

AmigaZipFAQ

KLAATU

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Chapter 1

AmigaZipFAQ

1.1 KLAATU's Amiga ZIP-Drive FAQ

KLAATU's Amiga and the IOMEGA ZIP-Drive GUIDE

English version 1.2 (May 1996)

Copyright © 1995-1996 by Joachim E. Deußen

[Preface](#)

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[History](#)

Please note, that not every point may be applicable for your setup. But I collected problems from the net and own experiences. If you play on high risc and loose, than that's not my problem. You've been warned! If you read about probelems with the ZIP and one of your components, you better try to borrow a drive first and test it before spending money on it!

1.2 Index

Index:

1.3 History

History:

Version Date Source What's new

1.0 31.12.95 Aminet: docs/help initial release

1.1 27.03.96 Aminet: docs/help corrections, additions

1.2 07.05.96 Aminet: docs/help additions

1.4 Contents

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- > 1. **What's the ZIP drive?**
- > 1. **ZIP drive**
- 2. **ZIP disk**
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-
- > := new since last release

1.5 Preface

Preface:

IOMEGAs ZIP-Drive - some sort of floppy disk that can store 100MB of data - certainly was the most surprising hardware of 1995. The shortage of the drive and the difficulties in getting one of these devices proofed it.

Especially the low price made the choice for the ZIP a lot easier, since conventional, harddisk-technology based removeables are not that cheap. (Okay, Syquest almost immediatly hit back with the EZ135...)

The ZIP drive comes with drivers for Macintosh, DOS/Windows and Windows95, but as we know it, the Amiga does not need any drivers for harddisks and floppies. So you can connect it simply to the SCSI bus and there you go.

But since there are lots of other questions regarding the ZIP and the Amiga I decided to publish this FAQ. It is not intended to replace the ZIP FAQ and it only deals with items regarding the Amiga.

Look out for my other FAQs on the Aminet:

Klaatu's ShapeShifter FAQ

Amiga and CD-ROM drives FAQ

And now, have fun...

1.6 What's the ZIP drive?

What's the ZIP drive:

The ZIP drive is a new revolutionairy storage device from IOMEGA. It stores 100MB (95MB formatted) on a single disk. (25MB [24MB formatted] are announced by not available at this time) This disk is about the same size a normal 3.5" floppy disk and twice as high. The technologi used for the disk is floppy disk based rather than the Bernoulli line of removeables or the harddisk-based SyQuest technology. (Though specifications say, that the read/write-head does not touch the surface like on floppy disks)

The external drive comes in a dark blue plastic housing with a nice Mac-like design. It has a see-through insert on the top so one can see the label of the inserted disk, On the right there are two LEDs: Power and InUse and a button to eject the disk, just like a cd-rom or normal floppy disks on the Mac. On tha back are two D-Sub 25 SCSI-I connectors, one for ZIP <-> computer and one for other <-> ZIP cables. In the SCSI version of the drive are two switches located between those connectors, one for the termination (if the ZIP is the last device within the SCSI chan) and one for the ID seletion between ID% and ID6). A tiny, little hole serves as emergency eject like found on CD-ROM drives. The device can lay flatt or stand on its side, so it will fit nicely to your computer.

The external power-supply will give a current of 5V/1A (at least in germany I found a 2Amps version, but since I saw a lot of 1Amps power supplies, I guess the ZIP does not need the extra power) and comes in several local variations, adapted to the local power net. While the geraman power supply is very light and small, for US residents it is better to get hold of an intl. power supply bacsue its lighter and smaller. A backdraw is the missing power On/Off switch, but the drive can remain on without any hesitations. To reset it, if needed, just pull the power supply, or you may connect all of you equipment to a switschable power cord.

The internal drive, called SCSI insider, also comes in the dark blue housing - okay this is not very suitable for white or black PC-towers - for a 5.25" drive bay. It has a standard 50pin SCSI connector and a normal 3.5" power connector.

The external drive is made totally from plastik and therefore is not heavy. The external is designed for easy transport and will survive minor drops without breaking.

For the external device interface you can choose between a SCSI-2 interface or a parallel interface, the internal only comes as SCSI. The SCSI version works on all computers that has a SCSI adapter. A 50cm D-Sub25 to D-Sub 25 premium cable is included, other devices can be daisy chained to the second D-Sub25 SCSI port.

The external parallel version is designed for PC only. It will work with normal and enhanced ports, but on normal ports you will have a signficatly performance loss (<375KB/s with enhanced ports against >900KB/s with the SCSI interface). The parallel version will not fit to the amiga parallel port due to hardware restrictions.

___ ZIP drive

___ ZIP disk

___ Interface

___ Software

___ Package

___ Goodies

1.7 ZIP drive

IOMEGA ZIP drive:

Size: external: 182mm × 132mm × 36mm (7"×5.25"×1.5")

internal: 5.25" size

Color: dark blue(indigo), dark grey

Material: external: plastic

internal: metal and plastic

Technology: Floppy disk based (but Heads do not touch the surface!)

Disk mechanism: Manually insert, soft eject via button or software

Emergency eject (via hole on backside)

Rotation: 3000/s

Access time: 30ms

Mounting position: horizontal or vertical

Operating Modes: Operate

Stand-By

Power down (after 15min of inactivity)

Power: external: power source

internal: 3.5" power connector

Power Source for external devices:

Primary Second. Size Cable Model

US: 110V/200mA 5V/1A 2.5"×2.25"×3.25" 6' (???)

D: 230V/100mA 5V/1A 55mm×46mm×80mm 2m (APS48ER-210)

230V/100mA 5V/2A 55mm×65mm×85mm 2m (APS57ER-210)

Intl: 110-230V/100mA 5V/1A #10044

Epson ZIP drive:

Size: external: 182mm × 132mm × 36mm (7"×5.25"×1.5")

internal: ?

Color: flat white, dark grey

Material: plastic

Technology: Floppy disk based (but Heads do not touch the surface!)

Disk mechanism: Manually insert, soft eject via button or software

Emergency eject (via hole on backside)

Rotation: 3000/s

Access time: 30ms

Mounting position: horizontal or vertical

Operating Modes: Operate

Stand-By

Power down (after 15min of inactivity)

Power Source for external devices:

Primary Second. Size Cable Model

US: 110V/200mA 5V/1A 2.5"×2.25"×3.25" 6' (???)

D: 230V/100mA 5V/1A 55mm×46mm×80mm 2m (APS48ER-210)

230V/100mA 5V/2A 55mm×65mm×85mm 2m (APS57ER-210)

Intl: 110-230V/100mA 5V/1A #10044

1.8 ZIP disk

ZIP disk:

Size: 98mm × 99mm × 6mm

Color: dark grey

Storage: unformatted formatted

25MB 24MB

100MB 95MB

Preformatted: Macintosh HFS

DOS FAT

Write protect: software controlled: Write, Write w/ password,

Read/Write w/ password

1.9 Interface

ZIP Interface (external):

Interface:

Type: SCSI-2, D-Sub 25 with through-put for daisy chain,

Termination via switch on the backside

ID: 5 or 6 selectable via switch on the backside

Transfer rates: 55-60MB/min (>900KB/s)

Interface:

Type: Parallel normal, bi-directional or enhanced ESP/EPP

Transfer rates: normal 2- 6MB/min (<100KB/s)

bi-di 7-12MB/min (<200KB/s)

EPP 17-22MB/min (<375KB/s)

ZIP Interface (internal):

Interface:

Type: SCSI-2, 50pin ribbon

Termination by jumper

ID: 5 or 6 selectable by jumper

Transfer rates: 55-60MB/min (>900KB/s)

1.10 ZIP Software

ZIP Software:

ZIP Tools: Drivers and Software for the software controlled protection

Vendor OS Plattform Included? Price PN

IOMEGA DOS/Windows Intel-PC yes

IOMEGA Windows 95 Intel-PC yes, since 11/95

IOMEGA MacOS 7 Macintosh yes

IOMEGA OS/2 Intel-PC no \$20 #10042

HiSoft AmigaOS 3 Amiga with Squirrel

Oregon AmigaOS 3 Amiga no \$20

Aminet AmigaOS 3 Amiga no PD

For the Amiga see also [ZIP Tools for Amiga](#)

1.11 ZIP packages

Packages:

All packages include: ZIP drive

ZIP Tools disk (Dual formatted for MacOS and DOS)

documentation

SCSI external: D-Sub 25 to D-Sub 25 SCSI premium cable

Floppy disks for Macintosh,

DOS/Windows,

Windows95, in SCSI versions

SCSI-Manual

Power supply

SCSI internal: Floppy disks for Macintosh,

DOS/Windows,

Windows95, in SCSI versions

SCSI-Manual

IOMEGA ZOOM SCSI-Adapter (Adaptec AVA-1502 non-bootable ISA-SCSI adapter)

50cm 50pin SCSI-ribboncable

poweradapter 5.25"->3.5"

4 screws

Parallel: D-Sub 25 to D-Sub 25 parallel cable

Floppy disks for DOS/Windows,

Windows95 in Par versions

PAR-Manual

Power Supply

Additional ZIP-Tools disks for OS/2 or Win3, Win95 or MacOS can be ordered from IOMEGA for ~\$20.

1.12 Goodies

Goodies:

IOMEGA offers several additional goodies for the ZIP drive including new ZIP disks :-)

- ZIP disks "IBM compatible" pre-format
- ZIP disks "Macintosh compatible" pre-format
- Carrying cases
- ZIP disks holder
- ZIP disk labels
- ZIP SCSI cables
- ZIP SCSI cards for the ISA bus (~\$60, #10013)
- Macintosh PowerBook SCSI adaptor (~\$20, #10042)
- ZIP Tools disks for Macintosh, OS/2(~\$20, #10045), DOS/Windows, Windows95
- ZIP drive cleaning kit
- ZIP drive power supplies (Intl. version: ~\$60, #10044)

1.13 Parallel interface

Parallel interface:

Let me simply put it this way: There is no possibility to connect the parallel version of the ZIP drive to an Amiga.

The PC parallel port has another layout as the Amiga parallel port and both ports are only compatible if they work as printer ports.

Used for bi-directional I/O, the amiga is missing one programmable line (though he has lots of others :-). All attempts to programm a software driver or build some hardware adaptor failed. Not only for the zip drive but for a lot of other nice PC parallel port hardware.

1.14 SCSI interface

SCSI interface:

SCSI

The SCSI version of the ZIP drive implements a standard SCSI-2 interface that conforms to ISO=0, ECMA=0, ANSI=2 and does not support synchronous transfers (though it tolerates them) nor reselction (make sure this feature is switched of at your controller!).

Problems may(!) occur on some controllers that do not support LUNs (the Fastlane Z3 does not!) correctly. (I have really no idea why the ZIP needs a LUN, sorry). So check LUN support before you buy the drive.

___ [Output of ProbeSCSI for the ZIP drive](#)

___ [Controller](#)

___ [Preping and Formating](#)

___ [Working with ZIP disks](#)

1.15 Output of ProbeSCSI

Output of ProbeSCSI for the ZIP drive:

```
-----  
ProbeSCSI V0.08 ©1994 Ron Klinkien. All rights reserved.  
-----  
Scanning 'scsi.device' Target 6 on 26-Dec-95 23:11:09 ...  
Vendor Identification : IOMEGA  
Product Identification : ZIP 100  
Revision Level : C.18  
[Drive Capacity Info Page]  
-----  
Capacity in Blocks : 196608  
Sector Size in Bytes : 512  
Capacity in Kb's : 98303 (95 Mb)  
[SCSI Inquiry Page]  
-----  
Peripheral Qualifier : 0 Currently Connected  
Peripheral Device Type : 0 Direct Access Device (eg. Hard Disk)  
Device Type Modifier : 0  
Removable Medium : Yes  
ISO Version : 0  
ECMA Version : 0  
ANSI Approved Version : 2 (ANSI X3.131-1990)  
Async Event Notification : Not Supported  
Terminate IO Process Msg : Not Supported  
Response Data Format : 2 (SCSI-2)  
Additional List Length : 75  
Inquiry 5 & 6 (Reserved) : 00, 00  
Relative Addressing : Not Supported  
Wide Bus 32 Support : Not Supported  
Wide Bus 16 Support : Not Supported  
Synchronous Transfer : Not Supported  
Linked Commands : Not Supported  
Tagged Command Queuing : Not Supported  
Soft Reset : Not Supported  
Comment 1 : 09/22/95  
Comment 2 :  
Comment 3 : (c) Copyright IOMEGA 1995
```

[Sense Data Page] [Scsi ModeSense (Saved)]

Sense Key : Illegal Request (0x05)

Add. SenseCode : Saving Parameters Not Supported (0x39)

SenseCode Qual : (0x00)

NOTE: Found Unequal Page Length in this Mode Sense Page!

Probably because the Device doesn't Support Saved Pages.

[Mode Sense Page] Current Changeable Default Saved

Mode Sense Data Length 37 37 37 0

Medium Type 0 0 0 0

Device Specific Parameter 0 0 0 0

Block Descriptor Length 8 8 8 0

Density Code Default Default Default Default

Number of Blocks 0 0 0 0

Block Size

NOTE: Found More than One Page in this Mode Sense Page!

Probably because the Device doesn't Support Saved Pages.

NOTE: Found Unequal Page Length in this Mode Sense Page!

Probably because the Device doesn't Support Saved Pages.

[0x01] [Read-Write Error Rec. Page] Current Changeable Default Saved

Page Can be Saved False False False False

Page Length 6 6 6 0

Auto Write Reallocation Enabled True True True False

Auto Read Reallocation Enabled True True True False

Transfer Block False True False False

Read Continuous False False False False

Enable Early Recovery True True True False

Post Error False True False False

Disable Transfer on Error False True False False

Disable Correction False True False False

Read Retry Count 22 255 22 0

Correction Span 0 0 0 0

Head Offset Count 0 0 0 0

Data Strobe Offset Count 0 0 0 0

Write Retry Count 2 2 2 0

Recovery Time Limit

NOTE: Found Unequal Page Length in this Mode Sense Page!

Probably because the Device doesn't Support Saved Pages.

[0x02] [Disconnect-Reconnect Page] Current Changeable Default Saved

Page Can be Saved False False False False

Page Length 10 10 10 0

Buffer Full Ratio 0 255 0 0

Buffer Empty Ratio 0 255 0 0

Bus Inactivity Limit 0 0 0 0

Disconnect Time Limit 0 0 0 0

Connect Time Limit 0 0 0 0

Maximum Burst Size 0 0 0 0

Data Transfer Disconnect

NOTE: Found UnEqual Page Length in this Mode Sense Page!

Probably because the Device doesn't Support Saved Pages.

[0x2f] [Vendor Unique Page Code] Current Changeable Default Saved

Page Can be Saved False False False False

Page Length 4 4 4 0

[Primary Defects List] No Cyl Head Sector

...

[Grown Defects List] No Cyl Head Sector

No entries found ...

1.16 Controller

Controller

You may connect the drive to every Amiga SCSI controller with an external D-Sub 25 (SCSI-1 or Apple-style) connector. For a SCSI-2 style HD D-Sub 50 you need an adaptor or special cable.

The drive has a build in terminator that can be used if the drive is the last one on the chain. SCSI IDs range only from 5 to 6, also selectable via a backside switch. If ID 5 or ID 6 is already used, you must change the other device to free the ID. This is because the drive is primarily targeted for the Macintosh and they have rarely devices on these IDs.

Problems may(!) occur on some controllers that do not support LUNs (the Fastlane Z3 does not!) correctly. (I have really no idea why the ZIP needs a LUN, sorry). So check LUN support before you buy the drive.

The drive tollerates synchronous transfers, but reselection must be disabled.

Working (i.e. no mayor problems reported) controllers are:

Computer Controller SCSI Bus Comment

A500 GVP II SCSI-2 Z1

RocTec SCSI Z1
A1200 Blizzard 1230III SCSI-2 direct
Ferret SCSI-2
SCSI+ SCSI-2 PCMCIA
Squirrel SCSI-2 PCMCIA
A2000 A2091 SCSI-1 Z2
Oktagon 6.8 SCSI-1 Z2
GVP Series II SCSI-2 Z2
GVP 4040 SCSI-2 direct
Evolution 3.4 SCSI-2 Z2
Masoboshi SCSI-2 Z2
Hardframe SCSI-2 Z2
Apollo 2030 SCSI-2 direct
A3000(T) A3091 SCSI-1 direct
A4000(T) A4091 SCSI-2 Z3
A4091 SCSI-2 direct
CyberStorm SCSI SCSI-2 direct
Oktagon SCSI-2 Z3
GVP A4008 SCSI-2 Z3 use "gvpcontrol <unit> DCOFF"
GVP HCD+sII 4.13 SCSI-2 Z3
DF4000SX SCSI-2 Z3
Zeus SCSI-2 Z3
(FastLane Z3) SCSI-2 Z3 depending on ZIP/FLZ3 version

1.17 Controller

A3000: A3091

- I recommend to replace the originally old Western Digital WD 00-04 PROTO controller with the newer, fixed one 00-08.
- Also you should check if pin 25 of the external SCSI connector has +5V, otherwise you suffer from the wrong-way diode. This part was put in the wrong way and so can not terminate the SCSI chain correctly.
- In severe cases you should not terminate the drive! I experienced lots of SCSI bus lockups when my drive was terminated, switching of the termination (by accident) solved this problem.
- On A3000 with V36 bootroms the well known problem of the delayed boot exists also for the ZIP drive. Simply put a disk in the drive, and the A3000 will boot up quickly.
- If there was no disk in the drive during startup, the drive is also unknown to the DOS. Use SCSIMounter or similar to mount it for the first time. Afterwards you should have no trouble with diskchanges.

1.18 Preping and formatting

Preping and formatting the disk

- If you have connected the drive, inserted a disk (may be preformatted for IBM or Macintosh, doesn't matter) and powered up your Amiga, you should see the device in your HD-Prep program like HDToolsBox. (It's assumed you're using this one, if not your actual readouts may differ) The device is currently unknown to your Amiga filing system, it's not in the file drive specifications. So you should read out the **drive specifications**. Now your Amiga knows about the new drive.
- You may then format the inserted disk with a simple format command. Several people reported, that low-level formatting gains some speed out of the disks, but I can not find any proof of it, except in the DiskSpeed 4.2-results. So if you like to low level format your disks, stay within the HDToolsBox, select Low Level Format and accept the destruction of all your data. Then wait for approx. 10 Minutes.
- Newer ZIP-drives come with a Zip-Tools disk that is write protected. In this case you can use the low-level format to get rid of this protection. Another way is to use the ZIP-Tools for the Amiga or try to use them on a PC or Macintosh.
- The AmigaOS has several problems dealing with removeables. (They may be fixed by the driver, but don't count on that!) If you have no disk inserted during startup, the drive simply is not there. You must then mount it using SCSIMounter or similar tools. Also it has difficulties dealing with different partitioned removeable media. If the next disk is partitioned different from the first, this could lead you into trouble. The least worst case is, that you have some ghost-icons and entries for the now removed partitions. The worst case is, that the OS keeps the partition information and destroys your current disk. The problem may(!) be solved, if you choose to write a real RDB to the ZIP-Disk, but it is a known problem of several controllers not to work with RDBs written by other controllers. You may find yourself dealing with unreadable disks at your friend's computer.
- That's why I recommend, that you partition your zip disks all the same: one big partition. I find the following most convenient: I format my disk all the same as one big partition of ~95MB. With a tool I read out a sample **ZIP mountlist** that I put then in DEVS:DOSDrivers/. This guarantees, that the drive is known to the system under all conditions even if no disk is inserted upon startup (which of course took unnaturally long on an A3000 with V36 bootroms, of course)
- Formatting new disks is done easy: If you like a low level format, do so within HDToolsBox or your special program for this action. Then start the System/Format program, if you do not see an icon on the workbench for your ZIP disk (if you low level formatted the disk, you should see one, otherwise if you simply inserted a Macintosh or IBM preformatted disk, you should not). The Format program shows you a list of all acceptable devices, there will be an entry for the ZIP disk also. Select it, choose your options and go for it. Formatting will take about 5-10 minutes. Though your device is ever named ZIP0 - or whatever you choose for a name within HDToolsBox - you may rename the logical device name to whatever you like it to.
- If you are using a SCSI utility, that can read out the data from the drive - like **ProbeSCSI** does you may be surprised about the high number of bad/remapped blocks. First of all, remember the disk is floppy disk technology based and you do have often bad blocks on floppies too. This is a normal behavior. Second, take a closer look and you will see, that a lot of the marked block consist of pure humbug values either 0 or in the millions where no physical block exists. So real bad block counts from 20-40 are a normal value, don't get nervous.

1.19 Working with ZIP disks

Working with disks is easy:

After you have mounted and formatted your drives they simply work like big floppies. Via SCSI software control you can Write-protect, Read/Write protect, Unprotect, Unprotect till the next ejection and of course Eject the disk.

The supplied ZIP Tools for the other platforms will do that for you. On the Amiga there is one **software packages** that can perform this task: the ZIP Tools from Oregon Research. (Also included by HISOFT with their ZIP-drive/Squirrel SCSI package for the A1200)

Christian Bauer (author of ShapeShifter) found out, what **SCSI commands** must be sent to the ZIP. You can program your own ZIP Tools.

1.20 ZIP SCSI commands

ZIP SCSI commands:

The Shapeshifter Debug routines found out the following 6-bytes commands:

Write protect

Bit| 7|6|5|4|3|2|1|0|

Byte| | | | | | | |

---+---+---+---+---+---+---+---+---+---+

0| \$0C |

---+-----+---+---+---+---+---+

1| LUN| 0| 0| 0| 0| 1| 1| |

---+-----+---+---+---+---+---+

2| 0 |

---+-----+-----+

3| 0 |

---+-----+-----+

4| Length of Password |

---+-----+-----+

5| Control |

---+-----+-----+

Read-/Write-protect

Bit| 7|6|5|4|3|2|1|0|

Byte| | | | | | | |

---+---+---+---+---+---+---+---+---+---+

0| \$0C |

---+-----+---+---+---+---+---+

1| LUN| 0| 0| 0| 1| 1| 0| 1| |

---+-----+---+---+---+---+---+

2| 0 |

---+-----+-----+

3| 0 |

---+-----+-----+

4| Length of Password |

---+-----+-----+

5| Control |

---+-----+-----+

Unprotect:

Bit| 7|6|5|4|3|2|1|0|

Byte| | | | | | | |

```

-----+-----+-----+-----+-----+
0 | $OC |
-----+-----+-----+-----+
1 | LUN | 0 | 0 | 0 | 0 | 0 | 0 |
-----+-----+-----+-----+
2 | 0 |
-----+-----+-----+-----+
3 | 0 |
-----+-----+-----+-----+
4 | Length of Password |
-----+-----+-----+-----+
5 | Control |
-----+-----+-----+-----+

```

During the Dataphase the password is transferred (without a terminating Zero-Byte!). For a Description of CONTROL see the ANSI-SCSI Standard

1.21 Example ZIP drive mountlist

Example ZIP drive mountlist:

ZIP0: Device = <scsi.device>

Unit = <6>

Flags = 0x0

Surfaces = 1

BlockSize = 512

BlocksPerTrack = 68

Reserved = 2

Interleave = 0

LowCyl = 2

HighCyl = 2890

Buffers = 30

BufMemType = 0

DOSType = 0x444f5303

MaxTransfer = 16777215

Mask = 0x7fffffe

GlobVec = 0

#

Note that the combination of Surface/BlocksPerTrack and HighCyl may differ from controller to controller since all media are projected to an endless byte stream. All combinations that result in ~196520 blocks are correct. In the above example a layout of 2 surfaces by 34 BlocksPerTrack by 2890 Tracks is also satisfying.

1.22 Drive Specifications

Reading out Drive Specifications:

- Click on the UNKNOWN drive.
- Click the button Change drive type.
- If the drive is within the presented list, select it and exit using OK.
- If you can not find the drive, select Define New... and Read ConfigurationContinue.
- Accept the new drive type by clicking as often on till you are back in the main window.
- Select Save changes to drive. You will not destroy any data on it.
- Make sure Reselction is disabled!

1.23 Partition a ZIP disk

Partition a ZIP disk:

- Select for the ZIP drive.
- Delete all partitions - by clicking on the partition and selecting DELETE - except for one, that you make as big, as possible.
- Name that partition ZIP0 or whatever you like it to be. (In this doc we stick to ZIP0:)
- Change the filesystem if you like, but the ZIP disk should stay on the OS default for disks: FFS international.
- Select OK and accept, the error-message.
- NOTE: if you leave now HDToolsBox you will have to reboot to take the changes in effect. But this will happen only once.
- One disatvantage of this is that a real RDB is written to the disk, with can lead to the known problemes if other controllers have to deal with it. Use a low-level format to get rid of the RDB if you like.

RDB no RDB

+ recognized immediatly - needs a unified mountlist
on all used controllers

- probs detecting on some + no problem on foreign
controllers controllers

1.24 Speed comparisons

Speed comparisons:

Determing the speed of a device is not so easy. A lot of people swear of DiskSpeed 4.2, but I thing DiskSpeed only tell you how it could be, not how it really is. Or do you know how large the buffers are your applications are using for disk-IO? And it stands in the contrary to the fact that more filesystem buffers (the buffers set in HDToolsbox) improve the speed of a device dramatically. I like more results that give you raw disk IO as found in SCSSISpeed or SysInfo or comparisons for real file copy like Eckhard Ludwig did.

_____ **Mac Magazin**

_____ **c't Computer Magazine**

_____ **Joachim E. Deußen**

_____ **Eckhard Ludwig**

1.25 Speed Comparisons

Speed comparisons:

Test were done using a Macintosh Quadra 840AV, 16MB RAM, 850MB Quantum Trailblazer harddisk, System 7.5.1.

- Folder-size: 18MB with 693 small files.
- Filemakerfile-size: 19MB with 76000 records

Action ZIP-Drive EZ135

-
- Folder to disk 300s 207s
 - Folder to HD 220s 130s
 - Copy FM-file to disk 40s 20s
 - Combined Search 9s 6s

in FM-file

- Sort 10000 records 68s 40s

1.26 Speed comparisons

Speed comparisons:

The benchmark-program CTHDBENCH test the drives in a 30MB partition under DOS. Only under the non-multitasking DOS in Real-mode you have the full control over the computer timing, also no system enhancers were loaded, autoexec.bat and config.sys were empty. The test was done using a 486-66-CPU with EISA-SCSI adaptor Adaptec 1742.

All modern disk storage systems are using some kind of ZoneBitRecording ZBR that stores more sectors on the piuter areas of the disk and less sectors on the inner areas. Reading more sectors in a single rotations means higher data throughput, reading less means lower throughput. That's what measured for the fastest/slowest zone. On dreives with only one Head the speed layout of these zone has it's lowest points not on the borders, but in the center of the graphic representation.

Benchmarks (Cthdbench, 100-MByte-Disk)

fastest Zone slowest Zone

Max. Read 925 KByte/s 625 KByte/s

Max. Write 927 KByte/s 623 KByte/s

Average 538 KByte/s 388 KByte/s

Total time 12:17 min:s 16:56 min:s

1.27 Speed comparisons

Speed comparisons:

First I tested the ZIP with SysInfo (if you like it or not!): 932kb/s for the reformatted ZIP disk, 950KB/s for the low-level formatted ZIP disk.

The DiskSpeed tests were done on my A3000/25 using DiskSpeed 4.2 and SCSSISpeed 4.2. I had two original "IBM compatibel" preformatted disks. The first was only reformatted, the second low-level formatted using HDToolsBox.

The results are rather surprising, as the device gained 300KB/s in read with a 256KB buffer, but dropped otherwise. The overall "feeling" of the device and the different ZIP disks did not change at all.

MKSoft DiskSpeed 4.2 Copyright © 1989-92 MKSoft Development

CPU: 68030 AmigaOS Version: 40.70 Normal Video DMA

Device: ZIP0: Buffers: 30

Comments: DiskSpeed 4.2

Disk: "IBM compatibel" and reformatted

CPU Speed Rating: 1374

Testing directory manipulation speed.

File Create: 19 files/sec | CPU Available: 65%

File Open: 23 files/sec | CPU Available: 67%

Directory Scan: 38 files/sec | CPU Available: 72%

File Delete: 39 files/sec | CPU Available: 68%

Seek/Read: 41 seeks/sec | CPU Available: 73%

Testing with a 512 byte, MEMF_FAST, LONG-aligned buffer.

Create file: 19968 bytes/sec | CPU Available: 72%

Write to file: 20096 bytes/sec | CPU Available: 72%

Read from file: 19840 bytes/sec | CPU Available: 73%

Testing with a 4096 byte, MEMF_FAST, LONG-aligned buffer.

Create file: 127170 bytes/sec | CPU Available: 74%

Write to file: 135680 bytes/sec | CPU Available: 75%

Read from file: 146432 bytes/sec | CPU Available: 72%

Testing with a 32768 byte, MEMF_FAST, LONG-aligned buffer.

Create file: 326069 bytes/sec | CPU Available: 73%

Write to file: 433093 bytes/sec | CPU Available: 75%

Read from file: 454656 bytes/sec | CPU Available: 75%

Testing with a 262144 byte, MEMF_FAST, LONG-aligned buffer.

Create file: 517815 bytes/sec | CPU Available: 76%

Write to file: 854817 bytes/sec | CPU Available: 79%

Read from file: 929361 bytes/sec | CPU Available: 78%

Testing with a 524288 byte, MEMF_FAST, LONG-aligned buffer.

Create file: 324435 bytes/sec | CPU Available: 80%

Write to file: 952096 bytes/sec | CPU Available: 79%

Read from file: 1028015 bytes/sec | CPU Available: 79%

Testing with a 1048576 byte, MEMF_FAST, LONG-aligned buffer.

Create file: 326998 bytes/sec | CPU Available: 78%

Write to file: 1033079 bytes/sec | CPU Available: 79%

Read from file: 1010675 bytes/sec | CPU Available: 79%

Testing with a 2097152 byte, MEMF_FAST, LONG-aligned buffer.

Create file: 213995 bytes/sec | CPU Available: 80%
Write to file: 632943 bytes/sec | CPU Available: 77%
Read from file: 652640 bytes/sec | CPU Available: 77%
Testing with a 4194304 byte, MEMF_FAST, LONG-aligned buffer.
Create file: 414456 bytes/sec | CPU Available: 77%
Write to file: 618628 bytes/sec | CPU Available: 78%
Read from file: 652302 bytes/sec | CPU Available: 77%

Disk: low-level formatted

CPU Speed Rating: 1376

Testing directory manipulation speed.

File Create: 20 files/sec | CPU Available: 63%
File Open: 23 files/sec | CPU Available: 66%
Directory Scan: 36 files/sec | CPU Available: 73%
File Delete: 40 files/sec | CPU Available: 65%
Seek/Read: 40 seeks/sec | CPU Available: 73%
Testing with a 512 byte, MEMF_FAST, LONG-aligned buffer.
Create file: 20800 bytes/sec | CPU Available: 71%
Write to file: 20365 bytes/sec | CPU Available: 72%
Read from file: 18641 bytes/sec | CPU Available: 74%
Testing with a 4096 byte, MEMF_FAST, LONG-aligned buffer.
Create file: 128374 bytes/sec | CPU Available: 73%
Write to file: 136363 bytes/sec | CPU Available: 74%
Read from file: 147088 bytes/sec | CPU Available: 72%
Testing with a 32768 byte, MEMF_FAST, LONG-aligned buffer.
Create file: 323584 bytes/sec | CPU Available: 75%
Write to file: 442368 bytes/sec | CPU Available: 75%
Read from file: 461693 bytes/sec | CPU Available: 74%
Testing with a 262144 byte, MEMF_FAST, LONG-aligned buffer.
Create file: 574037 bytes/sec | CPU Available: 74%
Write to file: 954407 bytes/sec | CPU Available: 77%
Read from file: 998337 bytes/sec | CPU Available: 78%
Testing with a 524288 byte, MEMF_FAST, LONG-aligned buffer.
Create file: 612485 bytes/sec | CPU Available: 77%
Write to file: 1030541 bytes/sec | CPU Available: 78%
Read from file: 1003422 bytes/sec | CPU Available: 53%
Testing with a 1048576 byte, MEMF_FAST, LONG-aligned buffer.
Create file: 675048 bytes/sec | CPU Available: 52%
Write to file: 1069975 bytes/sec | CPU Available: 51%

Read from file: 1110256 bytes/sec | CPU Available: 51%
 Testing with a 2097152 byte, MEMF_FAST, LONG-aligned buffer.
 Create file: 340446 bytes/sec | CPU Available: 67%
 Write to file: 682370 bytes/sec | CPU Available: 68%
 Read from file: 666467 bytes/sec | CPU Available: 78%
 Testing with a 4194304 byte, MEMF_FAST, LONG-aligned buffer.
 Create file: 442437 bytes/sec | CPU Available: 77%
 Write to file: 648269 bytes/sec | CPU Available: 71%
 Read from file: 651289 bytes/sec | CPU Available: 70%

1.28 Speed comparisons

Eckhard Ludwig did some test:

The test was done using a directory of 100MB with different files in several formats (.LHA, .GIF, .JPG).

For the Read-/Write speed tests these files were transferred from a fast SCSI-harddisk(ST31200N) to the removeable drives and back to the harddisk.

For the Backup tests the same directory was backed up to the disks.

This test is so nearly identical to the test done in PC-Shopping 10/95. Their results are listet for comparison.

Testsystem:

Here: Amiga 4000 Cyberstorm 68060/50MHz Cyber-SCSI, 32MB Memory,
 (26MB free) 1 GB Seagate SCSI-Harddisk,

R/W-Test was performd using the Copy command of Directory Opus 5.11

Backup test was performed using DiavoloBackup 32.pro

PC-Shopping: Pentium 100MHz PCI, 256K Secondlevel, 16MB Memory,
 1,1GB Seagate SCSI-Harddisk, PCI/SCSI Hostadapter AHA2940 w/ 10MB/s

Cacheprogram "SmartDrive", Backupprogram Corel SCSI2 Utilities SCSI-Backup

Part 1: Direct access media

Device Task Amiga FFS int. Amiga AFS Pentium

 MOD NEC ODD-155 Write: 136KB/sec

(1.3GB 5.25") Read: 292KB/sec

MOD Sony RMO-S570 Write: 86KB/sec

(1.3GB 5.25") Read: 183KB/sec

MOD IBM 0632CHX Write: 250KB/sec 276KB/sec

(1.3GB 5.25") Read: 386KB/sec 494KB/sec

Iomega ZIP-Drive Write: 422KB/sec 484KB/sec 140KB/sec

Read: 494KB/sec 513KB/sec 113KB/sec

Syquest SQ3270 Write: 29KB/sec 757KB/sec 184KB/sec

Read: 210KB/sec 705KB/sec 295KB/sec

 Specialtest: Copy a 54MB Testfile (Sample 16bit/44KHz):

MOD IBM 0632CHX Write: 363KB/sec 340KB/sec

(1.3GB 5.25") Read: 697KB/sec 706KB/sec

Iomega ZIP-Drive Write: 21KB/sec 635KB/sec

Read: 18KB/sec@Üub} 675KB/sec

ZIP to MOD 358KB/sec 349KB/sec

MOD to ZIP 494KB/sec

The ZIP result is not a measuring error. Playing the sample from the ZIP also results in several dropout. Using AFS solves the problem!

Part 2: Backup media

The NEC and IBM MOD have nearly the same technical data.

Device Task Amiga FFS int. Amiga AFS Pentium

 MOD NEC ODD-155 Backup: 246 KB/sec

(1.3GB 5.25") Restore: 275 KB/sec

MOD IBM 0632CHX Backup: 274 KB/sec 280 KB/sec

(1.3GB 5.25") Restore: 537 KB/sec 531 KB/sec

Iomega ZIP-Drive Backup: 669 KB/sec 654 KB/sec 86 KB/sec

Restore: 468 KB/sec 466 KB/sec 71 KB/sec

Syquest 3270S Backup: 812 KB/sec 872 KB/sec 199 KB/sec

Restore: 552 KB/sec 562 KB/sec 287 KB/sec

You noticed that the ZIP connected to an Amiga is up to 7times faster than connected to the Intel hardware.

1.29 ZIP Tools for Amiga

ZIP Tools for the Amiga:

IOMEGA does not provide any Amiga ZIP Tools to control the ZIP features such as: Write-protect, Read-/Write-protect, Unprotect, Unprotect until eject, Eject. But even if you have none of the below mentioned ZIP Tools packages, you can (re)format a protected disk - but you loose all data on it, of course.

Oregon Research produces some kind of ZIP tools package for the Amiga. HiSoft includes the Oregon Research ZIP Tools in a ZIP package that consist of a Squirrel PCMCIA A1200 SCSI-Controller, a SCSI ZIP drive and the ZIP Tools.

The OR Amiga ZIP tools come in two variants: a CLI program and a commodity. Both programs let you set all software controlled ZIP features.

Oliver Hitz (oliver.hitz@unifr.ch) has uploaded a smal CLI only version of the ZIP Tools for amiga to the aminet/disk/misc directory. It is not fancy, but provides you with the basic functions and it's for free.

1.30 ZIP Tools Disk Password

ZIP Tools Disk Password:

If you have the ZIP tools and you want to reformat the ZIP Tools Disk that comes with the drive, you may try the following password:

"APlaceForYourStuff"

of course without the surrounding ""!

1.31 Emulations and foreign file access

The ZIP under Emulations and other OS:

The Amiga is capable of emulating a range of other computers including their operating systems.

All 8Bit emulations like all old Commodore Co,mputers, Atari 8Bit, Oric etc. do not support SCSI and therefore ZIP drives are not accessible.

For Unix (Amix, NETBSD, Linux68k), Atari TOS and PC-Task there are currently no solutions for a connection of the ZIP drive. However the Amiga is capable of reading **IBM compatible** i.e. FAT formatted ZIP disks.

The **Macintosh emulations** do support the ZIP drive.

1.32 DOS

DOS:

With the CrossDOS filesystem that is standard with the AmigaOS you can read "IBM compatible" formatted ZIP disks. To do this, you must mount a ZIP disk with the l:CrossDOSfilesystem:

PC0C:

Device = <scsi.device>

Unit = <6>

FileSystem = L:CrossDOSFileSystem

Flags = 0

Surfaces = 1

BlocksPerTrack = 1

SectorsPerBlock = 1

SectorSize = 512

Mask = 0x7ffffffe

MaxTransfer = 0x100000

Reserved = 0

Interleave = 0

LowCyl = 0

HighCyl = 196607

Buffers = 5

BufMemType = 0

StackSize = 2000

Priority = 10

GlobVec = -1

DosType = 0x4d534800

#

This mountlist is for a single partition on a ZIP disk and reflects the format of the pre-formatted "IBM compatible" disks. Note that the device-name must end with "C" or "D" for CrossDOS to recognise it correctly.

On the Aminet there is a program called MountDOS.lha that is able to scan and mount a DOS formatted disk, even the ZIP-disks.

1.33 Macintosh

Macintosh:

If you are not running one of the three Macintosh emulations **Shapeshifter**, **Emplant** or **AMax** you can read Macintosh formatted disks with the help of the CrossMAC¹ or the AmiCDFS filesystem. Similar to the use of CrossDOS for DOS formatted disks you must setup a Mountlist for a special Macintosh ZIP device:

MACZIP0:

Device = <scsi.device>

Unit = <6>

FileSystem = L:CrossMacFileSystem²

Flags = 0

Surfaces = 1

BlocksPerTrack = 1

SectorsPerBlock = 1

SectorSize = 512

Mask = 0x7ffffffe

MaxTransfer = 0x100000

Reserved = 0

Interleave = 0

LowCyl = 0

HighCyl = 196607

Buffers = 5

BufMemType = 0

StackSize = 2000

Priority = 10

GlobVec = -1

DosType = 0x4d414300

#

This mountlist is for a single partition on a ZIP disk and reflects the format of the pre-formatted "Macintosh compatible" disks.

¹CrossMAC is not part of the AmigaOS and must be purchased from your local dealer.

²Replace with L:AmiCDFS if you do not use CrossMac. AmiCDFS is on Aminet and supports Macintosh HDs, Floppies and ZIPs since version 2.10

1.34 ShapeShifter

ShapeShifter:

ShapeShifter fully supports the ZIP drive starting with version 3.3. In earlier versions you can see two ZIP disk icons on the finders desktop. Also you may have to activate "Direct Transfers" (with all the backdraws this may have) to enable the ZIP as a removable. Otherwise it may be a fixed harddisk and is not changeable.

The ZIP Install disk for the initial start comes on a Macintosh 800K DD disk. This disk is not readable by the Amiga.

A workaround for this problem is to mount the ZIP Tools disk via **CrossMAC** on the Amiga and copy the needed files - at least the IOMEGA driver Init - to your Macintosh device disk. Another way is to mount the ZIP Tools disk with CrossDOS and the use the Macintosh-Partitionfile as a filedisk.

All tools on the ZIP Tools disk work flawlessly under MacOS and the Shapeshifter. But I experienced several problems with the DiskDup program for duplicating ZIP disks. Disk changes were not correctly notified. The original IOMEGA driver for the ZIP also should have several problems with thrid-party harddiskdrivers like d2 Driver or ProDriveStep

1.35 Emplant

Emplant:

Sorry, but I do not have any information if the Emplant fully supports the ZIP and the ZIP tools. Since Emplant has no problems with SyQuest removeable media it is to assume it will support the ZIP.

1.36 Amax

Amax:

Sorry, i do not have any information if the rather old AMax emulator will supports the ZIP.

1.37 Glossar

Glossar:

ZIP := ZIP drive

MOD := Magneto Optical Disk

DAT := Digital Audio Tape

SyQuest := Synonym for all kinds of removeable devices based on harddisk technology, introduced by SyQuest for the mass market.

SCSI := Small Computer System Interface

EPP := Enhanced Parallel Port

BIDI Ports := bi-directional parallel port

Raw speed := transfer speed that a device has withoiut the overhaed of the OS and/or the file system.

1.38 Legal Stuff

B. Legal Stuff:

This FAQ is

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1.39 Where to get...

Where to get...:

IOMEGA:

SMail: Iomega Corporate Office

Iomega Corporation

1821 West Iomega Way

Roy, Utah 84067-9977

USA

Voice: 801-778-1000 (only if really necessary)

801-778-3000 or

1-800-456-552 (Interactive Voice Help system)

1-800-697-8899 or

1-800-MY-STUFF (Sales Information)

801-778-5763 (automated FAX, USA/CAN only)

BBS: 801-392-9819

Compuserve: GO MACCVEN

GO PCVENE

America Online: IOMEGA

EMail: info@iomega.com

WWW: <http://www.iomega.com> (slow site!)

WWW-Pages:

<http://www.rmii.com/~bobm/zip.html>

Oregon Research

Phone: 503-620-4919

DiskSpeed 4.2:

Meeting Pearls III CD-ROM

AmigaZIPFAQ:

Aminet:docs/help/AmiZIPFAQ.lha

Author:

KLAATU@NEWSWIRE.GUN.DE

1.40 Additional material

Additional material:

SCSI commands:

CEBIX@ng-box.wwbnet.de (Christian Bauer)

Speed tests:

ECKHARD@top.east.de (Eckhard Ludwig)

Kurz vorgestellt : Wechselplatte

Detlef Grell

Nice and SCSI

Iomegas ZIP-Drive: die 100-MByte-Floppy

c't 6/95, page 86

Heise Verlag, Hannover

Prüfstand : Wechselplatten

Detlef Grell

Kapazität einfach nachlegen

Wechselplatten zwischen 230 und 270 MByte

c't 5/95, page 128ff.,

Heise Verlag, Hannover

Hardware

Dr. Christopher Busch

Kampf der Zwerge

Mac Magazin 2/96, page 52-53

Orbis Publishing Ltd, London

Pictures of the ZIP drive:

c't computer magazine

Picture from artikel Nice and SCSI

c't 6/95, page 86

Heise Verlag, Hannover

Password:

RAPID@pleasure.ohz.north.de

1.41 Empty

Empty: