

Advanced/MA User-Installable Upgrades

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This document applies only to standard Advanced/MA baseboards with BIOS identifier .BU0.

The devices listed below are categorized according to two levels of qualification:

Full Functional Tested: The device has passed electrical and functional testing across the full temperature and voltage specifications for the product, as well as signal quality analysis and vendor specification analysis per the Full Functional Test Qualification Procedure for the particular device. The testing of the device may have been conducted by the vendor or other third party.

Basic Functional Tested: The device has passed basic functional testing at ambient temperatures per the Basic Functional Test Qualification Procedure for the particular device. The testing of the device may have been conducted by the vendor or other third party.

Devices are added to the list upon written notification to Intel that the device has passed all the requirements documented in the applicable test procedure. Devices not listed can be used, but in the event of unreliable system operation, the devices should be replaced with tested devices to determine whether the unlisted devices are causing the problem.

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SYSTEM MEMORY

Table A-1 shows the possible memory combinations. The Advanced/MA will support both Fast Page DRAM or EDO DRAM SIMMs, but they cannot be mixed within the same memory bank. If Fast Page DRAM and EDO DRAM SIMMs are installed in separate banks, each bank will be optimized for maximum performance. Parity generation and detection is NOT supported, but parity SIMMs (x36) may be used. SIMM requirements are 70ns Fast Page Mode or 60nS EDO DRAM (70 ns EDO may be used with a 60mhz or slower external CPU clock) with tin-lead connectors.

| <i>SIMM 1,2 (Bank 0) SIMM Type (Amount)</i> | <i>SIMM 3,4 (Bank 1) SIMM Type (Amount)</i> | <i>Total System Memory</i> |
|---|---|----------------------------|
| 1M X 32 (4 MB) | Empty | 8 MB |
| 1M X 32 (4 MB) | 1M X 32 (4 MB) | 16 MB |
| 1M X 32 (4 MB) | 2M X 32 (8 MB) | 24 MB |
| 1M X 32 (4 MB) | 4M X 32 (16 MB) | 40 MB |
| 1M X 32 (4 MB) | 8M X 32 (32 MB) | 72 MB |
| 2M X 32 (8 MB) | Empty | 16 MB |
| 2M X 32 (8 MB) | 1M X 32 (4 MB) | 24 MB |
| 2M X 32 (8 MB) | 2M X 32 (8 MB) | 32 MB |
| 2M X 32 (8 MB) | 4M X 32 (16 MB) | 48 MB |
| 2M X 32 (8 MB) | 8M X 32 (32 MB) | 80 MB |
| 4M X 32 (16 MB) | Empty | 32 MB |
| 4M X 32 (16 MB) | 1M X 32 (4 MB) | 40 MB |
| 4M X 32 (16 MB) | 2M X 32 (8 MB) | 48 MB |
| 4M X 32 (16 MB) | 4M X 32 (16 MB) | 64 MB |
| 4M X 32 (16 MB) | 8M X 32 (32 MB) | 96 MB |
| 8M X 32 (32 MB) | Empty | 64 MB |
| 8M X 32 (32 MB) | 1M X 32 (4 MB) | 72 MB |
| 8M X 32 (32 MB) | 2M X 32 (8 MB) | 80 MB |
| 8M X 32 (32 MB) | 4M X 32 (16 MB) | 96 MB |
| 8M X 32 (32 MB) | 8M X 32 (32 MB) | 128 MB |

Table A-1. Possible SIMM memory combinations

Note: SIMMs may be parity (x 36) or non-parity (x 32)

IMPORTANT NOTE

SIMMs with gold contacts should NOT be placed into SIMM sockets with tin-lead contacts or vice-versa. Mixing dissimilar metal contact types has resulted in unreliable memory operation. Use only Tin-lead contact SIMMs.

TESTED SIMM VENDORS

The following tables list SIMMs that have been tested. SIMMs that are not listed should also function properly as long as their specifications are compatible with the devices listed below. In general, SIMM devices that are faster than those specified for a given platform will work, although no extra performance will be realized.

All Sizes: Tin-lead contacts.

FAST PAGE SIMM

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---|-------------|---------------------------|-----------------------------|
| 1M x 32 (4MB), Non-Parity - 70ns | | | |
| Centon Memory | FULL | CPCB00104-7 | Samsung DRAM |
| Centon Memory | FULL | CSAM1MX32-70SMT or 60SMT | |
| Centon Memory | FULL | CSAM1MX32NT7SMT | |
| Century Microelectronics Inc. | FULL | 3216M6-07T | |
| Fujitsu Ltd | FULL | 158101 | NPNX DRAM 1MX4 |
| Hyundai | FULL | HYM532100AM-70 | |
| Hyundai | FULL | HYM532100AM-60B | |
| Hyundai | FULL | HYM532120W-70 | HY532120w-7MA |
| Micron Technology | FULL | MT8D132M-7 | |
| Oki Semiconductor | FULL | MSC23132C-70DS8 | |
| Samsung Corning Co, LTD. | FULL | KMM5321000BV-7 | |
| Samsung Corning Co, LTD. | FULL | KMM5321000CV-7 | |
| Samsung Corning Co, LTD. | FULL | KMM5321000AW-7 | |
| Smart Modular Technologies | FULL | SMI5321000-7 | |
| Smart Modular Technologies | FULL | SMI5321000W-7 | |
| Smart Modular Technologies | FULL | SM5321000H-7 | |
| Smart Modular Technologies | FULL | INSM5321000T-7 | |
| Smart Modular Technologies | FULL | IN5321000-W7 | with NEC DRAM |
| Smart Modular Technologies | FULL | NI532014081XXS7 | Hitachi devices Hm514405cs6 |

1M x 32 (4MB), Non-Parity - 70ns (cont.)

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|----------------------------|-------------|---------------------------|-------------------------------------|
| Smart Modular Technologies | FULL | INSM5321000-70 | |
| Smart Modular Technologies | FULL | IN5321000W-7 | Siemens 1X16 DRAM |
| Smart Modular Technologies | FULL | INSM5321000-7 | with NEC 424400-70 |
| Smart Modular Technologies | FULL | IN5321000W-7 | with NEC 4218160-60,70 |
| Texas Instruments | FULL | Z124BBK32S-70 IN | TM124BBK32S-70 |
| Texas Instruments | FULL | TM124BBK32S-60 | |
| Texas Instruments | FULL | Z124BBK32U-70 | TI# TM124BBK32U-70 |
| Toshiba Corporation | FULL | THM3210B0AS-70 | |
| Unigen Corporation | FULL | UG8M132SQT-70 | |
| Unigen Corporation | FULL | NU53201400IXS7 | |
| Advantage Memory Corp. | BASIC | AMC1x32-70T | |
| Celestica Inc. | BASIC | CL001D01320B00J-70 | |
| Kingston Technology Corp. | BASIC | KTM1x32L-70T | |
| Simple Technology | BASIC | STI321000-70T | |
| Super PC Memory | BASIC | 4000/72NP | TIN must be specified when ordering |
| Unigen Corporation | BASIC | 1x32UG7PBT1 | |
| Unigen Corporation | BASIC | 1x32UG7SQT | |
| Viking Components | BASIC | 1x32-70T | |
| VisionTek Inc. | BASIC | VT69130.0 | |

1M x 32 (4MB), Non-Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|----------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT8D132M-6 | |
| 1st Tech Corporation | BASIC | 20-132-60T | |
| VisionTek Inc. | BASIC | VT69030.0 | |

1M x 36 (4MB), Parity - 70ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|--------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT9D136M-70 | |
| Simple Technology | BASIC | STI361000-70T | |
| VisionTek Inc. | BASIC | VT69110.0 | |
| Workstation Direct | BASIC | MM1x36-70T12C | |

1M x 36 (4MB), Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---------------|-------------|---------------------------|-----------------|
| | | | |

2M x 32 (8MB), Non-Parity - 70ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|----------------------------|-------------|---------------------------|----------------------|
| Hyundai | FULL | HYM532200AM-70 | |
| Micron Technology | FULL | MT16D232M-7 | |
| Micron Technology | FULL | MT16D232M-6 | |
| Oki Semiconductor | FULL | MSC23232C-70DS16 | |
| Samsung Corning Co, LTD. | FULL | KMM5322000BV-7 | |
| Samsung Corning Co, LTD. | FULL | KMM5322000CV-7 | |
| Smart Modular Technologies | FULL | SMI5322000-7 | |
| Smart Modular Technologies | FULL | NI532023101XXS7 | using 1 x 16 devices |
| Texas Instruments | FULL | Z248CBK32S-70 IN | TM248CBK32S-70 |
| Texas Instruments | FULL | Z248CBK32S-60 IN | TM248CBK32S-60 |
| Toshiba Corporation | FULL | THM3220C0AS-70 | |
| Advantage Memory Corp. | BASIC | AMC2x32-70T | |
| Celestica Inc. | BASIC | CL001D02320B00J-70 | |
| Kingston Technology Corp. | BASIC | KTM2x32L-70T | |
| Simple Technology | BASIC | STI322000-70T | |
| Unigen Corporation | BASIC | 2x32UG7DBT | |
| Unigen Corporation | BASIC | 2x32UG7PBT1 | |
| Viking Components | BASIC | 2x32-70T | |
| VisionTek Inc. | BASIC | VT69150.0 | |

2M x 32 (8MB), Non-Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|----------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT16D232M-6 | |
| 1st Tech Corporation | BASIC | 20-232-60T | |
| 1st Tech Corporation | BASIC | 20-232-601T | 4 DRAMs |
| Simple Technology | BASIC | STI322000-60T | |
| Simple Technology | BASIC | STI322000A-60T | |
| Simple Technology | BASIC | A322000-60T | |
| VisionTek Inc. | BASIC | VT69050.0 | |

2M x 36 (8MB), Parity - 70ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|--------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT24D236M-7 | |
| Micron Technology | FULL | MT18D236M-7 | |
| Micron Technology | FULL | MT18D236M-6 | |
| Simple Technology | BASIC | STI362000A-70T | |
| VisionTek Inc. | BASIC | VT69120.0 | |
| Workstation Direct | BASIC | MM2x36-70T24C | |

2M x 36 (8MB), Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---------------|-------------|---------------------------|-----------------|
| | | | |

4M x 32 (16MB), Non-Parity - 70ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|----------------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT8D432M-7 | |
| Micron Technology | FULL | MT8D432M-6 | |
| Smart Modular Technologies | FULL | SM532044004X357 | *** OBSOLETE |
| Celestica Inc. | BASIC | CL001D04320B00J-70 | |
| Kingston Technology Corp. | BASIC | KTM4x32L-70T | |
| Simple Technology | BASIC | STI324000-70T | |
| Unigen Corporation | BASIC | 4x32UG7KBT2 | |
| Viking Components | BASIC | 4x32-70T | |
| VisionTek Inc. | BASIC | VT69160.0 | |

4M x 32 (16MB), Non-Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|--------------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT8D432M-6 | |
| Samsung Corning Co., Ltd | FULL | KMM5324100AK-6 | |
| Texas Instruments | FULL | TM497BBK32S-60 | |
| 1st Tech Corporation | BASIC | 20-432-60NT3 | |
| Advantage Memory Corp. | BASIC | AMC4x32-60T | |
| Simple Technology | BASIC | STI324000-60T | |
| Simple Technology | BASIC | A324000-60T | |
| VisionTek Inc. | BASIC | VT69060.0 | |

4M x 36 (16MB), Parity - 70ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|--------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT12D436DM-7 | |
| Micron Technology | FULL | MT12D436DM-70 | |
| Simple Technology | BASIC | STI-XPRESS/16HB | |
| VisionTek | BASIC | VT69140.0 | |
| Workstation Direct | BASIC | MM4x36-70T12C | |

4M x 36 (4MB), Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|----------------------|-------------|---------------------------|-----------------|
| Texas Instruments | FULL | Z497MBK36Q-60 | |
| 1st Tech Corporation | BASIC | 20-436-60NT3 | |
| 1st Tech Corporation | BASIC | 20-1040-05 | 9 DRAMs |

8M x 32 (32MB), Non-Parity - 70ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---------------------------|-------------|---------------------------|-----------------|
| Advantage Memory Corp. | BASIC | AMC8x32-70T | |
| Kingston Technology Corp. | BASIC | KTM8x32L-70T | |
| Simple Technology | BASIC | STI328000-70T | |
| Unigen Corporation | BASIC | 8x32UG7KBT2 | |
| Viking Components | BASIC | 8x32-70T | |
| VisionTek | BASIC | VT69170.0 | |

8M x 32 (32MB), Non-Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|----------------------|-------------|---------------------------|-----------------|
| 1st Tech Corporation | BASIC | 20-832-60NT3 | |
| 1st Tech Corporation | BASIC | 20-1040-15 | |
| VisionTek Inc. | BASIC | VT69070.0 | |

8M x 36 (32MB), Parity - 70ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|-------------------|-------------|---------------------------|-----------------|
| Simple Technology | BASIC | STI-XPRESS/32HB | |
| VisionTek | BASIC | VT69180.0 | |

8M x 36 (32MB), Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|----------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT24D836M-6 | |
| 1st Tech Corporation | BASIC | 20-1040-07 | |

EDO SIMM

Note: 60ns EDO SIMMs are required when the external CPU clock is set to 66 MHz (e.g., for the 100, 133, 166, and 200 MHz Pentium processor). Either 60ns or 70ns SIMMs can be used for external clock frequencies of 50 MHz and 60 MHz, but no additional performance will be seen with the 60ns SIMMs.

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---|-------------|---------------------------|-----------------|
| 1M x 32 (4MB), Non-Parity - 70ns | | | |
| Micron Technology | FULL | MT8D132M-7X | |
| Micron Technology | FULL | MT8D132M-6X | |
| Samsung Corning Co. Ltd. | FULL | KMM5321004CV-7 | 4M DRAM Based |
| Samsung Corning Co. Ltd. | FULL | KMM5321004CV-6 | 4M DRAM Based |
| Samsung Corning Co. Ltd. | FULL | KMM5321204AW-7 | |
| Samsung Corning Co. Ltd. | FULL | KMM5321204AW-6 | |
| Smart Modular Technologies | FULL | NI532014081XXS7 or S6 | |
| Texas Instruments | FULL | TM124BBK32U-60 | |
| Texas Instruments | FULL | TM124FBK32U-70 | new mask fix |
| Texas Instruments | FULL | Z124FBK32S-70 | |
| Simple Technology, Inc. | BASIC | STI321004A-70T | 1-800-367-7330 |
| Viking Components | BASIC | EDO1327T | |

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---|-------------|---------------------------|-----------------|
| 1M x 32 (4MB), Non-Parity - 60ns | | | |
| Micron Technology | FULL | MT8D132M-6X | |
| NEC ELECTRONICS INC | FULL | DRAM(4218165-60) | |
| Samsung Corning Co. Ltd. | FULL | KMM5321204AW-6 | 16M DRAM Based |
| Samsung Corning Co. Ltd. | FULL | KMM5321004CV-6 | 4M DRAM Based |
| Smart Modular Technologies | FULL | NI532014081XXS6 | |
| 1st Tech Corporation | BASIC | 20-1039-09 | |
| Advantage Memory Corp. | BASIC | AMC1x32-60TEDO | |
| Kingston Technology Corp. | BASIC | KTM1x32L-60ET | |
| Simple Technology | BASIC | STI321004-60T | |
| Simple Technology | BASIC | STI321004T-60T | |
| Simple Technology | BASIC | A321004-60T | |
| Unigen Corporation | BASIC | 1x32UG6DBT-EDO | |
| VisionTek Inc. | BASIC | VT69210.0 | |

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---|-------------|---------------------------|-----------------|
| 2M x 32 (8MB), Non-Parity - 70ns | | | |
| Micron Technology | FULL | MT16D232M-7X | |
| Micron Technology | FULL | MT8D232M-7X | |
| Micron Technology | FULL | MT8D232M-6X | |
| Smart Modular Technologies | FULL | NI532024081XXS7 | 1mx4 based |
| Texas Instrument | FULL | TM248GBK32U-70 | new mask fix |
| Samsung Corning Co. Ltd. | BASIC | KMM5322104AU-7 | |
| Simple Technology, Inc. | BASIC | STI322004A-70T | 1-800-367-7330 |
| Viking Components | BASIC | EDO2327T | |

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---|-------------|---------------------------|-----------------|
| 2M x 32 (8MB), Non-Parity - 60ns | | | |
| Micron Technology | FULL | MT16D232M-6X | |
| Samsung Corning Co. Ltd. | FULL | KMM5322204BW-6 | |
| Smart Modular Technologies | FULL | NI532024081XXS6 | |
| 1st Tech Corporation | BASIC | 20-1039-11 | |
| Advantage Memory Corp. | BASIC | AMC2x32-60TEDO | |
| Celestica Inc. | BASIC | CL001D02325B00J-60 | |
| Kingston Technology Corp. | BASIC | KTM2x32L-60ET | |
| NEC | BASIC | MC-422000F32BA-60 | |
| Samsung Corning Co. Ltd. | BASIC | KMM5322104AU-6 | |
| Simple Technology | BASIC | STI322004T-60T | |
| Simple Technology | BASIC | STI322004AT-60T | |
| Unigen Corporation | BASIC | 2x32UG6DBT-EDO | |
| VisionTek Inc. | BASIC | VT69220.0 | |

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|--|-------------|---------------------------|-----------------|
| 4M x 32 (16MB), Non-Parity - 70ns | | | |
| Simple Technology, Inc. | BASIC | STI324004-70T | 1-800-367-7330 |
| Unigen Corporation | BASIC | 4x32UG7KBT2EDO | |
| Viking Components | BASIC | EDO4327T | |

4M x 32 (16MB), Non-Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---------------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT8D432M-6X | |
| Micron Technology | FULL | MT8D432M-60X | |
| Samsung Corning Co. Ltd. | FULL | KMM5324104AK-6 | |
| Texas Instruments | FULL | TM497FBK32S-60 | |
| 1st Tech Corporation | BASIC | 20-1040-17 | |
| Advantage Memory Corp. | BASIC | AMC4x32-60TEDO | |
| Celestica Inc. | BASIC | CL001D04325B00J-60 | |
| Kingston Technology Corp. | BASIC | KTM4x32L-60ET | |
| Simple Technology | BASIC | STI324004-60T | |
| Simple Technology | BASIC | STI324004T-60T | |
| Simple Technology | BASIC | A324004-60T | |
| VisionTek Inc. | BASIC | VT69240.0 | |

8M x 32 (32MB), Non-Parity - 70ns

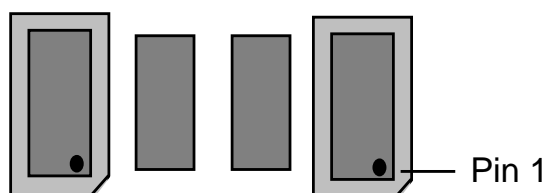
| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|-------------------------|-------------|---------------------------|-----------------|
| 1st Tech Corporation | BASIC | 20-1026-02 | |
| Simple Technology, Inc. | BASIC | STI328004-70T | 1-800-367-7330 |

8M x 32 (32MB), Non-Parity - 60ns

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---------------------------|-------------|---------------------------|-----------------|
| Micron Technology | FULL | MT16D832M-60X | |
| Samsung Corning Co, LTD. | FULL | KMM5328104BK-6 | |
| 1st Tech Corporation | BASIC | 20-1040-21 | |
| Advantage Memory Corp. | BASIC | AMC8x32-60TEDO | |
| Kingston Technology Corp. | BASIC | KTM8x32L-60ET | |
| Simple Technology | BASIC | STI328004-60T | |
| Simple Technology | BASIC | STI328004T-60T | |
| VisionTek Inc. | BASIC | VT69280.0 | |

GRAPHICS MEMORY

The Advanced/MA baseboard has 1 MB of Fast Page DRAM installed for graphics and two SOJ type sockets for upgrades up to 2 MB of graphics DRAM. The user can install two 256k x 16, 60 nS DRAM to provide a total of 2 MB of graphics DRAM. The DRAM may be either EDO or Fast Page mode, but no performance advantage will be seen with EDO.



| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|---------------|-------------|---------------------------|-----------------|
|---------------|-------------|---------------------------|-----------------|

Fast Page Video DRAM (256Kx16, 60ns, SOJ)

| | | | |
|-------------------|------|-----------------|--|
| Hyundai | FULL | HY514260BJC-60R | |
| Micron Technology | FULL | MT4C16257DJ-6TR | |

EDO Video DRAM (256Kx16, 60ns, SOJ)

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|-------------------------|-------------|---------------------------|-----------------|
| Etron Technology Inc. | FULL | EM614163A-60 | |
| Micron Technology | FULL | MT4C16270DJ-6 | |
| Samsung Corning Co.,Ltd | FULL | KM416C254BJ-6T | |

REAL TIME CLOCK BATTERY REPLACEMENT

The battery can be replaced with a Sanyo CR2032, or equivalent, coin cell lithium battery. This battery has a 220 mAh rating.

APPROVED BATTERY VENDORS

| <i>Vendor</i> | <i>Qual</i> | <i>Vendor Part Number</i> | <i>Comments</i> |
|-----------------------------------|-------------|---------------------------|-----------------|
| Battery, Coin cell, CR2032 | | | |
| Maxell Corporation | FULL | CR2032 | |
| Panasonic Industrial Company | FULL | CR2032 | |
| Renata Batteries U.S. | FULL | CR2032 | |
| Sanyo Energy Corp | FULL | CR2032 | |
| Sony Corp | FULL | CR-2032 | |

OVERDRIVE PROCESSOR SUPPORT MATRIX

The information below describes the specific OPSD systems that support the OverDrive 320-pin PODP 3V-XXX processors which can be accommodated in a 320 pin Type 5 Socket or a 321 pin Type 7 Socket. The tables list the jumper settings required for the selected OverDrive processors. These OverDrive processors select their clock ratios internally and do not use the baseboard's internal clock ratio jumpers. These OverDrive processors work over a voltage range that includes both VR and VRE voltage ranges, therefore the user does not need to change the voltage specification jumpers on the baseboard.

For any particular baseboard, the type and speed of memory and/or the speed of the cache components that are used on the baseboard, may limit a baseboards' maximum achievable External CPU Clock speed. This would then limit the selection of Pentium OverDrive processor that could be used to full effect on this particular baseboard. Use the current external CPU clock settings as a guide in selecting a compatible selection for a Pentium OverDrive processor speed.

The Advanced/MA baseboard has a 321-pin Type 7 Zero Insertion Force (ZIF) socket which may provide users with an OverDrive processor performance upgrade path.

| PROCESSOR UPGRADES | <i>Original</i> | <i>External CPU Clock</i> | <i>Host Bus Frequency Jumper</i> |
|-------------------------|-----------------|---------------------------|----------------------------------|
| | <i>CPU Type</i> | <i>Speed</i> | <i>J5J1</i> |
| Intel PODP 3V - 125 MHz | 75 MHz | 50 MHz | pins 1-2, 4-5 |
| Intel PODP 3V - 150 MHz | 90 MHz | 60 MHz | pins 1-2, 5-6 |
| Intel PODP 3V - 166 MHz | 100 MHz | 66 MHz | pins 2-3, 4-5 |

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