

Hyper+ XF 1.0 MANUAL. (+ ROM)

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Hyper+ XF 1.0 MANUAL (c) 1998 S.Dorndorf

Note: this german to english translation was done with the help of BABELFISH. So there are quite many errors and mistakes, as well as non-translated german words. I was much to lazy to translate it all by hand or to correct the full Babelfish text. Thus, give it a good laugh when reading this sometimes funny translation...

(Laufwerk=drive, M?glichkeit=possibility, Unterst?tzung=support, n?chste=next, f?r=for, L?nge=length, mu?=must, etc. etc.)



1 introduction

The Hyper-XF ROM 1.0 is an upgrade for the ATARI floppy disk drive XF551. There are two versions: a) Hyper-XF 1.0A for the original XF with 5,25"drive and b) Hype-XF 1.0B for converted XF with 3,5" drive. After the installation, which is very simple, lots of additional functions are aivalable:

- quicker floppy Speeder (ultra speed and hyperspeed)
- bootable hyperspeed driver in the ROM
- partition administration (four partitions on a 3,5"-disk)
- inserted boot menu to boot of partitions and shop the hyperspeed driver
- improved double Density recognition
- command for reading from ATARI ST or PC double Density disks
- commands for TRACK analysis
- command for formatting arbitrary special format (known as sector skewing)
- commands for copying copyprotected disks
- possibility for the installation of an automatic density recognition (similar to the 1050 floppy)

Furthermore, the many small errors of the original-XF551-ROM were eliminated. The Hyper-XF always writes without Verify to disk. The Verify is anyway very slow and therefore used by no more DOS. It is unfortunately not possible to format in High Density.

After switching on the Hyper-XF behaves in the same way like the normal XF551 OS, but it gives the following differences:

- the Hyper-XF recognizes double Density disks during the reading now also

- disks can be formatted, read and written in all three densities (single, medium and double), as well as 360k and 720k.
- now supports ultraspeed and hyperspeed instead of XF highspeed.



2 Installation of the Hyper-XF ROMs

The Hyper-XF ROM is present on an 8KB-EPROM-Chip and is a replacement for the original ATARI XF ROM. Right on the label of the Hyper-XF ROMs you can read the version number: A is meant for 5,25" drives and B for 3,5" drives. Never use the B-version with a 5,25" drive!!

To the installation you go forwards as follows (for the change in a 3,5"drive see also chapter 3):

- unscrew the four screws on the lower surface of the XF
- take off plastic top of the XF
- unscrew the four screws, which connect the metal angle of the 5,25" drive with the the XF lower part
- lift the drive assembly carefully to the side, so you can see a chip with 28 pins
- if needed take off the flat cable (but remember the polarity!)
- lever the chip with the 28 pins with a screwdriver carefully from its base
- put the Hyper-XF ROM into the base; NOTE: Do not touch the pins of the ROMs with your fingers, to avoid magnetic polarity (and possible destruction of the chips);

The notch at one of the narrow sides at the Hyper-XF ROM must fit to the drive assembly front show. Wrong installation may cause malfunction or even destruction of the ROM. - now install the drive assembly again and bolt on - check whether the flat cable at the drive assembly sits correctly - then take the plastic top again and fit it to the drive and again bolt on. Thus the installation is completed.

For a test stick on the cables to the XF551 and switch the XF on. Whenswitching on, the write head should move a little inward and again moveoutward, if not an error is present. Setup the XF with the rear left DIP switches to drive number #1 (both switches down) and then switch the drive and right afterwards the ATARI XL/XE on (without a disk in the XF). If the boot Menu with the copyright notice appears, the Hyper-XF is fully operational.



3 changes for a 3,5" drive

The XF551 can be changed easily to a 3,5" drive. Therefore you will need the following things:

- a 3,5" drive (approx. 20 Dollars / 24 Euros)
- a 5,25" mounting case for 3,5" drives (approx. 3 Dollars, 4 Euros)
- a current cable connection to convert the standard 5,25" drive cable for the 3,5" drive

- possibly a longer flat cable for the 3,5 drive (approx. 20cm);

NOTE: When purchasing a 3,5" drive pay attention, that the drive configures as drive A: (not B:), otherwise you may have to change a jumper in the drive assembly change, so that the XF functions correctly.

The installation turns out as follows:

- the 3,5"-Laufwerk with the 4-6 provided screws at the bay fasten
- the four screws at the lower surface of the XF551 unscrew
- Geh?usedeckel take off
- the flat cable and the current supplying us cable of the 5,25"
- Laufwerk take off (note polarity before)

- the four screws, which hold the 5,25"
- Laufwerk at the metal angle, unscrew and the 5,25"
- Laufwerk away-put
- now the hyper+ XF ROM 1.0B into the XF to build, see chapter 2.
- the 3,5"-Laufwerk with the four screws to the metal angle fasten
- which inserts put on the Anschu?leiste in the back at the 3,5"
- Laufwerk - the flat cable on the insert put

NOTE: Polarity absolutely consider: The red marked cable at the flat cable mu? on the Anschlu?beinchen 1 of the 3,5"-Laufwerks to be put. The Beinchen 1 is mostly marked by " 1 " on the 3,5"-Laufwerksplatine. - the current cable connection to the current supplying us cable f?r the 5,25"-Laufwerk attach and to the 3,5"-Laufwerk anschlie?en. This is only in a polarity m?glich, thus no force uses. - Geh?usedeckel on present and bolt. Thus the change is completed, for a test proceed as in chapter 2.



4 Ultra speed

The Hyper-XF uses Ultra speed, which alters the Baud rate between the computer and the drive from 19200 bps (standard) to 57600 bps (ultra/hyper speed), which is even faster than XF highspeed (with 38400 bps). Ultra speed is also used by Happy 1050 and Speedy 1050 enhancements and has become a de-facto standard in the ATARI 8bit world. Thus ultra speed is supported by most XL/XE OS extensions (e.g. QMEG-OS, SPOS, US+OS, etc.) and many DOS versions (e.g. XDOS, Bibo DOS, Turbo-DOS XL/XE, Sparta DOS, Super DOS, etc.). So the XF becomes three times faster than in normal operation mode.

For the utilization of the high data transfer however, disks must be formatted (as with the normal XF551 or USD) in a special "sector skewing format". This happens automatically, if the OS or the DOS sends the formatting command in Ultra speed to the drive assembly (the QMEG-OS 4.04 does). Otherwise you should use a program, which permits it, to use ultra speed and formats with sector skew (for Sparta DOS you can use XINIT.COM).



5 Hyperspeed

If you use no OS or DOS with ultra speed support, you can also use hyperspeed to begin. Hyperspeed is just as quick as Ultra speed, it has however two advantages: First, many DOS versions with XF551 support can be patched easily for the use of hyperspeed. Second, the Hyper-XF menu already contains a hyperspeed driver, which can be loaded before a disk is booted with the ATARI. Simply boot your computer without a disk in the drive (the Hyper-XF should be setup as drive 1). The following menu appears on the screen:

Hyper+ XF 1.0x (C) S.Dorndorf

Mode=X ABCDMFSX

Boot? E16

Now insert a disk and press one of the indicated keys of the menu besides "BOOT?": (1) the hyperspeed driver is loaded and booted in the RAM of the XL/XE on the upper half of PAGE 1 (\$100-\$17f) and the disk loads with hyperspeed. (6) corresponds to (1), the hyperspeed driver however is loaded into the upper half of PAGE 6 (\$600-\$67f) and the disk loads with hyperspeed. (ESC) The inserted disk is booted normally without any hyperspeed driver. The indicated BOOT ERROR is intended, because it represents the only way to arrange the ATARI to boot off the inserted disk.

The program loaded from the disk may overwrite the hyperspeed driver in the memory on PAGE 1 or PAGE 6. In this case the computer will lock up and crash. Try simply both variants out, normally functions (1). With (6) quite many programs will crash, which do not adhere to the ATARI guideline, to keep PAGE 6 free for the user.

For formatting apply the same rules like for Ultra speed: For the utilization of hyperspeed the disks must be particularly formatted. This happens automatically, if the formatting command is sent by the DOS in hyperspeed (the DOS Patches mentioned above to do all this).



6 diskette format

The Hyper+ XF understands by the standard formatting command, which each DOS uses, altogether 12 different formats:

It can be formatted in single Density (SD), medium Density (MD) or double Density (dd). All formats can be produced alternatively on one side or bilaterally: With the one-sided format also with 3,5"-Laufwerken only 40 TRACKS are formatted, always formatted with the bilateral format the whole disk. Additionally can be formatted each format in the normal variant or in the Ultra speed variant.

With 3,5"-Laufwerken it is better to use DD disks to HD disks functions, if the HD hole is sealed, it also can however more often to read errors occur (so far I had itself still no problems).

In High Density (1,4MB) cannot be formatted.



7 Density recognition

The Hyper+ XF recognizes additionally during the reading of a sector the density of the inserted disk. If you call with a DOS without XF Unterst?tzung after a disk change of SD or MD on dd or turned around the directory, then folds only with the second attempt. Changing from SD on MD or goes in reverse problem-free, since the Sektorl?nge does not depend itself. With DOS version, those with the sector 1

(Sparta DOS) give it against it no problems with the Density recognition read a open file.

The hyper+ XF offers however the possibility to insert a contact at the drive assembly flap so there? the Density recognition as with the 1050 fully automatic functions. To the installation mu? however in the XF to be gel?tet: Pin 35 of the 8040/8050 (the chip with the 40 pins) into the XF more?ber a tracer with mass (e.g. pin 14 of the 1772 or the pin 20 of the 8040/8050) connect. The tracer mu? in the drive assembly mechanism so to be fastened, there? the tracer is closed, if the drive assembly lever is open. Suitably f?r 5,25"-Laufwerke is e.g. the mushroom head tracer Best NR. 704687 from the offer of Conrad.



8 partitions and operatings mode

The hyper+ XF offers altogether eight different operatings mode, which specify like the hyper+ XF disks access. To?ndern the operating mode boats it the hyper+ XF without disk, on what the boat Men? appears.

Right beside " MODE= " the up-to-date stopped operating mode stands. By Dr?cken one of the keys ABCDMFSX is ge?ndert the mode. With the keys ESC (or 1 or 6) then an inserted disk can be gebootet.

There are the following operatings mode:

Mode X: (XF mode) this mode is active after switching on of the hyper+ XF on. It corresponds to the normal XF551-Betrieb.

Mode S: (ST /PC /HDI standard mode) serves for the access to double-sided disks in the old standard format, as it is used e.g. by the HDI. In this mode disks do not k?nnen in the ST or PC format to be read, letters go however also with special command. The s-mode differs from the x-mode only by the format on the backside of the disk (the XF551 stores the sectors on the backside " wrongly around ", e.g. the current sector 721 in the s-format on TRACKS 0, sector 1, in the x-format against it on TRACK 39, is sector 18 with a 5,25"-DD-Disk).

NOTE: The hyper+ XF does not pr?ft after, in which mode a disk was formatted. Use therefore the mode S only, if absolutely needed (in order e.g. one with the HDI formatted double-sided DD disk to read) and you switch thereafter immediately back into the x-mode.

Mode M: (multi) in this mode the XF divides the inserted disk in partitions. On each partition you can contents of a

5,25"-Diskseite (alternatively SD, MD or dd) accommodate and with each DOS work on. With 5,25"-Disketten two partitions (A and B) are available, whereas four partitions (A, B, C and D) are available with 3,5"-Disketten.

On the partitions you can work with ascending drive numbers access (depending on the switch attitude in the back on the drive assembly). E.g. if the XF is adjusted as drive assembly #1, then become with a 3,5"-Laufwerk with D1: to D4: the partitions A to D addressed. Become accordingly with 5,25"-Laufwerken of either D1: and D2: the partitions A and B addressed. Quasi two and/or four drive assemblies stand to the Verfügung, which is zusammengefaßt on a disk.

Thus you can work with each DOS on the entire disk access, especially the partitions can also in densities to be formatted. Or you copy with a disk copier, which allows the selection of several drive numbers, which data disk side of " Alternate Reality - The Dungeon " on a 3,5"-Disk together, which makes diskette changeoverflüssig when playing. NOTE: Under the drive number for the partition A (D1: in the above example) you can also exactly as in the mode X on the whole disk access. Thus a h?ufiger change between the modes X and M is avoided. If you want to format all partitions in the same density, can instead also the drive assembly for the partition A on both sides to format, goes more quickly. The hyper+ XF cannot recognize partitionierte disks automatically. They must thus even pay attention not to write e.g. to partition B if one not partitionierte disk is inserted.

Mode F: (format multi) mode corresponds to M, however the hyper+ XF tests automatically with each partition change the density of the partition. It ermöglicht to also change without special software between differently formatted partitions. NOTE: With differently formatted partitions an inserted contact at the drive assembly flap is set for automatic Density recognition au?er combat, since the disk was not changed.

Mode A,B,C,D: (partition mode) hereby can be accessed under the drive number stopped in the back at the drive assembly the appropriate partition A to D. With 5,25"-Laufwerken C and D correspond to the partitions A and B. are e.g. the XF as drive assembly #1 adjusted, have you hereby the M?glichkeit, each gew?nschte partition to boats.



9 SIO commands

In the following chapters all SIO commands of the hyper+ XF are explained. This is above all for a programmer with machine language

knowledge interesting, which writes utilities for the hyper+ XF
machine.

Zunächst some Erläuterungen: A diskette side has 40 tracks (TRACKS)
(with 3.5": 80 TRACKS). Each TRACK is normally divided for his
part when formatting in 18 sectors (with MD there is 26 sectors).

Logical TRACK and Sektornr: The logical TRACK No. goes from 0 to 79
(3.5": from 0 to 159). The logical TRACK No. is more greater than
39 (3.5": more greater than 79) the hyper+ XF accesses automatically
on the correct TRACKS on the second disk side. The logical sector
No.

corresponds in the s-mode to the physical sector No., in all other
modes is always however the sectors (and the TRACKS) on the
Diskrückseite " wrongly around " put down, in order to be compatible
to the Original-XF551. E.G. for SD and dd apply: The sector 1
corresponds to the physical sector 18, sector 2 corresponds to that
physical sector 17 etc.. The hyper+ XF expects TRACK and sector data
always logically, with which conversions are not necessary on the
part of the programmer.

current Sektornr: The normal numbering of all sectors
starting from 1. It applies for to SD and dd the following
conversion, for MD must the 18 by 26 to be replaced: $lfd.Secnr =$
 $log.Tracknr * 18 + log.Secnr$

In the following for all SIO commands become in each case - the
command byte (\$302), - the I/O Datenrichtung (\$303: 0=No DATA,
\$40=receive, \$80=send), - the number of the data byte (\$308/9) and -
the AUX1/AUX2-Bytes (\$30a/b) indicated:



10 XF551-Kommandos

Command: R (\$52) function: (READ second gate) DATA I/O read sector:
Receive 128/256 byte AUX1: current Sektornr. (Low byte) AUX2:
current Sektornr. (High byte) or AUX1: logical Tracknr. AUX2:
\$\$C0 plus logical Sektornr. or AUX1: logical Tracknr. AUX2: \$\$FF
(reserve sector reads) reads the indicated sector of disk. 128 (with
SD and MD) or 256 bytes (with dd) is sent to the computer. With the
current sectors 1 to 3 also in dd only 128 byte is sent.

The gewünschte sector can be indicated also in form of the logical
TRACK and sector No. (AUX2>=\$C0). Is AUX2=\$FF becomes sucked.
Reserve sector (see e-command) of the indicated TRACK read. The
AUX2-Werte \$\$FC to \$\$FE is for internal functions (boat Men?) the
hyper+ XF reserves.

Command: P (\$50) function: (PUT second gate) DATA I/O write sector:
Send to 128/256 byte) AUX1/2: as is the case for command R

Writes the data on the indicated sector on disk. Corresponds to the ansonstem R-command.

Command: W (\$57) function: Sector write (Write second gate) corresponds to the p-command.

Command: S (\$53) function: DATA I/O read status: Receive 4 byte
AUX1: without meaning AUX2: Density check level: " = status only (no check) " T " (\$54) = test engine (check only, if engine out) "U" (\$55) = Unconditional (check in any case) otherwise = check on error (check only in the case of error)??ber AUX2 one can indicate S " (\$53) whether and in which case the hyper+ XF the density of the inserted disk is to pr?fen. This is interesting if no Density recognition is built into the drive assembly. The drive assembly sends 4 bytes, which contain the momentary status of the drive assembly:

1.Byte = DRIVE status

Bit 0: Last command incorrectly bit 1: Last data block incorrectly
bit 2: Last disk read/write access incorrectly bit 3: Disk write protected bit 4: Engine still works bit 5: Double Density bit 6: next formatting instruction formats on both sides bit 7: Medium Density

Bit 3 is valid only if with the last disk access the wanted sector on the disk were present. Bit 6 can be set more?ber the o-command and after everyone of the six commands RPWutc is set back, in order to avoid false formatting.

2.Byte = status of the floppy CONTROLLER (FDC) bit 0: / BUSY CONTROLLER works still bit 1: / DRQ service request of the FDC unanswered bit 2: / LD CONTROLLER data went lost bit 3: / (carriage return character) checksum-error bit 4: / RNF sector not found bit 5: / blank record type " Deleted " bit 6: / WP write-protect bit 7: / OPEN no disk in the drive assembly

This byte indicates, which errors arose with the last access to a disk sector. All bits are Low active. Bit 7 is g?ltig only if the automatic Density recognition were built into the XF. Hier?ber can be queried also the most diverse error sector, the following variants are m?glich:

\$\$FF OK \$\$FB LD \$\$F7 (CARRIAGE RETURN CHARACTER) \$\$F3 LD+CRC \$\$DF BLANK \$\$DB LD+RT \$\$D7 RT+CRC \$\$D3 LD+CRC+RT \$\$EF RNF \$\$E7 RNF+CRC

3.Byte = Timeout value for formatting (\$\$D9) this byte can be also used, in order to query whether the addressed drive assembly is a

hyper+ XF. Furthermore stands for Ultra and High speed in the lower four bits the SIO Transferrate f?r (see also the?-command).

4.Byte = operating mode and type of drive assembly

Bit 7: reserved (always 0) bit 6: 0 = 5,25"-Laufwerk 1 = 3,5"-Laufwerk bit 5: reserved (always 0) bit 4: With the next disk access Density checks execute bit 3: reserved (always 0) bit 210: Operating mode: ABCDMFSX value: 01234567

Bit 4 is set whenever with the last disk access the wanted sector is not found. That can happen only if the sector is defective, is not formatted the disk or no disk lies in the drive assembly. With the s-command a Density check is executed if AUX2 is not equal to " S ".

Command: (\$21) Function: Disk/partition in SD or dd formats DATA I/O: Receive 128/256 byte AUX1/2: without meaning

Formats a disk and/or a partition - depending upon adjusted operating mode.

The density (SD or dd) and the page number (one-sided/bilateral) must be adjusted before the o-command to be adjusted. If the density is adjusted to MD, in SD one formats. It is always formatted with Verify, in order to recognize incorrect disks equal when formatting.

Command: " (\$22) function: DATA I/O format disk/partition in MD: Receive 128 byte AUX1/2: without meaning

Always formats the disk in MD. The side's number must be adjusted with the o-command to be adjusted. Corresponds otherwise to the!-command.

Command: N (\$4e) function: Vintages of the Config block (IN PUT Config block) DATA I/O: Receive 12 byte AUX1/2: without meaning

The 12 byte of the PEROM config. table is sent to the computer, which was adjusted last more?ber the o-command:

Byte 0: TRACK amount of (40 and/or 80) byte 1: Step rate in ms (6 and/or 3) byte 2: Sectors for each trace REAR ONE (always 0) byte 3: Sectors for each trace LO (18 and/or 26) byte 4: Side amount of (0 or 1) byte 5: Formatting procedure (0=FM, 4=MFM) byte 6: Byte for each sector REAR ONE (0 or 1) byte 7: Byte for each sector LO (128 or 0) byte 8: Drive assembly actively (always 255) byte 9-11: unused (always 0)

Command: O (\$4f) function: (output Config block) DATA I/O write Config block: Send 12 byte AUX1/2: without meaning

The 12 bytes of the Config block are sent to the drive assembly. For the meaning of the bytes see n-command. The o-command is used, over before formatting with the commands! to adjust and " the density and

side's number correctly. The hyper+ XF determines the format from the bytes 5, 6 and 7, all other bytes is ignored. Nevertheless the bytes 0 and 2-7 should be always set.

After executing one of the commands RPWutc is always set the byte 5 of the Config block zur?ck to 0. Thus one avoids, there? a disk is formatted on both sides by mistake. Byte 5 does not have influence on reading and writing from disk sector.



11 speed Y-command

Command: (\$3f) Function: DATA I/O read SIO speed byte: Receive 1 byte AUX1/2: without meaning

A byte is sent to the computer (\$09), with which the computer is adjusted to the high Datatransfer (Ultra or hyperspeed). This is done via registering the byte in \$\$D204. With Ultra speed data must be transfered with this command in high datatransfer. With hyperspeed mu? the command byte with set bit 5 and 7 to be sent and after the receipt of the command AK byte to the high data rate be switched. Hyperspeed corresponds to 5 in the command byte of the Original-XF551-High-Speed up to the higher data rate and setting bits.

Command: Space (\$20) function: DATA I/O format disk/partition in the background: NO DATA AUX1/2: If AUX1=\$11 and AUX2=\$04 are formatted in MD

Corresponds to the!-command with the following differences: If AUX1=\$11 and AUX2=4 are, in MD one formats. After formatting the first TRACK the computer sends back a COMPLETE . The computer can continue working now, while the drive assembly still formats. With the s-command it can be determined later whether formatting was successful. This command is e.g. for a disk copier useful, in order to format while reading the source diskette in at the same time the target disk in another drive assembly.

Command: f (\$66) function: DATA I/O format disk with certain sector order: Send 128 byte AUX1/2: without meaning

128 bytes are sent to the drive assembly. The first 12 byte corresponds to the Config block (see o-command), the next 18 and/or 26 bytes specifies, into which order the logical sectors on the TRACKS are put down. The optimal sector sequence is different

depending upon density, e.g. the sequences are for the normal speed format as follows:

SD: 1.3.5.7.9.11.13.15.17.2.4.6.8.10.12.14.16.18 (Sector-Skew=10)
dd:
6.12.18.5.11.17.4.10.16.3.9.15.2.8.14.1.7.13 (Sector-Skew=16)



12 hyper+ XF commands

Command: c (\$63) function: (Configure mode) DATA I/O stop operating mode: NO DATA AUX1: Bit 2-0: Operating mode (corresponds to 01234567 ABCDMFSX) bit 4: 1=Density-Check with the next disk access AUX2: without meaning

Hereby the operating mode is stopped.

Command: e (\$65) function: Universal formatting (Extended format) DATA I/O: Send 128 byte AUX1: logical No. of the TRACK = \$\$FF whole which can be formatted disk/partition format \$\$FE = as \$\$FF, but in the background AUX2 formats: Bit 7: 1=ohne, 0=mit Verify format

With this command any format on the disk can be produced. Apart from the data in AUX1 and AUX2 must be 128 byte a long format block with the following format data to the drive assembly to be sent:

Byte 0-11: To Config block, see o-command

Byte 10: Sector Skew byte bit 0-4: Sector sequence 0 = from sector table 1-\$19= take Sector Skew indication (it gives on how many sectors are to lie between two successively numbered sectors) \$1a = for normal speed to compute \$1b = for normal speed (optimized) \$1c= optimized for Warp speed \$1d = optimized for Ultra speed \$1e = optimized for HDI format \$1f = optimized for turbo-DRIVE bit 65: Reserve sector 00 = no place specifies for reserve sector lets 01 = with place for reserve sector format to 10 = with additional reserve sector to format without meaning, if bit 0-4 >=\$1A
bit 7: reserves, 0 bits

Byte 11: Second gate length byte \$00 = take Sektorlengths from length table \$01 = Sektorlength in accordance with ?? Bits 5-6 of byte 10 compute \$20-\$df = direct indication of the Sektorlength in FM byte

Byte 12-56: Sector table each byte in this table corresponds to a

sector: Bit 0-4: Sector number bit 765: Error status of the sector:
101 = sector with LD error 110 = sector with RNF+RC error otherwise = sector without errors

Special value in the sector table: \$\$C0 = gap format (only if byte 11 = 0) \$00 = marks the end of the sector table

Byte 60-103: Length table indicates the length to each sector and/or gap from the sector table in FM byte. A FM byte corresponds to 1 byte in SD, in MD and dd 2 bytes on the disk. For a sector are lengths of \$20-\$df valid, for a gap lengths of 1-\$FF. A sector always consists of 32 FM byte for the sector header and under normal conditions of 64 or 128 FM byte for the sector data. In addition may still some gapbytes come. The sum of all bytes in the Lengthtable must not be longer than 3232.

If a wrong value should be located somewhere in the format block, this before the engine starts with an error 144 is acknowledged.

Command: g (\$67) function: TRACKS analyze (GET TRACK info.) DATA I/O: Receive 128 byte AUX1: logical Tracknr. AUX2: Analysis level:
\$00 = complete Scan \$20 = test only sector header otherwise = test only sector contents (AUX2 mu? To sector Skew of the disk contained, see byte 10 of the format block) with this command the given TRACK one analyzes. The drive assembly sends 128 byte to the computer, which corresponds to the format block of the e-command in their structure exactly. The density of the TRACK is not tested, therefore mu? before the g-command the correct density adjusted its.

F?r the received format block applies: Byte 10 and 11 are always 0. The following meaning has the bits 7-5 of the bytes from the sector table: 000 = sector OK ONE and empty (filled with zeros) 001 = raw component error 010 = RC ERRORS 011 = RT+RC errors * 100 = sector is short (too few data byte has), has an RC ERROR and possibly still another raw component error * 101 = LD errors, possibly also (CARRIAGE RETURN CHARACTER) and/or raw component error * 110 = RNF+RC errors 111 = sector of OK ONE and not empty

The Sektorheader test determines only with * marked error sector and determines the Sektorlengths. The remainder is determined by the Sektorcontents test.

The format block received with the g-command can serve without change as input f?r the e-command. That serves copying copy-protected disks together with the commands t and u.

Command: t (\$74) function: Error sector in SD and MD read (TRACK READ) DATA I/O: Receive 128/129/256 byte AUX1: logical Tracknr. AUX2: Bit 4-0: logical Sektornr. Bit 765: Read mode 000 = normally read (only SD/MD) 001 = RT/RC/LD errors ignore (only SD/MD)

010 = RT/RC/LD errors ignore (only SD/MD) and CONTROLLER status as 1.Byte
100 = first half of a 512-Byte-Sektors send read 110 = second half read

With this instruction error sector does not to be quickly read, the hyper+ XF makes in the case of an error a repeating attempt in SD and MD, how it is with the R-command the case. 128 byte is sent to 129 byte to the computer, with the variant 010 is it. Furthermore can the 512-Byte-Sektors of a DD disk by the ATARI ST or a PC in two be read in two halves.

Command: u (\$75) function: Error sector in SD and MD write (update second gate) DATA I/O: Send 128 byte AUX1: logical Tracknr. AUX2: Bit 4-0: logical Sektornr. Bit 7-5: Type of error: 000 = normally 001 = blanks 010 = (carriage return character) 011 = RT+CRC 100 = LD without (carriage return character) 101 = LD+RT without (carriage return character) 110 = Short second gate (last data byte enth?lt number of bytes which can be written) 111 = Short second gate with blank

Writes an error sector on the disk. 128 byte is sent to the drive assembly.



13 disk utility

Around the Possibilities of the hyper+ XF to use correctly it requires still some disk utility:

- disk copier for quick copying of arbitrary disks
- TRACK copier for copying copy-protected disks
- disk map by for the quick scanning of a disk
- patched DOS and Game DOS (hyperspeed, operations mode)
- DOS Formatter (suitably for all DOS versions)
- ST/PC disk readers for reading from files of the PC or ST

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