QuickChip 133MHz

Processor Upgrade for 486 Based Systems

Installation Guide

for 486-Based SX, SX2, DX & DX2 Systems

PNY TECHNOLOGIES

NOTICE:

The instructions herein contain important information regarding the safe installation and operation of this product. By breaking the product seal, you acknowledge your responsibility for complying with all warnings and accept all risks associated with the installation and use of this product.

PNY Technologies products are not intended for use in life critical situations, or as critical components in life support systems. Life support devices or systems are defined as devices which are intended for surgical implant into the human body, or for support of sustaining life, and whose failure to perform, when used in accordance with instructions provided by the manufacturer, might result in injury to the user.

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NOTE: DUE TO REVISIONS, ILLUSTRATIONS SHOWN MAY DIFFER FROM ACTUAL PRODUCT.

LIFETIME WARRANTY

PNY Technologies, Inc. warrants to the original consumer purchaser of the PNY QUICKCHIP ("QUICKCHIP ") processor upgrade will be free of manufacturing defects from the original date of purchase. If the QUICKCHIP should become defective, PNY Technologies, Inc. will replace it, provided the QUICKCHIP is delivered at the customer's expense to PNY Technologies, Inc.'s facility. Replacement products may either be new or reconditioned, at PNY Technologies, Inc.'s discretion.

EXCLUSION FROM STANDARD LIFETIME WARRANTY

IMPORTANT: This warranty does not cover damage resulting from accident, improper installation, misuse or abuse, lack of reasonable care, the affixing of any attachment not provided with the QUICKCHIP, improper connections with peripherals, external electrical fault, lightning, disaster, or modifications to the QUICKCHIP not approved in writing by PNY Technologies, Inc., and will be effective only if the original consumer purchaser completes and returns the registration card included with the QUICKCHIP to PNY Technologies, Inc. within 30 days of the date of original purchase. Even if the registration card is not returned, the limitation of liability and disclaimer of any implied warranties by PNY Technologies, Inc. are still in effect. This warranty is valid only within the United States and applies only to QUICKCHIPs th at are new, in cartons and that are unopened on the date of original purchase. This warranty shall not extend to any subsequent purchasers of the QUICKCHIP from the original purchaser.

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Section 1 *Quick Start*

Installation Overview

We strongly recommend reading this entire manual prior to the installation procedure of the QUICKCHIP. Failure to do so may result in damage to your computer and/or the QUICKCHIP.

If you feel uncomfortable with any part of the installation process, please take your computer to a trained computer technician or service center.

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Important Things to Remember

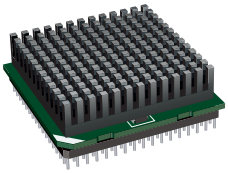
- **Never** bend the pins on the processor
- **Never** remove a soldered chip
- **Never** disassemble the QUICKCHIP
- Save and print or write down initial settings of the computer such as jumper, CMOS and Chip Set settings.
- Mark or note the pin 1 location on the motherboard before you remove the old processor.
- Make sure Pin 1 on the QUICKCHIP lines up with Pin 1 on the mother board socket.
- Back up the data from your hard drive.

Section 2 *Introduction*

Congratulations on the purchase of your PNY Technologies QUICKCHIP 133™ processor upgrade for 80486 SX, SX2, DX and DX2 systems. **We strongly recommend reading this entire manual prior to the installation procedure of the QUICKCHIP. Failure to do so may result in damage to your computer and/or the QUICKCHIP.**

Package Contents

The following items should be included in the QUICKCHIP package. If you are missing any of theses items, immediately return the QUICKCHIP to the place of purchase.



QUICKCHIP 133 Processor Upgrade

Chip Removal Tool

Installation Guide

Utilities 3.5" Floppy Disk

Product Registration Card

Additional Items You Will Need

- Installation video (included)
- Your computer's manual
- Any tools required to open your computer such as a screw driver

Compatibility and Performance

The QUICKCHIP 133 is capable of running 133MHz, however, the actual speed and performance delivered depends on your system's bus speed. The QUICKCHIP will not work in systems with the 486 SLC or DLC processors. The following chart shows how the QUICKCHIP 133 133MHz will perform based on the system's bus speed and the QUICKCHIP's clock multiplier (3x or 4x).

Original 486 CPU		133 133 - Clock-Tripled (3x)	133 133 - Clock-Quadrupled (4x)
SX	25MHz	75 MHz	100 MHz
DX	25MHz	75 MHz	100 MHz
SX2	50MHz	75 MHz	100 MHz
DX2	50MHz	75 MHz	100 MHz
SX	33MHz	100 MHz	133 MHz
DX	33MHz	100 MHz	133 MHz
SX2	66MHz	100 MHz	133 MHz
DX2	66MHz	100 MHz	133 MHz
DX	40MHz	120 MHz	Not Compatible
DX2	80MHz	120 MHz	Not Compatible
DX	50MHz	Not Compatible	Not Compatible

The QUICKCHIP 133 uses clock-quadrupling technology which enables your computer to run four times faster than the native 486 processor speed. At 133MHz, the QUICKCHIP 133 is rated at Pentium-75 plus performance. The QUICKCHIP 133 features 16KB internal cache, a built-in math coprocessor, and 32-bit internal and external processing running internally at 133MHz and externally at 33MHz. The QUICKCHIP 133 is a convenient, high-performance solution for increasing your computer's CPU speed up to 250% over its current 486 processor. This upgrade gives you the power and performance for today's most demanding software applications.

The QUICKCHIP 133 is a chip-for-chip processor upgrade which installs directly into your existing processor socket, or Intel® OverDrive® socket. Many 486 computers use ZIF (zero-insertion-force) sockets with a lever or retaining screw to make removing the CPU chip quick and easy.

The Components

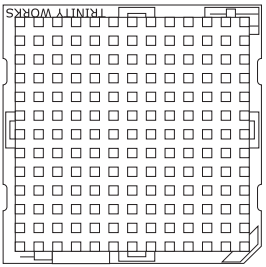
The QUICKCHIP consists of several main components which include:

The Heatsink - Cools the 133 processor

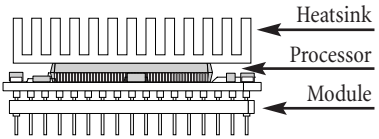
The 133 Processor - The replacement for the 486

The Module - Contains the circuitry, switches, pins and 133 processor

DO NOT attempt to separate any of the QUICKCHIP's components. Doing so will damage the QUICKCHIP and void your warranty..



Top View

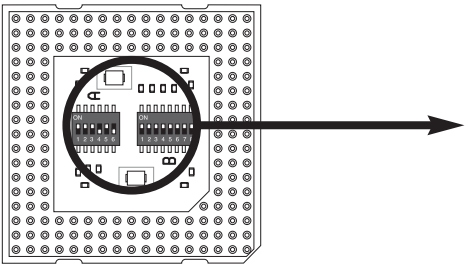


Side View

The Dip Switches

The QUICKCHIP features two blocks of dip switches. These switches are set at the factory for the highest speed and compatibility. **DO NOT** change the default settings without testing in your computer first.

Bottom View



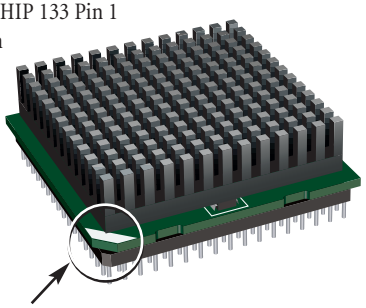
Switches Close-up
with Default settings

Pin 1 Orientation

Notice that one of the corners on the QUICKCHIP 133 upgrade has a white stripe and beveled edge or other distinguishing mark. This corner signifies Pin 1 and must line-up with Pin 1 on the processor socket (Figure 2.1). Before removing the old 486 processor, please take note of its Pin 1 location (Figure 2.2). This will aid you in aligning the QUICKCHIP in the correct position.

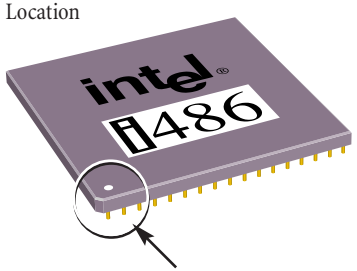
Failure to align Pin 1 on the QUICKCHIP 133 with Pin 1 on the socket will damage your computer and/or the QUICKCHIP upgrade.

Figure 2.1
QUICKCHIP 133 Pin 1 Location



Pin 1 - Beveled Edge & White Stripe

Figure 2.2
Original 486 CPU Pin 1 Location



Pin 1 - Beveled Edge and White Dot

Bus Speed

Some system boards allow you to alternate the bus speed and the voltage. If possible set the bus speed to a maximum of 33MHz. This will allow you to run the QUICKCHIP at 133MHz. To change the system board's bus speed, consult your owner's manual.

Highest Successful Operation Setting

To achieve the highest level of performance and successful operation, configure your system board jumpers (see your owner's manual) to:

486 DX 33MHz - 5 volt

Special Notes

The QUICKCHIP 133 employs the AMD Am133™ P-75 processor running 133Mhz. Your BIOS may recognize this upgrade as a 486 microprocessor. After installing the upgrade, run the utilities located on the enclosed disk to verify the speed and performance of your machine.

PNY Technologies is NOT responsible for damages to your computer or lost data even if PNY Technologies has been advised of the possibility of such damages.

PNY Technologies will only repair or replace defective modules within the warranty period. If you wish to return the QUICKCHIP for a refund, you must contact the original place of purchase. Returns are governed by the policy of each individual reseller. Do not return the product to PNY Technologies for a refund.

If you do not have experience installing computer hardware or feel uncomfortable with the process, you may prefer to have a trained computer technician install this upgrade.

Do not add any additional peripherals or software until after the QUICKCHIP has been installed and proper operation verified.

CPU Configurations

The following is a list of common ways the CPU may be configured on the system board.

The method used to install a processor in a 486-based computer should resemble one of the following configurations. **If you have a ZIF socket with an overhead bar, call technical support BEFORE installing the QUICKCHIP!**

Configuration 1 - Standard Socket without an OverDrive socket

You will remove the 486 processor with the chip extractor tool and install the QUICKCHIP 133 into the empty standard socket.

Configuration 2 - ZIF (Zero Insertion Force) Socket

Side Bar ZIF

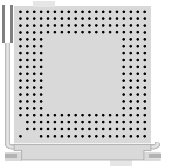
OR

Retaining Screw ZIF

You will unlock the socket using the side bar or retaining screw, remove the 486 processor and install the QUICKCHIP 133 into the empty ZIF socket.
If you have a ZIF socket with an overhead bar, call technical support BEFORE installing the QUICKCHIP!

Configuration 3 - Standard Socket WITH an OverDrive Socket

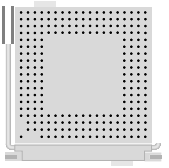
WITH



If the 486 is in the standard socket, you will remove the 486 processor with the chip extractor tool and install the QUICKCHIP 133 into the empty standard socket. DO NOT use the OverDrive socket.

Configuration 4 - Surface-Mounted (Soldered) Processor WITH OverDrive Socket

WITH



The 486 processor cannot be removed. You MUST install the QUICKCHIP 133 into the OverDrive Socket. REFER TO YOUR OWNER'S MANUAL TO SET THE NECESSARY JUMPERS. Do not attempt to remove a soldered chip.

Preliminary Speed Check Using SysChk

SysChck is a utility located on the Utilities Disk that measures different components in your computer. Use this utility to measure the CPU Speed and CPU Throughput Speed. You can measure the performance of your computer by checking SysChck. SysChck must be run in DOS. It cannot be run in the DOS shell through Windows®.

Accessing SysChck:

1. Insert the Utility Diskette in the floppy drive `(A:)`
2. If you are in:
   Windows 95, select "Shut Down" from the start button.
   Select "Restart the Computer in MS-DOS mode?"

   Windows 3.1, select "File" from the Program Manager
   Select "Exit Windows" (and confirm)

   You should have a `DOS C:\Windows` Prompt
3. Change to the applicable drive `(A:)`
4. Change the directory.
   `cd syschk` (enter)
5. To execute the program, type `SYSCHK` at the `A:\SYSCHK` prompt.
6. Press `9` for SPEED. This will display the throughput speed and the CPU speed.
7. Record your speed and through put for future reference.

Before You Begin QUICKCHIP Installation

The QUICKCHIP installation should not take long to complete, however, please allow plenty of time to finish. Before beginning the removal of the old 486 processor and installing of the QUICKCHIP, there are a few details to be addressed.

1. Start your computer and verify that there are no hardware or software problems before you begin the installation. If you are experiencing any problems, correct them before you begin the installation.
2. Back up all data from the hard drive and record all original CMOS settings.
3. Verify the type of processor socket you have (see page 11).
4. Take note of the position and orientation of Pin 1 (identified by either a notch, beveled edge, dot or half-circle) of the 486 CPU before you remove it.

NOTE: If you have a ZIF socket with an overhead bar (Figure 3.2) or a 168-pin socket (Figure 3.1), you need a socket extender (not included). If you have one of these sockets to DO NOT attempt to install the QUICKCHIP. Call PNY Technologies Technical Support at 1-888-316-1192. and we will send you a chip extender at no cost to you.

Figure 3.1
168-pin socket. Notice the missing extra pin at the pin corner.

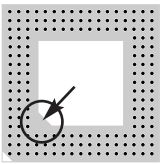
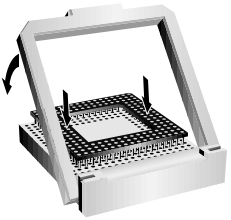


Figure 3.2
Overhead bar Zif with Socket Extender



Now that you have recorded your original settings and set the motherboard for the correct clock speed and voltage (if necessary), it is time to install the QUICKCHIP.

Removing the 486 Processor

1. Shut down the computer and be sure all peripherals are turned OFF and unplugged.
2. Disconnect all power cords from the computer.
3. Place the computer on a surface that has area to work. Remove the cover from your computer. Consult your owner's manual for detailed instructions.
4. Locate the 486 CPU processor on your system board or CPU expansion card. The CPU processor should have the manufacturer's logo, such as "INTEL", and the CPU type and speed rating, such as "80486DX-33". The 486 CPU processor may have a heatsink and or fan attached to it.
5. Make sure you can easily access the 486 CPU. If there is an expansion card or drive obstructing the CPU, remove the device(s), if possible, and store it in a safe place.
6. Take note of the position and orientation of Pin 1 of the 486 by marking it with a felt tip pen before you remove it. The QUICKCHIP 133 will be installed with its Pin 1 in the same position as the 486 Pin 1.

If your computer has a surface-mounted processor, which is soldered on the system board, you need to find the OverDrive socket on the system board and go directly to "QUICKCHIP Installation" on page 14. **DO NOT attempt to remove a soldered chip.**

If you have a 486 soldered to the system board and DO NOT have an additional socket or OverDrive socket, the upgrade can not be installed in your system.

Removing the 486 from a standard socket

1. Remove the 486 CPU chip from its socket using the provided Chip Extractor Tool. Carefully insert the edge of the tool between the processor and the socket. Start on one side of the 486 chip at a time, levering each side up slightly. (Figure 3.3) Work around each side several times until the pins on the underside of the chip are sufficiently exposed.
2. Once free, **carefully lift out the processor with your fingers taking care not to bend or break the pins.**
3. Use the QUICKCHIP 133 packing material to store the 486 chip in a safe place.

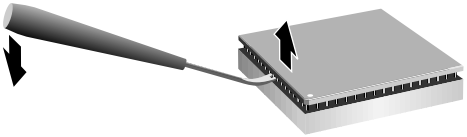


Figure 3.3
Removing the 486 from a Standard Socket with the Chip Extractor Tool

Removing the 486 from a ZIF socket

1. Unlock the socket using the side lever, overhead bar or loosening the retaining screw.
2. Once free, carefully remove the CPU with your fingers. (Figure 3.4)

Figure 3.4
Removing the 486 from a ZIF Socket with a Sidebar

QUICKCHIP Installation

The upgrade installation may vary according to the type and location of your 486 processor socket. Also, the orientation when installing the QUICKCHIP 133 will depend on the location of Pin 1 on the processor socket. Pin 1 of the 133 processor has a white stripe and beveled edge or other distinguishing mark. Pin 1 on the system board is usually denoted by a beveled corner, arrow, dot, an extra pin hole or other distinguishing mark.

If you have a 168-pin sockets or overhead-bar ZIF socket, you need to contact PNY Technologies Technical Support to receive a PGA Socket Extender. Follow the steps below to install the QUICKCHIP 133 into your computer.

WARNING: If the processor upgrade is not installed correctly (Pin 1 to Pin 1), it may result in damage to the computer, the processor upgrade or both. (Figure 4.1 & 4.3)

Installing in a Standard Socket

1. Align the QUICKCHIP's pins with the socket on the motherboard. Be sure it's pin 1 to pin 1.
2. Apply an even pressure while gently, but firmly, pushing the QUICKCHIP 133 into the socket. Repeat on opposite corners of the upgrade until it is flush with the system board socket. (Figure 4.2)

Note: If the processor upgrade is resisting, stop and check the pin alignment. If the alignment is incorrect, remove the processor upgrade and begin the insertion again.

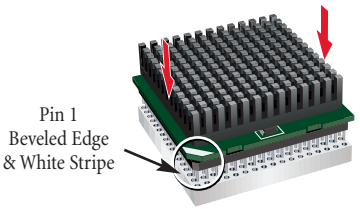


Figure 4.1
Aligning the QUICKCHIP in a Standard Socket

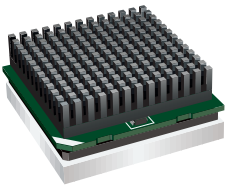


Figure4.2
QUICKCHIP installed in a Standard Socket

Installing in a ZIF Socket

1. Make sure the side bar lever is fully rotated upward or the retaining screw is loose.
2. With the socket in the unlocked or open position, align the pins on the QUICKCHIP 133 with the holes on the ZIF socket. **You do not need to force the QUICKCHIP 133 into the socket.**
3. Apply gentle pressure, only if needed, to make sure the processor is completely inserted and flush with the ZIF socket. Lower the sidebar lever or rotate the retaining screw to lock the socket. (Figure 4.4)

Note: If the processor upgrade is resisting, stop and check the pin alignment. If the alignment is incorrect, remove the processor upgrade and begin the insertion again.

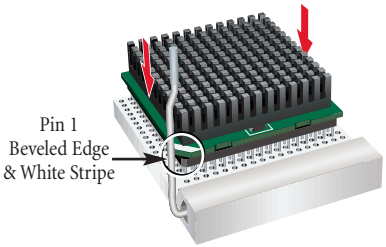


Figure 4.3
Aligning the QUICKCHIP 133 in a ZIF Socket

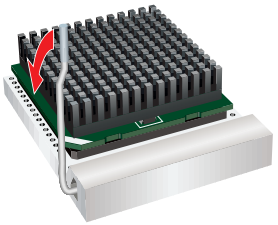


Figure 4.4
Securing the QUICKCHIP installed in a ZIF Socket

Completing the Installation

1. Replace any cards or drives removed earlier.
2. Replace the cover of your computer, and reconnect the cords/cables.
3. Check that your computer starts correctly. It should begin memory count and run its POST (Power-On-Self-Test). If it does not boot-up, refer to the Technical Guide on page 17 for help.

Final Speed Check Using SysChck

SysChck is a utility located on the Utilities Disk that measures different components in your computer. Use this utility to measure the CPU Speed and CPU Throughput Speed. You can measure the performance of your computer by checking SysChck. This is a running test that should instantly report a reading. There is no need to wait for it to stop. SysChck must be run in DOS. It cannot be run in the DOS shell through Windows®.

Accessing PNYBENCH:

1. Insert the PNY Technologies Utility Diskette in the floppy drive **`(A:)`**

Congratulations! You have just increased the speed of your computer! If you experience any problems, refer to the Technical Guide on page 17. If your problem is not listed or if you have any questions regarding this product, call PNY Technologies Technical Support at **1-888-316-1192**.

Section 4 *Technical Guide*

If you are experiencing any problems after installing the QUICKCHIP for the first time, the following section should help you find the solution. Make sure you record all jumper and CMOS settings before you change them.
Check the QUICKCHIP packaging to see if you computer is on the Incompatibility List. Note: the QUICKCHIP will not work in notebook computers.

Problem #1 - The QUICKCHIP will not fit.

Solution #1: Make sure all pins are aligned properly.
Solution #2: If there's a ZIF handle, be sure is it all the way up in the unlocked position.
Solution #3: Is the system board socket 168-pin? If so, you need to install the 168-pin socket extender first.

Problem #2 - No video.

Solution #1: Check all power cords and internal device cables.
Solution #2: Make sure the system board is set for 5 volts.
Solution #3: Make sure the jumpers on the system board are set to DX33 or DX25 setting. Refer to your owner's manual for details on these settings.
Solution #4: Try all the dip switch settings on page 18-19 until you find one that works.
Solution #5: Check BIOS version. You may need to upgrade. Check with your computer's manufacturer for information.

Problem #3 - Computer freezes during boot-up.

Solution #1: Try all the dip switch settings on page 18-19 until you find one that works.
Solution #2: In your CMOS set-up, set DRAM Wait States to 0, 1 or 2.
Solution #3: In your CMOS set-up, set AT Bus Clock to 4, for 33MHz, or 3, for 25MHz.

Problem #4 - No increase in speed.

Solution #1: Run Utilities Disk to check actual CPU speed and throughput.
Solution #2: In your CMOS set-up, set Internal and External Cache to enabled.
Solution #3: In your CMOS set-up, set DRAM Wait States to 0, 1 or 2.
Solution #4: In your CMOS set-up, set AT Bus Clock to 4, for 33MHz, or 3, for 25MHz.

Problem #5 - Original 486 chip will not work.

Solution #1: Make sure it is seated in the socket properly with Pin 1 to Pin 1.
Solution #2: Reset all jumpers and CMOS settings to to original 486 settings.
Solution #3: Reset CMOS according to computer manufacturers instructions.

Problem #6 - Floppy drive is not recognized.

Solution #1: Disable the Power Save feature in the BIOS.
Solution #2: Disable the Shadow Memory in the CMOS set-up.
Solution #3: Disable the External Cache in the CMOS set-up.

QUICKCHIP Dip Switch Settings for 4x

Step 1 -Turn the QUICKCHIP over and orient its position as shown. (Figure 5.1) If the switch is: Up=ON and Down=OFF. Switches A1-6 are on the left and B1-8 are on the right.

Step 2 -Use the Chip Extractor Tool or any small-tipped object to change the dip switches according to the settings shown below.

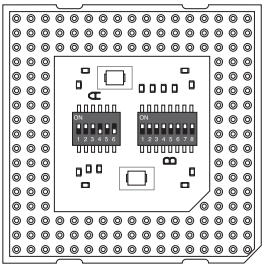
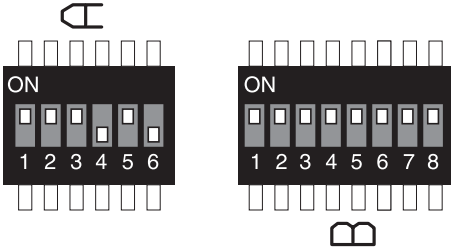
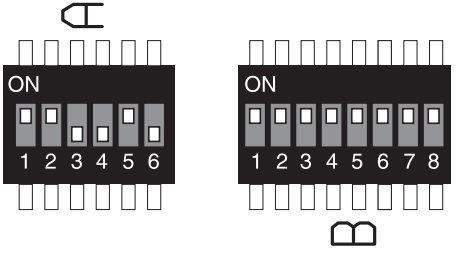


Figure 5.1 - Bottom View



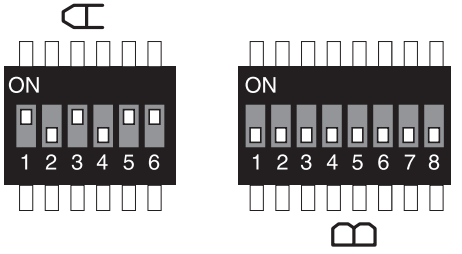
Default Setting - 4X

4x Pass Through
Switches A1, A2, A3. A5 and B1-8 are up = "ON"
Switches A4 and A6 are down = "OFF"



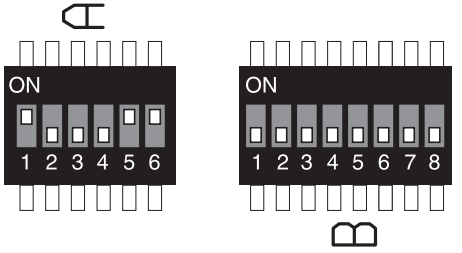
Option 1 - 4X

4x Write Through
Step 3 - Leave the default switches A1, A2, A5 and B1-8 "ON"
Step 4 - Turn switch A3 "OFF"



Option 2 - 4X

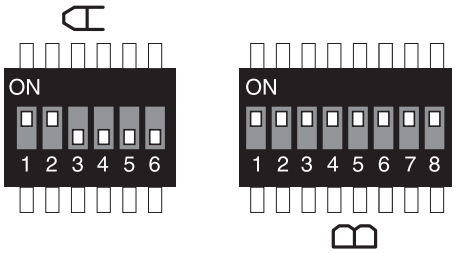
4x Pass Through
Step 3 - Turn switches A1, A3, A5 and A6 "ON"
Step 4 - Turn switches A2, A4 and B1-8 "OFF"



Option 3 - 4X

4x Write Through
Step 3 - Turn switches A1, A5 and A6 "ON"
Step 4 - Turn switches A2, A3, A4 and B1-8 "OFF"

QUICKCHIP Dip Switch Settings for 3x

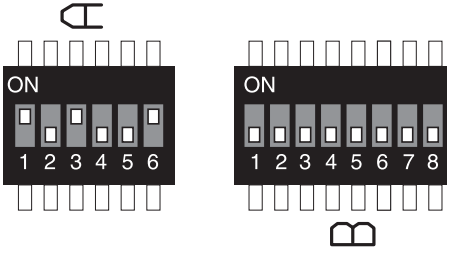


Option 1 - 3X

3x Write Through

Step 3 - Leave the default switches A1, A2 and B1-8 "ON"

Step 4 - Turn switch A3and A5 "OFF"

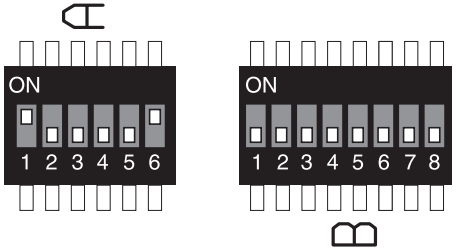


Option 2 - 3X

3x Pass Through

Step 3 - Turn switches A1, A3 and A6 "ON"

Step 4 - Turn switches A2, A4, A5 and B1-8 "OFF"



Option 3 - 3X

3x Write Through

Step 3 - Turn switches A1 and A6 "ON"

Step 4 - Turn switches A2, A3, A4, A5 and B1-8 "OFF"

If the QUICKCHIP is still not working properly after you have tried all of the dip switches listed here and tried all of the troubleshooting techniques on page 17, call Technical Support.

NOTICE:

The instructions herein contain important information regarding the safe installation and operation of this product. By breaking the product seal, you acknowledge your responsibility for complying with all warnings and accept all risks associated with the installation and use of this product.

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