User's Guide to
MBX 1200z
FPU, 32-Bit Memory, and Clock
for the Amiga® 1200
from
MicroBotics, Inc.

GENERAL DESCRIPTION AND ORGANIZATION

MBX 1200z is a high speed floating point and memory card which employs the Motorola 68881 as a math co-processor chip running at a 14.3 MHz clock. Optionally, 25 or 50 MHz 68882 can be supported. Also supported is the addition of up to eight megabytes of 32-bit wide RAM via the installation of an optional SIMM (Single Inline Memory Module) bearing 1,2,4, or 8 megs of memory. Finally, the board supports a battery-backed real time clock circuit to provide system date and time for file date-stamping.

STARTING INSTALLATION INSTRUCTIONS

Shut down your Amiga 1200 and remove the power cord from the back of the Amiga. Turn your 1200 over on its keyboard so that you can easily access the hatch in the bottom of the machine. Open the plastic hatch on the bottom of the Amiga. In good light, closely examine the physical layout of the expansion bay in your Amiga.

BASIC MBX 1200z INSTALLATION

1.   Examine your MBX 1200z (holding it by its edges) paying particular attention to the jumper settings on your board (jumpers are little black plastic blocks that slip over some of the upright, brass colored pins on your board; they "tell" MBX 1200z some of its configuration information). Take a look at the MBX 1200z diagram in this documentation. Make sure your jumpers are set correctly.

2.   Keeping the component side of the board facing outwards from the Amiga, insert the MBX 1200z into the expansion bay. Note that you'll have to maneuver it into the bay since the connecter end is wider than the bay opening.

3.   Line up the black edge-card connector with the expansion card-edge on your Amiga. Lightly press it onto the card edge and make sure it is properly lined up. Then firmly press it completely onto the card edge.

4.   Replace the plastic hatch and turn your Amiga back over. Your MBX 1200z is now ready to use.

INSTALLING SIMM MEMORY

If you or your dealer are installing a SIMM into MBX 1200z this can be done without removing the MBX 1200z from the Amiga. Make sure the power is off and the power cable removed from the back of the Amiga before proceeding. Handle the SIMM by its side edges. Rest the card edge side of the SIMM in the SIMM socket with the notched side of the SIMM on the "keyed" side of the connector. See the diagram. Press down firmly on the top edge of the SIMM with both thumbs; then press the SIMM forward to snap it into place (pushing it past the metal retaining clips). Should you need to remove the SIMM, simply use your thumbs to squeeze open the metal clips (pressing them outwards towards the side of the SIMM connector). The SIMM will pop up when released.

If you or your dealer are purchasing a SIMM from a source other than MicroBotics, Inc., you must be certain to get the correct type. MBX 1200z does NOT use the common, 8-bit SIMM as found in the Macintosh marketplace. Rather it uses the same sort of SIMM as used in the Amiga 4000. This is a 72-pin, 32-bit wide SIMM. MBX 1200z needs only an 80ns SIMM in order to operate at zero wait states. You can use a 70 or 60ns SIMM but these may cost more for no additional benefit. The following is a list of Micron part numbers for the correct SIMM. You can use the equivalent parts from any good quality manufacturer.
MBX 1200z SIMM SPECIFICATION; 80ns, 72-pin "wide-body" SIMM organized N-megabytes x 32 bits. For example, Micron MT8D25632 (one megabyte); MT16D51232 (two megabytes); MT8D132 (four megabytes); and MT16D232 (eight megabytes).

JUMPER SETTINGS: If memory is installed you must check the three jumper blocks on J1. See the diagram for details. Note that if no memory is installed, the first jumper must be ON (in "TEST" mode) for the board to work properly.

MATH COPROCESSORS

The Motorola Floating Point Units (FPU's) 68881 and 68882 are supported on the MBX 1200z. A synchronously clocked 14.3MHz 881 is standard. Optionally, the board may be supplied with a 25 or 50MHz 68882. Note that there is only a minor performance difference between the older 68881 and the 68882 at the same clock speed (about 5%) unless the software is written with the 882 especially in mind (little is). An FPU upgrade kit (consisting of the math chip and appropriate crystal) is available from MicroBotics. Unless you have a PGA chip pulling tool, it is best to leave the removal of the installed math chip to a technician. The operation of a properly installed math chip is transparent to the user running under AmigaDOS 3.0. The FPU provides a significant performance increase when running software which is computationally intense; particularly that software which makes heavy use of transcendentals and floating point math. If your application software offers you a choice, be sure to operate it in 881/882 mode for good performance.

IMPORTANT: Note that the math chips compatible with MBX 1200z must be PGA (Pin Grid Array) style.

JUMPER SETTINGS: When running clocked from the motherboard (14.3MHz) the J2 Jumper block is on the upper two pins (see diagram). When a faster math chip and oscillator are installed, this jumper is moved down to the lower two pins. Do NOT overclock a math chip —doing so may damage the chip, cause inaccuracies, and will void your warranty.

1200z REALTIME CLOCK

The MBX 1200z also provides a realtime, battery backed clock (although the product may also be sold without the clock hardware installed— check your board). This clock uses the AmigaDOS Date and SetClock routines. See your DOS manual for details. The coin-cell lithium battery will last a very long time. Should you ever have to replace it, use an equivalent lithium cell (3 volts; CR 2032). Such batteries are widely available. Be sure that the "+" on the battery is facing outwards.

IMPORTANT NOTE: If you should have an Amiga 1200 with *another* real time clock installed on the motherboard, you should disable the MBX 1200z real time clock by removing the clock chip from the MBX 1200z. The clock chip location is clearly labeled "REAL TIME CLOCK" and is found directly above the math chip approximately in the center-left of the board. Use a small, flat bladed screwdriver to carefully pry out the chip. You should also remove the battery.

CLARIFICATION: Don't confuse this real time clock with references to "clock speed" in the context of math chip cycle rates. The two sorts of "clocks" are entirely unrelated.

INCLUDED SOFTWARE
The included software utility, MBXRAM8, permits you to control the appearance of the PCMCIA credit-card slot and its conflict with autoconfiguring FastRAM in the upper four megabytes. This is only a concern if you have eight megabytes of FastRAM on your MBX 1200z. See the "read me" file on the diskette. Also included is the highly-respected MBRTest-2 utility which you can use to test your A1200 motherboard memory as well as your MBX FastRAM. See the relevant text file on the diskette.

TROUBLESHOOTING
MBX 1200z is tested thoroughly before it is shipped. But even the most reliable devices can have problems occasionally. If your MBX 1200z should appear not to function properly, consider the following checklist:

1. Are your jumpers properly set?
2. Are all chips correctly installed and firmly seated in their sockets? Is the MBX 1200z board firmly seated on the Amiga card edge?
3. Do you have a PCMCIA "credit card" peripheral installed? Does your system work correctly without it?
4. Does your MBX 1200z work without other peripherals attached to the Amiga (external floppies, etc.)?
5. Is your power supply on a properly grounded outlet?
6. If you have problems with a particular piece of software, have you discussed it with the software publisher?
7. Have you tried running your system without background utility software (i.e., running from an "out-of-the-box" Workbench disk without any modifications)?
8. Have you tried running your software without FastRAM enabled (in "TEST" mode)? Some older software is not well designed for compatibility with FastRAM.
9. If you're having clock problems, do you have a second clock installed on your system?
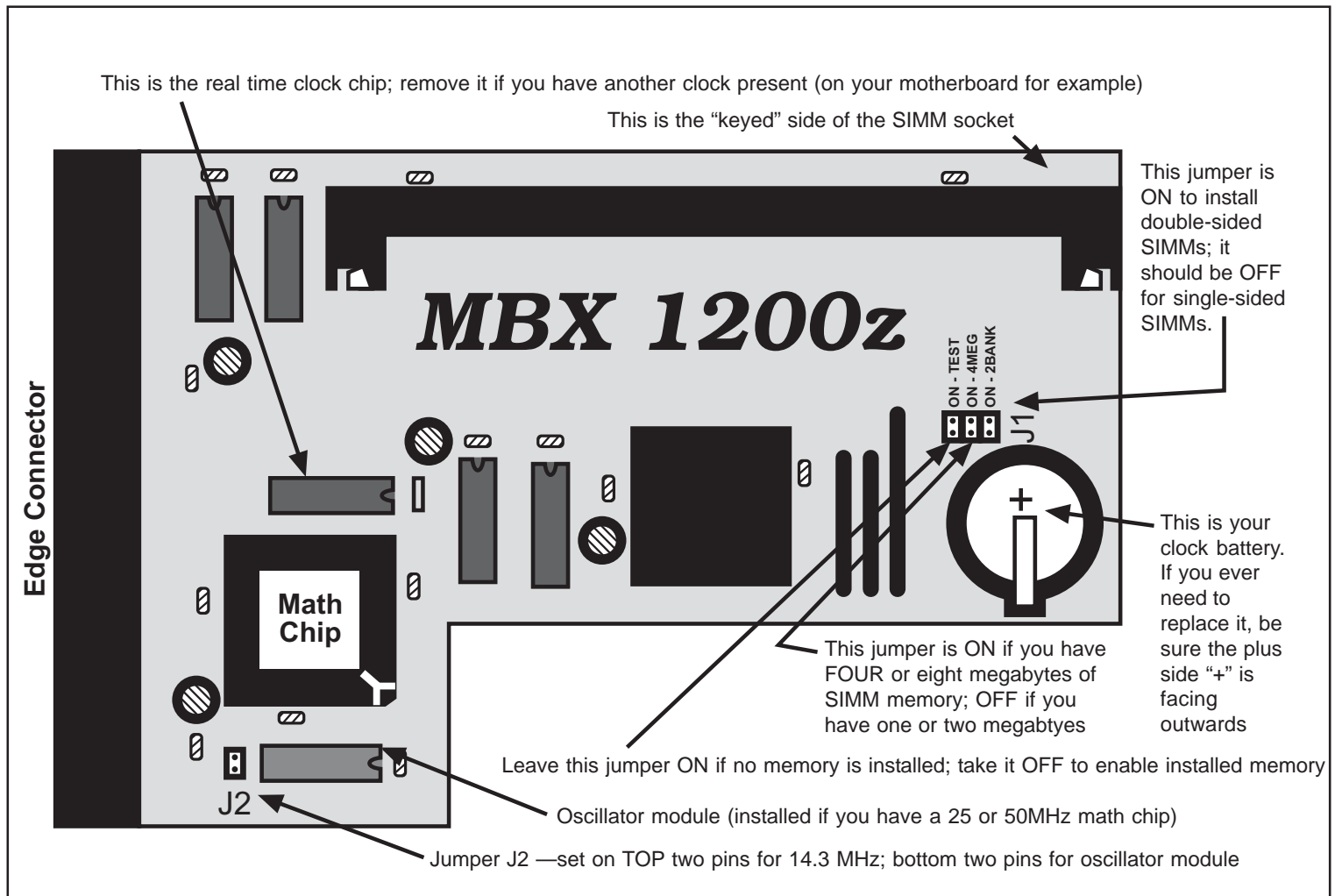
If you have worked your way through the above checklist and are still experiencing problems, see your MBX 1200z dealer. Alternatively, you may call MicroBotics Technical Support, but only after working through the checklist. Please be sure to make a note of your serial number and board revision number.

DESIGN CREDITS
Product Managers: Jerry Robinson, Redmond Simonsen
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This is the real time clock chip; remove it if you have another clock present (on your motherboard for example)

This is the "keyed" side of the SIMM socket

This jumper is ON to install double-sided SIMMs; it should be OFF for single-sided SIMMs.

MBX 1200z

ON - TEST
ON - 4MEG
ON - 2BANK

J1

Edge Connector

Math Chip

This is your clock battery. If you ever need to replace it, be sure the plus side "+" is facing outwards

This jumper is ON if you have FOUR or eight megabytes of SIMM memory; OFF if you have one or two megabtyes

Leave this jumper ON if no memory is installed; take it OFF to enable installed memory

J2

Oscillator module (installed if you have a 25 or 50MHz math chip)

Jumper J2 —set on TOP two pins for 14.3 MHz; bottom two pins for oscillator module

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