

DKB WildFire 060



Installation and
User's Guide

by
DKB Software

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I. Introduction:

Thank you for purchasing the DKB WildFire accelerator board, the most powerful expansion board ever developed for the Amiga 2000. Once you've installed the WildFire, you'll have the fastest Amiga computer available today. Motorola's long awaited 68060 processor, combined with DKB's advanced architecture will make your Amiga 2000 far faster than an Amiga 4000 Tower! However, we weren't satisfied with just making your Amiga 2000 faster.

The WildFire also provides impressive expandability:

Four SIMM sockets for adding up to 128 Megs of RAM.
State of the Art 32 Bit DMA SCSI II Fast Hard Disk Controller.
Ethernet networking capability, with a 10Base-T RJ-45 interface.
PCI bus on Two SIMM connectors, for future expansion options.
All this without using a single Zorro expansion slot.

Only the WildFire has all of the following state of the art features:

50 Mhz Motorola 68060 processor (upgradable when faster processors become available.) By providing the 68060 with the fastest Amiga 2000 motherboard interface possible, we were able to give you unmatched speed. WildFire is up to 47% faster than the Cyberstorm 060 for the Amiga 4000 in some AIBB benchmark tests.

Four SIMM sockets make it easy to add up to 128 megabytes of high speed local bus memory, using industry standard 72 pin memory modules. If matched pairs of SIMMs are used, WildFire will automatically enable the faster Interleaved Memory Mode, effectively providing 64 bit memory access.

WildFire's built in 32 Bit DMA SCSI II Fast hard disk controller allows you to add up to seven SCSI devices, including massive hard drives, CD-ROM drives, tape drives, and removable media drives. This lightning fast 32 Bit DMA SCSI II Fast hard disk controller has a burst transfer rate of over 70 megabytes per second between the controller and memory, while using less than 10% of the WildFire's CPU resources!

WildFire's 10base-T RJ-45 Ethernet port can use twisted pair or optional thin coax connections to your network. The Ethernet port can be used to connect your Amiga 2000 to other Amigas by using Ethernet boards from several Amiga developers. Additional software is required, such as Enlan-DFS Peer to Peer network from Interworks, or Amiga Envoy from Intangible Assets Manufacturing. You can also use the Ethernet port to attach your Amiga to a Novell network with Oxxi's Amiga Client Server software.

A built in PCI expansion bus has been included in the WildFire design. The two PCI bus connectors on the back of the WildFire board are for future expansion options such as super fast display cards, etc.

This amazing PCI bus has already been tested at data transfer speeds of over 70 megabytes per second.

WildFire is backed by DKB's famous customer service. When you call our technical support line, you'll talk to a real person who will help you solve your problem.

Installing the WildFire is easy. Just add memory, remove your Amiga's cover, plug the board into the Amiga 2000 accelerator slot, and replace the cover. The WildFire will automatically configure and add itself to your Amiga. Preparing a SCSI drive requires a few additional steps, and the details of installing memory are important, so please consult this manual before proceeding.

Please Note:

Your Amiga 2000 must have AmigaDos 3.1 ROMs and software installed for the WildFire board to work.

II. Adding Memory to the WildFire:

A. Purchasing SIMMs:

In order to get any speed benefit from your WildFire, you will need to install one or more SIMM modules before installing the board. All advanced processors require 32 bit RAM to operate efficiently. WildFire uses industry standard SIMMs. These are the same types of SIMMs that are used by the Amiga 4000, some other accelerator boards, and most other recently manufactured computers. These SIMMs are available from your local Amiga dealer and Amiga specific mail order houses. Although you can also find these SIMMs elsewhere, we urge you to get them from someone who supports and understands the Amiga.

Here's why:

1) Amiga dealers and Amiga specific mail order houses have lots of Amiga related experience and will probably understand the specific needs of the WildFire board. You'll be more likely to get the right SIMMs on your first try.

2) If something does go wrong, you won't have to explain what the Amiga is, or what the WildFire is, to someone who may just blame you for the problem.

If you are unable to find the proper SIMMs, please contact DKB for information on where to obtain them.

Important!

You must specify 1K refresh when ordering your SIMMs. Use pairs of 60ns SIMM s for maximum speed. Adding SIMMs in sets of four is the easiest way to guarantee contiguous memory.

The following 72 pin SIMMs will work with the WildFire board:

4 Meg SIMMs are 1 Meg X 32 60ns, 70ns, or 80ns

8 Meg SIMMs are 2 Meg X 32 60ns, 70ns, or 80ns

16 Meg SIMMs are 4 Meg X 32 60ns, 70ns, or 80ns

32 Meg SIMMs are 8 Meg X 32 60ns, 70ns, or 80ns

You can mix and match SIMMs using any of the 4, 8, 16, or 32 megabyte sizes with speeds of 80ns or less, but for maximum speed, use only matched pairs of 60ns parts. Make sure you use SIMMs with a 1K refresh, not a 4K refresh. If the refresh rate is wrong, your WildFire will not operate at all, or your Amiga will crash constantly.

Installing identical SIMMs in alternate banks (i.e. U312 and U314, then U313 and U315) automatically activates Interleaved Memory Mode, which provides the added speed benefits of 64 bit RAM access.

Therefore, if you want to have 16 Megs of RAM, you are better off using two 8 Meg SIMMs than one 16 Meg SIMM.

Remember! For maximum WildFire speed performance:

Use only 60ns SIMM modules and pairs of matched SIMMs in alternate banks, starting with U312 and U314.

B. Installing SIMMs:

Caution! Always take proper precautions against static discharge when handling electronic equipment.

- 1) Always store, ship, or carry the board in its protective anti-static wrapper.
- 2) Always ground yourself before taking the board out of its wrapper. A good way to accomplish this is to touch the metal frame of your Amiga, before touching the board, and before removing the Amiga's power cord from the back of the machine.
- 3) Always remove the Amiga's power cord from the back of the machine before installing the board.
- 4) Never pass the board to another person unless it is inside its protective anti-static wrapper.
- 5) Be extra careful when handling the board if you have rugs on your floor, especially during dry weather conditions.

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SIMM modules are designed for easy installation. Place the WildFire board in front of you on the anti-static wrapper in which it was packed. Position it face up with the 100 pin Amiga bus connector facing towards you. There is a little notch on the left edge of the SIMM that must be to your left before installing the SIMM. Hold the SIMM at a 90 degree angle to the WildFire board. Position the SIMM module, over the appropriate SIMM connector, with the metal contacts in the slot touching the contacts on the SIMM connector. Push the top edge down and back gently until it reaches approximately a 45 degree angle. The SIMM will snap into place on both ends with small plastic clips that hold the SIMM securely in place. If you ever need to remove the SIMM module, use your thumbs to push both clips away from the edges of the SIMM, and lift the SIMM out of the connector.

Your WildFire board comes with four SIMM sockets marked U312, U313, U314 and U315. In order to gain the benefits of Interleaved Memory Mode, insert identical SIMMs into banks U312 and U314 first. If you also have a SIMM, or SIMMs, of different sizes, then insert them into U313, and/or U315.

All memory should be added to the board by installing U312 first, or U312 and U314 together then U313, or U313 and U315. You do not have to use pairs of SIMMs to get the WildFire to work. However, as stated earlier, the WildFire will be faster if matched SIMMs are installed two at a time.



C. RAM Configuration Examples:

If you have two 8 Meg SIMMs and one 32 Meg SIMM. Insert the 8 Meg SIMMs in U312 and U314 and the 32 Meg SIMM into U313. In this configuration the first 16 Megs of RAM will use the faster Interleaved Memory Mode, but the next 32 Megs of RAM won't use Interleaved Memory Mode. You would have to add a second 32 Meg SIMM to U315 to get all your RAM to use Interleaved Memory Mode.

If you pick up a second 32 Meg SIMM later, it would be wiser to put the biggest matched pair of SIMMs in the first two SIMM positions, U312 and U314. This would give you access to the greatest amount of contiguous RAM. Leaving the 8 Meg SIMMs in the first two SIMM positions, U312 and U314, would fragment your RAM.

So in our example above for using two 8 Meg and one 32 Meg SIMM to activate Interleaved Memory Mode we did create a bit of memory fragmentation, but we added greatly to the speed of the WildFire board. With certain combinations of SIMMs it is possible to have the best of both worlds, maximum speed and contiguous memory. The easiest way to do this is to use any two or any four SIMMs of exactly the same size and speed. If that isn't possible, you would do best to use only matched sets of SIMMs. Install the SIMM set with the highest Meg count in SIMM sockets U312 and U314, then install the smaller set of SIMMs in SIMM sockets U313 and U315.

If you are not fortunate enough to own sets of SIMMs, just install the highest meg count into SIMM socket U312, the next size down into U314, the next down into U313, and finally the lowest Meg count into U315. WildFire's intelligent, automatic RAM configuration will make each memory segment as large as possible, and keep memory segmentation to a minimum.

If all your SIMMs are 60ns or faster, you should remove the black plastic jumper from JP104 which is located just below the 68060 CPU. If any of your SIMMs are 70ns or slower, the jumper must be on both pins of JP104. Do not change JP103 or any of the other jumpers on the WildFire board or the board will not operate properly.

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D. Factory Default Jumper Settings:

JP101 - Off

JP102 - Pins 1 & 2 Connected

JP103 - On

JP104 - On for 70ns or 80ns RAM (Default) - Off for 60ns RAM

JP201 - Off

JP401 - Off

III. Installing a SCSI Drive:

The WildFire allows you to install internal SCSI drives, using the 5.25" or 3.5" drive bays in your Amiga, and/or external SCSI drives, using the external 50 pin high density SCSI II Fast connector on the WildFire's rear bracket.

There are three basic steps to installing internal drives:

- 1) Physically and securely mount the drive somewhere in your system.
- 2) Connect your drive(s) to the WildFire via either the internal or external 50 pin SCSI connector. You can have drives connected to either or both SCSI connectors. Each drive must have its own power cable attached. The power connector on the WildFire board is NOT A POWER OUTPUT. Do not connect your drives to that connector. It's there for additional power input to the WildFire board for future expansion purposes only. Make sure your SCSI drive chain is properly terminated or your drives will not operate correctly.

Basically, a SCSI chain is properly terminated when the last physical device in the chain is terminated. This has nothing to do with where the drive is actually mounted, or what the drive unit number is. It is strictly determined by which drive is farthest away along the cable. In other words, if the SCSI cable were laid out on a table in a straight line, then the drive at the end of the cable farthest from the controller would have to be terminated. All other drives should have their termination either removed or disabled. Please refer to the drive manufacturers specifications to determine the correct method of setting the termination on your various SCSI devices. SCSI termination is used to absorb signals at the end of the SCSI chain to prevent them from echoing back and con-

fusing other drives or the SCSI controller. If the WildFire is placed somewhere in the middle of the SCSI chain by connecting drives to both the internal and the external SCSI connectors, the WildFire's own terminator resistors have to be turned off.

3) Partition and format the drive, using the included RapidSet software. Please read the RapidSet Manual on the installation disk for a full explanation of the RapidSet software. The WildFire uses the AmigaDos Rigid Disk Block standard for automatically identifying and mounting SCSI drives on bootup. Although it isn't strictly necessary to re-partition existing hard drives, this is still the recommended procedure. This is due to differences in which the various hard disk controllers define a given hard disk. Re-partitioning and reformatting your drives using the RapidSet software will ensure maximum performance from your drives. Caution! Be sure to backup your drives before re-partitioning an existing drive or all your data may be lost.

A. Mounting a Drive Internally:

The Amiga 2000 usually has two open drive bays, a 5.25" inch opening below the floppy drive bridge, and a 3.5" bay to the left side of the floppy drive. Systems with two floppy drives do not have an empty 3.5" bay. Locate an appropriate drive bay and mount the drive with its smooth side up, and its component side facing down. Screw holes are provided in the sides and on the bottom of your drive for this purpose. If a 3.5" drive is to be mounted in the 5.25" drive bay, a special inexpensive adapter can be purchased for this purpose.

Caution! Do Not use Velcro or double stick tape to mount your drives. These products may seem to be sufficient for this purpose, but they may cause overheating, and even worse, permanent drive damage if the machine should undergo rough handling for any reason.

Caution! The power connector on the WildFire board is NOT A POWER OUTPUT. Do not connect your drives to that connector. It's there for additional power input to the WildFire board for future expansion purposes only.

B. Connecting SCSI and Power Cables:

Once you've physically installed the drive, you need to connect it to the WildFire board and to your system's power supply.

1) Hook the drive up to your computer's power supply. You should find one or more unused power cables. These are approximately 3/4 inch wide with four power pins in the end. Plug this cable into the power socket on the back of the drive. The plug is keyed, so it will only fit one way. If none of your power connectors are free, you'll need to buy a power 'Y' adapter that splits one power plug into two.

Caution! The power connector on the WildFire board is NOT A POWER OUTPUT. Do not connect your drives to that connector. It's there for additional power input to the WildFire board for future expansion purposes only.

External drives usually come with their own power supply, which you plug in separately from the computer. Turn the external drive power supply on with your Amiga 2000, by using a common power strip, or before you turn on your Amiga. Either way will enable the WildFire to recognize external SCSI drives on power up. If external drives do not spin up fast enough, they will not be recognized on the preliminary boot sequence. In this case it will be necessary to power them up before turning on the Amiga 2000 power supply.

2) Connect your drive(s) to the WildFire board with the 50 pin SCSI ribbon cable. Plug the ribbon cable into the 50 pin header near the rear edge of the WildFire board with the stripe (usually red) connected to pin one. The WildFire board has the number 1 printed near pin one of the SCSI connector. Plug the other end into the drive with the stripe connected to pin one of the drive. Most of the time, both the drive and the cable are keyed for this purpose. However, this is not always the case so be careful.

If you have an external drive, connect it to the WildFire card with an external high density SCSI II cable. This cable must have either a 50 pin SCSI II high density 'D' style connector or a 50 pin Centronics type connector on the side that plugs into the drive box, and a 50 pin SCSI II high density 'D' connector that mates with the plug on the WildFire board's

rear bracket. Caution! Use extreme care when connecting SCSI II high density connectors. The connectors are very easy to break, if you aren't careful. Space limitations and the additional ground paths needed for SCSI II fast drives forced us to choose this type of connector. It will give you unlimited reliable service if proper care is taken while inserting or removing the cable.

3) Make sure your SCSI drive chain is properly terminated or your drives will not operate correctly.

Basically, a SCSI chain is properly terminated when the last physical device in the chain is terminated. This has nothing to do with where the drive is actually mounted, or what the drive unit number is. It is strictly determined by which drive is farthest away along the cable. In other words, if the SCSI cable were laid out on a table in a straight line, then the drive at the end of the cable farthest from the controller would have to be terminated. All other drives should have their termination either removed or disabled. Please refer to the drive manufacturers specifications to determine the correct method of setting the termination for your various SCSI devices. SCSI termination is used to absorb signals at the end of the SCSI chain to prevent them from echoing back and confusing other drives or the SCSI controller. If the WildFire is placed somewhere in the middle of the SCSI chain by connecting drives to both the internal and the external SCSI connectors, the WildFire's own terminator resistors have to be turned off using the WildFire configuration screen.

To reach the WildFire configuration screen, hold down the right mouse button when you turn on or reboot your Amiga. In a few seconds, a menu screen will appear. You can then toggle the check mark beside Enable SCSI Termination. Clicking your left mouse button with your pointer over the Save button will make your changes survive, even after your Amiga 2000 is turned off. If you want simply to try a different setting, you can left mouse click the Boot 68060 button. These settings will not survive when the Amiga is powered down, but they will survive all resets.

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External drives often use an external terminator. This is usually a 50 pin Centronics type connector that goes into the second SCSI connector on the back of the drive. Some external drives use a switch to turn termination on or off. Check your drive to see how it is terminated.

Note: The WildFire board uses active SCSI termination. Most of the older SCSI drives include a passive terminator, which should not be used with the WildFire. If your drive uses passive termination, consult the drive manual for information on how to disable it, and replace it with an active terminator. Do not mix active and passive terminators on the same SCSI bus!

Here are some guidelines to follow in determining the correct termination for your system:

If you have either one internal drive, or one external drive connected to the WildFire, that drive should be terminated.

If you have either two or more internal drives, or two or more external drives connected to the WildFire, only the drive that is last on the chain should be terminated.

If you have one internal and one external drive, both drives should be terminated, and you should use the WildFire configuration screen to remove termination from the WildFire itself.

If you have multiple internal and external drives, the drive on each end farthest from the WildFire board should be terminated, and termination should be removed from the WildFire itself. To reach the WildFire configuration screen, hold down the right mouse button when you turn on or re-boot your Amiga. In a few seconds, a menu screen will appear. You can then toggle the check mark beside Enable SCSI Termination. Clicking your left mouse button with your pointer over the Save button will make your changes survive, even after your Amiga 2000 is turned off. If you want simply to try a different setting, you can left mouse click the Boot 68060 button. These settings will not survive when the Amiga is powered down, but they will survive all resets.

IV. Installing the WildFire in your Amiga:

- 1) Make sure your computer is unplugged from its power source.
- 2) Remove the Amiga 2000s metal cover. There are two screws near the bottom on each side of the Amiga 2000 and one screw in the center near the top edge on the back of the machine that need to be removed. While you are back there, remove the two screws that go into the back of the top portion of the power supply. You do not need to remove the power supply. Removing these screws will make it easier to install the WildFire card into your Amiga. With this in mind, you should also remove the screws that hold any other cards you might have in place. These would include the Video Toaster, graphics cards, memory boards, hard disk controllers, etc. You do not have to remove all of these cards from the machine. Again, the idea here is to release the rear cover of the Amiga 2000 so it will be really easy to install the WildFire board into the machine without bending or damaging it. If your Amiga 2000 has a black metal stiffening bar that runs from the front of the machine to the rear, remove the rear screw on that bar as well.
- 3) Install any internal SCSI drives, as explained in section III, above.
- 4) Find the accelerator slot, located just to the left of the metal drive bridge as you look at the computer from the front. If you already have an accelerator installed, remove the two screws that hold the rear bracket of the board to the computer, and unplug the accelerator board. If no accelerator is installed, remove the two screws holding the metal cover over the rear bracket opening closest to the power supply.

Apply some pressure to the rear cover of the Amiga to give yourself some extra room and insert the WildFire board into the accelerator slot. Secure the rear bracket of the WildFire to the rear of the computer, using the two screw provided.

If you have trouble pushing the WildFire board down at the back of your Amiga, and you can't align the screw holes, remove the WildFire board and put it in a safe place. Now look at the area just below the rear accelerator slot plate opening on the inside of your Amiga 2000.

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There is a metal rear wall, a metal motherboard shield, and the inside of the Amiga 2000 Serial connector. In many cases, this metal shield will keep the WildFire from being pushed down all the way. The rear plate of the WildFire can catch on the metal shield and the metal shield doesn't move when you pull the Amiga 2000 rear cover back. The solution to this problem is to carefully bend the conflicting area of the metal shield down and towards the front of the Amiga 2000. You can re-shape the shield so that it lies flat on top of the Serial connector, thus getting it completely out of the way. Be very careful not to damage your motherboard while re-shaping the shield. If you can't easily think of how to do this modification, don't try it. You would be better off seeing your Amiga dealer or a mechanically inclined friend to get some help.

Double check your work. If all appears to be well, reconnect the power cord, and turn the Amiga on. If it boots normally, shut down again and re-install all boards which you intend to keep using, then replace all screws and the top cover. You are now ready to start enjoying your souped up Amiga.

If the computer fails to boot properly, turn it off at once, and consult the troubleshooting section.

A few words about 16 bit RAM boards and your old SCSI controller:

If you had any 16 bit RAM boards installed in your Amiga 2000 before you started the WildFire installation, please consider the following very carefully. Although your 16 Bit RAM should still work with the WildFire installed, it is inadvisable to re-install it, after you have installed your new accelerator.

The reason for this is simple. Amiga 2000 RAM boards are designed around a 16 Bit data bus. The advanced 68060 50 Mhz processor on the WildFire board can't operate very much faster in 16 bit RAM than the 7.16 Mhz processor which originally shipped with your Amiga. This is partially due to the bottleneck caused by the 16 bit RAM and partially because your old RAM board is probably running at about 150ns even if it contains faster RAM chips than that

You see, it's the board that controls the speed of the chips in most, if not all, 16 bit designs, not the rated speed of the RAM. The bottom line is that these boards will operate so slowly that they are not worth keeping in your system.

On the other hand, if the total amount of RAM available is really important to you, and the board appears to work properly, then it is OK to keep using it until you can afford to buy additional 32 bit RAM. Your WildFire will use your 32 bit RAM first until there is none left, then it will use your 16 bit RAM, then your Chip RAM until all your RAM is used up.

If you had an existing SCSI controller installed in any of your Amiga 2000s Zorro II slots, it is advisable to use the WildFire's SCSI controller instead of keeping your old controller in your Amiga. No matter how fast your old controller was, the WildFire controller is faster. This is due to its advanced 32 bit DMA design. Older drives might not show much of a speed increase because they may have already been running at their peak performance level. However, they will be able to maintain a higher level of performance even during CPU intensive tasks. Unless you have a more compelling reason to keep the old controller, it is best removed from your system.

V. Software Installation:

If your Amiga 2000 is already running AmigaDos v3.1 or better, you have two options for installing the software required by the WildFire board for operation.

1) If you haven't yet installed the Wildfire board, boot your Amiga 2000 normally. Put the WildFire installation disk in DF0: after your Amiga finishes booting. Double left mouse click our disk icon, then our install icon, and the required files will be installed on your hard drive. Once the software is installed, remove the disk, install the WildFire board, and reboot your Amiga. You will now have the fastest Amiga available.

2) If you have already installed your WildFire board, boot your Amiga 2000 with the WildFire installation disk in DF0:. Your Amiga will boot from our floppy. Double left mouse click our disk icon, then our install icon and the required files will be installed on your hard drive. Once the software is installed, remove the disk and reboot your Amiga. You will now have the fastest Amiga available.

If you have connected a SCSI device either to the internal 50 pin header or the external 50 pin SCSI II connector, you must configure the device with the included RapidSet software before using it. Please read the RapidSet Manual on the installation disk for a full explanation of the RapidSet software.

VI. Trouble Shooting:

The DKB WildFire is easy to use, and normally its operation should be trouble free. If you are having a problem, we suggest that you check the following:

- 1) Your Amiga must have AmigaDos 3.1 ROMs installed to operate the WildFire board.
- 2) Is the power cable firmly connected to the computer, and to the wall outlet? Make sure that there is power coming from the wall outlet.
- 3) Are the SIMM modules correctly seated in their connectors and locked into place?
- 4) Is the DKB WildFire board itself seated firmly in the accelerator slot?
- 5) Is the software supplied with the WildFire installed on your hard drive? If not, boot from the WildFire install disk and install the WildFire software.
- 6) Are all expansion devices and cables correctly and firmly attached to your Amiga? If you're using a SCSI drive, make certain the 50 wire SCSI cable is plugged in firmly at both ends, with pin 1 of the drive connected to pin 1 of the WildFire board. Also, make sure that the cable from the power supply is plugged firmly into the drive, and that the drive is actually getting power. You should hear the sound of the drive spinning up when you turn on the computer.

If you are unable to get your computer working properly, or are experiencing any difficulty in any step of the installation process, please do not hesitate to call us.

Our Technical Support number is 810-348-3755.

We would like to thank you again for buying DKB products. The Best Built, Best Backed Products for Amiga Computers.

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WARRANTY

For a period of Two Years from the date of purchase to the original purchaser, DKB Software warrants that the equipment shall remain free of manufacturing defects.

The equipment, when possible, is tested in all its normal operating modes prior to delivery or shipment.

If a defect should occur during the first Two Years, the unit must be returned to DKB Software along with a sales receipt for repair.

The purchaser's sole and exclusive remedy in the event of a defect is limited to the correction of the defect by adjustment, repair, or replacement at DKB Software's discretion and expense.

DKB Software shall have no responsibility for shipping expenses to or from the repair station.

This warranty is voided if the equipment has been altered or modified, or if the equipment is subjected to improper or abnormal use.

We are not responsible for any damage caused by or derived from the installation of this hardware product.

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