Integration Guide

Revision History

Rev.	Description	Engineering	Marketing	C. Support
A	RELEASE	JR	GB	TL

Model: BMX-3 ***Part Number:*** 940-002-00 ***Rev:*** A

ECOs/Rework applied

Step #	ECO #	Rework description/instructions	Installed	Labor	Init.
1	-	ECOs + all Eng. mods see inside this folder	[illegible]	1.50	[illegible]
2	-	SOC4/04-ODF + Eng. Mods			

Components replaced

Zetaco P/N	Vend P/N / loc	Fail -or- ECO	Replaced by	Zetaco P/N	Vend P/N / loc	Fail -or- ECO	Replaced by
	/	|			/	|	
	/	|			/	|	
	/	|			/	|	
	/	|			/	|	
	/	|			/	|	
	/	|			/	|	

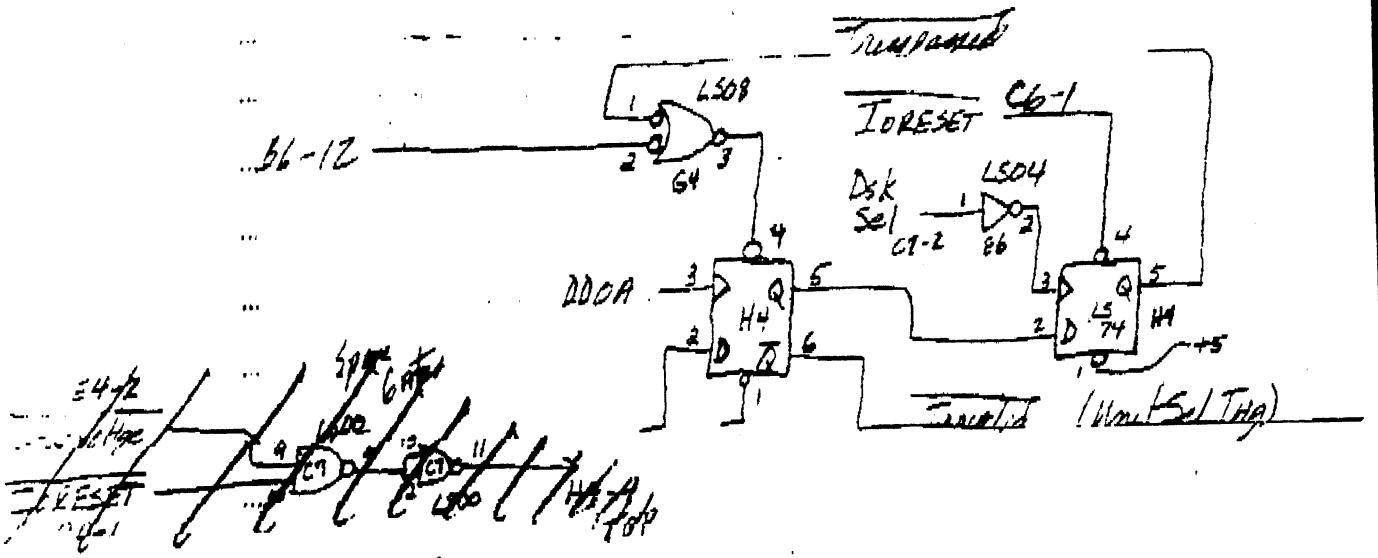
Invoice date	Your Order No.	Our Order No.	Representative	Terms	F.O.B	Date Shipped	Shipped Via

#	Part #	Code	Description			
1	Flat rate:		BMX-3 special upgrade per Gary Becker			
	Qty 1	@ $	250.00	each.	Ext:	250.00
2	T&M labor:	0	Not applicable			
	Qty 0	@ $	0.00	each.	Ext:	0.00
3						
	Qty	@ $		each.	Ext:	
4						
	Qty	@ $		each.	Ext:	
5						
	Qty	@ $		each.	Ext:	
					Sub total:	

*** (Plus shipping and materials if applicable)

#					
6	Shipping:	1	Shipping charges are APPLICABLE		
				Shipping cost:	
7	Materials:			:	
				Total cost:	

Consider using an OR of Low Voltage and IOREST



3 new ICs LS08, LS74, LS04

Do first

1. Piggy Back New LS74 on top of H4. Solder pin 7 to pin 7 and pin 14 to pin 14. Lift other legs of New LS74.

2. Piggy Back New LS08 on top of G4. solder leg 7 to leg 7 and leg 14 to leg 14. Lift other legs of new LS08.

3. Piggyback new LS04 on top of E6. Same as before

4. Lift H4-4 (Bottom IC)

5. Lift B6-12. wire B6-12 lifted to LS08 G4-2.

6. Wire LS08 G4-3 to Bottom H4-4 lifted.

5. Wire Bottom H4-5 to top H4-2.

9. Wire C7-2 to LS04 E6-1.

10. Wire LS04 E6-2 to Top H4-3.

11. Wire C6-1 to Top H4-4.

12. Wire Top H4-1 to Top H4-14.

****
****
* TECH TIP 091 *
****
****

Catagory::Controller Product::BMX-3
Reference::Upgrade to revision AB
Submitted by::Robert Shaffer Date::December 29, 1992

****

The following is the upgrade to Rev J:

Lift the following pins:
3K-6 (74F15)
3K-10
3H-3 (74F74)
11E-10 (74F112)
11E-14
3T-10 (74F08)

Run the following wires:
3K-6 to 3K-8
3K-10 to 11E-9
3H-3 to 9F-14
3J-3 to 7C-13
3T-10 to 7C-11
4J-12 to 7C-9 to 7C-10
7C-8 to 11E-10
11E-14 to 8T-9

All wires are to the legs NOT the etch (on chips with lifted legs)

To revision AB from revision J:

Lift pin 8B-3 (74s74)

Run the following wires:
8B-3 to 8AA-8 (74LS08)
8B-3 ETCH to 8AA-9
8B-6 to 8AA-10

Upgrade proms at location P1 thru P6 to rev 09
Upgrade prom at 6D to rev 09

BMC Contention fix (required for all boards):
Lift pin N11-1
Lift pin J1-33
Run wire from J1-33(pin) to N11-1(pin) to B12-1(terminator)

****
****
* TECH TIP 057 *
****
****

Catagory::Controller Product::BMX-3
Reference::BMX-3 controller revision history
Submitted by::Robert Shaffer Date::3/12/92

****

The following is a revision history w/reason for change and matching configuration tape and ECO numbers. Configuration tape part number is 400-404-00 and board part number is 500-404-00.

BD REV	TAPE REV	ECO	REASON
A	A		
B	?		
C	?		
D	?	0485	New proms. Virtual config. problems
E	D/E	0498	New proms. Single/double DOC override added Fixed sizing problem to allow DFMTR to run on disk with >32 sectors.
F	D/E	0526	New proms. DCH format problem in S280. Re-select problem with 9762. MIIS compatible.
G	D/E	0562	Board cover notch for terminator removal.
H	?		
J	F	0576	New proms. Improve 20MHZ proformance (slip -skip changes). Add sector slip while logically interleaved. Correct MIIS 'what' problem.
K	F	0592	Power fail circuit changes. Calibration resistor added.
L	G	0591	New proms. S280 dual port problem. MV10000, Zebra, BMX3 problems. New diag, fmtr.
M	G		
N	G	0618	Manual change only
P	G	0630	New proms. DC or UNSAFE errors w/20MHZ disk drives.
R	G	0648	Ground wire and lug to cables.
S	G	0650	Added AVIV board cover option
T	G	0665	Fix EEPROM corruption problem on MV10000 during power up
U	G		
W	G	0741	Manual change only. MV20000 approval
X	G	0748	Change board cover specs
Y	H	0764	Various changes in all programs on the configurator tape
		0768	New proms. Fix CMD drive problem
		0769	Jumper pin changes
AA	H	0773	Intermittent RDOS problems in S280
AB	H	0786	New proms. Fix problem w/Amcodyne 7110
AC	H		

AD	H	0820	Documentation change only
AE	H/J	0843	Documentation change only
AF	H/J/K	0849	Paddleboard change
AG	H/J/K		
AH	H/J/K	0919	Tape documentation change only
		0927	Assy & part list revision up to same level
AJ	H/J/K	0929	New proms. Fix address error problem formatting drive w/>32 heads. Also fix format problem on disk w/>32 heads but <32 sectors.

Tape revision J fixed the following problems with the diags:
DIAG - fixed error reporting problem
FMTR - fixed error reporting problems
RELI - fixed bug which occassionally would put program in a loop displaying 'unexpected interrupt'.

New

Revision Compatibility/ECO Reference Chart

BW-3

~~Model X~~ Software Support Package Tape
400-~~496~~-00 404

~~Model X~~ Assembly
500-~~492~~-00 404

	A	B	C	D	E	F	G	H	J	K	ECO #	Class	Note
A	X												
B													
C													
D											0485		1
E				X	X						0498		2
F				X	X						0526		4
G				X	X						0562		5
H													
J						X					0576		6
K						X					0592		7
L							X				0591		8
Microcode revision													
ECO #					05107	05796	05916	07864	08744	09191			
Class													
Note					3	6	8	16	23	25			

1

Revision Compatibility/ECO Reference Chart

BMX-3

~~Model X~~ Software Support Package Tape
400-~~496~~-00 404

~~Model X~~ Assembly 500-~~492~~-00 404	~~A~~ G	H	~~II~~	~~IJK~~							ECO #	Class	Note
~~A~~ M	X												
N	X										0618		9
P	X										0634		10
R	X										0648		11
S	X										0650		12
T	X										0665		13
U	X												
W	X										0741		14
~~W~~ X	X										0748		15
~~X~~ Y	~~IJK~~	X									0764		16
~~Y~~ Y		X									0768		17
Microcode revision													
ECO #	0591	0764											
Class													
Note	8	16											

Revision Compatibility/ECO Reference Chart

BMX-3

~~Model X~~ Software Support Package Tape
400-~~495~~-00
404

~~Model X~~ Assembly 500-~~492~~-00 404	~~A~~ H	J	K								ECO #	Class	Note
~~A~~ Y	X										Ø769		18
A ~~A~~	X										Ø773		19
A ~~B~~	X										Ø786		20
A ~~B~~ C	X												
A ~~C~~ D	X										Ø820		21
A ~~D~~ E	X	X									Ø843		22
A ~~E~~ F	X	X	X								Ø849		24
A ~~F~~ G	X	X	X										
A ~~G~~ H	X	X	X								Ø919		25
A ~~H~~ ~~H~~	X	X	X								Ø927		26
A ~~H~~ J	X	X	X								Ø929		27
Microcode revision													
ECO #	Ø769	Ø849	Ø919										
Class													
Note	16	23	25										

Notes

1. New PROMs. Corrected a problem with multiple virtual unit configuration. When virtual mode was software disabled, the deferred seek bit caused seeks to not be executed.

2. New PROMs. Added single/double DOC override. Fixed a Zebra sizing problem w/DFMTR so that drives with more than 32 sectors can be formatted. Provided for an alternate PROM IC type for production.

3. New Configurator. Added RDOS virtual, more help, small path changes, better lists, modified megabyte calculations, added drive types.

4. New PROMs. Sped up DIB statusing. This corrected a DCH format problem in the S/280. Fixed a reselect problem with some drives, including CDC 9762. Present invalid status on a unit change for MIIS compatability.

5. Added a notch to the board cover so that the terminators can be removed without removing the board cover.

6. New PROMs. Improved 20MHz performance via 'slip-skip' changes. No more skipping revs. Added ability to sector slip while logically interleaved. Also corrected a MIIS problem - what? -. Configurator changes.

7. Power fail circuit changes. Added calibration resistor selection for flexibility in production.

8. New PROMs. Fixed an S/280 dual port problem. Added rework for the MV/10000 & DG Zebra. New diagnostic and formatter.

9. Manual change only

10. New PROMs. Corrected potential DC or UNSAFE errors @ 20MHz.

11. Cable and manual change. Added ground wire and lug to cables.

12. Added AVIV board cover option.

13. Corrected an EEPROM data corruption problem during power-up in an MV/10000

14. MAnual change only. Approved the MV/20000.

15. Changed the board cover specs.

16. Various changes in DISKD, DISKF, DISKR, CFBMX3 and SLIPS.

17. New PROMs. Fix a CMD drive problem (Amcodyne 7110). ECO is void. Notice duplicate revision 'Y' - ???

18. Changed some jumper pins. Documentation changes.

19. Fixed intermittent RDOS problemsin the S/280.

20. New PROMs. Fixed a problem with the Amcodyne 7110.

21. Documentation change only.

22. Documentation change only.

23. New diagnostic : Fixed error reporting problem.
New formatter: Fixed error reporting problem.
New Reliability: Corrected a bug that occasionally caused the program to loop displaying 'unexpected interrupt'

Added a DCH printer 'help' to all programs.

24. Paddleboard change.

25. Tape documentation change.

26. Brought assembly & parts list revisions up to the same level. Unmatched revision levels was a mistake.

27. New PROMs. Fixed an address error problem which occurred when formatting a drive with more than 32 heads. Also fixed a format problem with drives that have more than 32 heads AND less than 32 sectors.

BMX2 500-547-00

Lift J1-33

Lift L11-2

Lift K11-11

Lift L10-1

Run wire L10-1 to K11-11

Run wire K11-11 to L11-2 (terminator)

Run Wire L11-2 to J1-33

****
****
******** TECH TIP #20 ********
****
****
tegory - DISK Product - BMX3
ference - Very slow controller operation
Submitted by - Robert Shaffer
****
****

It has been noticed that some BMX3 controllers run very slow under certain conditions. Our tests have confirmed that depending on the CPU, Disk, and Controller revision, the controller may run upto 10 times SLOWER than a good one. This problem is primarily associated with 20MHZ disks such as the Sabre 9720-850 and Fujitsu 2361, although I have noticed it on the MV4000 running slow with a Fujitsu 2351.

PROBLEM DESCRIPTION:

20MHZ disk drives running on slow DCH/BMC CPU's such as the MV4000, S140, and S280 (lesser extent) will cause the disk to skip rotations thus reducing the speed of the controller. The normal way to fix this is to interleave the controller. BUT in most of the drives we use, this CAN NOT be done because of split sectoring or split drives!! Our tests have shown that a good controller will do about 18000 seeks in 15 minutes of Reli on a MV4000, a bad controller will do 1800!

RESOLUTION:

Zetaco has made a fix so that the controller will automatically do a 2:1 interleave on 20MHZ drives, thus illiminating the problem. This fix is in REVISION P or ABOVE and you must use REV G or ABOVE configuration tape for this : to work.

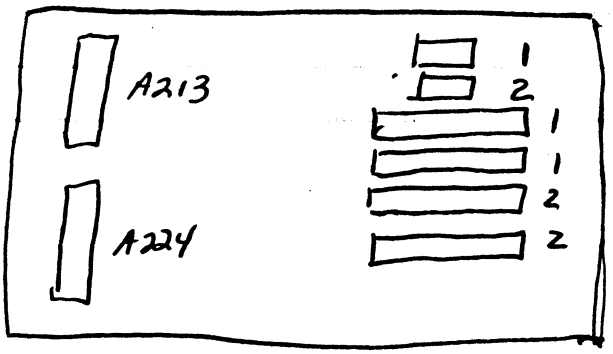
NOTES:

BMX3 controller REV D will run in ALL CPU's except the MV4000, S140 and S280 with NO speed problems.

TECH TIP #8

CATAGORY - Disk PRODUCT - 9720
Reference - Setup of different models of 9720

INTERFACE Bd - All models



A213			A224	
1	O		1	O
2	C		2	O
3	O		3	O
4	C		4	O
5	O		5	O
6	O	C for BMX3	6	O
7	O	SMDE C for BMX3	7	O
8	O		8	O
9	O		9	O
10	C		10	O

O - open C - closed

DRIVE

SWPD - ALWAYS IN - DISABLE SWEEP CYCLE
RUNT - ALWAYS OUT - MAKES SECTOR COUNT 1 less than set up for.

CONTINUATION Tech Tip #8

Sector Switches BMX3 - RDOS

Switch	model - 368	500	736	850	1120	1230
2^0				O		
2^1				C		
2^2				C		
2^3				C		
2^4				C		
2^5				C		
2^6				C		
2^7				O		
2^8				C		
2^9				O		
2^{10}				C		
2^{11}				C		
2^{12}				C		
2^{13}				C		
Clock Pulses				2.465 64		
Bytes/Sector				642		

WON'T RUN ON BMX3, 3AP, 3A because freq. RATE IS greater THAN 20MHz

CONTINUATION of Tech Tip #8

SECTOR Switches BMX3 - AOS, AOS/VS

Switch	model = 368	500	736	850	SLVS MAIS 8600	1120 1230
2^0			C	O	O	
2^1			C	C	O	
2^2			C	C	C	
2^3			C	C	O	
2^4			O	C	O	
2^5			C	C	C	
2^6			O	C	O	
2^7			C	O	C	
2^8			C	C	C	
2^9			O	O	O	
2^{10}			C	C	C	
2^{11}			C	C	C	
2^{12}			C	C	C	
2^{13}			C	C	C	
Clock Pulses			1.814 51	2.465 64	2.465 64 used	
Bytes/sect				642	640	
B/S			C	C	C	

WONT RUN ON BMX3, 3A, 3AP because freq. RATE > 20mHz

CONTINUATION of Tech TIP #8

Sector Switches ARZI – AOS, AOS/VS, ROOS

Switch	model = 368	500	736	850	1120	1200
2^0	0	0	C	C	C	C
2^1	C	0	C	C	0	0
2^2	C	C	C	0	C	C
2^3	C	C	C	0	0	0
2^4	0	0	0	C	0	C
2^5	0	0	C	C	0	C
2^6	0	0	0	C	C	C
2^7	0	C	C	0	0	0
2^8	0	C	C	0	0	0
2^9	C	0	0	C	C	C
2^{10}	0	0	C	C	C	C
2^{11}	0	0	C	C	C	C
2^{12}	N/A	N/A	C	C	C	C
2^{13}	N/A	N/A	C	C	C	C
Clock	ROUND DOWN 1.6	ROUNDUP 1.6	ROUND UP 1.814	ROUNDUP 1.6	ROUNDUP 1.83	ROUND DOWN 2.016
Pulses	** 52/51	69	51	69	69	86/85*
Bytes	592.87/3.37	595.50/594	593/590	595.50/594	664.50/606	592.50/37.5
A/B			C	0	0	0

* 86 pulses, 85 used
** 52 pulses 51 used

CONTINUATION of Tech TiP #8

Logical ADDRESS - switch ON logic BOARD

UNIT	Switch =	2^0	2^1	2^2	2^3
0		C	C	C	C
1		O	C	C	C
2		C	O	C	C
3		O	O	C	C
4		C	C	O	C
5		O	C	O	C
6		O	O	C	C
7		O	O	O	C
8		C	C	C	O

O = OPEN C = Closed

IF using FRONT CONSOLE, leave All closed

Integration Guide

BMX-3 Disk Controller

BMX-3 Disk Controller has been tested and verified by Engineering for use in the following disk drives and Data General CPUs.

SECTION A: DATA GENERAL PROCESSORS

NOVA 4.....	via DCH.....	RDOS (Rev 6.0 to Rev 7.5)
S/120.....	via DCH.....	RDOS (Rev 6.0 to Rev 7.5) and AOS (Rev 6.0 to Rev 7.0)
S/140.....	DCH or BMC.....	RDOS (Rev 6.0 to Rev 7.5) and AOS (Rev 6 to Rev 7)
S/280.....	DCH or BMC.....	RDOS (Rev 7.0 to Rev 7.5) and AOS (Rev 6.0 to Rev 7.0)
MV/4000.....	via BMC.....	AOS/VS (Rev 5.0 to Rev 7.63)
MV/7800U*....	via BMC.....	AOS/VS (Rev 6.06 to 7.63)
MV/6000.....	via BMC.....	AOS/VS (Rev 5.0 to Rev 7.63)
MV/8000,II,C.	via BMC.....	AOS/VS (Rev 5.0 to Rev 7.63)
MV/10000**...	via BMC.....	AOS/VS (Rev 5.0 to Rev 7.63)
MV/15000.....	via BMC.....	AOS/VS (Rev 7.55 to Rev 7.63)
MV/20000**...	via BMC.....	AOS/VS (Rev 6.54 to 7.63)

* Model BMX-3 is designed to run with the MV/7800U, but NOT with the MV/7800C; for the MV/7800C, use Zetaco's Model BMX-3A instead, which has the proper pin-outs to accomodate its backplane.

** The diagnostic program provided on the BMX-3 Software Support Tape will run only on the first IOC (not the second).

NOTE: The BMX-3 product is a discontinued product and has been replaced by the BMX-3AP.

SECTION B: Verified Disk Drives

Disk Drive Model	Transfer Rate MB/sec	Unformatted Capacity	FORMATTED CAPACITY		
			RDOS Below Rev. 7.0	RDOS, Rev. 7.0 and Above	AOS & AOS/VS
Century Data AMS 571	2.0	615	267/267	534	190/190
CDC 9710 HSD	1.2	82	67	73	73
CDC 9715-160 FSD	1.2	165	134	147	147
CDC 9715-340 FSD	1.2	344	279	305	277
CDC 9715-500 FSD	1.8	516	227/227	454	277 or 190/190
CDC 9720-368 Sabre	1.8	368	149/149	324	277
CDC 9720-736 Sabre	1.8	736	320/320	640	277/277 or 602 **
CDC 9771 XMD	1.8	825	268/268	360/360	277/277/73 or 602 **
Fujitsu 2351 Eagle	1.9	475	207/207	207/207	277 or 190/190
Fujitsu 2333*	2.5	337	134/134	147/147	277 or 147/147
Fujitsu 2344*	2.5	690	276/276	602 or 301/301	277/277 or 602 **
Fujitsu 2361 EagleXP*	2.5	690	275/275	602 or 301/301	277/277 or 602 **

* ZETACO recommends <u>against</u> interfacing these 20 Mhz drives on the Data Channel (DCH), because performance limitations will likely result (depending on the CPU).

** AOS/VS <u>ONLY</u>

BMX-3 FEATURES SUMMARY

* Supports Data Transfer Rates up to 2.5 MB/sec:
  ZETA 1 FORMAT: Standard SMD Drives
  ZETA 2 FORMAT: Fujitsu 20 MHz
  ZETA 3 FORMAT: High Speed BMX-1 Compatible

* Virtual Mapping Feature allows higher formatted capacities.

* Emulates DG's 6060, 6061, 6067, 6160, 6161, 6122, 6214

* Both FCC & Non-FCC cabling are off the backplane.

* Requires an "I/O ONLY" slot within chassis.

* Has logical interleave

SECTION B: Verified Disk Drives

Disk Drive Model	Transfer Rate MB/sec	Unformatted Capacity	FORMATTED CAPACITY		
			RDOS Below Rev. 7.0	RDOS, Rev. 7.0 and Above	AOS & AOS/VS
Century Data AMS 871	2.0	615	267/267	534	190/190
CDC 9710 HSD	1.2	82	67	73	73
CDC 9715-160 FSD	1.2	165	134	147	147
CDC 9715-340 FSD	1.2	344	279	305	277
CDC 9715-500 FSD	1.8	516	227/227	454	277 or 190/190
CDC 9720-368 Sabre	1.8	368	149/149	324	277
CDC 9720-736 Sabre	1.8	736	320/320	640	277/277 or 602 **
CDC 9771 XMD	1.8	825	268/268	360/360	277/277/73 or 602 **
Fujitsu 2351 Eagle	1.9	475	207/207	207/207	277 or 190/190
Fujitsu 2333*	2.5	337	134/134	147/147	277 or 147/147
Fujitsu 2344*	2.5	690	276/276	602 or 301/301	277/277 or 602 **
Fujitsu 2361 EagleXP*	2.5	690	275/275	602 or 301/301	277/277 or 602 **

* ZETACO recommends against interfacing these 20 Mhz drives on the Data Channel (DCH), because performance limitations will likely result (depending on the CPU).

** AOS/VS ONLY

SECTION C: OTHER DISK DRIVES

Although the disk drives listed below have NOT been tested in Zetaco's labs and verified as operational with Zetaco controllers, they are successfully running within our Customer base.

AMCODYNE	8160	KENNEDY	5380	PERTEC	199
	7110		53160		265
			7340		332
AMPEX	165		7380		
	330			PRIAM	3450
		MEGAVAULT	26		7050
CENTURY	T306		80		803
DATA	AMS 315		132		804
	AMS 513		186		806
	C2075		212		807
	T82				808
		NEC	D2246		3350
CDC	9762		D2247		6650
	9766		D2257		15450
	9775		D2352		
	9457		D2268H	TOSHIBA	182
			D2362		184
FUJITSU	M2880				186
	M2284	NORTHERN	8204		
	M2294	TELCOM	82087	TECSTOR	85
	M2298		82107		160
	M2311				165
	M2322				200
					300

If you know of devices, other than those listed in Section B, that are running with BMX-3, please write, telex or fax our Customer Support Group with the information so they can be added to this section.

BMX-3 FEATURES SUMMARY

* Supports Data Transfer Rates up to 2.5 MB/sec:
  ZETA 1 FORMAT: Standard SMD Drives
  ZETA 2 FORMAT: Fujitsu 20 MHz
  ZETA 3 FORMAT: High Speed BMX-1 Compatible

* Virtual Mapping Feature allows higher formatted capacities.

* Emulates DG's 6060, 6061, 6067, 6160, 6161, 6122, 6214

* Both FCC & Non-FCC cabling are off the backplane.

* Requires an "I/O ONLY" slot within chassis.

* Has logical interleave

BMX-3 Integration Guide

BMX-3 Disk Controller has been tested and verified by Engineering for use in the following disk drives and Data General CPU's.

SECTION A: DATA GENERAL PROCESSORS

NOVA 4.....	via DCH.....	RDOS (Rev 6.0 to Rev 7.5)
S/120.....	via DCH.....	RDOS (Rev 6.0 to Rev 7.5) and AOS (Rev 6.0 to Rev 7.0)
S/140.....	DCH or BMC.....	RDOS (Rev 6.0 to Rev 7.5) and AOS (Rev 6 to Rev 7)
S/280.....	DCH or BMC.....	RDOS (Rev 7.0 to Rev 7.5) and AOS (Rev 6.0 to Rev 7.0)
M/600.....	DCH or BMC.....	RDOS (Rev 6.0 to Rev 7.5) and AOS (Rev 6.0 to Rev 7.0)
MV/4000.....	via BMC.....	AOS/VS (Rev 5.0 to Rev 7.5)
MV/7800U*....	via BMC.....	AOS/VS (Rev 6.06 or 7.5 ONLY)
MV/6000.....	via BMC.....	AOS/VS (Rev 5.0 to Rev 7.5)
MV/8000,II,C.	via BMC.....	AOS/VS (Rev 5.0 to Rev 7.5)
MV/10000**...	via BMC.....	AOS/VS (Rev 5.0 to Rev 7.5)
MV/15000.....	via BMC.....	AOS/VS (Rev 7.55 ONLY)
MV/20000**...	via BMC.....	AOS/VS (Rev 6.54 or 7.5 ONLY)

* Model BMX-3 is designed to run with the MV/7800U, but NOT with the MV/7800C; for the MV/7800C, use Zetaco's Model BMX-3A instead, which has the proper pin-outs to accomodate its backplane.

** The diagnostic program provided on the BMX-3 Software Support Tape will run only on the first IOC (not the second).

Sections B & C (Disk Drives) are on reverse side.

BMX-3 FEATURES SUMMARY:

* Supports Data Transfer Rates up to 2.5 MB/sec:
  ZETA 1 FORMAT: .8 MB/sec (6.4 Mhz) - 1.2 MB/sec (10 Mhz)
  ZETA 2 FORMAT: 1.2 MB/sec (10 Mhz) - 2.5 MB/sec (20 Mhz)
  ZETA 3 FORMAT: High Speed BMX-1 Compatible

* Virtual Mapping Feature allows higher formatted capacities.

* Emulates DG's 6060, 6061, 6067, 6160, 6161, 6122, 6214

* Both FCC & Non-FCC cabling are off the backplane.

* Requires an "I/O ONLY" slot within chassis.

* Has logical interleave

A Subsidiary of the Carlisle Corporation
Corporate: 6850 Shady Oak Road, Eden Prairie, Minnesota 55344 U.S.A., (612) 941-9480 Telex 290975 FAX (612) 941-1395
Europe: 9 High Street, Tring, Hertfordshire HP 23 5AH, England (44) 44 282-7011 Telex 851-827557

SECTION B: VERIFIED TAPE DRIVES

Legend: SS = Start/Stop, S = Streamer, SS/S = Start/Stop & Streamer

Drive Model	800 bpi (NRZI)			1600 bpi (PE)			6250 bpi (GCR)		
	type	ips	KB/sec	type	ips	KB/sec	type	ips	KB/sec
Cipher F880				S	100	160			
CDC 92185-01				S	75	120	S	75	469
Fujitsu 2442*				S	100	160	S	100	625
Fujitsu 2444*				S	75	120	S	75	469
Fujitsu 2436				SS/S	200	320	SS/S	200	1250
Kennedy 9400	SS	75	60	SS	75	120	SS	45	281
Kennedy 9600	S	100	80	S	100	160			
Kennedy 9610	SS	50	40	SS	100	160	SS	100	625
STC 2921				SS	50	80	SS	50	312
STC 2922				SS/S	100	160	SS/S	100	625
Telex 9251	SS	50	40	SS	50	80	SS	50	312

Megatape MT500: streams at 180 ips (10,666 bpi), resulting in 250 KB/sec.

Megatape MT750: streams at 180 ips (16,000 bpi), resulting in 250 KB/sec.

*The optional CACHE buffer has not yet been tested in Zetaco labs.

SECTION C: If you know of devices, other than those listed in Section B, that are running with BMX-2, please write or telex our Customer Support Group with the information so they can be added to this section.

SMD Disk Drive Formatted Capacities using Zetaco's BMX-3 or DC-297 Disk Controllers with 'Virtual Mapping'

Drive Model	Data Trans Rate MB/sec	Disk Diam	Type	Heads	Cylinders	Max. Sectors (512 B)	Unformatted Capacity in MB	Formatted Capacities (MB & % use of drive)		
									AOS or AOS/VS	
								RDOS	w/o Virtual Mapping	with Virtual Mapping
CENTURY DATA PRODUCTS										
AMS 513	1.28	14"	F	19	845/823	55	514/501	452/440 87.9 %	192/192 74.7 %	192/192/50 84.4 %
AMS 571	1.98	14"	F	19	981/941	56	615/590	534/512 86.8 %	192/192 62.4 %	192/192/96 78 %
PRIAM										
7050	.806	8"	F	5	1050	23	70	61.8 88 %	X 0 %	50 71.4 %
807	1.21	8"	F	11	1552	35	344	305.9 88.9 %	147 42.7 %	277 or 192/96 80.5 % or 83.7 %
808	1.81	8"	F	11	1552	51	516	445.7 86.4 %	147 28.5 %	277 or 192/192/50 53.7 % or 84.1 %
6650	1.04	14"	F	3	1121	35	68	60.2 88.5 %	X 0 %	50 73.5 %
15450	1.04	14"	F	7	1121	35	158	140.6 89 %	73 46.2 %	73 or 50/50 46.2 % or 63.3 %
CONTROL DATA CORP										
FSD 9715-340	1.2	9"	F	24	711	35	344	305 88.6 %	96 28 %	277 80.5 %
FSD 9715-500	1.8	9"	F	24	711	52	516	454 88 %	96 18.6 %	192/192 74.4 %
XMD 9771	1.8	14"	F	16	1024	64 (86)	825	536 65 %	147 17.8 %	604/73 82 %
EMD 9720	1.8	8"	F	10	1217	52	368	324 88 %	147 40 %	277 75 %
FUJITSU										
M2294	1.2	14"	F	16	1024	35	335	293 87 %	147 43.8 %	277 82.6 %
M2312	1.2	8"	F	7	589	35	84	73 87 %	X 0 %	73 87 %
M2298	1.859	14"	F	16	1024	35/35	671.08	536.8 79.9 %	147/147 43.9 %	277/277 82.5 %

B&B

Non-Virtual Characteristics

Enter Command (? to see choices): L

CURRENT CONFIGURATION FACTS

	Port 0	Port 1	Port 2	Port 3
Throttle Burst Rate	32	32	32	32
Break Count	0	0	0	0
Sync Byte	223	223	223	223
ECC Enabled	YES	YES	YES	YES
Media Format Type	ZTA1	ZTA1	ZTA1	ZTA1
Interleave Factor	1	1	1	1
Sector Slip Enabled	NO	NO	NO	NO
Data Transfer Method	BMC			
BMC Priority	2			
Dual Port Enabled	NO			

The disks on this controller are:

DISK		HDS	HDS-REM SECS	PHY. UNIT#	LG. UNIT#
PRT 0	UD-User Defined	5	32	0	0
PRT 1	UD-User Defined	5	32	0	0
PRT 2	UD-User Defined	5	32	0	0
PRT 3	UD-User Defined	5	32	0	0

Enter Command (? to see choices): ?

COMMAND MENU

CHANGE CONTROLLER FACTS:

A - Data Transfer Method
B - BMC Priority
D - Disk Drive(s)
P - Dual Porting Flag

CHANGE DISK PER PORT FACTS:

E - ECC Enable or Disable
F - Throttle Burst Rate
G - Throttle Break Count
I - Interleaving & Sector Slip
M - Media Format & Sync Byte

MISCELLANEOUS COMMANDS:

H - HELP (Operations)
W - HELP (What To Do)
J - CHANGE ALL controller facts
K - CHANGE ALL DISK per port facts
L - LIST all configuration facts
N - START logging to printer
O - STOP logging to printer
Q - QUIT the program
U - UPDATE EEPROM
X - SWITCHES (ZETACO Only!)

Enter Command (? to see choices): O

Virtual Characteristics

```
Enter Command (? to see choices): L
```

CURRENT CONFIGURATION FACTS

	Port 0	Port 1	Port 2	Port 3
Throttle Burst Rate	32	32	32	32
Break Count	0	0	0	0
Sync Byte	223	223	223	223
ECC Enabled	YES	YES	YES	YES
Media Format Type	ZTA2	ZTA2	ZTA2	ZTA2
Interleave Factor	1	1	1	1
Sector Slip Enabled	NO	NO	NO	NO
Data Transfer Method	BMC			
BMC Priority	2			
Dual Port Enabled	NO			

DISK NAME	PHYSICAL Unit	Total Secs.	Logical Interlv.	Ports 0 1 2 3	LOGICAL Unit	MB	Emulation
ND-New Disk Type	0	70	NO	X X X X	0	147	6161
					1	147	6161

```
Enter the number of a port to examine closer or enter a carriage
return or newline to return to the main menu: 0
```

********** PHYSICAL CHARACTERISTICS **********

DISK NAME	Unit	Cyls	Secs	Slipped	Heads	Megs	Split Method
ND-New Disk Type	0	1646	35	0	10	194	Secs/2;Cyls*2

********** LOGICAL CHARACTERISTICS **********

EMULATION NAME	Unit	Cyls	Secs	Heads	Megs
6161	0	822	35	10	147
6161	1	822	35	10	147

```
Enter Command (? to see choices): O
...Logging to the printer ended.
```

DG Disk Emulations

EMULATION	HEADS	CYLINDER	SECTORS	MB	FAMILY
6061	19	411	24	96	Zebra
6061	19	815	24	190	Zebra
6067	5	815	24	50	Zebra
6160	5	823	35	73	Kismet
6160	10	823	35	147	Kismet
6122	19	815	35	277	Vulcan
6214	40	843	35	602	Kismet

NOTES:

Figuring sectors:

$$\text{Sectors} = \frac{\text{Bytes/Track}}{576 \text{ min. (10MHZ Transfer)}}$$

$$\text{Example } 35 = \frac{20{,}160}{576}$$

Figuring formatted capacity:

MB = Hds X cycl X Sec.X 512 (Data-DG)

Figuring Transfer:

MB/Sec X 8 bits/sec. = MBits/Sec. - MHZ

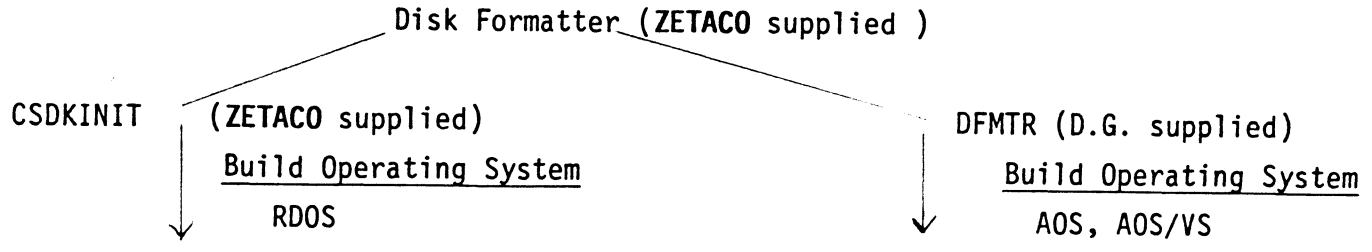


TABLE 3.1

1. DG EMULATION GROUPS

ZEBRA - 4 logical (AOS, AOS/VS) (4 logical RDOS)

	CYLINDERS	HEADS	SECTORS	BLOCK SIZE	SYMBOL	FORMATTED CAPACITY
6060	411	19	24	187,416	Z0	96
6061	815	19	24	371,640	Z1	190
6067	815	5	24	97,800	Z7	50

KISMET - 2 logical (AOS,AOS/VS) (4 logical RDOS)

	CYLINDERS	HEADS	SECTORS	BLOCK SIZE	SYMBOL	FORMATTED CAPACITY
6160	823	5	35	144,025	K0	73
6161	823	10	35	288,050	K1	147
6214	843	40	35	1,180,200	K4	602

VULCAN - 4 logical (AOS,AOS/VS) (4 logical RDOS)

	CYLINDERS	HEADS	SECTORS	BLOCK SIZE	SYMBOL	FORMATTED CAPACITY
6122	815	19	35	541,975	V	277