



Tekram Technology Co., Ltd.

Test Report

Product Name : DC-200
Test Report Date : 2001-Oct-19
Test Report Version : B
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Report Version History

Version	Date	Description
A	2001-Sep-27	First Release
B	2001-Oct-19	1.Modify and add new item in "Rebuild Test" 2.Add Performance comparison in Test report

Test Environment

	PCB Version	Drivers Date	Bios Version	Software Version	Remark
Win98se	1.0	2001-9-19	1.05BT	1.14B	
WinME	1.0	2001-9-19	1.05BT	1.14B	
WinNT	1.0	2001-9-19	1.05BT	1.14B	
Win000	1.0	2001-9-19	1.05BT	1.14B	

A. Product Spec & Basic Function Test

A1. Product Specification

Features	<ul style="list-style-type: none"> ● Support RAID 0(striping), RAID 1(mirroring), and RAID 0+1 (striping and mirroring), JBOD mode ● Two independent IDE channels support up to four Ultra ATA/100/66 drives ● Support hot-swap to automatically rebuild mirror array ● Support 2-card function ● Easy-to-use GUI-based software for monitoring and storage management ● RAID with ATA (2 HDDs RAID 0/1, 1 HDD ATA) ● Multi-RAID (2 HDDs RAID 0, 2 HDDs RAID 1)
Mode Supports	<ul style="list-style-type: none"> ● 1 card mode: ATA-100/66, RAID 0, RAID 1, RAID 0+1, JBOD, RAID with ATA, multi-RAID ● 2 cards mode: ATA-100/66, RAID 0, RAID 0+1
Processor	ARS106S, a PCI Dual Channel Ultra ATA 100 RAID Controller with 100MB/sec transfer rate.
Drivers Available	Windows 98SE/ME/NT 4.0/2000

A2. CHECK PCB LAYOUT

Item	Function	Result	Remark
1	Model Name	Pass	
2	Check REV #	Pass	
3	Jumper Setting	Pass	

A3. CHECK JUMPER SETTING

Item	Function	Result	Remark
1	Check if the jumper can be used properly	Pass	
2	Check if the functions are in accordance with the manual	Pass	

A4. CHECK PCBA Construction and Appearance

Item	Function	Result	Remark
1	Check if the installation is ok	Pass	
2	Check if the cable for internal and external interface is ok	Pass	

B.BIOS FUNCTION TEST

B1.CHECK BIOS Basic Function & Information

Item	Function	Result	Remark
1	Check if the LOGO and Model of the chipset is correct	Pass	Aralion (ARS106s)
2	Check if the related information on screen is correct (BIOS & Others)	Pass	
3	Check PCI List information	Pass	
4	Check (CTRL+U) if the user can enter the BIOS SETUP (with HDD linked)	Pass	
5	Check if the window information of Status is correct	Pass	
6	Check if the Help Information be displayed correct	Pass	
7	Check Set RAID Configuration	Pass	
8	Check Delete RAID Configuration	Pass	
9	Check Display RAID Configuration	Pass	
10	Check Del HDD Partition	Pass	
11	Check if the Yes/No question is correct when exit	Pass	

B2.Check Boot From Devices

Item	Boot From Devices	Boot From	Result	Remark
1	IDE CD-ROM(Floppy 1.44M Emulation)	CDROM , C, A	Pass	
2	IDE CD-ROM(NO Emulation)	CDROM , C, A	Pass	
3	Floppy(1.44M)	A , C	Pass	
4	IDE HDD	C Only	Pass	
5	LS/ZIP Device	LS/ZIP , C	Pass	
6.	Boot From One Card(All Raid & JBOD & ATA)	C, A	Pass	
7	Boot From Two Cards(All Raid & JBOD & ATA)	C, A	Pass	

B3.CHECK BIOS Function

ITEM HDDs	HDD Connect Mode	ATA100/66	RAID 0	RAID 1	RAID0+1	JBOD	Remark
2 HDDs	Pm0-Sm0	Pass	Pass	Pass	N/A	Pass	
3 HDDs	Pm0-Ps0-Sm0	Pass	N/A	N/A	N/A	Pass	
4 HDDs	Pm0-Ps0-Sm0-Ss0	Pass	Pass	N/A	Pass	Pass	
4 HDDs	Pm0-Pm1-Sm0-Sm1	Pass	Pass	N/A	Pass	Pass	
5 HDDs	Pm0-Ps0-Sm0-Ss0-Pm1	Pass	N/A	N/A	N/A	Pass	
6 HDDs	Pm0-Ps0-Sm0-Ss0-Pm1-Sm1	Fail*1	N/A	N/A	N/A	Pass	
7 HDDs	Pm0-Ps0-Sm0-Ss0-Pm1-Ps1-Sm1	Fail*1	N/A	N/A	N/A	Pass	
8 HDDs	All Ports	Fail*1	N/A	N/A	Pass	Pass	

ITEM Function	HDDs	HDD Connect Mode	Array Connect Mode	Result	Remark
Raid With ATA	3 HDDs	(Pm+Sm)+Ps	Raid0 With ATA	Pass	
		(Pm+Sm)+Ps	Raid1 With ATA	Pass	
	4 HDDs	(Pm0+Sm0)+Ps0+Ss0	Raid0 With ATA	Pass	
			Raid1 With ATA	Pass	
		(Pm0+Pm1)+Sm0+Sm1	Raid0 With ATA	Pass	
			Raid1 With ATA	Pass	
	5 HDDs	(Pm0+Pm1+Sm0+Sm1)+Ps0	Raid0 With ATA	Pass	
			Raid0+1 With ATA	Pass	
Multi Raid	4 HDDs	(Pm0+Sm0)+(Ps0+Ss0)	Raid0 With Raid0	Pass	
			Raid0 With Raid1	Pass	
			Raid1 With Raid1	Pass	
		(Pm0+Pm1)+(Sm0+Sm1)	Raid0 With Raid0	Pass	
			Raid0 With Raid1	Pass	
			Raid1 With Raid1	Pass	
	6 HDDs	(Pm0+Pm1+Sm0+Sm1)+(Ps0+Ps1)	Raid0 With Raid0	Pass	
			Raid0 With Raid1	Pass	
			Raid0+1 With Raid1	Pass	
	8 HDDs	(Pm0+Pm1+Sm0+Sm1)+ (Ps0+Ps1+Ss0+Ss1)	Raid0 With Raid0	Pass	
			Raid0 With Raid0+1	Pass	
			Raid0+1 With Raid0	Pass	
Raid0+1 With Raid0+1			Pass		

* Pm : Primary Master, Ps : Primary Slave Sm : Secondary Master Ss : Secondary Slave

*One Card : Pm0-Channel 1 Master, Ps0-Channel 1 Slave, Sm0-Channel 2 Master, Ss0-Channel 2 Slave

*Two Cards : Pm1-Channel 1 Master, Ps1-Channel 1 Slave, Sm1-Channel 2 Master, Ss1-Channel 2 Slave

Test Environment	Manufacturer	Model	Bios	Chipset	CPU Speed
Main Board	Tekram	P6B40-A4X	1.10	Intel FW82443BX & FW82371EB	Pentium III 550
IDE Hard Disk	1.IBM ATA100 20G(ibm-dtla-307020)		5.WDC ATA100 10G(wd100bb-32au)		
	2.Seagate ATA100 20G(st320414a)		6.WDC ATA166 6.4G(wd64a)		
	3.IBM ATA100 20G(Ic351020aver07-0)		7. .WDC ATA100 10G(wd100bb-32au)		
	4.Seagate ATA100 20G(st320414A)		8. WDC ATA166 6.4G(wd64a)		
DRAM	1. HY PC133 256M		2.		
IDE CD-ROM	1. ASUS 40X(CD-S400/A)		2.		
VGA Card	1. S3 Savage4		2.		
Power	1. ChangChen ATX-300SE		2.		

C.Compatibility TEST

C1.MAIN BOARD

No	Manufacturer	MODEL	Chipset	BIOS	CPU Type	Result	Remark
1.	Tekram	P6PRO-Au	VIA Vt82c69x&Vt82c686a	1.03	Pentium III 500	Pass	
2.	Tekram	P6B40-A4X	INTEL FW82443&FW82371EB	1.31	Pentium III 500	Pass	
3.	ASUS	TUSL2-M	INTEL FW82815&FW82801BA	1009A	Pentium III 550	Pass	
4.	MSI	MS 6337	INTEL FW82815&FW82801BA	1.4	Pentium III 550	Pass	

C2.HARD DISK

ITEM	Manufacturer	Model Name	SIZE	Result	Remark
ATA66	Quantum	FIREBALL	4GB	Pass	
	Western Digital	WD64AA-00aaa4	6.4GB	Pass	
ATA100	WD	WD100BB	10G	Pass	
	IBM	IC35L020AVER07-0	20GB	Pass	
	Maxtor	5T020H2	20GB	Pass	
	WD	WD200BB	20G	Pass	
	Seagate	ST320414A	20GB	Pass	
	Maxtor	5T040H4	40GB	Pass	
	IBM	IC35L040AVER07-0	40GB	Pass	
	IBM	DTLA-307075	76.8GB	Pass	

C3.SOUND CARD

Sound Card Type/Mode	OS Version	Result	Remark
On Board (Asus TUSL2-M)	Windows 2000	Pass	
Creative SB Live	Windows 2000	Pass	

C4.VGA CARD

Manufacturer /Model	OS Version	Result	Remark
ATI VC264VT	Windows 2000	Pass	
SiS 6326	Windows 2000	Pass	

C5.SCSI CARD

Manufacturer /Model	OS Version	Result	Remark
Adaptec 29160	Windows 2000	Pass	
Tekram DC-390U3D	Windows 2000	Pass	

C6.LAN CARD

Manufacturer /Model	OS Version	Result	Remark
Intel 82559	Windows 2000	Pass	
D-Link DFE-530TX	Windows 2000	Pass	

D. Operation System

D1. OS on Card (use 4 hard disks)

Function Item		Raid 0	Raid 1	Raid 0+1	ATA	GUI	REMARK	
Operation System								
Windows 98se	One Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
	Two Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
Windows NT 4.0	One Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
	Two Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
Windows Me	One Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
	Two Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	

Operation System		Fnnction Item	Raid 0	Raid 1	Raid 0+1	ATA	GUI	REMARK
Windows 2000 Professional	One Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
	Two Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	

Test Environment	Manufacturer	Model	Bios	Chipset	CPU Speed
Main Board	TEKRAM	P6B40-A4X	1.31	Intel FW82443BX, Intel FW82371EB	PEMTIUM III 500MHZ
IDE Hard Disk	1. SEAGATE ST320413A 20GB			4. WD WD200BB-00AUA1	
	2. IBM IC35L040AVER07-0 41GB			5. QUANTUM FIREBALL 5.1GB	
	3. WD WD200BB-32AUA1			6.	
DRAM	1. HYUNDAI (HY57V64820HG) KOREA 128MB			2.	
IDE CD-ROM	1. SONY CDU4011-81			2.	
VGA Card	1. ATI (PCI)			2.	
Power	1. CHANGCHEN ATX-300SE			2.	

D2. OS on M/B IDE Port (use 5 hard disks)

Function Item		Raid 0	Raid 1	Raid 0+1	ATA	GUI	REMARK	
Operation System								
Windows 98se	One Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
	Two Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
Windows NT 4.0	One Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
	Two Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
Windows Me	One Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
	Two Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	

Function Item		Raid 0	Raid 1	Raid 0+1	ATA	GUI	REMARK	
Operation System								
Windows 2000 Professional	One Card	English	Pass	Pass	Pass	Pass		
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	
	Two Card	English	Pass	Pass	Pass	Pass	Pass	
		Simple Chinese	Pass	Pass	Pass	Pass	Pass	
		Trad Chinese	Pass	Pass	Pass	Pass	Pass	
		Japanese	Pass	Pass	Pass	Pass	Pass	
		German	Pass	Pass	Pass	Pass	Pass	

Test Environment	Manufacturer	Model	Bios	Chipset	CPU Speed
Main Board	TEKRAM	P6B40-A4X	1.31	Intel FW82443BX, Intel FW82371EB	PEMTIUM III 500MHZ
IDE Hard Disk	1. SEAGATE ST320413A 20GB			4. WD WD200BB-00AUA1	
	2. IBM IC35L040AVER07-0 41GB			5. QUANTUM FIREBALL 5.1GB	
	3. WD WD200BB-32AUA1			6.	
DRAM	1. HYUNDAI (HY57V64820HG) KOREA 128MB			2.	
IDE CD-ROM	1. SONY CDU4011-81			2.	
VGA Card	1. ATI (PCI)			2.	
Power	1. CHANGCHEN ATX-300SE			2.	

E. Benchmark Test

E1. IO-Meter (Raid 0)

Vendor / Model	Access Specification Name	Workers	I/Ops	MBps	Average Response Time	Maximum Response Time	% CPU Utilization
DC-200	8K Sequential Write	20	1478.1	11.5	13.5	108.9	20.2
	8K Sequential Read	20	4963.7	38.8	04.0	42.3	55.3
	8K Random Write	20	704.8	05.5	28.3	173.3	09.7
	8K Random Read	20	177.5	01.4	112.3	285.7	03.2
DC-200	16K Sequential Write	20	1516.0	23.7	13.2	53.8	20.8
	16K Sequential Read	20	3506.0	54.8	05.7	43.9	42.2
	16K Random Write	20	523.0	08.2	38.1	195.4	08.0
	16K Random Read	20	161.9	02.5	123.0	328.6	03.6
DC-200	32K Sequential Write	20	899.7	28.1	22.2	74.0	54.0
	32K Sequential Read	20	1554.2	48.6	12.8	62.5	55.7
	32K Random Write	20	336.1	10.5	59.3	235.5	31.6
	32K Random Read	20	100.2	03.1	198.6	546.6	44.5
DC-200	64K Sequential Write	20	424.8	26.6	47.0	128.7	71.6
	64K Sequential Read	20	950.8	59.4	21.0	80.5	73.3
	64K Random Write	20	240.6	15.0	82.8	261.8	78.2
	64K Random Read	20	88.8	05.6	224.0	549.3	56.7
DC-200	128K Sequential Write	20	211.5	26.4	94.5	202.6	71.3
	128K Sequential Read	20	463.0	57.9	43.1	150.0	77.2
	128K Random Write	20	192.3	24.0	103.5	340.1	73.2
	128K Random Read	20	86.3	10.8	229.9	578.2	56.4
DC-200	256K Sequential Write	20	109.0	27.3	182.9	431.7	70.7
	256K Sequential Read	20	165.9	41.5	120.3	322.8	94.9
	256K Random Write	20	107.5	26.9	185.1	464.8	89.6
	256K Random Read	20	73.9	18.5	268.6	726.8	57.2
DC-200	512K Sequential Write	20	54.4	27.2	364.0	833.8	69.2
	512K Sequential Read	20	79.0	39.5	251.0	558.8	63.0
	512K Random Write	20	53.8	26.9	366.6	1285.4	69.9
	512K Random Read	20	54.3	27.1	365.3	1041.7	64.1
DC-200	1M Sequential Write	20	27.5	27.5	723.1	1573.1	86.6
	1M Sequential Read	20	42.1	42.1	470.5	1227.5	62.5
	1M Random Write	20	26.9	26.9	730.2	2961.5	70.5
	1M Random Read	20	35.0	35.0	562.6	1718.3	70.7

Vendor / Model	Access Specification Name	Workers	I/Ops	MBps	Average Response Time	Maximum Response Time	% CPU Utilization
DC-200	2M Sequential Write	20	13.6	27.3	1413.5	3555.0	69.5
	2M Sequential Read	20	19.6	39.1	996.2	1925.1	64.9
	2M Random Write	20	13.5	26.9	1453.4	3034.1	70.8
	2M Random Read	20	19.1	38.1	1032.6	2977.7	81.7
DC-200	5M Sequential Write	20	5.2	25.9	2076.5	6111.4	100.0
	5M Sequential Read	20	7.9	39.4	1328.3	2643.7	100.0
	5M Random Write	20	5.1	25.6	1997.4	3881.1	100.0
	5M Random Read	20	8.0	40.1	1315.8	2686.9	100.0

Test Environment	Manufacturer	Model	Bios	Chipset	CPU Speed
Main Board	Tekram	P6B40-A4X V1.31	V1.10	FW82443BX & FW82371	Pentium III 500
IDE Hard Disk	1. IBM 20G 7200 RPM ATA100 * 2			4.	
	2. Seagate 320414A 20G ATA100 * 2			5.	
	3.			6.	
DRAM	1. HY 256M PC133			2.	
IDE CD-ROM	1. ASUS 40X			2.	
VGA Card	1. S3 Savage 4			2.	
Power	1. Changchen ATX-300SE			2.	

E2. IO-Meter (Raid 1)

Vendor / Model	Access Specification Name	Workers	IOps	MBps	Average Response Time	Maximum Response Time	% CPU Utilization
DC-200	8K Sequential Write	20	948.1	7.4	21.1	115.0	1.6
	8K Sequential Read	20	6749.9	52.7	3.0	56.1	70.0
	8K Random Write	20	226.8	1.8	87.9	252.7	5.6
	8K Random Read	20	184.0	1.4	108.3	303.9	4.8
DC-200	16K Sequential Write	20	657.7	10.3	30.4	78.9	10.2
	16K Sequential Read	20	4067.5	63.6	4.9	38.1	44.6
	16K Random Write	20	197.2	3.1	101.0	300.9	5.3
	16K Random Read	20	197.2	3.1	101.0	300.9	5.3
DC-200	32K Sequential Write	20	526.6	16.5	37.9	116.7	9.9
	32K Sequential Read	20	2230.5	69.7	8.9	54.5	26.8
	32K Random Write	20	164.4	5.1	121.3	318.0	4.5
	32K Random Read	20	164.9	5.2	121.0	331.7	4.1
DC-200	64K Sequential Write	20	289.4	18.1	68.9	194.2	6.7
	64K Sequential Read	20	1166.1	72.9	17.1	57.8	14.4
	64K Random Write	20	131.4	8.2	151.4	410.6	4.8
	64K Random Read	20	144.2	9.0	138.1	391.8	5.0
DC-200	128K Sequential Write	20	146.4	18.3	136.0	310.7	6.1
	128K Sequential Read	20	226.5	28.3	88.0	233.0	7.4
	128K Random Write	20	99.2	12.4	200.4	547.1	5.0
	128K Random Read	20	115.7	14.5	172.1	457.0	4.6
DC-200	256K Sequential Write	20	74.8	18.7	265.8	602.7	74.8
	256K Sequential Read	20	114.8	28.7	173.6	400.3	6.6
	256K Random Write	20	68.3	17.1	290.2	659.8	5.3
	256K Random Read	20	83.0	20.8	239.2	649.3	4.8
DC-200	512K Sequential Write	20	37.3	18.7	529.5	1251.3	5.5
	512K Sequential Read	20	61.6	30.8	322.2	754.5	6.2
	512K Random Write	20	35.3	17.7	557.5	1309.3	6.1
	512K Random Read	20	54.8	27.4	360.9	1084.7	6.2
DC-200	1M Sequential Write	20	18.8	18.8	1039.4	2286.7	5.5
	1M Sequential Read	20	31.9	31.9	620.0	1482.2	6.2
	1M Random Write	20	18.2	18.2	1073.4	2440.8	4.7
	1M Random Read	20	33.8	33.8	582.4	1337.5	6.7

Vendor / Model	Access Specification Name	Workers	I/Ops	MBps	Average Response Time	Maximum Response Time	% CPU Utilization
DC-200	2M Sequential Write	20	9.3	18.7	2019.2	4063.5	5.1
	2M Sequential Read	20	16.0	31.9	1218.5	2463.9	6.3
	2M Random Write	20	9.3	18.5	2024.7	4266.9	5.8
	2M Random Read	20	17.7	35.3	1100.7	2310.5	6.3
DC-200	5M Sequential Write	20	3.5	17.6	2811.5	6483.5	100.0
	5M Sequential Read	20	6.2	30.9	1697.1	3746.4	100.0
	5M Random Write	20	3.4	17.0	2881.9	5159.6	100.0
	5M Random Read	20	7.0	35.2	1486.5	3228.1	100.0

Test Environment	Manufacturer	Model	Bios	Chipset	CPU Speed
Main Board	Tekram	P6B40-A4X V1.31	V1.10	FW82443BX & FW82371	Pentium III 500
IDE Hard Disk	1. IBM 20G 7200 RPM ATA100 * 2			4.	
	2. Seagate 320414A 20G ATA100 * 2			5.	
	3.			6.	
DRAM	1. HY 256M PC133			2.	
IDE CD-ROM	1. ASUS 40X			2.	
VGA Card	1. S3 Savage 4			2.	
Power	1. Changchen ATX-300SE			2.	

E3. IO-Meter (Raid 0+1)

Vendor / Model	Access Specification Name	Workers	IOps	MBps	Average Response Time	Maximum Response Time	% CPU Utilization
DC-200	8K Sequential Write	20	891.5	7.0	22.4	174.9	80.3
	8K Sequential Read	20	6397.5	50.0	3.1	40.8	76.7
	8K Random Write	20	414.9	3.2	48.1	224.8	32.1
	8K Random Read	20	196.2	1.5	101.6	260.5	4.9
DC-200	16K Sequential Write	20	781.2	12.2	25.5	97.9	72.9
	16K Sequential Read	20	3817.3	59.6	5.2	43.1	49.1
	16K Random Write	20	333.6	5.2	59.7	221.8	58.5
	16K Random Read	20	189.0	3.0	105.4	254.5	4.4
DC-200	32K Sequential Write	20	423.5	13.2	47.1	136.3	72.0
	32K Sequential Read	20	2129.8	66.6	9.4	59.2	31.1
	32K Random Write	20	237.5	7.4	83.7	394.6	78.3
	32K Random Read	20	174.5	5.5	114.1	291.6	4.2
DC-200	64K Sequential Write	20	223.6	14.0	89.0	204.6	71.0
	64K Sequential Read	20	1247.0	77.9	16.0	77.5	21.9
	64K Random Write	20	179.2	11.2	110.9	322.4	78.2
	64K Random Read	20	170.3	10.6	117.0	290.2	5.4
DC-200	128K Sequential Write	20	112.0	14.0	178.2	383.7	71.2
	128K Sequential Read	20	598.3	74.8	33.4	91.6	16.2
	128K Random Write	20	110.5	13.8	179.5	623.1	71.0
	128K Random Read	20	154.4	19.3	128.9	473.3	6.6
DC-200	256K Sequential Write	20	56.0	14.0	354.3	819.5	69.9
	256K Sequential Read	20	219.7	54.9	90.7	219.4	11.7
	256K Random Write	20	55.9	14.0	354.0	1542.8	70.8
	256K Random Read	20	127.3	31.8	156.4	537.7	7.0
DC-200	512K Sequential Write	20	28.1	14.0	702.2	1643.4	70.0
	512K Sequential Read	20	118.2	59.1	168.4	403.6	12.3
	512K Random Write	20	27.7	13.9	704.7	3417.7	71.0
	512K Random Read	20	97.0	48.5	205.1	1343.0	10.0
DC-200	1M Sequential Write	20	14.0	14.0	1376.3	3285.2	70.3
	1M Sequential Read	20	63.6	63.6	312.2	708.9	13.5
	1M Random Write	20	14.1	14.1	1373.3	5908.4	69.5
	1M Random Read	20	58.6	58.6	338.5	1762.4	13.7

Vendor / Model	Access Specification Name	Workers	I/Ops	MBps	Average Response Time	Maximum Response Time	% CPU Utilization
DC-200	2M Sequential Write	20	6.9	13.8	2653.6	5329.5	69.7
	2M Sequential Read	20	32.8	65.5	602.3	1308.5	13.2
	2M Random Write	20	7.1	14.2	2630.8	5716.0	70.5
	2M Random Read	20	31.2	62.5	632.4	1452.1	12.5
DC-200	5M Sequential Write	20	2.6	12.9	3715.4	6412.7	100.0
	5M Sequential Read	20	12.8	64.0	836.2	1791.6	100.0
	5M Random Write	20	2.5	12.6	3843.9	6769.5	100.0
	5M Random Read	20	12.7	63.5	841.7	1869.1	100.0

Test Environment	Manufacturer	Model	Bios	Chipset	CPU Speed
Mother Board	Tekram	P6B40-A4X V1.31	V1.10	FW82443BX & FW82371	Pentium III 500
IDE Hard Disk	1. IBM 20G 7200 RPM ATA100 * 2			4.	
	2. Seagate 320414A 20G ATA100 * 2			5.	
	3.			6.	
DRAM	1. HY 256M PC133			2.	
IDE CD-ROM	1. ASUS 40X			2.	
VGA Card	1. S3 Savage 4			2.	
Power	1. Changchen ATX-300SE			2.	

F. Rebuild Test

F1. REBUILD & AUTO REBUILD TESTING

OS TYPE	Cards	Item	Connected devices	HDD connect Mode	Rebuild in GUI	Auto rebuild in GUI	Reboot and Rebuild	Rebuild In bios	Remark
Win98SE	One Cards	Raid 1	4 HDDs	Pm-Sm, Ps-Ss	Pass	Pass	Pass	Pass	
	Two Cards	Raid 0+1	4 HDDs	Pm0-Pm1-Sm0-Sm1	Pass	Pass	Pass	Pass	
Windows ME	One Cards	Raid 1	4 HDDs	Pm-Sm, Ps-Ss	Pass	Pass	Pass		
	Two Cards	Raid 0+1	4 HDDs	Pm0-Pm1-Sm0-Sm1	Pass	Pass	Pass		
Windows NT4.0	One Cards	Raid 1	4 HDDs	Pm-Sm, Ps-Ss	Pass	Pass	Pass		
	Two Cards	Raid 0+1	4 HDDs	Pm0-Pm1-Sm0-Sm1	Pass	Pass	Pass		
Windows 2000	One Cards	Raid 1	4 HDDs	Pm-Sm, Ps-Ss	Pass	Pass	Pass		
	Two Cards	Raid 0+1	4 HDDs	Pm0-Pm1-Sm0-Sm1	Pass	Pass	Pass		
Test Environment	Manufacturer	Model	Bios	Chipset				CPU Speed	
Mother Board	ASUS	TUSL2-M	V1009A	815E& FW8280IBA				Pentium III 550	
	MSI	815E Pro	V1.4	815E& FW8280IBA				Pentium III 550	
IDE Hard Disk	1. IBM 20G 7200 RPM ATA100 X2				4.WD 100BB X2				
	2. Seagate 320414A 20G ATA100 X2				5.				
	3. WD 200BB X2				6.				
DRAM	1. HY 128M PC133				2.				
IDE CD-ROM	1. Sony 40X				2.				
VGA Card	1.On board				2.				
Power	1. Changchen ATX-300SE				2.				

* Pm : Primary Master, Ps : Primary Slave Sm : Secondary Master Ss : Secondary Slave

*One Card : Pm0-Channel 1 Master, Ps0-Channel 1 Slave, Sm0-Channel 2 Master, Ss0-Channel 2 Slave

*Two Cards : Pm1-Channel 1 Master, Ps1-Channel 1 Slave, Sm1-Channel 2 Master, Ss1-Channel 2 Slave

G. Reliability TEST

G1. WinBench99 (Disk) 72 Hours

ITEM	RAID Mode	Run Times	HDDs	Result	Remark
Run WinBench99 (Disk)	RAID 0	24 Hours	4 HDDs	Pass	
Run WinBench99 (Disk)	RAID 1	24 Hours	4 HDDs	Pass	
Run WinBench99 (Disk)	RAID 0+1	24 Hours	4 HDDs	Pass	
Test Environment	Manufacturer	Model	Bios	Chipset	CPU Speed
Mother Board	Tekram	P6B40-A4X V1.31	V1.10	FW82443BX & FW82371	Pentium III 500
IDE Hard Disk	1. IBM 20G 7200 RPM ATA100 * 2			4.	
	2. Seagate 320414A 20G ATA100 * 2			5.	
	3.			6.	
DRAM	1. HY 128M PC133			2.	
IDE CD-ROM	1. ASUS 40X			2.	
VGA Card	1. S3 Savage 4			2.	
Power	1. Changchen ATX-300SE			2.	

G2. IOmeter 72 Hours

ITEM	RAID Mode	Run Times	HDDs	Result	Remark
Run IOmeter	RAID 0	24 Hours	4 HDDs	Pass	
Run IOmeter	RAID 1	24 Hours	4 HDDs	Pass	
Run IOmeter	RAID 0+1	24 Hours	4 HDDs	Pass	
Test Environment	Manufacturer	Model	Bios	Chipset	CPU Speed
Mother Board	Tekram	P6B40-A4X V1.31	V1.10	FW82443BX & FW82371	Pentium III 500
IDE Hard Disk	1. IBM 20G 7200 RPM ATA100 * 2			4.	
	2. Seagate 320414A 20G ATA100 * 2			5.	
	3.			6.	
DRAM	1. HY 128M PC133			2.	
IDE CD-ROM	1. ASUS 40X			2.	
VGA Card	1. S3 Savage 4			2.	
Power	1. Changchen ATX-300SE			2.	

H.performance comparison

H1.RAID0

Access Specification Name	Workers	Tekram / DC-200		Promise / Fastrak100 TX2		Highpoint / DC-100	
		MBps	% CPU Utilization	MBps	% CPU Utilization	MBps	% CPU Utilization
8K Sequential Write	20	6.9	11.4	7.1	12.5	6.8	10.7
8K Sequential Read	20	32.1	44.4	31.7	48.9	32.1	47.4
8K Random Write	20	2.1	5.4	2.5	6.1	2.3	6.1
8K Random Read	20	1.2	4.7	1.2	4.2	1.1	5.0
16K Sequential Write	20	10.8	10.5	13.1	13.8	11.9	11.0
16K Sequential Read	20	46.6	35.3	45.7	37.2	41.4	33.6
16K Random Write	20	3.2	5.2	4.3	5.6	3.9	6.5
16K Random Read	20	2.2	4.4	2.3	4.3	2.2	4.5
32K Sequential Write	20	15.7	8.4	24.5	12.5	18.1	10.1
32K Sequential Read	20	19.1	9.9	24.3	13.2	21.5	11.7
32K Random Write	20	4.7	4.7	6.0	4.8	5.9	5.1
32K Random Read	20	3.9	4.7	4.1	3.6	4.1	4.5
64K Sequential Write	20	20.6	7.1	23.5	8.4	23.5	8.1
64K Sequential Read	20	26.4	8.2	22.4	8.0	23.8	7.9
64K Random Write	20	8.2	4.8	8.0	4.0	7.9	4.6
64K Random Read	20	7.4	4.2	7.4	4.3	7.2	4.9
128K Sequential Write	20	32.4	8.0	27.4	7.9	43.6	12.3
128K Sequential Read	20	36.9	8.3	34.3	8.9	37.6	9.0
128K Random Write	20	13.2	5.3	13.9	4.8	13.4	5.4
128K Random Read	20	13.4	5.1	12.7	4.7	12.8	4.8
256K Sequential Write	20	30.6	7.3	30.6	7.9	51.1	12.4
256K Sequential Read	20	48.0	9.0	36.5	8.9	46.6	11.1
256K Random Write	20	20.4	5.1	21.5	6.5	21.9	6.5
256K Random Read	20	20.5	5.5	19.9	7.0	19.8	5.9
512K Sequential Write	20	31.8	6.6	32.0	7.8	57.1	11.4
512K Sequential Read	20	44.9	9.2	32.2	8.5	37.0	8.1
512K Random Write	20	27.9	5.7	30.1	7.1	30.4	7.5
512K Random Read	20	29.0	6.0	27.6	6.8	27.8	7.1
1M Sequential Write	20	32.5	6.7	32.3	6.9	57.7	11.6
1M Sequential Read	20	48.8	8.5	32.0	7.9	37.6	8.3
1M Random Write	20	26.5	6.2	34.7	7.8	36.5	8.2
1M Random Read	20	32.4	6.6	30.7	7.6	31.1	7.5
2M Sequential Write	20	32.1	6.5	31.7	8.0	57.6	12.8
2M Sequential Read	20	49.2	10.3	33.7	9.0	37.2	8.9
2M Random Write	20	27.7	6.6	33.1	8.1	38.5	10.0
2M Random Read	20	36.3	7.6	32.8	8.5	34.2	9.0

H2.RAID 1

Access Specification Name	Workers	Tekram / DC-200		Promise / Fastrak100 TX2		Highpoint / DC-100	
		MBps	% CPU Utilization	MBps	% CPU Utilization	MBps	% CPU Utilization
8K Sequential Write	20	4.3	7.3	5.4	10.7	3.9	9.4
8K Sequential Read	20	22.5	30.9	22.7	32.4	22.7	32.4
8K Random Write	20	1.3	4.4	1.1	3.7	1.2	5.6
8K Random Read	20	1.1	4.1	1.2	3.2	1.1	4.7
16K Sequential Write	20	8.3	8.8	8.5	8.7	7.2	8.7
16K Sequential Read	20	9.1	8.6	9.8	8.5	8.6	8.6
16K Random Write	20	2.4	5.1	2.0	3.8	2.2	4.9
16K Random Read	20	2.2	4.1	2.2	3.2	2.1	4.1
32K Sequential Write	20	10.1	6.5	11.1	7.6	12.2	8.1
32K Sequential Read	20	14.2	7.3	13.9	6.9	11.6	6.7
32K Random Write	20	4.1	4.4	3.5	4.3	3.8	4.8
32K Random Read	20	4.1	4.3	4.3	3.7	3.9	4.6
64K Sequential Write	20	14.0	4.9	19.8	6.8	18.8	7.4
64K Sequential Read	20	17.8	6.3	17.9	5.5	17.5	6.0
64K Random Write	20	7.0	4.4	6.0	3.6	6.5	4.9
64K Random Read	20	7.2	4.1	6.9	3.7	7.1	4.1
128K Sequential Write	20	16.5	5.7	25.5	6.7	25.6	7.8
128K Sequential Read	20	25.8	6.9	26.1	5.7	25.9	7.0
128K Random Write	20	10.2	4.3	10.1	4.3	10.6	5.1
128K Random Read	20	11.9	4.5	12.7	4.3	11.6	4.4
256K Sequential Write	20	16.2	4.4	28.9	7.2	28.8	7.3
256K Sequential Read	20	29.1	5.9	29.2	5.5	29.1	6.0
256K Random Write	20	14.0	4.4	14.9	4.9	15.4	5.6
256K Random Read	20	17.9	4.7	18.3	4.7	17.0	4.8
512K Sequential Write	20	16.4	5.2	28.8	6.8	28.7	7.4
512K Sequential Read	20	29.1	5.7	29.2	5.3	29.1	5.9
512K Random Write	20	13.6	4.3	19.3	4.9	19.4	5.8
512K Random Read	20	23.8	5.3	24.6	4.3	22.2	5.3
1M Sequential Write	20	16.2	4.5	28.8	6.2	28.8	7.5
1M Sequential Read	20	29.2	5.7	29.2	5.5	29.1	5.6
1M Random Write	20	13.7	4.4	22.3	7.7	21.2	5.7
1M Random Read	20	29.0	5.9	29.4	5.9	26.7	5.6
2M Sequential Write	20	16.1	4.7	29.4	6.7	29.2	7.3
2M Sequential Read	20	29.8	6.4	30.0	6.1	29.8	6.1
2M Random Write	20	13.1	4.8	21.7	6.3	21.0	6.3
2M Random Read	20	32.0	6.1	28.3	6.1	29.1	6.0

H3.RAID 0+1

Access Specification Name	Workers	Tekram / DC-200		Promise / Fastrak100 TX2		Highpoint / DC-100	
		MBps	% CPU Utilization	MBps	% CPU Utilization	MBps	% CPU Utilization
8K Sequential Write	20	6.0	39.4	6.7	15.0	7.0	14.5
8K Sequential Read	20	32.0	48.2	21.8	32.5	20.7	31.0
8K Random Write	20	1.5	95.5	1.6	5.0	1.6	5.9
8K Random Read	20	1.2	4.7	1.0	3.5	0.9	4.4
16K Sequential Write	20	9.4	53.8	10.7	12.3	10.2	11.5
16K Sequential Read	20	45.7	38.0	21.1	19.2	18.5	15.4
16K Random Write	20	2.5	94.9	2.7	4.7	2.7	5.5
16K Random Read	20	2.3	4.9	1.8	3.5	1.6	4.2
32K Sequential Write	20	11.6	65.6	14.6	10.5	16.8	12.4
32K Sequential Read	20	17.3	9.3	13.3	7.6	13.2	7.9
32K Random Write	20	3.7	92.5	4.1	5.3	4.2	5.2
32K Random Read	20	4.1	4.5	2.6	3.2	2.6	4.2
64K Sequential Write	20	13.7	69.6	14.7	6.8	16.1	7.3
64K Sequential Read	20	25.9	8.8	11.1	5.9	10.0	5.1
64K Random Write	20	6.3	88.0	5.8	3.8	5.9	5.1
64K Random Read	20	7.9	4.9	3.7	3.7	3.5	4.1
128K Sequential Write	20	14.1	69.9	20.4	7.8	20.0	7.2
128K Sequential Read	20	40.9	10.5	10.7	5.1	10.5	4.7
128K Random Write	20	10.0	80.2	9.0	4.6	9.1	5.4
128K Random Read	20	14.2	5.3	5.8	4.0	6.1	4.3
256K Sequential Write	20	14.1	70.3	20.1	6.6	19.8	7.4
256K Sequential Read	20	47.5	10.1	10.4	4.4	10.1	4.7
256K Random Write	20	12.8	71.4	11.9	5.7	12.0	6.0
256K Random Read	20	22.0	6.1	8.8	4.1	8.8	4.4
512K Sequential Write	20	14.0	69.5	21.1	6.5	20.1	7.0
512K Sequential Read	20	44.1	8.8	10.4	3.8	10.5	4.5
512K Random Write	20	12.1	74.3	13.3	5.0	12.9	5.9
512K Random Read	20	29.6	7.2	10.2	3.9	10.6	4.2
1M Sequential Write	20	14.0	69.6	21.7	6.5	20.0	7.1
1M Sequential Read	20	47.6	10.2	10.4	4.8	10.4	4.2
1M Random Write	20	10.0	78.9	13.0	5.0	12.1	5.6
1M Random Read	20	32.5	7.7	14.5	4.7	11.8	4.3
2M Sequential Write	20	13.9	68.8	21.4	7.5	19.9	7.6
2M Sequential Read	20	47.8	10.6	10.6	4.6	10.3	4.4
2M Random Write	20	7.9	83.6	12.1	5.5	11.0	5.8
2M Random Read	20	34.3	8.1	14.3	4.6	12.9	4.9

Test Environment	Manufacturer	Model	Bios	Chipset	CPU Speed
Mother Board	Tekram	P6B40-A4X V1.31	V1.10	FW82443BX & FW82371	Pentium III 500
IDE Hard Disk	1. IBM 20G ATA100(IC35L020AVER07-0) X 4		4.		
	2.		5.		
	3.		6.		
DRAM	1. HY 128M PC133		2.		
IDE CD-ROM	1. ASUS 40X		2.		
VGA Card	1. S3 Savage 4		2.		
Power	1. Changchen ATX-300SE		2.		