

# WINNER-1 Project WNR-32100A

**NEW 2.10 Gbyte  
High Performance  
3.5" - 1" Height Disk Drive**

## FEATURES

- Formatted Capacity 2.10 GByte
- 5,400 rpm spindle speed
- 11 msec average seek time
- PRML Read Channel
- PIO Mode 4 Multi Word DMA Mode 2
- Automatic/Host Power Saving Mode
- Rugged : 10 G's of Operating Shock
- 128KB segmented read/write cache buffer
- Fast ATA-2/E-IDE Interface
- Automatic reassignment of defective sector
- Read Ahead Cache
- Write Cache
- Write Auto Reassignment
- Power On Self Diagnosis
- Error Correction on the Fly (Multi-Burst)
- Automatic Update of ATA Task File Registers
- Data Buffer Streaming Support

## DRIVE ARCHITECTURE

Formatted Capacities	
Megabytes per Drive	2104.2
Megabytes per Surface	350.7
Physical Organization	
Disks	3
Data Surfaces	6
Read/Write Heads	6
Cylinder	5000

## FUNCTIONAL SPECIFICATIONS

Actuator Type	Rotary Voice Coil
Interface	Fast ATA-2/E-IDE
Servo	Embedded Sector Servo
Recording Method	8/9 (0,4,4)
Recording Density (bpi,max.)	91,800
Flux Density (fcpi,max.)	103,000
Track Density (tpi)	5,100
Areal Density (Mb/In <sup>2</sup> )	470
Sector Size (Bytes)	512

## PERFORMANCE SPECIFICATIONS

Seek Time (typical)	
Track to Track	<3.0 ms
Average	<11 ms
Full Stroke	<22 ms
Head Switching Time (msec)	6.0 ms
Average Latency	5.6 ms
Spindle Speed	5,400 ± 0.1% rpm
Data Transfer Rate	
To/From Media	43/85 Mbits/s
To/From Buffer	16.6 Mbytes/s
Buffer Size	128 Kbytes

## RELIABILITY SPECIFICATIONS

Seek Error	1 in 10 <sup>7</sup> bits
Recoverable Read Error	1 in 10 <sup>11</sup> bits
Non-recoverable Read Error	1 in 10 <sup>15</sup> bits
MTBF (POH)	500,000 hours
MTTR (typical)	5 minutes
Start/Stop Cycles	50,000
Component Design Life	5 years

## ENVIRONMENTAL SPECIFICATIONS

Temperature	
Operating	5 ~ 55 °C
Non-operating	-40 ~ 70 °C
Thermal Gradient (max.)	20 °C/hr
Humidity (non-condensing)	
Operating	5 ~ 80 %
Non-operating	5 ~ 90 %
Maximum Wet Bulb	26 °C
Altitude (relative to sea level)	
Operating	0 to 10,000 feet
Non-operating	0 to 40,000 feet

## SHOCK AND VIBRATION

Shock (1/2 sine pulse, 11 ms duration)	
Operating	10 G
Non-operating	75 G
Vibration (swept sine, 1 octave per minute)	
Operating	
5 ~ 21 Hz	0.034" (double amplitude)
22 ~ 400 Hz	1.5 Gp-p
Non-operating	
5 ~ 21 Hz	0.195" (double amplitude)
22 ~ 500 Hz	8 Gp-p

## POWER CHARACTERISTICS

Voltage	5V±10%	12V±10%
Current(Max.)	0.49 Amps	1.18 Amps
Total Power Dissipation (Watts)		
Power Up (max.)		16.5 watts
Read/Write (typical)		5.9 watts
Seek (typical)		7.9 watts
Idle (typical)		3.3 watts
Standby (typical)		1.4 watts
Sleep (typical)		1.3 watts

## ACOUSTIC NOISE

Maximum value at 1 meter	
Idle	35 dBA
Random Read/Write	40 dBA

## PHYSICAL DIMENSION

Height	1 inch
Width	4 inches
Depth	5.75 inches
Weight	1.2 pounds

*Specifications are subject to change without notice*



ELECTRONICS