

Integration Guide

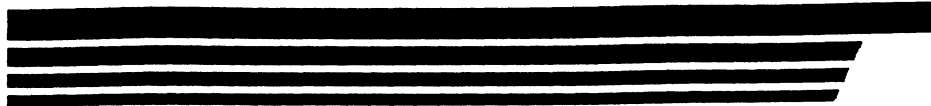
Revision History

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

Model: DC-297

Part Number: 940-005-00

Rev: A



Integration Guide

DC-297 Disk Controller

DC-297 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

CPU	BUS	OPERATING SYSTEM/S
NOVA 3	DCH	RDOS (Rev 6.0 to Rev 7.5)
NOVA 4	DCH	RDOS (Rev 6.0 to Rev 7.5)
S/120	DCH	RDOS (Rev 6.0 to Rev 7.5) & AOS (Rev 6.0 to Rev 7.0)
S/140	DCH	RDOS (Rev 6.0 to Rev 7.5) & AOS (Rev 6.0 to Rev 7.0)
S/280	DCH	RDOS (Rev 7.0 to Rev 7.5) & AOS (Rev 6.0 to Rev 7.0)
M/600	DCH	RDOS (Rev 6.0 to Rev 7.5) & AOS (Rev 6.0 to Rev 7.0)
C/150*	DCH	RDOS (Rev 6.0 to Rev 7.5) & AOS (Rev 6.0 to Rev 7.0)
S/130* & **	DCH	RDOS (Rev 6.0 to Rev 7.5) & AOS (Rev 6.0 to Rev 7.0)
S/230* & **	DCH	RDOS (Rev 6.0 to Rev 7.5) & AOS (Rev 6.0 to Rev 7.0)
C/330* & **	DCH	RDOS (Rev 6.0 to Rev 7.5) & AOS (Rev 6.0 to Rev 7.0)

* Side-mount CPUs require Non-FCC cabling, off the handle.

** These CPUs require a pre-installation check for -5 volts (Range = -4.75 to -5.25).

SECTION B: Verified Disk Drives

Disk Drive Model	Transfer Rate MB/sec	Unfor- matted Capacity	FORMATTED CAPACITY		
			RDOS Below Rev. 7.0	RDOS, Rev. 7.0 and Above	AOS
Century Data ^{AMS} 571	20	615	267/267	534	190/190
CDC 9710 RSD	12	82	67	73	73
CDC 9715-160 FSD	12	165	134	147	147
CDC 9715-340 FSD	12	344	279	305	277
CDC 9715-500 FSD	18	516	227/227	454	277 or 190/190
★ CDC 9720-368 Sabre	18	368	149/149	324 317	277
CDC 9771 XMD	18	825	268/268	360/360	602/73
Fujitsu 2351 Eagle	19	475	207/207	207/207	277 or 190/190
Fujitsu 2333*	2.5	337	134/134	147/147	277 or 147/147
Fujitsu 2361 EagleXP*	2.5	690	275/275	602 or 277/277	602 or 277/277

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

★ Bob Talles of Remedpar (1800-624-3994) got 317MB usage out of a 368 under RDOS Single Doc configured as follows:

3/7/91

- ZEBRA			
- Virtual			
- Logical	Physical		single unit (no split)
19H	10H		
29S	5LS		<u>physical interleave 2:1</u>
1360C	1217C		

SECTION C: OTHER DISK DRIVES

Although the drives listed below have NOT been tested in Zetaco's labs and verified as operational with our controllers, they are successfully running with 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		TOSHIBA 182
		184
FUJITSU M2880		186
M2284	NORTHERN 8204	
M2294	TEL COM 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 DC-297, please write, telex or fax our Customer Support Group with the information so they can be added to this section.

DC-297 FEATURES SUMMARY

- ** Designed for I/O ONLY slot within DG's FCC chassis with cabling off the backplane; or any I/O slot in Non-FCC chassis, with cabling off the handle edge.
- ** Supports Data Transfer Rates up to 2.5 MB/sec in various formats: ZETA 1 & compatibles, ZETA 2, ZETA 3.
- ** Virtual Mapping feature allows highest formatted capacities.
- ** Emulates 6060, 6061, 6067, 6160, 6161, 6122, 6214.
- ** Has logical interleave, enabling the use of Sector Slip in a fast drive/slow processor configuration.

Revision Compatibility/ECO Reference Chart

DC-297

Model X Software Support Package Tape
400-496-00

	A	B	C	D	E						ECO #	C l a s s	N o t e
Model X Assembly 500-492-00 <small>4005</small>													
A											537	C	1
B											-		
C											537	C	1
D											545	B	2
E											554	C	1
F											592	C	3
G											593	C	4
H											615	A2	5
J											628	C	6
K											635	C	7
L			X								648	B	8
Microcode revision													
ECO #					8 3 9								
Class					C								
Note					11								

Revision Compatibility/ECO Reference Chart

**Model X Software Support Package Tape
400-496-00**

Model X Assembly 500-492-00	A										ECO #	C l a s s	N o t e
<i>MA</i>											771	C	9
<i>N</i>											778	A2	10
<i>O</i>													
<i>P</i>													
<i>Q</i>													
<i>R</i>													
<i>S</i>													
<i>T</i>													
<i>V</i>											913	B1	12
<i>W</i>											918	C	13
Microcode revision													
ECO #													
Class													
Note													

1. Doc. Change only.
2. Corrected Miis boot problem.
3. ~~Q~~ Changed power tail circuit to provide for calibration in checkout.
4. Added slip-skip F.W. Updated manual. Added Sector-Skip manual to product package.
5. New firmware. What for?
6. Corrected a problem in which a 297, ^{in an S/290,} configured for dual port would crash CPU B when CPU A powered up. The 297 would select the disk & fail to release it.
7. Changed standoff screw length.
8. Added ground braid to cables. Updated manual.
9. Fixed a RW timeout problem under ALT-2 (DG) format.
10. Corrected intermittent boot problems most prevalent in S/280.
11. Corrected bugs in Disk D, Disk R & Disk F.
12. Modified the SSP tape.
17. Added programs to list. — already on the SSP tape.

DC-297 REV'S FOR ARTWORK 041-079-00 B

CO	ASM. REV.	REASON FOR CHANGE:
	500-405-00 B	
	400-405-00 B	
	400-405-01 B	
----	600-405-00 B	RELEASE OF DC-297 BOARD, TAPES & MANUAL.
	CLASS C.	BRING DOCUMENTATION IN ACCORDANCE TO SCHEMATICS. CHANGE RESISTOR @ R23-4 NEAR T7 FROM 33 OHM TO 47 OHM. THE FOLLOWING REWORK WAS NOT ECO'D BUT APPEARS TO HAVE OCCURED BETWEEN REV. B & C: SCRAPE & THEN GLUE FEEDTHRU NEAR BB1 O
537	500-405-00 C	THE COMP. & SOLDER SIDE OF THE BOARD.
	CLASS B.	MODIFY FIRMWARE FOR MIIS BOOT PROBLEM.
545	500-405-00 D	UPDATE PROMS P11801 THRU P12401 TO REV.-02.
	CLASS C.	
554	500-405-00 E	FIX PRINT.
	CLASS C.	
585	600-405-00 C	CHANGE P/N'S IN MANUAL TO CALL OUT CABLELESS PDBD'S.
	CLASS C.	INCORPORATE 1% DIODE TO POWER FAIL CIRCUIT. ALLOW 4 RESISTOR OPTION @ R23-4, USE 47, 39, 33, OR 56 OHM RESISTOR (WHICH EVER ONE WORKS).
592	500-405-00 F	
	CLASS C.	
	400-405-00 C	INSTALL SLIP SKIP TO FIRMWARE & ADD SECTOR SLIP MANUAL TO CONFIGURATION MATRIX.CHANGE REV. FROM 4.50 TO 4.51 ON TAPES
	400-405-01 C	
	600-405-00 D	REMOVE SLIP SKIP APPENDIX TO MANUAL & MAKE OTHER CHANGES.
593	500-405-00 G	UPDATE PROMS P11802 THRU P12402 TO REV. -03
	CLASS B & A2	BOARDS WITH REV. -03 PROMS <u>MUST</u> BE UPDATED TO REV. -04. CORRECT RELEASE OF A PRELIM. ENG. VERSION OF THE REV. 3 FIRMWARE INSTEAD OF THE MODIFIED FINAL VERSION. UPDATE FIRMWARE FROM P11803 THRU P12403 TO REV. -04.
615	500-405-00 H	
	CLASS C.	FIX S280 POWER UP SELFTEST IN A DUAL PORT CONFIGURATION.
628	500-405-00 J	UPDATE PROMS FROM P11804 THRU P12404 TO REV.-05.
	CLASS C.	CHANGE LENGTH OF SCREW HOLDING STANDOFFS TO PCB FROM 1/4" TO 3/16".
635	500-405-00 K	
	CLASS B.	ADD GROUND BRAID TO CABLES:300-011-00,300-013-00,300-081-00
	600-405-00 E	MODIFY MANUAL TO SHOW HOW TO HOOK UP THE GROUNDING CABLE. CHANGE OF CONTROL DOCS. @ END OF PARTS LIST CAUSES REV.
648	500-405-00 L	CHANGE IN PCB ASM.
	CLASS C.	RELEASE NEW REVISION IF DISK D,F & R, CFV297 & SLIPS.
	400-405-00 D	NOTE LATER IT WAS FOUND THAT REV. D WAS BAD SO WE WENT BACK TO SHIPPING REV. C.
765	400-405-01 D	
	CLASS C.	FIX RD/WT TIMEOUT PROBLEM FOUND WHEN RUNNING ALT-2 (DG) FORMAT BY UPDATING THE BIT SLICED FIRMWARE FROM P11805 THRU P12405 TO REV. -06.
771	500-405-00 M	
	CLASS C.	FIX INTERMITTENT BOOT PROBLEMS (DISCOVERED ON THE BMX-3). ADD REWORK: LIFT Z10-11. ADD WIRE FROM/TO: N9-1 TO R10-12, N9-2 TO R10-13, N9-3 TO LIFTED Z10-11.
778	500-405-00 N	
	CLASS C	CORRECT/MODIFY DISK DIAG, FORMATTER & RELI PROGRAMS.
839	400-405-00 E	UPDATE TAPE
	CLASS C	CORRECT/MODIFY DISK DIAG, FORMATTER & RELI PROGRAMS.
840	400-405-01 E	UPDATE SECTOR SLIP TAPE.
	CLASS B1	CHANGE REVISION OF THE SECTOR SLIP FORMATTER.
913	400-405-01 F	UPDATE SECTOR SLIP TAPE.
	CLASS C	ADD 4 PROGRAMS TO PROGRAM LIST ON THE TAPE, NOTE THESE PROGRAMS HAVE ALWAYS BEEN ON THE TAPE. UPDATE TAPE.
918	400-405-00 F	

DC-297 REV'S FOR ARTWORK 041-079-00 B

CO	ASM. REV.	REASON FOR CHANGE:
	CLASS C	COMBINE PARTS LIST REV. WITH PRODUCT REV.
927	500-405-00 W	500-405-00 N TO PARTS LIST REV. W HENCE 500-405-00 W.
	CLASS C	ALLOW AMCODYNE 7130 DISK UNIT TO RUN ON DC-297, UPDATE THE
931	500-405-00 X	FIRMWARE FROM P11806 THRU P12506 TO REV.-07. (MILES 33 FIX
	400-405-00 G	MODIFY THE CONFIGURATOR PROGRAM TO SUPPORT AN ADDED ADDRESS
	400-405-01 G	FIELD DEFINITION & THE NEW WAY CMD'S ARE RUN. UPDATE TAPES
974	CLASS C	FIX PROBLEM WITH RAM ARBITRATION CIRCUIT THAT CAUSES ECC
		UNDETECTED ERRORS. UPDATE MANUAL FROM 600-405-00E TO F. AD
	600-405-00 F	REWORK: K8=74F08; N10=74F11; R6,S6,T6 & P6=2149-45. LIFT
	500-405-00 Y	D6-3 & H10-10. ADD WIRE FROM/TO: H9-8 TO H10-10. H9-9 TO
		H10-10 PAD. H9-10 TO D6-5. H8-2 TO D6-3.
	CLASS C	FIX CYLINDER ADDRESS ERRORS CAUSED BY NON-VIRTUAL SPLIT
		HEADS "UPPER CYLINDERS BIT NO MASKED OUT", BY UPDATING THE
999	500-405-00 AA	FIRMWARE FROM P11807 THRU P12507 TO REV.-08.
	CLASS C	
1055	500-405-00 AB	FIX DRAWING & PARTS LIST.
	CLASS A2	PREVENT ECC UNDETECTED ERRORS FROM OCCURRING WHEN RUNNING
		RELI @ HIGH +5 MARGINS. BY CHANGING THE FOLLOWING IC'S TO
		BB4=F08; R3=F374; T4=F374. THIS WILL DECREASE DATA SET UP
1149	500-405-00 AC	TO BUFFER.
	CLASS B2	FIX ECC UNDETECTED ERRORS-REMOVE THE CLEAT SIGNAL FROM A
		FLIP-FLOP ON THE RAM ARB. LOGIC AND "ANDED" IT INTO DATA
		INPUT OF THE FLIP-FLOP. (THIS WAS DEV. 91.) ADD REWORK:
1201	500-405-00 AD	LIFT D6-1 & D6-2. ADD WIRE TO/FROM: D6-6 TO R9-9; S9-11 TO
		R9-10; R9-8 TO P8-1; P8-2 TO D6-2.
	CLASS B2	ENDING MEMORY ADDRESS ERRORS WHEN RUNNING HIGH MARGINS
		USING RELI. E.M.A IS ONE LESS THAN IT SHOULD BE.
1309	500-405-00 AE	A3=F04. (THIS WAS DEVIATION 115).
	CLASS B2	CORRECT A POWER UP PROBLEM WHICH CAN CAUSE PCB TO FAIL RELI
		ON 20 MHZ DRIVES (CLOCK CIRCUITRY SET TO 350 NS INSTEAD OF
		200 NS. UPDATE FIRMWARE TO CLEAR RH ON POWER UP FROM
1311	500-405-00 AF	P11808 THRU P12508 TO -09.
	CLASS A2	CORRECT ECC UNDETECTED ERRORS SEEN RUNNING RELI OVERNIGHT
		IT IS CAUSED BY NOISE ON DRR LINE CAUSING WRONG DATA TO BE
		LATCHED INO THE F374'S BUT ONLY WHEN ARBITRATION OCCURS.
		ADD REWORK: D9=74F32; LIFT R3-11 & T4-11. ADD WIRE FROM/TO:
		D9-7 TO C9-7; (D9-1 TO C4-13)<--SEE ECO 1432 BEFORE
		INSTALLING. D9-2 TO K8-5; D9-3 TO R3-11 TO T4-11. WAS
1313	500-405-00 AG	DEVIATION 118.
	CLASS B1	FIX ADDRESS ERRORS WHEN RUNNING RELI AT LOW MARGINS.
1333	500-405-00 AH	C4=74F02.
	CLASS C	FIX INTERMITTANT ECC UNDETECTED ERRORS WHEN RUNNING HIGH OF
		LOW MARGINS BY REPLACING ALL T.I. PARTS ON 74F74 TO
1339	500-405-00 AJ	NATIONAL/FAIRCHILD PARTS @ B6,D6,E6,J8,G10,H10 & BB11.
	CLASS C	FIX POSSIBILITY OF A R/W TIME-OUT ERROR FROM OCCURRING THIS
		HAPPENS ONLY WHEN REVOLUTIONS ARE SKIPPED ON THE DRIVE.
		CHANGE R4-1 FROM 150K RESISTOR TO 1.2M OHM RESISTOR & C4-2
1340	500-405-00 AK	FROM 10 UF CAP TO A 1UF CAP BOTH ARE NEAR L6. (WAS DEV. 120)
	CLASS A2	CORRECT ECC UNDETECTED ERRORS WHEN RUNNING MARGINS (RELI).
		ADD A GATE TO ELIMINATE A LONG LINE REFLECTION. ADD REWORK:
		LIFT C4-13 & U10-11. ADD WIRE FROM/TO D9-1 TO D9-4 TO
		LIFTED PIN C4-13; D9-5 TO D9-7; D9-6 TO LIFTED U10-11. THIS
1432	500-405-00 AL	WAS DEV. 131

SOFTWARE SUPPORT PACKAGE TAPE
ZETACO

FOR: DC-297/WELLEX

ASSEMBLY #: 950-087-00
REV. LEVEL: A

1. TAPE IDENTIFICATION:

Label the tape as follows, using label included with tapes:

ZETACO
MODEL 297/WELLEX
SUPPORT PACKAGE 400-471-00 "*" "
800 OR 1600 BPI

2. PROGRAMS ON TAPE:

- A. CFV297.SV - REV. 02.20
- B. DISKD.SV - REV. 05.25
- C. DISKF.SV - REV. 05.25
- D. DISKR.SV - REV. 05.45
- E. ZDKINIT.SV DG REV 6.80.ZETA REV 01.00
- F. ZDSKED.SV DG REV 6.80.ZETA REV 01.00
- G. RDOSECC.SV REV 01.00
- H. AOSECC.PR REV 01.00

3. LISTINGS TO ACCOMPANY TAPE:

- A. DISKD - REV. 05.25
- B. DISKF - REV. 05.25
- C. DISKR - REV. 05.45

* Indicates Current Revision

SOFTWARE SUPPORT PACKAGE TAPE
ZETACO

FOR: DC-297 SOKAR CUSTOMER

ASSEMBLY #: 950-083-00
REV. LEVEL: A

OKD

1. TAPE GENERATION:

- A. Log on the system and then enter: TAPES
- B. Load tape drive with a blank tape with write ring, select density and put drive on-line.
- C. Enter M481 "*" and the following will be displayed:

This is tape 400-481-00 "*"

File names will display as they are dumped to tape. When all have been dumped, screen will display:

Tape 400-481-00 "*" complete.

- D. Remove tape from drive; remove write ring from tape; label the tape as follows:

SOKAR
MODEL ST-298
SUPPORT PACKAGE 400-481-00 "*"
800 OR 1600 BPI

- E. To generate another tape, go back to Step B.

2. PROGRAMS ON TAPE:

- A. SR298C.SV - REV. 01.00
- B. CDISKD.SV - REV. 01.00
- C. CDISKF.SV - REV. 01.00
- D. CDISKR.SV - REV. 01.00
- E. CDKINIT.SV - REV. 7.80 SOKAR REV 01.00

* Indicates Current Revision

SOFTWARE SUPPORT PACKAGE TAPE
ZETACO

FOR: DC-297/SOKAR

ASSEMBLY #: 950-082-00
REV. LEVEL: A

CPD

1. TAPE GENERATION:

- A. Log on the system and then enter: TAPES
- B. Load tape drive with a blank tape with write ring, select density and put drive on-line.
- C. Enter M482"*".SOKARONLY and the following will be displayed:

This is tape 400-482-00 "*"

File names will display as they are dumped to tape. When all have been dumped, screen will display:

Tape 400-482-00 "*" complete.
- D. Remove tape from drive; remove write ring from tape; label the tape as follows:

SOKAR only
MODEL ST-298
SUPPORT PACKAGE 400-482-00 "*"
800 OR 1600 BPI
- E. To generate another tape, go back to Step B.

2. PROGRAMS ON TAPE:

- A. SR298C.SV - REV. 01.00
- B. SDISKD.SV - REV. 01.00
- C. SDISKF.SV - REV. 01.00
- D. SDISKR.SV - REV. 01.00
- E. SDKINIT.SV - REV. 6.80 SOKAR REV 01.00

* Indicates Current Revision