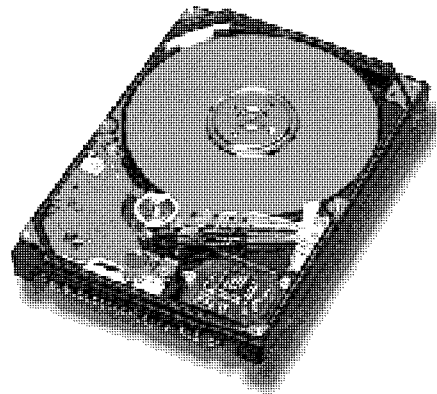




Travelstar 6GT

DADA-2540 and DADA-26480

IBM has introduced a new range of disk drives available in 5.4 and 6.4 GB capacities. The 12.5 mm high, 2.5-inch slimline Travelstar 6GT breaks capacity-point records with the highest capacity in its class and boasts an industry-leading areal density of 4.1 Gbits/sq.inch. IBM's Travelstar 6GT is the world's first notebook computer hard drive to ship with Giant Magnetoresistive (GMR) advanced head technology.



Applications

- M High performance portable computers
- M Non-IT-process control/fax
- M Removable/secure storage units

Features

- M 5400 and 6490 MB formatted capacities (512 byte/sector)
- M Enhanced IDE interface conforming to ATA-4 standards
 - PIO data transfer - mode 4 (16.6 MB/sec)
 - Ultra DMA data transfer (33.3 MB/sec)
- M 61.5-102.6 MB/s media data rate (instantaneous)
- M Rotational speed 4200 RPM

- M Average seek time 13ms
- M Latency 7.1 ms

- M 512 KB segmented buffer

- M Smooth glass disks
- M Mechanical latch
- M Load/Unload mechanism

- M No-ID sector formatting
- PRML data channel
- Predictive Failure Analysis (S.M.A.R.T. Compliant)

Benefits

- M Range of capacities to meet the need for increasing storage requirements

- M Fast interface data rates

- M High data rate across entire disk surface

- M Fast access to data

- M Fast data retrieval in single and multitasking applications

- M Superior reliability and portability

- M High reliability and availability
-

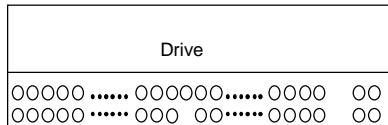
Connectors

The AT signal connector is designed to mate with Dupont part number 69764-044 or equivalent.

Notes:

- 1) Pin 20 is left blank for secure connector insertion.
- 2) Pin position A,B,C,D are used for drive address setting

Electrical Connector (rear view)

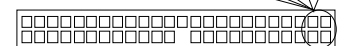
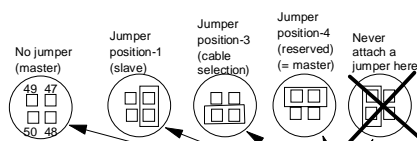


Pin 43.....19.....3 1 C A
44.....(20).....4 2 D B

Drive Address

A jumper is available at the interface connector to determine the drive address.

Using cable section, the drive address depends on the condition of pin 28 of the AT interface cable. In the case where pin 28 is ground or low, the drive is a master. If pin 28 is open or high level, the drive is a slave.



Note: Pin 20 is left blank for secure connector insertion
Note: When 49-pin is grounded, no spin-up at POR; when open, normal spin-up at POR

Cabling

The maximum cable length from the host system to the drive, plus circuit pattern in the host system, shall not exceed 18 inches.

Data Organization

DADA	25400	26480
Head number	16	15
Sectors/track	63	63
Cylinder number	11168	13424
Sector size	512	512
Total customer usable data sectors	10,553,760	12,685,680
Total customer usable data bytes	5,403,525,120	6,495,068,160

DC Power Requirement Limits

Power Supply Current +5VDC

	Population Mean
Low power idle average	0.13 A RMS ¹
Active idle average	0.19 A RMS
Performance	0.37 A RMS
Read average	0.42 A RMS
Write average	0.44 A RMS
Seek average	0.46 A RMS
Standby	0.06 A RMS
Sleep	0.02 A RMS
Start up (max)	0.94 A RMS
Power Supply Ripple (0-20Mhz)	100 mv p-p max



PACKAGING: The drive must be protected against electrostatic Discharge especially when being handled. The safest way to avoid damage is to put the drive in an anti static bag before ESD wrist straps etc. are removed.

Drives should only be shipped in approved containers, severe damage can be caused to the drive if the packaging does not adequately protect against the shock levels induced when a box is dropped. Consult your IBM marketing representative if you do not have an approved shipping container.

Signal definition

The pin assignments of interface signals are listed as follows:

PIN	Signal	I/O	PIN	Signal	I/O
01	-RESET	I	02	GND	
03	DD07	I/O	04	DD08	I/O
05	DD06	I/O	06	DD09	I/O
07	DD05	I/O	08	DD10	I/O
09	DD04	I/O	10	DD11	I/O
11	DD03	I/O	12	DD12	I/O
13	DD02	I/O	14	DD13	I/O
15	DD01	I/O	16	DD14	I/O
17	DD00	I/O	18	DD15	I/O
19	GND		(20)	Key	
21	DMARQ	O	22	GND	
23	-DIOW*	I	24	GND	
25	-DIOR*	I	26	GND	
27	IORDY*	O	28	CSEL	I
29	-DMACK	I	30	GND	
31	INTRQ	O	32	-HIOCS16	O
33	DA01	I	34	-PDIAG	I/O
35	DA00	I	36	DA02	I
37	-CSO	I	38	-CS1	I
39	-DASP	I/O	40	GND	
41	+5V Logic	PWR	42	+5V Motor	PWR
43	GND		44	(Resv)	

Notes:

- 1."O" designates an output from the drive.
- 2."I" designates an input to the drive.
- 3."I/O" designates an input/output common.
- 4."PWR" designates a power supply to the drive.
- 5."(Resv)" designates reserved pins which must be left unconnected.
6. The signal lines marked with (*) are redefined during the Ultra DMA protocol to provide special functions. These lines change from the conventional to special definitions at the moment the Host decides to allow a DMA burst, if the Ultra DMA transfer mode was previously chosen via Set Features. The drive becomes aware of this change upon assertion of the -DMACK line. These lines revert back to their original definitions upon the deassertion of -DMACK at the termination of the DMA burst.

Note:

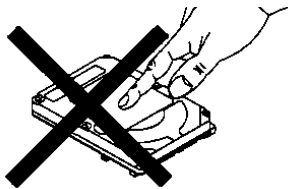
There are two input pins for +5 Volt power supply, "+5V Logic" and "+5V Motor." "+5V Logic" is connected to the internal logic circuits and "+5V Motor" is connected to the spindle motor and motor driver. It is possible to turn on and off "+5V Logic" by an external switch circuit to reduce power consumption to the least possible. In this mode, a voltage drop out due to the motor spin up current can be reduced by connecting "+5V Motor" line into the system power source directly.

If the above power management option is used, all signal lines that will be electrically active in the host system while the HDD is disconnected from power line shall be isolated by three-state line drivers. Internal leakage through ESD protection circuit may pull down LPUL (least positive up level) of logic signal below specification. Use both lines in parallel, for regular HDD applications.

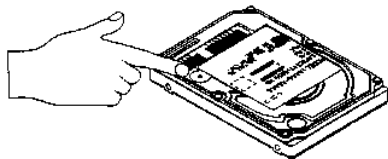
Environmental characteristics

Altitude	
Operating	-300 to 3000 m
Ship / store	-300 to 12000 m
Temperature	
Operating	5 to 55 C
Storage	0 to 65 C
Shipping	-40 to 65 C
Temperature gradient (max) (Operating, storage or shipping)	20 C / hour
Operating	
Ambient temperature	5 to 55 C
Relative humidity (non-condensing)	8% to 90%
Maximum wet bulb (non-condensing)	29.4 C
Shock (half-sine wave)	125 G/2 msec
Vibration random (RMS)	3.6 bels *
Non-Operating	
Ambient temperature	0 to 65 C
Relative humidity (non-condensing)	5% to 95%
Maximum wet bulb (non-condensing)	40 C
Shock (half-sine wave)	600 G/2 msec
Vibration random (RMS)	3.3 bels *

*Figures given are A weighted sound power (Bels).



DO NOT PRESS!



DO NOT COVER THIS HOLE!

Operating modes

Spin-up

Start up time period from spindle stop or power down.

Seek

Seek operation mode.

Write

Write operation mode.

Read

Read operation mode.

Performance Idle

The drive is capable of responding immediately to media access requests. All electronic components remain powered and full frequency servo remains operational.

Active Idle

The drive is capable of responding immediately to media access requests. Some circuitry including servo system and R/W electronics are in power saving mode. The head is parked near the outer diameter of disk without servoing. A drive in active idle mode may take longer than performance idle to complete the execution of a command because it has to activate that circuitry.

Low Power Idle

Head is unloaded on the ramp position. Spindle motor is rotating at full speed.

Standby

The drive is capable of accepting command. Spindle motor is stopped. All circuitry except host interface are in power saving mode. The execution of commands is delayed until spindle becomes ready.

Sleep

The device requires a soft reset or hard reset to be activated. All electronics including spindle motor and host interface are shut off.

Command description

The following commands are supported by the drive:

Commands	(Hex)	Protocol
Check power mode	(E5)	3
Check power mode*	(98)	3
Executive device diagnostic	(90)	3
Flush cache	(E7)	3
Format track	(50)	2
Format unit	(F7)	3+
Identify device	(EC)	1
Identify device DMA	(EE)	4
Idle	(E3)	3
Idle*	(97)	3
Idle immediate	(E1)	3
Idle immediate*	(95)	3
Initialize device parameters	(91)	3
Read buffer	(E4)	1
Read DMA (retry)	(C8)	4
Read DMA (no retry)	(C9)	4
Read long (retry)	(22)	1
Read long (no retry)	(23)	1
Read multiple	(C4)	1
Read native max LBA/CYL	(F8)	3+
Read sectors (retry)	(20)	1
Read sector (no retry)	(21)	1
Read verify sectors (retry)	(40)	3
Read verify sectors (no retry)	(41)	3
Recalibrate	(1X)	3
Security Disable Password	(F6)	2
Security Erase Prepare	(F3)	3
Security Erase Unit	(F4)	2
Security Freeze Lock	(F5)	3
Security set password	(F1)	2
Security Unlock	(F2)	2
Seek	(7X)	3
Set features	(EF)	3
Set max LBA/CYL	(F9)	3+
Set multiple mode	(C6)	3
Sleep	(E6)	3
Sleep*	(99)	3
SMART disable operators	(B0)	3
SMART enable/disable		
Attribute autosave	(B0)	3
SMART enable operations	(B0)	3
SMART execute off - line		
Data collection	(B0)	3
SMART read attribute values	(B0)	1
SMART read attribute thresholds	(B0)	1
SMART return status	(B0)	3
SMART save attribute values	(B0)	3
Standby	(E2)	3
Standby*	(96)	3
Standby immediate	(E0)	3
Standby immediate*	(94)	3
Write buffer	(E8)	2
Write DMA (retry)	(CA)	4
Write DMA(no retry)	(CB)	4
Write long (retry)	(32)	2
Write long (no retry)	(33)	2
Write multiple	(C5)	2
Write sectors (retry)	(30)	2
Write sectors (no retry)	(31)	2
Write verify	(3C)	2