

## IBM Travelstar™ 40GNX 2.5-inch hard disk drive

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### Highlights

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- **IBM offers new models that operate with the Enhanced Availability feature**
- **40GNX—the fifth generation of 5,400rpm models—offers high capacity and high performance in the industry with a 40GB , 9.5mm hard drive.**
- **40GNX provides areal densities of up to 34Gbits/sq.inch, yielding up to 20GB of capacity per disk**
- **All models contain Fluid Dynamic Bearing (FDB) motor technology for industry-leading idle and operating acoustic performance**
- **Travelstar provides industry-leading operational shock rating of up to 200Gs (2ms)**
- **Travelstar leverages latest antiferromagnetically coupled (AFC) media, also known as “pixie dust”**

### Leading-edge technology

IBM continues its rich tradition of producing mobile storage products by introducing the new Travelstar 40GNX, a 9.5mm high, fifth generation 5400 rpm, hard disk drive for mobile computing.

The innovative hard drive design combines AFC Media, Fluid Dynamic Bearing (FDB) motor technology, IBM Giant Magnetoresistive (GMR) heads, Partial Response Maximum Likelihood (PRML) digital channel, head load/unload technology, Enhanced Adaptive Batter Life Extender™ (ABLE) 3.0, and an ATA/100 interface. With this design, the Travelstar 40GNX provides exceptional storage capacity, performance, power management and quality required by today's demanding notebook requirements.

The Travelstar family of hard disk drives incorporates the latest IBM storage technology—antiferromagnetically coupled (AFC) media, informally known as “pixie dust.” This technology sandwiches a three-atom-thick layer of ruthenium, a precious metal, between two magnetic layers on a disk, allowing for a higher areal density, breaking through limitations of the super paramagnetic effect.

As a result, the new IBM Travelstar drives are suitable for demanding, high-capacity Internet, digital audio, video streaming, and real-time multimedia applications—whether users are in the office or on the road. In non-traditional applications, Travelstar drives can now incorporate into such products as Point-of-Sale Systems, Set-Top Boxes, Telemetry (automobile) applications, and communications and entertainment systems.

### Performance and reliability

The IBM Travelstar 40GNX hard drive uses proven IBM technology such as TrueTrack Servo, IBM Drive Fitness Test™ (DFT), and Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.), as well as a thermistor, an adaptive control device that helps maintain high performance and fast seek times at high environmental temperatures.

### Enhanced Availability models

IBM also offers enhanced availability features on selected new Travelstar models. These industry-first models increase the hard disk drive's available “power-on” hours for emerging applications with continuous operation. At a read/write or data access rate of up



*IBM Travelstar 40GNX: 9.5mm, 5400rpm, 40GB ATA-5 hard drive<sup>1</sup>*

to 50 percent—a typical usage cycle for 24x7 blade server environments—the drives are designed to allow users to leave these drives powered on around-the-clock.

### **Advanced mobile systems**

With these new drives, IBM has once again redefined state-of-the-art storage for mobile computing. The reduced acoustics, high speeds, and capacities of IBM Travelstar drives support superior digital content creation capabilities, higher quality digital audio and video, and significantly faster processing for data-intensive multimedia and Internet applications.

By using one of the new Travelstar drives in a laptop system, you can unchain your multimedia studio from the desktop, enabling high-end multimedia creativity as mobile as your imagination.

### **IBM quality, support, and service**

The new IBM Travelstar mobile hard drives share common field-proven components to provide manufacturers with superior-quality hard drives backed by IBM warranty and IBM technical support and services.

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## **IBM Travelstar hard disk drive characteristics**

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<b>Feature</b>	<b>Benefit</b>
40GB mobile hard drive and the fifth-generation 5,400rpm model in the industry	IBM Travelstar 40GNX has the industry-leading performance to enable mobile users to work with a new range of emerging storage-intensive applications.
Drive Noise Suppression System (DNSS) <ul style="list-style-type: none"> <li>Fluid Dynamic Bearing (FDB) motors on all models</li> <li>VCM acoustic dampening</li> </ul>	IBM Travelstar 40GNX incorporates state-of-the-art noise suppression technology for industry-leading quiet operation.
Fast Ultra-DMA 100 2.5-inch mobile hard drives	IBM Travelstar 40GNX features industry-standard high data transfer rates to help ensure ultimate performance.
High max areal density of 34Gbits/sq. inch resulting in up to 20GB of capacity per disk	IBM Travelstar 40GNX maximizes areal density to enable more data storage per disk in standard, compact packages.
Industry-leading operating shock rating (200Gs/2ms) for a 2.5-inch mobile hard drive	IBM Travelstar 40GNX provides exceptional ruggedness to help withstand shock during read/write operations.
Antiferromagnetically coupled (AFC) media on all models	The IBM Travelstar family incorporates AFC "pixie dust" technology, allowing for higher areal density.

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## IBM family of Travelstar 40GNX hard disk drives at a glance

Product name	Travelstar 40GNX	Travelstar 40GNX
Model name	IC25N040ATCS05	IC25N020ATCS05
<b>Configuration</b>		
Interface	ATA-5	ATA-5
Capacity (GB)	40	20
Sector size (bytes)	512	512
Recording zones	16	16
Data heads	4	2
Disks	2	1
Max. areal density (Gbits/sq.inch)	34	34
<b>Performance</b>		
Data buffer (KB) <sup>2</sup>	8,192 <sup>3</sup>	8,192 <sup>3</sup>
Rotational speed (rpm)	5,400	5,400
Latency (average ms)	5.5	5.5
Max. media transfer rate (Mbits/sec)	297	297
Max. interface transfer rate (MB/sec)	100MB/sec Ultra DMA mode-5	100MB/sec Ultra DMA mode-5
Seek time (ms)		
Average (typical)	12	12
Track to track (typical)	2.5	2.5
Full stroke (typical)	23	23
<b>Power</b>		
Requirement	+5VDC(±5%)	+5VDC(±5%)
Dissipation (typical)		
Startup (max. peak)	5.0 W	5.0 W
Seek (average)	2.6 W	2.6 W
Read (average)	2.5 W	2.5 W
Write (average)	2.5 W	2.5 W
Performance idle (average)	2.0 W	2.0 W
Active idle (average)	1.3 W	1.3 W
Low power idle (average)	0.85 W	0.85 W
Standby (average)	0.25 W	0.25 W
Sleep	0.1 W	0.1 W
Power consumption efficiency (watts/GB)	0.021	0.043
<b>Physical size</b>		
Height (mm)	9.5	9.5
Width (mm)	70	70
Depth (mm)	100	100
Weight (g)	102	102
<b>Environmental characteristics</b>		
Operating		
Ambient temperature	5° to 55° C	5° to 55° C
Relative humidity (non-condensing)	8% - 90%	8% - 90%
Maximum wet bulb (non-condensing)	29.4° C	29.4° C
Shock (half sine wave)	200Gs (2ms)	200Gs (2ms)
Vibration (RMS)		
Random (RMS)	0.67G (5 - 500Hz)	0.67G (5 - 500Hz)
Swept sine	1G 0-P (5 - 500Hz)	1G 0-P (5 - 500Hz)
Non-operating		
Ambient temp	-40° to 65° C	-40° to 65° C
Relative humidity (non-condensing)	5% - 95%	5% - 95%
Maximum wet bulb (non-condensing)	40° C	40° C
Shock (half sine wave)	800Gs/1ms	800Gs/1ms
Vibration (random (RMS))	3.01G (5 - 500Hz)	3.01G (5 - 500Hz)
<b>Acoustics (A-Weighted Sound Power (Bels))</b>		
Idle (typical)	2.5	2.5
Op (typical)	3.1	3.1
Idle (maximum)	2.7	2.7
Op (maximum)	3.3	3.3

## For more information

Internet and e-mail:

- [ibm.com/harddrive](http://ibm.com/harddrive)
- [drive@us.ibm.com](mailto:drive@us.ibm.com)

IBM TECH FAX document server:

- 408-256-5418 (*requires touch-tone phone*)
- *International callers must call from a fax machine*

IBM hard drive product information:

- 1-888-IBM-5214 (*United States*)
- 507-253-4110



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<sup>1</sup> Clear cover drive models shown for illustration purposes only

<sup>2</sup> Up to 280 KB out of 2048 KB used for firmware

<sup>3</sup> Up to 300 KB out of 2048 KB used for firmware

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