIFICATION CLARIFICATIONS**
1	Doc	Clarification of SMBus routing

SPECIFICATION CHANGES

The Specification Changes listed in this section apply to the *Desktop Board D850MD2 Technical Product Specification* (Order Number A94395). All Specification Changes will be incorporated into a future version of that specification.

1. Change to Description of Table 14, Section 1.14.2.2, Fan Connectors

Table 14, Section 1.14.2.2, will change in its entirety as follows:

Table 14. Fan Connector Descriptions for Boards that use the Hardware Monitoring and Fan Control ASIC

Feature	Processor Fan	Fan 1	Fan 2	Fan 3 (Note 1)
+12 V DC connection	Yes	Yes	Yes	Yes
Tachometer output	Yes	Yes	Yes	Yes
Controllable	No	Yes	Yes	Yes (Note 2)
Fan is on in the ACPI S0 or S1 states	Yes	Yes	Yes	Yes
Fan is off in the ACPI S3, S4, and S5 states	Yes	Yes	Yes	Yes

Notes: 1. This fan is present on the desktop board D850EMV2 only.

2. Fan 3 uses the same controls as fan 2. If fan 2 is switched off, fan 3 is also off.

2. Support For Faster Pentium® 4 Processors

1.6 Processor

CAUTION

Use of unsupported processors can damage the board, the processor, and the power supply. See the Intel® Desktop Board D850EMD2/D850EMV2 Specification Update *for the most up-to-date list of supported processors for these boards.*

The desktop boards D850EMD2/D850EMV2 support a single Pentium® 4 processor (in a µPGA478 socket) with a system bus of 400/533 MHz. Table lists the supported processors.

Table 5. Supported Processors

Type	Designation	System Bus	L2 Cache Size
Pentium® 4 processor	Up to 2 GHz	400 MHz	256 KB
Pentium 4 processor	1.6A, 1.7A, 1.8A, 2A, 2.20, 2.40, 2.50, and 2.60	400 MHz	512 KB
Pentium 4 processor	2.26, 2.40B, 2.53, 2.66, 2.80 GHz	533 MHz	512 KB

The list of supported processors for the desktop boards D850EMD2/D850EMV2 is available from Intel's World Wide Web site. All supported onboard memory can be cached. See the processor's data sheet for cachability limits.

NOTE

BIOS revision MV85010A.86A.0038.P15 or greater is required for the board to properly support 2.50 GHz Pentium® 4 or later processors.

CAUTION

Use only an ATX12V-compliant power supply with these desktop boards. ATX12V power supplies have two power leads that provide required supplemental power for the Intel® Pentium 4 processor and the Intel® 850E chipset. Always connect the 20-pin and 4-pin leads of the ATX12V power supply to the corresponding connectors on the board. Otherwise, the board and the processor could be damaged.

Do not use a standard ATX power supply. Doing so could damage the board and the processor.

For information about	Refer to
Processor support	Section 1.3, page 18
Processor usage	Section 1.3, page 18
Power supply connectors	Section 2.8.2.3, page 60

3. Support For Faster Intel® Pentium® 4 Processors to Table 5 of Section 1.6 Processor

Table 5 in section 1.6, Processor will change in its entirety as follows:

Table 5. Supported Processors

Processor Family	Processor Speed	System Bus	L2 Cache Size	BIOS Version	Notes
Pentium® 4 processor	3.06 GHz	533 MHz	512 KB	P21 or greater	The following board revisions (AA numbers) support these processors: C18361-601 or later C18369-601 or later. Please review the new http://developer.intel.com/design/motherbd/cooling.htm
	2.8 GHz	533 MHz	512 KB	P15 or greater	All board revisions support these processors
	2.66 GHz	533 MHz	512 KB	P15 or greater	
	2.6 GHz	400 MHz	512 KB	P15 or greater	
	2.53 GHz	533 MHz	512 KB	P10 or greater	
	2.5 GHz	400 MHz	512 KB	P15 or greater	
	2.4B GHz	533 MHz	512 KB	P10 or greater	
	2.4 GHz	400 MHz	512 KB	P10 or greater	
	2.26 GHz	533 MHz	512 KB	P10 or greater	
	2.2 GHz	400 MHz	512 KB	P10 or greater	
	2.0A GHz	400 MHz	512 KB	P10 or greater	
	2.0 GHz	400 MHz	256 KB	P10 or greater	
	1.9 GHz	400 MHz	256 KB	P10 or greater	
	1.8A GHz	400 MHz	512 KB	P10 or greater	
	1.8 GHz	400 MHz	256 KB	P10 or greater	
	1.7A GHz	400 MHz	512 KB	P10 or greater	
	1.7 GHz	400 MHz	256 KB	P10 or greater	
	1.6A GHz	400 MHz	512 KB	P10 or greater	
	1.6 GHz	400 MHz	256 KB	P10 or greater	
	1.5 GHz	400 MHz	256 KB	P10 or greater	
	1.4 GHz	400 MHz	256 KB	P10 or greater	

ERRATA

1. Wake From an ACPI Sleep State Using Wake Methodologies May Fail

PROBLEM: The desktop board hardware leaves the Resume Well Power OK (RSM_PWROK) signal deasserted before and after the resume well power (VccSus3_3 and VccSus1_8) is valid, instead of asserting it for 10 ms after valid power, which is required by the Intel® 82801BA I/O Controller Hub 2 (ICH2) and Intel® 82801BAM I/O Controller Hub 2 Mobile (ICH2-M) Datasheet (order number 290687). The result is that LAN wake attempts may fail.

NOTE: Wake from LAN* using the MagicPacket* utility will not be affected by this errata.

IMPLICATION: Users that take advantage of LAN wake methods to wake systems from an ACPI sleep state may experience some wake failures.

WORKAROUND: None.

STATUS: This issue was fixed in BIOS revision MV85010A.86A.0038.P15.

2. System Boot Time May be Excessive When Using ECC Memory

PROBLEM: A blank screen may occur for as long as one minute during POST while the system is booting, when ECC memory is utilized.

IMPLICATION: When BIOS detects ECC memory during the system boot process, BIOS will run memory scans multiple times resulting in a delayed POST (up to one minute) making the system seem unresponsive.

WORKAROUND: None.

STATUS: This erratum will not be fixed.

SPECIFICATION CLARIFICATIONS

The Specification Clarifications listed in this section apply to the *Desktop Board D850MD2 Technical Product Specification* (Order Number A94395). All Specification Clarifications will be incorporated into a future version of that specification.

1. Clarification of SMBus Routing

Section 2.8.2.1 will change in its entirety as follows:

2.8.2.1 Expansion Slots

The board has the following expansion slots:

- One AGP connector. The AGP connector is keyed for 1.5 V AGP cards only. Do not install a legacy 3.3 V AGP card. The AGP connector is not mechanically compatible with legacy 3.3 V AGP cards.
- PCI 2.2–compliant local bus slots (three on the desktop board D850EMD2; five on the desktop board D850EMV2). The SMBus is routed to PCI bus connector 2 only (ATX expansion slot 4). PCI add-in cards with SMBus support can access sensor data and other information residing on the board.
- One CNR connector (optional), shared with PCI bus connector 3 (ATX expansion slot 1) on the desktop board D850EMD2 or with PCI bus connector 6 (ATX expansion slot 1) on the desktop board D850EMV2.

NOTE

The SMBus routing to the PCI bus connectors does not conform to the PCI Engineering Change Notice (ECN) "Addition of the SMBus to the PCI Connector ECN", dated October 5th, 2000. The ECN specifies that SMBus signals must be routed to all PCI bus connectors. On this board, SMBus signals are routed to PCI bus connector 2 only.

Add-in cards that implement PCI bus connector pins A40 and A41 for any purpose other than SMBCLK (SMBus clock) and SMBDAT (SMBus data) should not be installed in PCI bus connector 2.

For information about	Refer to
Addition of the SMBus to the PCI Connector ECN	http://www.pcisig.com/data/specifications/smb_ecn_040501.pdf

NOTE

This document references back panel slot numbering with respect to processor location on the board. The AGP slot is not numbered. PCI slots are identified as PCI slot #x, starting with the slot closest to the processor. The CNR slot shares PCI slot 6. The ATX/microATX specifications identify expansion slot locations with respect to the far edge of a full-sized ATX chassis. The ATX specification and the board's silkscreen are opposite and could cause confusion. The ATX numbering convention is made without respect to slot type (PCI vs. AGP) but refers to an actual slot location on a chassis. Figure 15 on page 63 illustrates the desktop board D850EMD2's PCI slot numbering. Figure 16 on page 64 illustrates the desktop board D850EMV2's PCI slot numbering.