

Instruction Manual

KineticSystems

Model 3952-Z1B

Type L-2 Serial Crate Controller

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Model 3952-Z1B
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Schematic Drawing #02267-D-613	Insert
Schematic Drawing #02267-D-614	Insert

module

Type L-2 Serial Crate Controller

PRODUCT BRIEF

May 77

(Revised Jan. 80)

FEATURES

- COMPLIES WITH CAMAC SPECIFICATIONS IEEE 583 AND 595
- CAMAC CRATES CAN BE SEPARATED BY GREAT DISTANCES
- SERIAL DATA TRANSMISSION RATES TO 5 MEGABITS PER SECOND
- STRAP-SELECTED BYTE-SERIAL OPERATION FOR A FACTOR OF 10 INCREASE IN DATA RATE
- REMOTE DEMANDS CAN BE GENERATED ASYNCHRONOUSLY OVER THE SERIAL HIGHWAY
- UP TO 62 CRATES ON A SINGLE SERIAL LOOP
- FRONT-PANEL SELECTION OF CRATE ADDRESS
- INVALID ADDRESS PROTECTION
- AUXILIARY CONNECTOR FOR ADAPTER POWER AND FOR TEST SIGNALS

GENERAL DESCRIPTION

The Model 3952 is a double-width Type L-2 Serial Crate Controller (SCC) that provides the interface between the CAMAC Serial Highway and the CAMAC Dataway. It fully complies with the CAMAC specifications IEEE 583 and 595.

The use of L-2 Crate Controllers with an associated Serial Driver (such as the Model 3992, 3994 or 2050 Series) allows CAMAC crates to be separated by great distances with economical cabling between them.

The 3952 may be operated in bit-serial or byte-serial mode, at the option of the user. A strap is provided for making this selection. Bit-serial operation requires two twisted pair for the Serial Highway, one for the clock and one for the data. Byte-serial operation is a factor of 10 faster and requires nine pair, one for the clock and eight for the data.

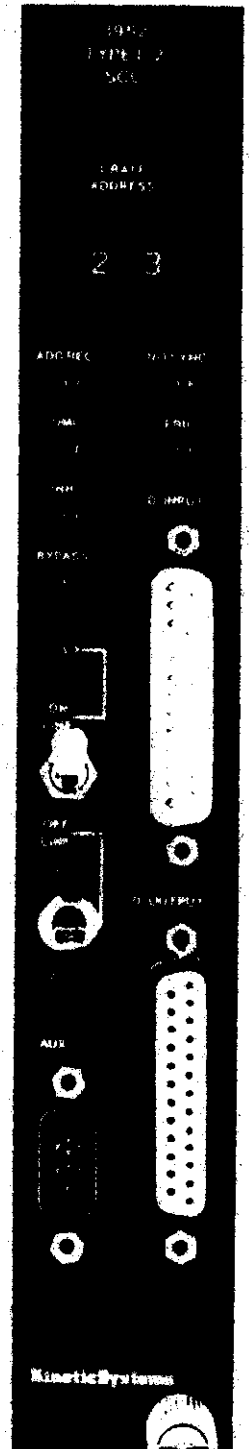
The Model 3952 will operate at clock rates from arbitrarily slow to 5 MHz. However, the transmission medium may well limit the maximum speed. The Serial Highway may be configured by direct connection of the Serial Crate Controllers and the Serial Driver. Use of a bit-serial U-port adapter or a byte-serial U-port adapter at each crate or cluster of crates provides bypass and loop collapse as well as allowing transmission over longer distances at higher speeds than is obtained through direct connection.

DEMAND MESSAGE GENERATION

GENERAL. In response to any L-signal in the crate, the L-2 Crate Controller, if enabled, generates a three-byte Demand message and inserts the message into the data stream. Demand messages are inserted between other messages, and a three-byte memory is inserted in the incoming data stream as Demand messages are transmitted. When a three-byte gap is detected between incoming messages, the delay is switched out, allowing another Demand message to be generated.

REPEATED DEMAND MESSAGES. If the L-signal in the crate is not cleared by a predetermined elapsed time, a Repeated-Demand message is generated. Repeated messages have each of the five Graded-L bits set to 1. The repeat-timer can be adjusted for delays between 1 msec and 10 sec. The delay is strap-selected. The timer can also be disabled.

SGL CONNECTOR. The rear-panel SGL Connector is a 52-way Cannon double-density connector with pins, Model 5943. This connector has all the input and output signals necessary for encoding the SGL field of the Demand message.



INTERNAL FUNCTION CODES (N = 30)

Command	SQ	Action
F(0)-A(1) RD1	DSQ	Re-reads previous read-field.
F(1)-A(0) RD2	1	Reads Status register.
F(1)-A(12) RD2	1	Reads LAM pattern.
F(17)-A(0) WT2	1	Writes Status register.
F(19)-A(0) SS2	1	Selectively sets Status register.
F(23)-A(0) SC2	1	Selectively clears Status register.

Note: SX = 1 is returned for all valid commands unless the 3952 is bypassed.

STATUS REGISTER

Bit	True-State Definition	State On Power-up	Notes
1	Initiates Dataway Z	0	Write-only
2	Initiates Dataway C	0	Write-only
3	SCC control-bit for Dataway I	1	Read/Write
4	DERR	0	Read-only
5	DSX	0	Read-only
6	DSQ	0	Read-only
7	Dataway I	0	Read-only
8	(Reserved)	—	—
9	Demand enable	0	Read/Write
10	Internal demand (L24)	0	Read/Write
11	Loop collapse	0	Read/Write
12	SCC bypass	1	Write-only
13	Dataway off-line	1	Writes control-bit, Reads actual state
14	Switch off-line	—	Read-only
15	(Reserved)	—	—
16	Selected L's present	—	Read-only

BYPASS AND LOOP COLLAPSE

Relay contacts are provided for control of external Bypass and Loop Collapse devices. The contacts have one side connected to module common and the other to the serial highway connectors. The bypass contact is closed for Bypass, and the loop collapse contact is closed for Loop Collapse. Loss of crate power will cause the bypass contact to close and the loop collapse contact to open.

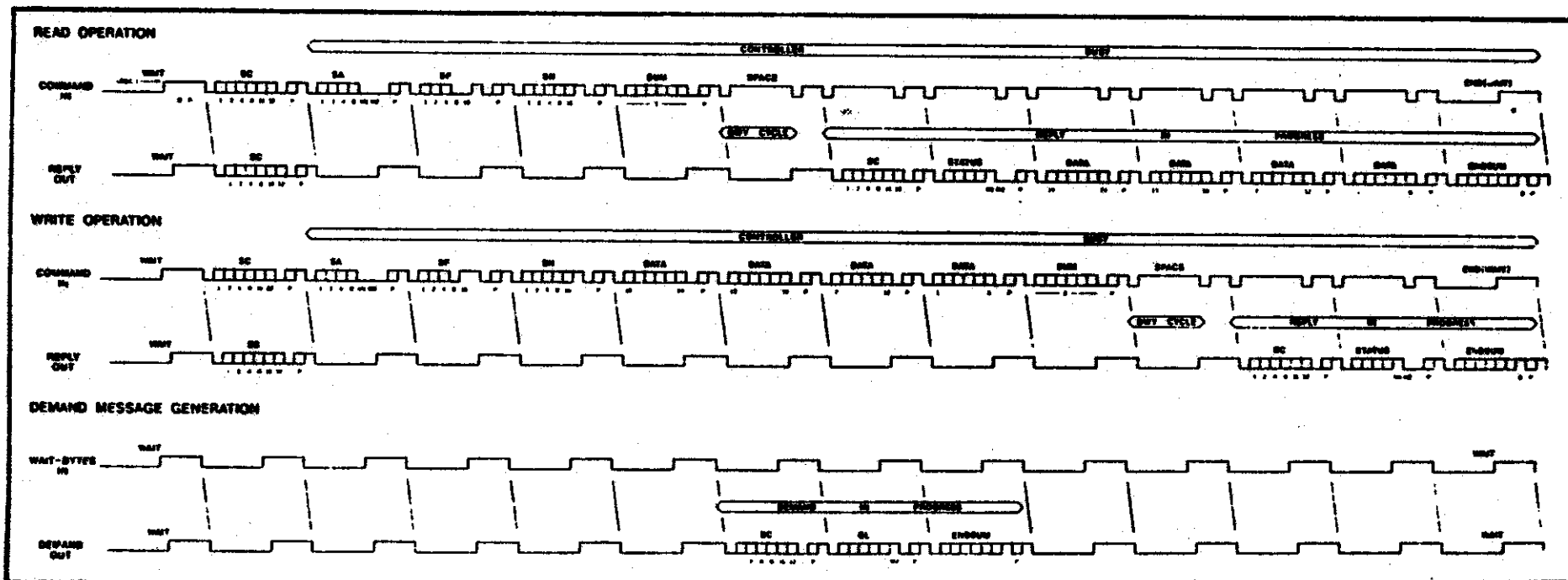
AUXILIARY CONNECTOR

A 19-pin miniature connector, Model 5941, provides front-panel access for adapter power and for certain test signals. The test signals are: CLOCK IN, CLOCK OUT, BIT DATA IN, BIT DATA OUT, and MESSAGE IN (Delimiter). All signals are TTL, low-true. The MESSAGE IN signal is useful for synchronizing an oscilloscope to the message traffic. Any external wires that are connected to these test signals should be limited to 0.5 meters so that the crate controller's performance is not degraded.

POWER REQUIREMENTS: +6 volts — 2200 mA

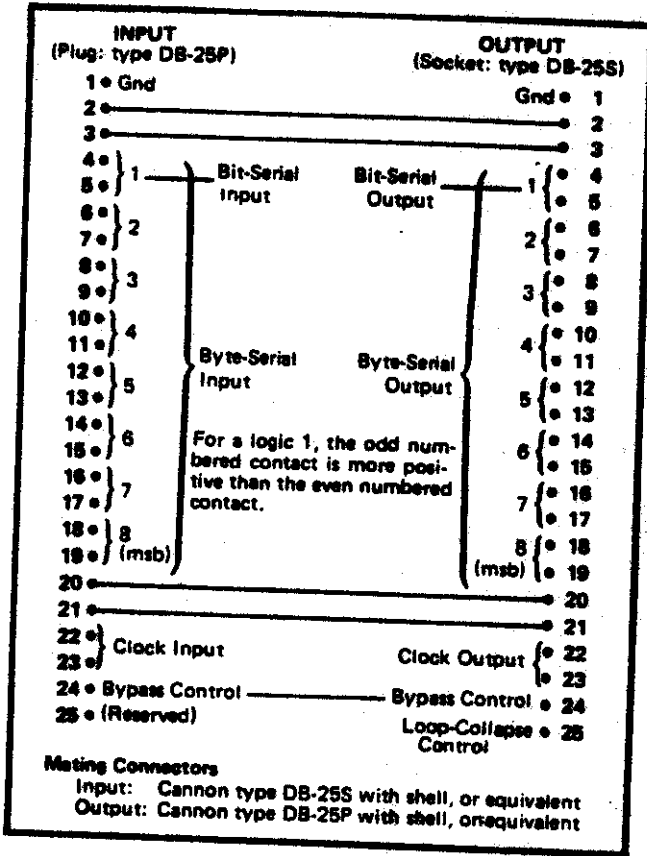
ORDERING INFORMATION

- Model 3952-Z1A — Type L-2 Serial Crate Controller Weight: 1.2 kg. (2 lb. 9 oz.)
- Model 3952-Z1B — Type L-2 Serial Crate Controller with special relays for use in high Gaussian fields.
- Accessories** — Models 5932, 5933, 5940, 5942 Mating Connectors
 Model 5800-Axyz Bit Serial Highway Cable
 Model 5800-Bxyz Bit Serial Highway Cable
 Model 5843-Series ACB Cable Assemblies
 Model 2010 SGL Adapter

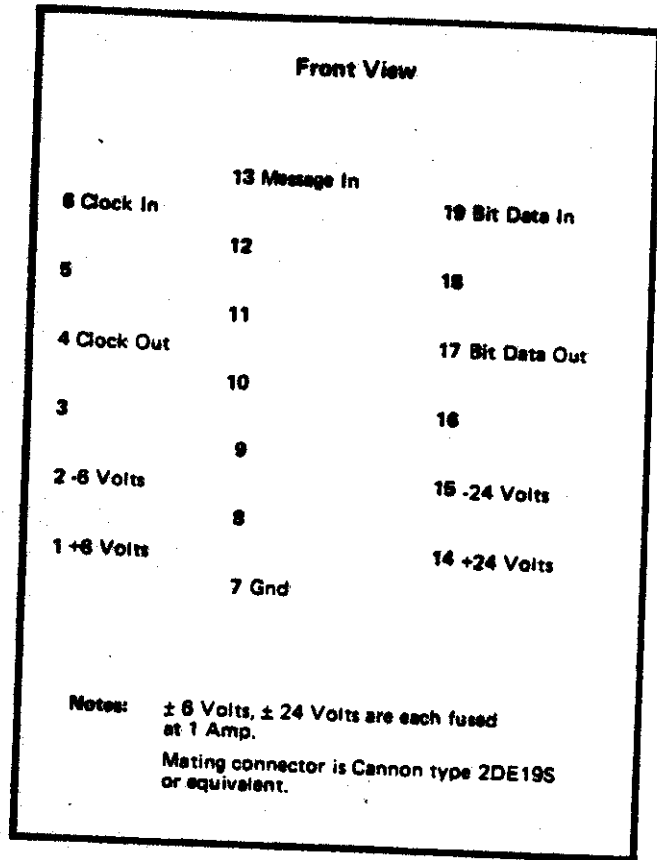


BIT-SERIAL MESSAGE OPERATIONS

SERIAL HIGHWAY CONNECTORS

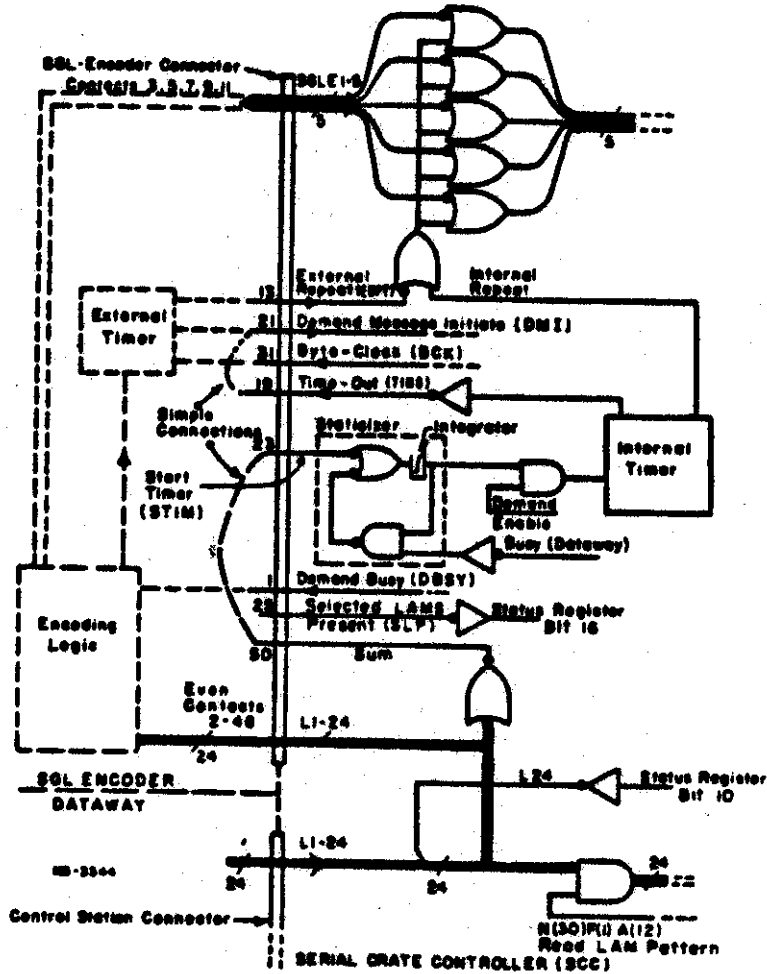


AUXILIARY CONNECTOR



SGL-ENCODER CONNECTOR

Contact	Signal	Direction	Contact	Signal	Direction
1	Demand Busy	Out	2	L1	Out
3	SGLE1	In	4	L2	Out
5	SGLE2	In	6	L3	Out
7	SGLE3	In	8	L4	Out
9	SGLE4	In	10	L5	Out
11	SGLE5	In	12	L6	Out
13	External Repeat	In	14	L7	Out
15	---	---	16	L8	Out
17	Request Inhibit	In	18	L9	Out
19	Time-out	Out	20	L10	Out
21	Demand Message Initiates	In	22	L11	Out
23	Start timer	In	24	L12	Out
25	Selected L's present	In	26	L13	Out
27	---	---	28	L14	Out
29	Auxiliary Controller Lockout	Out	30	L15	Out
31	Byte Clock	Out	32	L16	Out
33	---	---	34	L17	Out
35	---	---	36	L18	Out
37	---	---	38	L19	Out
39	---	---	40	L20	Out
41	SCC Busy	Out	42	L21	Out
43	N1	In	44	L22	Out
45	N2	In	46	L23	Out
47	N4	In	48	L24	In/Out
49	N8	In	50	L-SUM	Out
51	N16	In	52	Gnd	---



Example of Associated Parts of SCC and SGL Encoder

WARRANTY

All KineticSystems Corporation equipment is warranted against defects in workmanship and material under normal use and service for a period of two years from the date of shipment. KSC will repair or replace, at KSC's option, any equipment found to be defective in workmanship or material within two years of shipment. Repair charges will be applicable from two years after delivery with repair charges varying, depending on the complexity of the equipment. This warranty covers all such items delivered after March 1, 1978.

Equipment purchased by KineticSystems Corporation for resale will carry the original equipment manufacturers' warranty.

The equipment warranty outside the continental U.S.A. or Switzerland is limited to repair of the equipment and excludes shipping, custom's clearance, or any other charges.

Equipment for repair must be returned prepaid to KSC. Transportation charges for shipping the equipment to KSC shall be paid by the customer, while transportation charges for the return of the repaired equipment shall be paid by KSC except as indicated in the previous paragraph and will be made on a UPS basis, where available, or parcel post insured. Premium methods of shipment are available at customer's expense and will be used only when requested. If KSC selects the carrier, KSC will not thereby assume any liability in connection with the shipment nor shall the carrier be in any way construed to be the agent of KSC.

No equipment will be accepted for credit or exchange without the prior approval of KSC. Contact the Repair Service Center in your area for a return authorization number.

All customers (except European) please ship units to:

KineticSystems Corporation
Repair Service
11 Maryknoll Drive
Lockport, Illinois 60441
Telephone (815) 838-0005
TWX 910 638-2831

In Europe ship all units to:

Kinetic Systems International S.A.
Repair Service
6 Chemin de Tavernay
1218 Geneva, Switzerland
Telephone (022) 98 44 45
Telex 289 622 KSI CH

The following steps should be taken when returning a unit:

1. Contact KineticSystems and discuss the problem with an engineer.
2. Obtain a return authorization (RA) number.
3. Initiate a purchase order for the estimated repair charge if the equipment is out of warranty.
4. Ship the equipment to KineticSystems with the RA number, a description of the problem, and the name of the technical contact person.

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BILL OF MATERIALS FOR W0395221B
3952-21B ASSEMBLY

PARTS LIST REV # 8

ITEM NO	QUANTITY	DESCRIPTION	PART NO
1	1	A BOARD OF 3952-21B	A395221B
2	1	100PF/100V/10% #CN15A101K	CA 150101
3	3	.1UF RD .2"LD SPCG #C220D104Z	CA 150104
4	3	220PF REDCAP CW15C221K	CA 150221
5	1	33UF/10V PT KMT#T310B336K010A	CA 210336
6	2	22UF/15V PT KMT#T310B226K015A	CA 215226
7	38	DELTA IN INCHES 3M 3349/25	CB 950007
8	12	16 PIN DIP TO RIBBON T&B M165	CO 911005
9	2	FLAT CBL TO PCB 3M 3434-0000	CO 911012
10	6	RIB 16 PIN 7717-24IN	CO 911013
11	1	TPDD 19POS PIN ITT CANN 2DE19	CO 914005
12	1	DELTA 25 POS PIN 3M 3482-1000	CO 914013
13	1	DELTA 25 POS SKT 3M 3483-1000	CO 914014
14	14	B-SOCKETS AMP 2-331272-7	CO 921006
15	6	FEMSCR LK ASY CANN D204182DB	CO 991005
16	4	1N914A/1N4446	DI 100914
17	2	1N5401 (3 AMP)	DI 105401
18	7	SMALL RED LED MONSANTO #MV507	DI 901003
19	1	3952-21A B-719 SS S-745	FP 403952
20	3	1 AMP #LITTLEFU 275.001/27600	FU 911001
21	1	2 AMP LITFU 275.002/276.002	FU 911002
22	1	3 AMP LITFU 275.003/276.003	FU 911003
23	1	REG EXTENDED BTM RAIL B-251	HD 230251
24	1	REG EXTENDED TOP RAIL B-252	HD 230252
25	1	.4JMPR JD.400X0.125IRRPVCZZ	HD 901006
26	17	16P 6POS BUSBAR ROGR#1KSCMB01	HD 901020
27	2	10 LED IC PAD W THERML 771710	HD 901078
28	1	DATA FINGER GROS BORER#151-97	HD 901113
29	6	4-40 X 3/16 BND HD	HD 911005
30	2	4-40 X 1/4 BND HD	HD 911006
31	2	2-56 X 1/2 PH F-H BLK OXIDE	HD 911013
32	4	4-40X1/4 PHIL PAN HDMS BLK OX	HD 911035
33	2	#2-56 HEXNUT	HD 912001
34	1	DEUTSCH FASTNR FJBA-7500-4MMB	HD 914000
35	1	7402	IC 107402
36	1	7403	IC 107403
37	1	7414	IC 107414
38	1	7474	IC 107474

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BILL OF MATERIALS FOR W0395221B

3952-21B ASSEMBLY

PARTS LIST REV # 8

ITEM NO	QUANTITY	DESCRIPTION	PART NO
39	1	8095/74365	IC 108095
40	4	8096/74366	IC 108096
41	2	8160	IC 108160
42	2	8266	IC 108266
43	1	8273	IC 108273
44	1	8274	IC 108274
45	2	9322/74157 NO AMD	IC 109322
46	2	74160/9310 NATIONAL/AMD	IC 174160
47	8	74173/DM8551	IC 174173
48	2	74180	IC 174180
49	2	74184	IC 174184
50	2	74298	IC 174298
51	1	74500	IC 207400
52	1	74504	IC 207404
53	1	745133	IC 274133
54	4	26LS31 AMD	IC 402631
55	3	26LS32	IC 402632
56	4	74LS00	IC 407400
57	7	74LS02	IC 407402
58	2	74LS04	IC 407404
59	2	74LS08	IC 407408
60	1	74LS10	IC 407410
61	1	74LS20	IC 407420
62	1	74LS27	IC 407427
63	1	74LS30	IC 407430
64	1	74LS32	IC 407432
65	2	74LS42	IC 407442
66	2	74LS74	IC 407474
67	7	74LS107	IC 474107
68	1	74LS123	IC 474123
69	11	74LS174 NO FAIRCHILD	IC 474174
70	5	8T96	IC 901006
71	1	PCB 3952-A	PC 113952
72	1	PCB B415 3952	PC 302415
73	2	1/8W 5% 100 OHM	RE 121000
74	4	1/8W 5% 1000 OHM	RE 121001
75	4	1/8W 5% 1500 OHM	RE 121501
76	8	1/8W 5% 470 OHM	RE 124700
77	10	1/8W 5% 4700 OHM	RE 124701
78	1	1/4W 5% 1000 OHM	RE 221001
79	1	1/4W 5% 470 OHM	RE 224700
80	2	1/4W 5% 6800 OHM	RE 226801
81	7	7-680 BOURNS 4308R-101-681	RE 901003
82	1	13-4700 BOURNS 4114R-002-472	RE 901007
83	2	4-100 BOURNS 4308R-102-101	RE 901016

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BILL OF MATERIALS FOR W03952218
3952-218 ASSEMBLY

PARTS LIST REV # 8

ITEM NO	QUANTITY	DESCRIPTION	PART NO
84	2	TELEDYNE 712-5	RY 921011
85	1	SPDT LOCKTOGL C&K #7101K20	SW 911008
86	1	DPDT MOM TOGGLE C&K 721593YZ0	SW 911009
87	1	CHERRY SWITCH ASSEMBLY	SW 911018
88	2	2N3644 PNP NAT#PN3644-5	XS 203644
89	1	B BOARD OF 3952-218	B3952218
90	6	100PF/100V/10% #CN15A101K	CA 150101
91	1	1000PF RD CW15C102K/CN15C102K	CA 150102
92	4	.01UF RD CW15C103M/CS15C103M	CA 150103
93	6	.1UF RD .2"LD SPCG #CZ20D104Z	CA 150104
94	1	1UF REDCAP CY30C105M/CR30D105	CA 150105
95	3	33PF REDCAP CN15A330K	CA 150330
96	3	330PF REDCAP CW15C331K	CA 150331
97	1	33UF/10V PT KMT#T310B336K010A	CA 210336
98	3	22UF/15V PT KMT#T310B226K015A	CA 215226
99	1	10UF20V POLTANT T310B106K020A	CA 220106
100	1	TPDD 52POS PIN ITT CANN 2DB52	CO 914007
101	6	16 PIN IC SKT AMP 2-640358-4	CO 921002
102	12	B-SOCKETS AMP 2-331272-7	CO 921006
103	2	FEMSCR LK ASY CANN D204182DB	CO 991005
104	4	1N914A/1N4446	DI 100914
105	2	1N5401 (3 AMP)	DI 105401
106	1	3 AMP LITFU 275.003/276.003	FU 911003
107	1	REG EXTENDED BTM RAIL B-251	HD 230251
108	1	REG EXTENDED TOP RAIL B-252	HD 230252
109	1	SHIELD B-270	HD 240270
110	15	16P 6POS BUSBAR ROGR#1KSCMB01	HD 901020
111	1	GND SHIELD LABEL #77-631979-2	HD 901046
112	1	GRD SHIELD INSULATION LE BLK	HD 901065
113	1	DATA FINGER GRDS BORER#151-97	HD 901113
114	1	4-40 X 1/4 FLT HD	HD 911002
115	12	4-40 X 3/16 BND HD	HD 911005
116	3	4-40 X 1/4 BND HD	HD 911006
117	2	555/1455PI	IC 100555
118	1	7405	IC 107405
119	1	7406/7416	IC 107406
120	1	7407/7417	IC 107407

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BILL OF MATERIALS FOR W03952Z1B
3952-21B ASSEMBLY

PARTS LIST REV # 8

ITEM NO	QUANTITY	DESCRIPTION	PART NO
121	1	7408	IC 107408
122	1	7413	IC 107413
123	1	7414	IC 107414
124	6	7438	IC 107438
125	3	7445/74145	IC 107445
126	2	8095/74365	IC 108095
127	3	8123	IC 108123
128	4	9602/DMB602 NO NATIONAL	IC 109602
129	1	74279	IC 174279
130	1	75452 MOTOROLA ONLY	IC 175452
131	1	74500	IC 207400
132	1	74502	IC 207402
133	2	96S02 FAIRCHILD ONLY	IC 209602
134	2	74S133	IC 274133
135	1	74S139 AMD ONLY	IC 274139
136	9	74LS00	IC 407400
137	4	74LS02	IC 407402
138	2	74LS03	IC 407403
139	2	74LS04	IC 407404
140	2	74LS05	IC 407405
141	5	74LS08	IC 407408
142	1	74LS10	IC 407410
143	1	74LS11	IC 407411
144	2	74LS27	IC 407427
145	1	74LS30	IC 407430
146	4	74LS32	IC 407432
147	2	74LS42	IC 407442
148	9	74LS74	IC 407474
149	1	74LS75	IC 407475
150	3	74LS107	IC 474107
151	1	74LS123	IC 474123
152	3	74LS174 NO FAIRCHILD	IC 474174
153	1	74LS175	IC 474175
154	1	74LS193	IC 474193
155	1	PCB 3952-B	PC 123952
156	3	1/8W 5% 100 OHM	RE 121000
157	1	1/8W 5% 1000 OHM	RE 121001
158	2	1/8W 5% 10K	RE 121002
159	2	1/8W 5% 12K	RE 121202
160	2	1/8W 5% 22K	RE 122202
161	2	1/8W 5% 33K	RE 123302
162	1	1/8W 5% 470 OHM	RE 124700
163	19	1/8W 5% 4700 OHM	RE 124701
164	5	1/8W 5% 680 OHM	RE 126800
165	1	1/4W 5% 100 OHM	RE 221000

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BILL OF MATERIALS FOR W03952218
3952-218 ASSEMBLY

PARTS LIST REV # 8

ITEM NO	QUANTITY	DESCRIPTION	PART NO
166	2	1/4W 5% 10K	RE 221002
167	2	1/4W 5% 1500 OHM	RE 221501
168	5	1/4W 5% 4700 OHM	RE 224701
169	1	1/4W 5% 5600 OHM	RE 225601
170	7	1/4W 5% 680 OHM	RE 226800
171	1	1/4W 5% 6800 OHM	RE 226801
172	1	1/4W 10% 1.2M	RE 231204
173	1	1/4W 10% 4.7M	RE 234704
174	3	15-680 BOURNS 4116R-002-681	RE 901001
175	3	7-680 BOURNS 4308R-101-681	RE 901003
176	1	7-4700 BOURNS 4308R-101-472	RE 901006
177	1	3900/3952-21A B-720	RP 220720