

Easy1541

COLLABORATORS

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REVISION HISTORY

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Chapter 1

Easy1541

1.1 Easy 1541. Really? Yes, it's easy!

Easy1541 v 1.1.1 (15-Oct-96)
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Disclaimer
Description
Requirements
Installation
Easy1541 toolkit
1541 Commands
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About the Author...

1.2 DISCLAIMER:

DISCLAIMER

Fabrizio Farenga makes no warranties either expressed or implied, with respect to this software, its quality, performance, merchantability or fitness for any particular purpose. This software is licensed "as is".

The entire risk as to the quality and performance of the document is with the user. In no event will Fabrizio Farenga be liable for direct, indirect, incidental or consequential damages resulting from any defect in the software even if they have been advised of the possibility of such damages.

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- No change is made to the program nor to the accompanying documentation
- The package is always distributed in its complete form.
- Every form of distribution is allowed and encouraged, but no fee can be charged for this program except for, possibly, the cost of magnetic media and/or disk duplication and shipping.
- Inclusion in PD software libraries is allowed.
- The program cannot be distributed in any commercial product without the written consent of the author.

By copying, distributing and/or using the program you indicate your acceptance of the above rules.

- Long live and prosperity to the Amiga.
Unknown Vulcan

- Commodorians, the force was with us!
Michael S. Tomczyk

1.3 WHAT THE HELL IS EASY1541 ???

DESCRIPTION

Easy1541 is designed to provide EASY access to the Commodore 1541 drive (and compatibles) to manage old 5.25" disks formatted using standard CBM DOS 2.6 filesystem. Using the provided command set you can read and write disks created using a Commodore 1541 drive and an 8-bit Commodore home computer (C64, C16/+4 and C128).

Just plug the
cable
in your standard Amiga Parallel Port to connect a
Commodore 1541 and enjoy the Easy1541 potentiality. You can't connect the
cable to a non-standard parallel port (as the one in the BSC Multiserial
Card).

WHY TO USE EASY1541 ?

In the Internet (aminet, funet...) you can find many "Amiga To 1541" projects, interfaces, software and so on. Well, I tried most of them, and I got all kind of problems!

- Interfaces doesn't interface properly.
- Cables are hard to build (and doesn't work!)
- Provided utilities are crap.
- You need the same Amiga of the author to avoid crashes...

There's only a software available (unfortunately it's not freeware) that works properly, the old but good "ReadySoft Transfer Utility".

A BIT OF HISTORY

In late '80, the great software house "ReadySoft", published a Commodore 64 emulator for the Amiga 500/1000/2000. It was sold with a little program that allowed (using a provided cable) to copy files from/to a real 1541 drive connected to your Amiga. The cable was very easy to build too. You need no components at all, just solder some wires... The bad news was that you need a 68000 7.14 Mhz Amiga and Kickstart 1.x to run the transfer utility.

Thanks to Easy1541, you will be able to do on any Amiga the same thing you did using the ReadyTransfer utility on your old Amiga 500.

Unfortunately a GUI is not yet provided...

Note for the programmers:

The old ReadySoft code was full of "busy loops", and it crashed trying to use it on a 68020+ and OS 2.x / 3.x based Amiga.

1.4 WHAT I NEED TO USE EASY1541 ?

REQUIREMENTS

Easy1541 needs any Amiga system, but it requires at least AmigaDos 2.04. Hard Disk or a lot of memory is not required.

- It works fine using an A500 2.04 with 512K of Ram and 1 Drive...
- It works better using an A4000 3.1 with 6Mb of Ram and Hard Disk!

You need a Commodore 1541 Drive and a cable to connect it. The cable is the same used by the ReadySoft Commodore 64 emulator, so if you own it, use it. If you don't, you'll find a electric scheme to build it yourself.

If you like you can

order
a cable from the author.

If you own the special IEC cable by Christian Bauer, used by the Frodo C64 Emulator, you can use it but you have to install the special "f" version of my iec.library. Refer to the
installation
chapter for further information.

I tested several Commodore drives, and all worked:

- Commodore 1541 Dark Grey
- Commodore 1541 Light Grey
- Commodore 1541-II

I tested them in conjunction with the following Amiga's:

- Amiga 4000/40 OS 3.1
- Amiga 500 OS 2.04

If you find some incompatibilities please report them to the author.

1.5 TO INSTALL EASY1541 IS EASY.

INSTALLATION

To install Easy1541, just copy the file libs/iec.library in your libs:
directory.

If you plan to use a Frodo Cable (the one used by the C64 Frodo Emulator by Christian Bauer), you have to copy the proper iec.library version:
libs/frodo/iec.library

Now you can use the
ToolKit
commands. If you like you can copy them in your
c: directory.

If you like to write an installation script (using the standard Commodore installer), please do it and send it to me. I'll include it in the next Easy1541 release!

Thank you.

1.6 HOW TO USE THE PROVIDED COMMANDS

EASY1541 TOOLKIT

Several useful commands are provided with Easy1541 and constitute the fundamental toolkit. You'll find them in the root of the installation directory (usually "Easy1541"). They are listed below:

IECCmd

IECDir

IECLoad

IECReadD64

IECSave

IECStatus

IECUnit

IECWriteD64

These commands allow you to accomplish all the basic operations working with a Commodore 1541 drive. ←

At least a brief knowledge of the main commands and of the functional character of a Commodore 1541 Drive are required to use Easy1541.

For advanced (e.g. low-level) management of a 1541 unit or CBM DOS disks, you need to take advantage of the iec.library.

Note: don't issue any command to the 1541 if it is turned off. This will lock up the Amiga!

1.7 HOW TO SEND A COMMAND TO THE 1541

IECCmd

Format: IECCmd <command> [device]
Template: COMMAND/A,DEVICE/N
Purpose: To send a command string to the 1541 Drive

Specification: IECCmd is used to issue a command to the 1541 Drive Unit through the Command Channel (15). Commands must be in standard 1541 format and UPPERCASE. If you use special characters as space (), equals (=), plus (+) and other, you must enclose the entire command string within double quotes. [device] is the ID number (usually 8) of the 1541 drive connected to the Amiga. If no device is given, IECCmd send the command to the drive unit 8. A list of useful 1541 Commands 1541CMD} is included.

Examples:

```
1> IECCmd I
```

Initializes disk driver 8 to power up condition. A disk must be inserted.

```
1> IECCmd "N:TEST,AA"
```

formats the disk in the drive unit 8. The disk name will be "TEST" and the DiskID AA.

```
1> IECCmd "S0:PROVA" 9
```

erases files PROVA, from disk in drive unit 9

Be careful using commands. IECCmd asks no confirm.

Using Commodore Basic 2.0, this is the same of:

```
OPEN 15,<device>,15,"<command>" : CLOSE 15
```

1.8 THE 1541 COMMANDS QUICK REFERENCE

1541 Commands

I	Initialize Initializes disk driver to power up condition
N	New Formats new disk or re-formats used one
S	Scratch Erase a file or files from the disk
C	Copy Duplicate an existing file
R	Rename Change the name of existing file

V

Validate
Removes wasted spaces on disk

1.9 INITIALIZE

Initialize

PURPOSE: Initializes disk driver to power up condition.

FORMAT: IECCmd "I"

Sometimes, an error condition on the disk will prevent you from performing an operation. INITIALIZE returns the disk drive to its original state when power is turned on.

1.10 NEW

New

PURPOSE: Formats new disk or re-formats used one.

FORMAT: IECCmd "N0: disk name, id#"

This command formats a new disk. It is also useful to erase an already-formatted disk, as it erases the entire disk, puts timing and block markers on, and creates the directory and the BAM. The disk name is for user convenience while the id# is a 2 digit alphanumeric identifier that is placed in the directory a every block on the disk. If you switch disks while writing data, the drive will know by checking the id#.

EXAMPLES: IECCmd "N0: TEST DISK, A1"

IECCmd "N0: MY DISK, MY"

If the disk needs erasing but not reformatting, the same command is used, but leave out the id#.

EXAMPLE: IECCmd "N0: NEW INFO"

1.11 SCRATCH

Scratch

PURPOSE: Erase a file or files from the disk.

FORMAT: IECCmd "S0: filename"

This command erases one or more files from the disk, making room for new or longer files. Groups of files can be erased at one time by naming all of them in one scratch command.

EXAMPLES: IECCmd "S0: TEXT" (erases file called TEXT)

IECCmd "S0: TEXT, 0:TEST, 0: MUSIC"
(erases files TEXT, TEST and MUSIC)

1.12 COPY

Copy

PURPOSE: Duplicate an existing file.

FORMAT: IECCmd "C0:newfilename=0: oldfilename"

COPY allows you to make a copy of any program or file on the disk. The new file's name must be different from the old one. COPY can also combine up to four files into one new one.

EXAMPLES: IECCmd "C0:BACKUP=0: ORIGINAL"

IECCmd "C0: NEWFILE=0: OLD1,0: OLD2,0"
(combines OLD1 and OLD2 into NEWFILE)

1.13 RENAME

Rename

PURPOSE: Change the name of existing file.

FORMAT: IECCmd "R0: newname=0: oldname"

This command lets you change the name of a file once it's in the disk directory. RENAME will not work on any files that are currently open.

EXAMPLE: IECCmd "R0:GOODNAME=0: DUMBNAME"

1.14 VALIDATE

Validate

PURPOSE: Removes wasted spaces on disk.

```
FORMAT: IECCmd "V0:"
```

After a disk has had many files saved and erased, small gaps in the data begin to accumulate and waste memory space on the disk. VALIDATE reorganizes your disk so you can get the most memory from the available space. Also, this command removes files that were OPENed but never properly closed.

CAUTION! VALIDATE erases random files. If your disk contains random files, DO NOT use this command!

1.15 HOW TO DISPLAY A DIRECTORY

```
IECDir
-----
```

```
Format:      IECDir [device]
Template:    DEVICE/N
Purpose      To display the list of files in a disk
Specification: IECDir displays the file names contained in the
current disk inserted in the drive. If no device is given, IECDir
displays the directory of the disk inserted in drive unit 8.
```

Examples:

```
1> IECDir
```

Displays a list of files contained in the disk inserted in drive unit 8

```
1> IECDir 9
```

Displays a list of files contained in the disk inserted in drive unit 9

```
-----
Using Commodore Basic 2.0, this is the same of:
```

```
LOAD "$",<device>
```

```
LIST
-----
```

1.16 HOW TO COPY A FILE FROM 1541 TO AMIGADOS

```
IECLoad
-----
```

```
Format:      IECLoad <name> [ [TO] <newname>] [device]
Template:    FROM/A,TO,DEVICE/N
Purpose      To copy a file from 1541 to AmigaDos
Specification: IECLoad copies the file specified with the <name>
argument from the disk put in the 1541 drive to the current AmigaDos
```

directory. If <newname> is given, IECLoad copies the file to the AmigaDos file and directory specified. If no device is given, IECLoad copies the file from drive unit 8. On 1541 disks, filenames are up to 16 characters long and case-sensitive (and usually they are uppercase).

Examples:

```
1> IECLoad TEST
```

copies file "TEST" from disk inserted in 1541 drive unit 8 to current AmigaDos directory.

```
1> IECLoad TEST RAM:test.c64 9
```

copies file "TEST" from disk inserted in 1541 drive unit 9 to AmigaDos directory RAM: using the name "test.c64".

1.17 HOW TO READ A 1541 DISK IMAGE

IECReadD64

```
-----
Format:      IECReadD64 <filename> [device]
Template:    TO/A,DEVICE/N
Purpose      To create a
              D64
              image from the disk in the 1541 drive
Specification: IECReadD64 creates a disk image in
              D64
              format
              from the disk inserted in the drive 1541.  If no device is given,
IECReadD64 generate the image from drive unit 8.
```

Examples:

```
1> IECReadD64 test.D64
```

Create a

D64

image named "test.D64" from the disk inserted in drive unit 8

```
1> IECReadD64 test.D64 9
```

Create a

D64

image named "test.D64" from the disk inserted in drive unit 9

1.18 HOW TO COPY A FILE FROM AMIGADOS TO 1541

IECSave

Format: IECSave <name> [[TO] <newname>] [device]
Template: FROM/A,TO,DEVICE/N
Purpose To copy a file from AmigaDos to 1541
Specification: IECSave copies the file specified with the <name>
argument from AmigaDos to the disk put in the 1541 drive. If <newname> is
given, IECSave copies the file to the 1541 using the name specified. If
no device is given, IECSave copies the file to drive unit 8.

Examples:

```
1> IECSave TEST
```

copies file "TEST" from current AmigaDos directory to disk inserted in 1541
drive 8.

```
1> IECSave ram:test.c64 TEST 9
```

copies file "test.c64" from AmigaDos directory RAM to disk inserted in 1541
drive unit 9 using the name "TEST".

```
1> IECSave ram:test.c64 @0:TEST
```

Overwrite file "TEST". You need to put "@0:" before the filename, to
overwrite files on the 1541. Don't use @: (without the 0) due to an odd bug
of some Commodore Drives.

1.19 HOW TO DISPLAY THE STATUS OF THE DRIVE 1541

IECStatus

Format: IECStatus [device]
Template: DEVICE/N
Purpose To display the status of the drive 1541.
Specification: IECStatus displays the status message of the 1541
drive. If no device is given, IECStatus display the status of the drive
unit 8.

Examples:

```
1> IECStatus
```

displays the status message of the drive unit 8

```
1> IECStatus 9
```

displays the status message of the drive unit 9

1.20 HOW TO CHANGE THE DRIVE UNIT NUMBER

IECUnit

Format: IECUnit <newdevice> [device]
 Template: NEWDEVICE/N/A, DEVICE/N
 Purpose To change the drive Device Number
 Specification: All drives need an unique device numbers so the computer can identify which one you want to transfer data to or from. Normally the 1541 drive is preset inside the hardware with a device number of 8, drive number 0. The disk knows its own device number by looking at a hardware jumper on the circuit board and writing the number based on the jumper into a section of its RAM. Using IECUnit you can change the DeviceNumber.
 First, turn on one drive and change its device number, then the next drive, until all the drives are on.

Examples:

```
1> IECDir 9
```

Changes the device number of drive 8 to 9

```
1> IECUnit 10 9
```

Changes the device number of drive 9 to 10

 Using Commodore Basic 2.0, this is the same of:

```
OPEN 15,<device>,15
PRINT15,"M-W:"CHR$(119)CHR$(0)CHR$(2)CHR$(<newdevice>+32)CHR$(<newdevice>+64)
CLOSE 15
```

1.21 HOW TO WRITE A D64 FILE TO A 1541 DISK

IECWriteD64

Format: IECWriteD64 <filename> [device]
 Template: FROM/A,DEVICE/N
 Purpose To write a
 D64
 file to the disk in the 1541 drive
 Specification: IECWriteD64 writes a disk image in
 D64
 format
 to the disk inserted in the 1541 drive. The disk have to be formatted

before. If no device is given, IECWriteD64 writes the disk image to the drive unit 8. Writing a disk image, you erase all the previous contents of the disk.

Examples:

```
1> IECWriteD64 test.D64
```

Writes the

D64

image "test.D64" to the disk inserted in drive unit 8

```
1> IECWriteD64 test.D64 9
```

Writes the

D64

image "test.D64" to the disk inserted in drive unit 9

1.22 D64? WHAT IS THIS?

WHAT ARE .d64 DISK IMAGES?

.d64 files are the sector-by-sector contents of a Commodore 1541 formatted disk.

These files are commonly used by PeeCee C-64 emulators to store C-64 files, and to xfer 1541 disks into a convenient method of storage for use by the emulators. The Amiga C64 Emulator "Frodo" by Christian Bauer supports D64 images.

1.23 MY IRON-SOLDER IS HOT!

THE CABLE

IMPORTANT

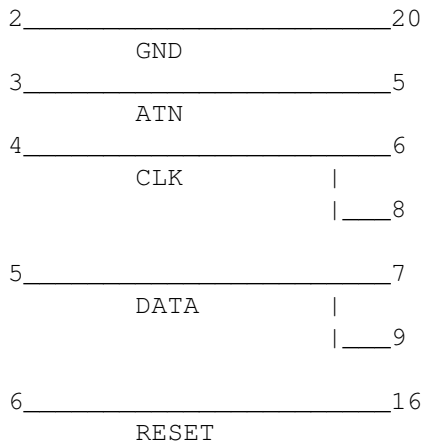
If you already own a "Frodo IEC Cable", you can use it! Just install the special "libs/frodo/iec.library" version!

To build a cable to connect the Amiga to a Commodore 1541 is fairly simple. It connects the parallel port of the Amiga with the round 6-pin connector on the drive 1541.

Simply connect the pins 2, 3, 4, 5 and 6 of the serial 1541 connector to the pins 20, 5, 6, 7, and 16 of the parallel Amiga connector respectively. Don't forget to connect the pin 8 to the pin 6 and the pin 9 to the pin 7, both on the Parallel Amiga connector side. That's all! No electronic components are required!

If you are not skilled in building cables, you can
 buy
 it directly from
 the author.

Serial 1541	Parallel Amiga
male connector	male connector
6-pin DIN	25-pin DSUB



Important note: If you plan to build and connect such a cable, please remember that you do it on your own risk. I will not take any responsibility if there is blue smoke coming out from the back of your computer!

1.24 ARE YOU A PROGRAMMER? I'M A PROGRAMMER!

THE IEC.LIBRARY

Easy1541 is the first Amiga<->1541 interface including support for developers. A special `iec.library` allows you to write your own program to manage the Commodore 1541 Drive. The `iec.library` provides the interface to the 1541 for C, assembly, and other programming languages. It is an Exec-style library that - like all shared libraries - must be jumped to with A6 holding the pointer to the base address of the library. You can find the description of all the public functions in the "`dev/iec.guide`" file of your Easy1541 directory. The `iec.library` follows the CBM Kernal calling convention. It reproduces the same serial bus functions of the Kernal ROM you can find in the 8-bit Commodore computers.

This make simple to apply old 8-bit Commodore procedures or routines to the Amiga. Isn't this Easy1541?

All the provided utilities of the

Easy1541 Toolkit
use the iec.library, and
the C sources are available in the "dev/examples/" directory.

Please refer to the iec.library Autodocs for further information.

1.25 COMMODORE... THE NAME BECAME HISTORY!

1.1.1 (15-Oct-1996)

Another annoying maintenance upgrade... "IECWriteD64" 1.1 didn't work properly. Fixed now.

1.1 (06-Oct-1996)

Fixed a little bug in the timer routine. Now Easy1541 works fine on 68000 based machines (A600, A500...) and doesn't generate "Enforcer Hits" anymore.

Now, the CIA timer is released each time a call to CloseLibrary() occur. This improve compatibility with other programs like "PlaySid".

Two tasks can't share iec.library anymore. This produced odd bugs.

Toolkit commands "IECReadD64", "IECWriteD64" and "IECDir" now handle Ctrl+C break sequence better (they didn't closed the iec.library).

1.0.1 (17-Sep-1996)

This is only a maintenance upgrade. I forgot to put the IECLoad command in the previous release and now it is finally available. I improved the docs adding a 1541 Command list too.

1.0 (26-Aug-1996)

This is the first Easy1541 release... I started this project in the early 1995, but I met with several difficulties sending data from the Amiga Parallel port to the 1541. Finally, on June 1996, a full working version of my Amiga->1541 code was on my Hard Disk, so I started to write the library and to create the Easy1541 package.

Expect great things from the future...

1.26 WHO ARE YOU? - SAID THE CLERK OF THE COMMODORE HQ

THE AUTHOR

Who am I?

My name is Fabrizio Farenga, and I'm a loyal Commodore user and programmer since years... I started using a little Commodore 16, and I proceeded in the yers buying a Commodore 64, a Commodore Amiga 500, and a Commodore Amiga 4000.

Currently I'm a Commodore computers collector, and I own several 8-bit models, pheriperals and other Commodore things. If you are interested visit my internet home page. If you have old Commodore things or documents about Commodore, and you want to trade or sell them, please contact me!

I'm Technical Editor of the Italian "Amiga Magazine", Amiga Editor of "K Magazine" and Director of Holodream Software (r), but mainly, I'm the Software Developer Manager of the Grapho Marketing & Communications company.

On the 1992 I written "Top Wrestling" (Amiga) for the Italian Software House "Genias", and in 1993 "F17 Challenge" (Amiga and CD32) for the British Team 17 Software.

I like very much code on old Commodore machines. I think this keep them alive... If nobody write new code for a computer it is dead! I just bought a Commodore Vic 20 Reference Programmers Guide and an 3K expansion cartridge. So I'll start to write code for the Commodore Vic 20 too.

Future plans include to write a turbo for Amiga<->1541 communications, and a full AmigaDOS device to use the 1541 as a standard Amiga diskdrive. I'd like to connect a Commodore Datassette(tm) to the Amiga too.

If you like to contact me, to exchange ideas, to report bugs, or just for fun, please use one of the following address:

email - f.farenga@agora.stm.it

World Wide Web - <http://www.agora.stm.it/F.Farenga>

Snail Mail - Fabrizio Farenga
Via C. De Fabritiis 55
00136 Roma
ITALY

Fax - +39/6/6869648

If you want to buy a Easy1541 cable,
[click here](#)

I would like to thank the following people:

Christian Bauer
for the many hints and good suggestions

The Unknown Ready Soft Programmer

for the cable and the old "A64 Transfer"

Francesco Simula

for the moral support during the debugging sessions and for the proof reading of this document

The Commodore Engineers

for the Commodore 8-bit technology

The following guys for bug reports and useful suggestions!

Richard Smedley

Enrico Vidale

1.27 SO, YOU ARE NOT A SKILLED TECHNICIAN?

HOW MUCH IS IT FOR A CABLE?

If you don't like to build a cable yourself, I can do it for you. You'll have to pay only for the cable components and for the shipping.

The cable is not expensive, and as soon as I'll receive your money, I'll send the cable back to you in few days.

The standard prices are the following:

- 10,000 Italian liras for Italy
- 10.00 US Dollars for Europe (except Italy)
- 15.00 US Dollars outside Europe

Please note:

I DON'T MAKE MONEY SELLING CABLES. THE COSTS ABOVE COVER STRICTLY THE COMPONENTS AND THE SHIPPING.

HOW CAN I ORDER A CABLE?

The easier and cheaper method is to put the exact amount in an envelope (e.g. a \$10 banknote), together with your full address. Please state clear what Amiga system you own and that you want a Easy1541 cable.

Note:

In some country is illegal to put money in an envelope and to mail it, so you do this at your own risk. Put the banknote inside a folded paper, so nobody knows what you're sending.

Send money to:

Fabrizio Farenga

Via C. De Fabritiis 55

00136 Roma

ITALY

If you want to use a different way of payment, please contact me:

Email: f.farenga@agora.stm.it

1.28 "

1.29 unnamed.1

1.30 unnamed.2
