

# **Kontron Server Board S5000PHB**

## **Tested Memory Report**



## Revision History

Date	Rev	Modifications
August 2006	0.5	Preliminary Release
December 2006	1.0	Updated with tested memory for the IP Network Server NSW1U
October 10, 2007	1.1	Updated list of tested memory for the IP Network Server NSW1U
October 15, 2007	1.2	Updated list of tested memory from CMTL update
November 06, 2007	1.3	Updated list from CMTL update. Added entries for 1 GB and 2 GB modules.
January 09, 2008	1.4	Updated list from CMTL update. Added entries for 512 MB and 4 GB modules
February 05, 2008	1.5	Updated list from CMTL update. Added entry for 4 GB module
March 04, 2008	1.6	Updated list from CMTL update. Added entries for 1 GB, 2 GB, and 4 GB modules
June 27, 2008	1.7	Updated list from CMTL update. Added entries for 512 MB, 1 GB, 2 GB, and 4 GB modules
August 19, 2008	1.8	Added entry for 8 GB module
May 18, 2009	1.9	Added new 1GB, 2GB, and 4GB Micron and Crucial modules
March 15, 2010	2.0	Added 2GB and 4GB Micron FBDIMMs
May 13, 2010	2.1	Added 1GB Micron FBDIMM
May 19, 2010	2.2	Added 2GB and 4GB SMART FBDIMMs
July 22, 2011	2.3	Added 4GB and 8GB Ventura FBDIMMs

## Disclaimer

The Kontron Server Board S5000PHB 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.

\* Other brands and names are the property of their respective owners.

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***NOTE:*** DIMM devices with gold contacts should NOT be placed into DIMM sockets with tin-lead contacts or vice-versa. Mixing dissimilar metal contact types has been shown to result in unreliable memory operation. Kontron recommends similar manufacturer and similar speeds in each Rank on the memory module. Mixing of dissimilar memory is NOT recommended.

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# 1. Overview of Memory Testing

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The following test processes are used to qualify Dual In-Line Memory Modules (DIMMs) for use with the Kontron Server Board S5000PHB. Memory is a vital subsystem in a server. Kontron requires that strict guidelines be met before a DIMM vendor is added to the Tested Memory Report. To be included on the list as a fully supported DIMM, the memory must undergo rigorous tests to ensure that the product will perform the intended server product functions.

The Tested Memory Lists for Kontron's server board products categorize memory modules as Advanced Tested. The Advanced Testing process includes a standard paper qualification and then is followed by two levels of functional testing. DIMMs that have completed memory testing are considered to be compatible with the product on which they were tested, and with the test software and operating systems that were used during the test process.

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**NOTE:** *Memory qualification for main memory is done by testing identical memory modules in all DIMM slots. Memory qualification does not include testing of mixed DIMM type and/or vendors. Mixing of DIMM types and/or vendors is not recommended.*

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## 1.1 Paper Qualification

A paper qualification is performed to verify that the specifications of a given DIMM meet Kontron's memory specifications for a given product. Specification criteria reviewed include: critical timings, electrical characteristics, timing requirements, environmental requirements, and packaging requirements.

## 1.2 Functional Testing

After a given DIMM passes the standard paper qualification, functionality of the DIMM is then tested with the intended Kontron product. Two levels of functional testing are performed: Standard and Advanced.

Standard functional testing requires that the given DIMM and Kontron product combination operate with no failures for a period of no less than six hours for both minimum and maximum DIMM configurations. Testing is performed using a Microsoft Windows\* operating system and a custom test package. The test systems operate with standard voltage and at room temperature.

## 1.3 Advanced Functional Testing

Advanced functional testing requires that the given DIMM and Kontron product combination operate with no failures for a period of no less than six hours for both minimum and maximum DIMM configurations. Testing is performed with multiple operating systems and various custom test packages. Each test configuration is tested with high and low voltage and temperature margin conditions.

## 1.4 Computer Memory Test Lab\*

Computer Memory Test Lab, also known as “CMTL\*” is a leading memory test organization responsible for testing a broad range of memory products. A memory product that receives a “PASS” after being tested by CMTL means it functions correctly and consumers can use the product to perform the intended server functions. In order to pass these stringent standards, memory products must maintain the highest manufacturing procedures and pass an exacting battery of tests. Testing is performed with Kontron-supplied equipment and procedures defined by Kontron’s various functional testing levels.

### **CMTL\* Contact Information:**

Office: (949) 716-8690  
Main Fax: (949) 716-8691

Computer Memory Test Lab (CMTL)  
24 Hammond Suite F  
Irvine, CA 92618  
<http://www.cmtlabs.com/>

## 2. S5000PHB Memory Subsystem

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The Kontron Server Board S5000PHB main memory subsystem is designed to support Fully Buffered Dual In-line (FBD) Registered DDR2-533 and DDR2-667 FBDIMM memory ECC Synchronous Dynamic Random Access Memory (SDRAM). Other industry naming conventions for DDR2-533 include PC2-4200 and for DDR2-667 include PC2-5300.

The maximum main memory capacity supported is based on the number of DIMM slots provided and maximum supported memory loads by the chipset. On the Kontron Server Board S5000PHB the maximum supported capacity is 32 GB; the minimum supported capacity is 512 MB with one single 512 MB DIMM. Supported FBDIMM capacities for main memory include: 512 MB, 1 GB, 2 GB, 4 GB, and 8 GB.

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**CAUTION:** *Although the board contains six DIMM slots and supports 8 GB modules, the board will not support a configuration of six 8 GB modules for a total memory capacity of 48 GB. The maximum supported capacity is 32 GB, which can be achieved with either of the following combinations:*

- Four 8 GB modules
  - Two 8 GB modules and four 4 GB modules
- 

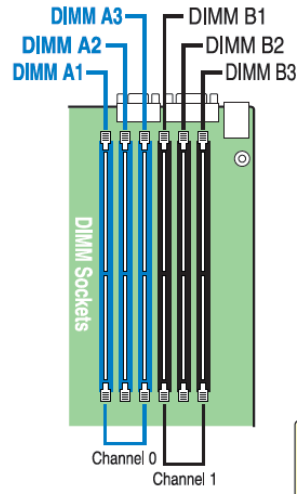
### 2.1 Main Memory Population

The Kontron Server Board S5000PHB has six DIMM slots grouped into two channels for main memory. DIMMs within each bank should be identical (same manufacturer, CAS latency, number of rows, columns and devices, timing parameters etc.). Although DIMMs within a bank must be identical, the BIOS supports various DIMM sizes and configurations, which allows memory between banks to be different. Memory sizing and configuration are guaranteed only for qualified DIMMs approved by Kontron.

DIMM population rules depend on the operating mode of the memory controller, which is determined by the number of DIMMs installed. DIMMs must be populated in pairs. DIMM pairs are populated in the following DIMM slot order:

- A1 and B1
- A2 and B2
- A3 and B3

DIMMs within a given pair must be identical with respect to size, speed, and organization, however, DIMM capacities can be different between different DIMM pairs. For example, a valid mixed DIMM configuration may have 512 MB DIMMs installed in DIMM Slots A1 and B1, and 1 GB DIMMs installed in DIMM slots A2 and B2.



### 2.1.1 Memory Subsystem

The MCH masters two fully buffered DIMM (FBD) memory channels. FBD memory utilizes a narrow high-speed frame-oriented interface referred to as a channel. On the server board, the two channels are routed to six DIMM slots and are capable of supporting registered DDR2-533 and DDR2-667 FBDIMM memory.

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**NOTE:** Only fully buffered DDR2 DIMMs are supported on this server board.

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The following table lists the current supported memory types.

<b>FBDIMM-533 CL4 &amp; FBDIMM-667 CL5 Memory Matrix</b>						
<b>DIMM Capacity</b>	<b>DIMM Organization</b>	<b>SDRAM Density</b>	<b>SDRAM Organization</b>	<b># SDRAM Devices</b>	<b># Address bits Row/Bank/Column</b>	<b># of Ranks</b>
512MB	64M x72	512Mbit	64M x 8	9	14/10/2	1
1GB	128M x 72	512Mbit	64M x 8	18	14/10/2	2
1GB	128M x 72	512Mbit	128M x 4	18	14/11/2	1
1GB	128M x 72	512Mbit	128M x 8	9	14/10/3	1
2GB	256M x72	512Mbit	128M x 4	36	14/11/2	2
2GB	256M x72	1Gbit	256M x 4	18	14/11/3	1
2GB	256M x72	1Gbit	128M x 8	18	14/10/3	2
4GB	512M x72	1Gbit	256M x 4	36	14/11/3	2
4GB	512M x 72	2Gbit	512M x 4	18	13/11/2	2
8GB	1024M x 72					

### 3. S5000PHB Main Memory Tested on the IP Network Server NSW1U

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The following tables list DIMM devices tested as compatible with the Kontron Server Board S5000PHB on the IP Network Server NSW1U. The list of tested memory is periodically updated when qualified memory is added during the production life of the Kontron product.

Kontron strongly recommends the use of ECC memory in all server products.

Memory modules not listed in the following tables have not been tested for compatibility and their use with the Kontron Server Board S5000PHB may result in unpredictable operation and data loss.

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**CAUTION:** *Third party memory vendors may use the same module part number with different DRAM vendors and die revisions. To ensure proper system operation, verify that each DRAM vendor and die revision has been separately tested and qualified. Please notify CMTL if there is a discrepancy. This list is subject to change without notice.*

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**NOTE:** *This list is not intended to be all-inclusive. It is provided as a convenience to Kontron's general customer base, but Kontron does not make any representations or warranties whatsoever regarding the quality, reliability, functionality, or compatibility of these memory modules.*

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**Kontron Server Board S5000PHB**  
**Fully Buffered ECC, DDR2-667, CAS Latency 5, Lead Free DIMM Modules**  
**512 MB Sizes (64Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Dataram	DTM65506C	HY5PS12821CFP-Y5 rev C	Hynix	40053A rev B	Intel	D1	Foxconn	64M x 8		25-Apr-07
ATP Electronics	AP64K72A8BHE6S	K4T51083QE-ZCE6 rev E	Samsung	D2F18A na	NEC	B5	Foxconn	64M x 8		07-May-07
Kingston	KVR667D2S8F5 /512I	NT5TU64M8BE-3C rev B	Nanya	2025285-002.A00 na	Intel	D1	Foxconn	64M x 8		25-May-07
Kingston	KVR667D2S8F5 /512I	E5108AGBG-6E-E rev G	Elpida	2025285-002.A00 na	Intel	D1	Foxconn	64M x 8		25-Jun-07
Smart Modular Technologies	SG647FBD6485 2IBD5	HYB18T512800BF-3S rev B	Qimonda	PG54G240 NFBUB4R AS rev A	IDT	A1.5	Foxconn	64M x 8		08-Aug-07
Smart Modular Technologies	SG647FBD6485 2-SEI	K4T51083QE-ZCE6 rev E	Samsung	M395T655 3EZ0 na	Intel	D1	Samsung	64M x 8		04-Dec-07
Dataram	DTM65506F	HYB18T512800B2F-3S rev B2	Qimonda	40053A rev B	IDT	C1	Foxconn	64M x 8		04-Mar-08
Micron	MT9HTF6472FY -667D5D4	MT47H64M8B6-3:D	Micron	0499D	IDT	C1	FMHS	64M x 8		27-Mar-2008
Crucial Technology	CT6472AF667.9 FD5D4	MT47H64M8B6-3:D	Micron	0499D	IDT	C1	FMHS	64M x 8		27-Mar-2008
Micron	MT9HTF6472FY -667D5N6	MT47H64M8B6-3:D	Micron	0499C	NEC	B5+	FMHS	64M x 8		31-Mar-2008
Crucial Technology	CT6472AF667.9 FD5N6	MT47H64M8B6-3:D	Micron	0499C	NEC	B5+	FMHS	64M x 8		31-Mar-2008
Micron	MT9HTF6472FY -667D5E4	MT47H64M8B6-3:D	Micron	0499D	Intel	D1	FMHS	64M x 8		03-Apr-2008
Crucial Technology	CT6472AF667.9 FD5E4	MT47H64M8B6-3:D	Micron	0499D	Intel	D1	FMHS	64M x 8		03-Apr-2008

**NOTE:** Rows highlighted in gray are for modules added since the previous publication of the list

**NOTE:** Some memory modules may have thermal issues when used in a non-Kontron 1U rack solution. Verifying any thermal limitations with your chassis supplier before purchasing a chassis is advised.

**Kontron Server Board S5000PHB**  
**Fully Buffered ECC, DDR2-667, CAS Latency 5, Lead Free DIMM Modules**  
**1 GB Sizes (128Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Dataram	DTM65507D	HYB18T512800BF3S rev B	Qimonda	40053A rev B	Intel	D1	Foxconn	64M x 8		19-Apr-07
Micron	MT18HTF12872 FDY-667D6E4	MT47H64M8-3	Micron		Intel	GB-D1	FDHS	64M x 8		29-Jan-07
Smart Modular Technologies	SG1287FBD648 52-HB	HY5PS12821CFP-Y5 rev C	Hynix	KS-11 (0646-3F)	IDT	A1.5	Hynix	64M x 8		23-Apr-07
Smart Modular Technologies	SG1287FBD648 52IBD5	HYB18T512800BF3S rev B	Qimonda	PG58G240 NFBUB4R BS rev A	IDT	A1.5	Foxconn	64M x 8		09-May-07
Dataram	DTM65507C	HY5PS12821CFP-Y5 rev C	Hynix	40053A rev B	Intel	D1	Foxconn	64M x 8		17-May-07
Kingston	KVR667D2D8F5 /1GI	NT5TU64M8BE-3C rev B	Nanya	2025286-002.A00 na	Intel	D1	Foxconn	64M x 8		06-Jun-07
ATP Electronics	AP28K72S8BHE 6S	K4T51083QE-ZCE6 rev E	Samsung	SP240S08 K1 na	NEC	B5	Foxconn	64M x 8		19-Jun-07
Kingston	KVR667D2D8F5 /1GI	E5108AGBG-6E-E rev G	Elpida	2025286-002.A00 na	Intel	D1	Foxconn	64M x 8		27-Jun-07
Ventura Technology Group	D2-54VD80SIV-555	K4T51083QE-ZCE6 rev E	Samsung	D2F28B na	IDT	A1.5	AVC	64M x 8		23-Jul-07
Smart Modular Technologies	SG1287FBD648 52-SEI	K4T510830QE-ZCE6 rev E	Samsung	M395T295 3EZ0 na	IDT	C1	Foxconn	64M x 8		12-Sep-07
Kingston	KVR667D2D8F5 /1GI	HYB18T512800BF-3S rev B	Qimonda	2025286-002.A00 na	Intel	D1	Foxconn	64M x 8		05-Oct-07
Kingston	KVR667D2D8F5 /1GI	HYB18T512800BF-3S rev B	Qimonda	2025286-002.A00 na	Intel	D1	Foxconn	64M x 8		05-Oct-07
Avant Technology	AVF7228B52E5 667F0-ELHP	EDE5108AHSE-6E-E rev H	Elpida	50-1451-01-A rev A	Qimonda	C1	Foxconn	64M x 8		09-Oct-07
Smart Modular Technologies	SG1287FBD648 52SEC1	K4T51083QE-ZCE6 rev E	Samsung	PG58G240 NFBUB4R BS rev A	IDT	C1	Foxconn	64M x 8		15-Oct-07
Smart Modular Technologies	SG1287FBD648 52IBDC	HYB18T512800BF3S rev B	Qimonda	PG58G240 NFBUB4R BS rev A	IDT	C1	Foxconn	64M x 8		25-Oct-07
Micron	MT18HTF12872 FDY-667D6E4	MT47H64M8B6-3:D	Micron	0500E	Intel	D1	FMHS	64M x 8		04-Mar-08
Micron	MT18HTF12872 FDY-667D6N6	MT47H64M8B6-3:D	Micron	0500E	NEC	B5+	FMHS	64M x 8		04-Mar-08
Micron	MT9HTF12872F Y-667E1D4	MT47H128M8HQ-3:E	Micron	0499D	IDT	C1	FMHS	128M x 8		04-Mar-08
Micron	MT9HTF12872F Y-667E1N8	MT47H128M8HQ-3:E	Micron	0499D	NEC	D1-667	FMHS	128M x 8		04-Mar-08
Crucial Technology	CT12872AF667. 18FD6E4	MT47H64M8B6-3:D	Micron	0500E	Intel	D1	FMHS	64M x 8		04-Mar-08
Crucial Technology	CT12872AF667. 18FD6N6	MT47H64M8B6-3:D	Micron	0500E	NEC	B5+	FMHS	64M x 8		04-Mar-08
Crucial Technology	CT12872AF667. 9FE1D4	MT47H128M8HQ-3:E	Micron	0499D	IDT	C1	FMHS	128M x 8		04-Mar-08
Crucial Technology	CT12872AF667. 9FE1N8	MT47H128M8HQ-3:E	Micron	0499D	NEC	D1-667	FMHS	128M x 8		04-Mar-08

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**Kontron Server Board S5000PHB**  
**Fully Buffered ECC, DDR2-667, CAS Latency 5, Lead Free DIMM Modules**  
**1 GB Sizes (128Mx72)**  
**[Continued]**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Dataram	DTM65507G	HYB18T512800B2F 3S rev B2	Qimonda	40053A rev B	IDT	C1	Foxconn	64M x 8		06-Mar-08
Avant Technology	AVF7228B52E5667F1 ELJP-IS	EDE5108AJBG-8E- E rev J	Elpida	D2F28B rev B	IDT	C1	Foxconn	64M x 8		30-May-08
Avant Technology	AVF7228B52E5667F1 NYBP-IS	NT5TU64M8BE- 25C rev B	Nanya	D2F28B rev B	IDT	C1	Foxconn	64M x 8		09-Jun-08
Micron	MT9HTF12872FY- 667E1N6	MT47H128M8HQ- 3:E	Micron	0499D	NEC	B5+	FMHS	128M x 8		09-May-08
Micron	MT18HTF12872FY- 667D6D4	MT47H128M4B6- 3:D	Micron	0501F	IDT	C1-667	FMHS	128M x 4		09-May-08
Crucial Technology	CT12872AF667.18F4 D6D4	MT47H128M4B6- 3:D	Micron	0501F	IDT	C1-667	FMHS	128M x 4		09-May-08
Crucial Technology	CT12872AF667.9FE1 N6	MT47H128M8HQ- 3:E	Micron	0499D	NEC	B5+	FMHS	128M x 8		09-May-08
Micron	MT9HTF12872FY- 667G1D6	MT47H128M8H Q-3:G	Micron	0738A	IDT	L4	FMHS	128M x8	1	12-Apr-09
Micron	MT9HTF12872FY- 667G1N8	MT47H128M8H Q-3:G	Micron	0738A	NEC	D1	FMHS	128M x8	1	12-Apr-09
Crucial Technology	CT12872AF667.9F G1D6	MT47H128M8H Q-3:G	Micron	0738A	IDT	L4	FMHS	128M x 8	1	12-Apr-09
Crucial Technology	CT12872AF667.9F G1N8	MT47H128M8H Q-3:G	Micron	0738A	NEC	D1	FMHS	128M x 8	1	12-Apr-09
Micron	MT9HTF12872FZ- 667H1D6	MT47H128M8CF- 3:H	Micron	0681A	IDT	L4	FMHS	128M x 8	1	13-May-10

NOTE: Rows highlighted in gray are *for modules added since the previous publication of the list*

**NOTE:** *Some memory modules may have thermal issues when used in a non-Kontron 1U rack solution. Verifying any thermal limitations with your chassis supplier before purchasing a chassis is advised.*

**Kontron Server Board S5000PHB**  
**Fully Buffered ECC, DDR2-667, CAS Latency 5, Lead Free DIMM Modules**  
**2 GB Sizes (256Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Smart Modular Technologies	SG2567FBD28452-SCD	K4T51043QC-ZCE6 rev C	Samsung	M395T5750-CZ0 na	IDT	A1.5	Samsung	128M x 4		27-Apr-07
Dataram	DTM65508D	HYB18T512400BF3S rev B	Qimonda	40060A rev A	Intel	D1	Foxconn	128M x 4		14-May-07
Ventura Technology Group	D2-56VF82SIV-555	K4T51043QC-ZCE6 rev C	Samsung	D2F24E na	IDT	A1.5	AVC	128M x 4		23-May-07
Dataram	DTM65508E	HY5PS12421CFP-Y5 rev C	Hynix	40060A rev A	Intel	D1	Foxconn	128M x 4		01-Jun-07
Kingston	KVR667D2D8F5/2GI	MT47H128M8HQ-3 rev E	Micron	2025286-002.A00 na	Intel	D1	Foxconn	128M x 8		14-Jun-07
ATP Electronics	AP56K72G4BH E6S	K4T51043QE-ZCE6 rev E	Samsung	SP240G04 K1 na	NEC	B5	Foxconn	128M x 4		29-Jun-07
Legacy Electronics Inc.	M527NAE90BE-30R	MT47H128M8HQ-3 rev E	Micron	D2F28B rev B	IDT	A1.5	AVC	128M x 8		05-Jul-07
Apacer	75.A72AI.G00	K4T51043QE-ZCE6 rev E	Samsung	48.1A205.011 rev 1	Intel	D1	AVC	128M x 4		06-Jul-07
Legacy Electronics Inc.	B527M4C90EE-30R	K4T51043QC-ZCE6 rev C	Samsung	D2F24E_A rev A	IDT	A1.5	AVC	128M x 4		10-Jul-07
Smart Modular Technologies	SG2567FBD28452IBD5	HYB18T512400BF3S rev B	Qimonda	PG54G240 NFSUB1R ES rev C	IDT	A1.5	Foxconn	128M x 4		23-Jul-07
Kingston	KVR667D2D4F5/2GI	HYB18T512400BF3S rev B	Qimonda	2025372-002.A00 na	Intel	D1	Foxconn	128M x 4		28-Sep-07
Smart Modular Technologies	SG2567FBD28452IBDC	HYB18T512400BF3S rev B	Qimonda	PG54G240 NFSUB1R ES rev C	IDT	C1	Foxconn	128M x 4		01-Oct-07
Kingston	KVR667D2D4F5/2GI	NT5TU128M4BE-3C rev B	Nanya	2025378-001.A00 na	Intel	D1	Foxconn	128M x 4		03-Oct-07
Smart Modular Technologies	SG2567FBD28452-IBQ	HYB18T512405BF3S rev B	Qimonda	0712 (240-25-4)	Qimonda	C1	Logitex	128M x 4		19-Oct-07
Kingston	KVR667D2D8F5/2GI	E1108ACBG-6E-E rev C	Elpida	2025286-002.A00 na	Intel	D1	Foxconn	128M x 8	2	15-Feb-08
Micron	MT18HTF25672FDY-667E1D4	MT47H128M8HQ-3:E	Micron	0500E	IDT	C1	FMHS	128M x 8		04-Mar-08
Micron	MT36HTF25672FY-667D1D4	MT47H128M4B6-3:D	Micron	0561A	IDT	C1	FMHS	128M x 8		04-Mar-08
Micron	MT18HTF25672FY-667E1D4	MT47H256M4HQ-3:E	Micron	0501F	IDT	C1	FMHS	256M x 4		04-Mar-08
Crucial Technology	CT25672AF667.18FE1D4	MT47H128M8HQ-3:E	Micron	0500E	IDT	C1	FMHS	128M x 8		04-Mar-08
Crucial Technology	CT25672AF667.36FD1D4	MT47H128M4B6-3:D	Micron	0561A	IDT	C1	FMHS	128M x 8		04-Mar-08

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**Kontron Server Board S5000PHB**  
**Fully Buffered ECC, DDR2-667, CAS Latency 5, Lead Free DIMM Modules**  
**2 GB Sizes (256Mx72)**  
**[Continued]**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Dataram	DTM65508F	HYB18T512400 B2F3S rev B2	Qimonda	40084A rev A	IDT	C1	Foxconn	128M x 4		11-Mar-08
ATP Electronics	AP56K72S8BJE6S	K4T1G084QQ- HCE6 rev Q	Samsung	D2F28B rev B	NEC	D1	Foxconn	128M x 8		17-Apr-08
Micron	MT18HTF25672FDY- 667E2D6	MT47H128M8H Q-3:E	Micron	0658A	IDT	L4-667	FMHS	128M x 8		29-Apr-08
Crucial Technology	CT25672AF667.18FE2D 6	MT47H128M8H Q-3:E	Micron	0658A	IDT	L4-667	FMHS	128M x 8		29-Apr-08
Micron	MT18HTF25672FDY- 667E1N8	MT47H128M8H Q-3:E	Micron	0500E	NEC	D1-667	FMHS	128M x 8		30-Apr-08
Crucial Technology	CT25672AF667.18FE1N 8	MT47H128M8H Q-3:E	Micron	0500E	NEC	D1-667	FMHS	128M x 8		30-Apr-08
Kingston	KVR667D2D8F5/2Gi	HY5PS1G831C FP-Y5 rev C	Hynix	2025286- 002.A00 na	Intel	D1	Foxconn	128M x 8		07-May-08
Kingston	KVR667D2D4F5/2Gi	HYB18T512400 B2F25F rev B2	Qimonda	2025378- 001.A00	INTEL	D1	Foxconn	128M x 4		11-Jun-08
Avant Technology	AVF7256B61E5667F1EL CP-IS	EDE1108ACBG- 8E-E rev C	Elpida	D2F28B rev B	IDT	C1	Foxconn	128M x 8		13-Jun-08
Micron	MT18HTF25672FDY- 667G1D6	MT47H128M8H Q-3:G	Micron	0658A	IDT	L4	FMHS	128M x8	2	12-Apr-09
Micron	MT18HTF25672FDY- 667G1N8	MT47H128M8H Q-3:G	Micron	0658A	NEC	D1	FMHS	128M x8	2	12-Apr-09
Crucial Technology	CT25672AF667.18FG1D 6	MT47H128M8H Q-3:G	Micron	0658A	IDT	L4	FMHS	128M x 8	2	12-Apr-09
Crucial Technology	CT25672AF667.18FG1N 8	MT47H128M8H Q-3:G	Micron	0658A	NEC	D1	FMHS	128M x 8	2	12-Apr-09
Micron	MT18HTF25672FDZ- 667H1D6	MT47H128M8C F-3:H	Micron	0681A	IDT	L4	FMHS	128M x 8	2	12-Mar-10
Smart Modular Technologies	SG2567FB212852HCDL	HY5PS1G831C FP-Y5 rev C	Hynix	PG58G240 NFBUB4R BS rev A	IDT	L4		128M x 8		19-May-10

**NOTE:** Rows highlighted in gray are for modules added since the previous publication of the list

**NOTE:** Some memory modules may have thermal issues when used in a non-Kontron 1U rack solution. Verifying any thermal limitations with your chassis supplier before purchasing a chassis is advised.

**Kontron Server Board S5000PHB**  
**Fully Buffered ECC, DDR2-667, CAS Latency 5, Lead Free DIMM Modules**  
**4 GB Sizes (512Mx72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Legacy Electronics Inc.	M547RAE90EE-30R	MT47H256M4H Q-3 rev E	Micron	D2F24E rev E	IDT	A1.5	AVC	256M x 4		15-May-07
ATP Electronics	AP12K72G4BJE6M	MT47H256M4H Q-3 rev E	Micron	SP240G04K 1 na	NEC	B5	Foxconn	256M x 4		21-May-07
Kingston	KVR667D2D4F5/4GI	E1108ABSH-E rev B	Elpida	0646 na	IDT	A1.5	Foxconn	256M x 4		21-Jun-07
Smart Modular Technologies	SG5127FBD225652MEC	MT47H256M4H Q-3 rev E	Micron	PG54G240N FSUB2RES rev A	IDT	C1	Foxconn	256M x 4		23-Jul-07
Apacer	78.BHGA8.421	E1104ACSE-6E-E rev C	Elpida	48.1A205.01 1 rev 1	IDT	C1	AVC	256M x 4		01-Aug-07
Smart Modular Technologies	SG5127FBD225652-SC	K4T1G044QC-ZCE6 rev C	Samsung	M395T5750 EZ0 na	IDT	A1.5	Samsung	256M x 4		22-Aug-07
Smart Modular Technologies	SG5127FBD225652SCD	K4T1G044QC-ZCE6 rev C	Samsung	M395T5750 EZ0 na	IDT	C1	Samsung	256M x 4		24-Aug-07
ATP Electronics	AP12K72G4BJE6S	K4T1G044QC-ZCE6 rev C	Samsung	D2F24E na	NEC	D1	Foxconn	256M x 4		19-Dec-07
Dataram	DTM65510C	HY5PS1G431C FP-Y5 rev C	Hynix	40084A rev A	IDT	C1	Foxconn	256M x 4		08-Jan-08
Micron	MT36HTF51272FY-667E1D4	MT47H256M4H Q-3:E	Micron	0589A	IDT	C1	FMHS	256M x 4		04-Mar-08
Crucial Technology	CT51272AF667.36FE1D4	MT47H256M4H Q-3:E	Micron	0589A	IDT	C1	FMHS	256M x 4		04-Mar-08
ATP Electronics	AP12K72G4BJE6S	K4T1G044QC-HCE6 rev Q	Samsung	D2F24E rev E	NEC	D1	Foxconn	256M x 4		18-Mar-08
Kingston	KVR667D2D4F5/4Gi	E1104ACSE-6E-E rev C	Elpida	2025378-001.A00	Intel	D1	Foxconn	256M x 4		04-Apr-08
Avant Technology	AVF7251B62E5667F4EL-CP-IS	EDE1104ACSE-8E-E rev C	Elpida	BA2FRCU 3.10 rev 3.10	IDT	C1	Foxconn	256M x 4		04-Jun-08
Micron	MT36HTF51272FY-667G1D6	MT47H256M4H Q-3:G	Micron	0659A	IDT	L4	FMHS	256M x 4	2	12-Apr-09
Micron	MT36HTF51272FY-667G1N8	MT47H256M4H Q-3:G	Micron	0659A	NEC	D1	FMHS	256M x 4	2	12-Apr-09
Crucial Technology	CT51272AF667.36FG1D6	MT47H256M4H Q-3:G	Micron	0659A	IDT	L4	FMHS	256M x 4	2	12-Apr-09
Crucial Technology	CT51272AF667.36FG1N8	MT47H256M4H Q-3:G	Micron	0659A	NEC	D1	FMHS	256M x 4	2	12-Apr-09
Micron	MT36HTF51272FDZ-667H1D6	MT47H128M8C F-3:H	Micron	0798A	IDT	L4	FMHS	128M x 8	4	12-Mar-10

**Kontron Server Board S5000PHB**  
**Fully Buffered ECC, DDR2-667, CAS Latency 5, Lead Free DIMM Modules**  
**4 GB Sizes (512Mx72) Cont'd**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Smart Modular Technologies	SG5127FBD12852HC DL	HY5PS1G831C FP-Y5 rev C	Hynix	PG54G240NF BUBGA1 rev A	IDT	L4		128M x 8		19-May-10
Ventura Technology Group	D2-58VJ10JV-555	HY5PS1G431C FP-Y5	HYNIX	D2F24E	IDT	C1	AKS	256X4	2	22-Jul-11

**NOTE:** Rows highlighted in gray are for modules added since the previous publication of the list

**NOTE:** Some memory modules may have thermal issues when used in a non-Kontron 1U rack solution. It is advised that you verify any thermal limitations with your chassis supplier before purchasing a chassis.

**Kontron Server Board S5000PHB**  
**Fully Buffered ECC, DDR2-667, CAS Latency 5, Lead Free DIMM Modules**  
**8 GB Sizes (1024M x 72)**

Manufacturer	Part Number	DRAM Part Number	DRAM Vendor	PCB Part Number	AMB Vendor	AMB Revision	Heat-sink Vendor	DRAM Organization	Rank	Date
Micron	MT36HTS1G72 FY-667A1D4	MT47H1G4THM-3:A	Micron	0467E	IDT	C1-667	FMHS	(1Gbx4)*18		15-May-08
Crucial Technology	CT102472AF66 7.36DA1D4	MT47H1G4THM-3:A	Micron	0467E	IDT	C1-667	FMHS	(1Gbx4)*18		15-May-08
Ventura Technology Group	D2-60VM10JV-555	H5PS2G43AFR-Y5	HYNIX	D2F24E	IDT	L4	AKS	512X4	2	22-Jul-11

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**NOTE:** Rows highlighted in gray are for modules added since the previous publication of the list

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**NOTE:** Some memory modules may have thermal issues when used in a non-Kontron 1U rack solution. It is advised that you verify any thermal limitations with your chassis supplier before purchasing a chassis.

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## 4. Kontron Carrier Grade Server TIGW1U SAS Front Panel Board Intel® RAID Cache Tested Memory

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The following tables list Mini-DIMM devices tested to be compatible with the Kontron Carrier Grade Server TIGW1U SAS Front Panel board. The list of tested memory is periodically updated as qualified memory is added during the production life of the Kontron product.

Kontron strongly recommends the use of ECC memory in all server products.

Memory modules not listed in the following tables have not been tested for compatibility and their use as RAID cache in the SAS Front Panel Board subsystem with the Kontron Carrier Grade Server TIGW1U may result in unpredictable operation and data loss.

**Mini-DIMMs used with the SAS Front Panel Board should be a single rank device (with at maximum nine x8 devices) due to the Intel® RAID Smart Battery (RSB) retention time requirements.**

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**CAUTION:** *Third party memory vendors may use the same module part number with different DRAM vendors and die revisions. To ensure proper system operation, verify that each DRAM vendor and die revision has been separately tested and qualified. Please notify CMTL if there is a discrepancy. This list is subject to change without notice.*

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**NOTE:** *This list is not intended to be all-inclusive. It is provided as a convenience to Kontron's general customer base, but Kontron does not make any representations or warranties whatsoever regarding the quality, reliability, functionality, or compatibility of these memory modules.*

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TIGW1U SAS Front Panel Board RAID Cache Registered ECC DDR Mini-DIMM Modules 128 MB Sizes							
Manufacturer	Part Number	Performance	Rank	DRAM Organization	# of Components	Row/Bank/Column	Bank Address
Micron	MT5HTF1672KY-40EB2	DDR2-400	1	32Mx16 (512Mb)	5	13/2/10	BA0-BA1
Smart Modular Technologies	SG572163FG8RWDG	DDR2-533	1	16Mx16 (256Mb)	5	13/2/9	BA0-BA1

TIGW1U SAS Front Panel Board RAID Cache Registered ECC DDR Mini-DIMM Modules 256 MB Sizes							
Manufacturer	Part Number	Performance	Rank	DRAM Organization	# of Components	Row/Bank/Column	Bank Address
Micron	MT5HTF3272KY-40ED1	DDR2-400	1	32Mx16 (512Mb)	5	13/2/10	BA0-BA1
Smart Modular Technologies	SG572328FG8RWDB	DDR2-400	1	32Mx8 (256Mb)	9	13/2/10	BA0-BA1

TIGW1U SAS Front Panel Board RAID Cache Registered ECC DDR Mini-DIMM Modules 512 MB Sizes							
Manufacturer	Part Number	Performance	Rank	DRAM Organization	# of Components	Row/Bank/Column	Bank Address
Smart Modular Technologies	SG572648FG8RZDB	DDR2-400	1	64Mx8 (512Mb)	9	14/2/10	BA0-BA1
Micron	MT9HVF6472PKY-53ED4	DDR2-533	1	64Mx8 (512Mb)	9	14/2/10	BA0-BA1
Micron	MT9HTF6472PKY-53ED3	DDR2-533	1	64Mx16 (1Gb)	5	14/2/10	BA0-BA1
Smart Modular Technologies	SG647MR264852SGV	DDR2-667	1	64Mx8 (512Mb)	9	14/2/10	BA0-BA1