
SHOOTER

SERVICE MANUAL

**LOGICAL DEVICES INC.
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General Information

- Intelligent Programmer with 512K RAM
- Built-in "Bios" and processor; has many firmware functions
- Stand alone or RS-232 Duplicate EPROMS without a PC or use RS-232 port for connecting to ANY computer or terminal.
- Supports both standard and intelligent programming algorithms.
- Supports EPROMs 2716-27512

Specifications

- Physical 4.5 "W x 7"L x 2.85"H
- Weight 3 lbs.
- Humidity 0-90%
- Temperature 0-40 C
- Enclosures Aluminum and steel
- Input Power 110VAC/60Hz or 220VAC/50Hz
- Socket High Quality Zero Insertion
- Ram Buffer 512K bits
- Programming Capacity One Device
- RS-232 Specs 110, 300, 1200, 2400 baud,
8 data bits, 2 stop bits, no parity
- Cable RJ-11 to DB25 direct IBM PC Compatible
- Status LEDs Busy, Ready, Error
- Pushbuttons Reset/Load, Program, Verify
- Error Checks Checksum
- File Formats Intel Hex, Motorola Hex, ASCII, Binary

SHOOTER INITIAL TEST
VER 1.0

Equipment Required:

- 1) Shooter
- 2) Shooter configurators: 27512-12.5V, 2732a-21V, 2764A-21V, 2716-25V.
- 3) Master EPROM chip - M27C52 ----- Checksum 6F91
- 4) Blank EPROM chips - M27C512, M273AFI, and AM2716-IDC
- 5) Power connector/RS232 cable
- 6) O-scope or Multimeter
- 7) (2) - Ram chips (84256-15LL)
- 8) CPU - D8749H
- 9) Heat sink (5V regulator) and Jumper (69-00125-5)
- 10) Address line test and load block test (schematics in back)

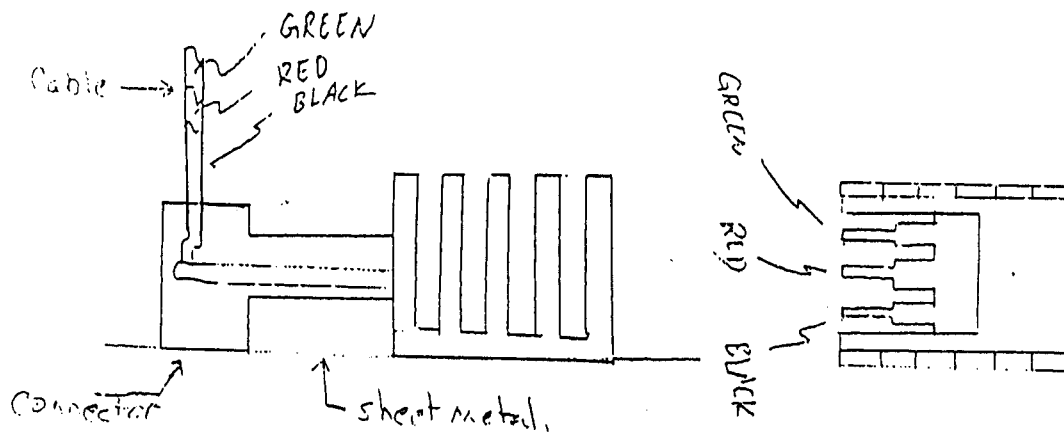
- Before applying power to the Shooter, inspect the board for any errors (do an initial QC).

At this time CPU and RAMs should not be installed in the board.

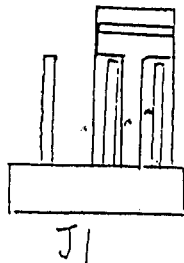
Connect the power cord, but not the RS 232 cable.

Connect the 5V regulator.

*** Make sure the regulator is connected properly ***



Connect the Jumper on J1.



Set the meter to 200V setting to observe all readings.

NOTE If any of the measurements are incorrect or any of the checksums are incorrect, Fail the initial Test !!!

1. Connect a bench 5V regulator.
2. Connect the power cord.
3. Set meter to 20V scale.
4. Connect the ground of the meter to the negative slot.
5. Apply power.
6. Measure TP1 (R22).
You should observe 5V +/- .5V.
The red and green LEDs should be lit.
7. Measure the (+) side of C3.
You should observe +15V to +17V.
8. Measure the (+) side of C4.
You should observe +35V to +40V.
9. Measure TP2 (V2).
You should observe +25.3V to +26.0V.
10. Measure TP3 (VR1).
You should observe -11.0V to -12.7V.
11. Measure TP4 (VR2).
You should observe +11.0V to +12.7V
12. Insert a 2732A CNF into the C NF socket.
13. Measure TP2.
You should observe +20.6V to +22.0V.
14. Replace the 2732A CNF with a 2764A CNF.
15. Measure TP2.
You should observe +12.8V to +13.2V.
16. The next step involves the dip switches.

17. Place the (+) meter lead on TP5 (pin 1 of SW1)
for the following checks:

SW1	SW2	SW3	SW4	TP5
Off	Off	Off	Off	0V
On	Off	Off	Off	+5V to +6V
Off	On	Off	Off	+5V to +6V
Off	Off	On	Off	+5V to +6V
Off	Off	Off	On	+5V to +6V

18. Remove power.

19. Insert CPU and RAM chips.

20. Connect board to terminal via RS232 cable.

Check the computer settings:

A) Make sure that Shooter is selected.

B) Utilities for shooter should be as follows:

- | | |
|-----------------------|--------------|
| 1) Programmer | Shooter |
| 2) COM Port | COM1 or COM2 |
| 3) Baud Rate | 2400 |
| 4) Parity | None |
| 5) Stop Bits | 1 |
| 6) Data Bits | 8 |
| 7) Save Configuration | Update |
- Update and exit the shooter menu

21. Apply power.

22. You should observe a menu being displayed on the terminal.
If not, ensure that all of the dip switches have returned to the off position.

23. Type "A" to enter terminal mode.

24. Type "C" (checksum).

You should observe a checksum of E000.

"EOJ" on the terminal simply stands for "End Of Job."

25. Type "F00", which will fill the RAMs with 0.

26. The yellow LED should light for a few seconds and then go out,
then the green LED should light.

27. Type "C" again.
The checksum should now be 0000.
28. Type "X000" to examine location 0.
29. Response Enter
0000 = 00 "01"
0001 = 00 "02"
0002 = 00 "04"
0003 = 00 "08"
0004 = 00 "Enter"
30. Type "C".
The checksum should now be 000F.
31. The following checks will be done using an oscilloscope.
32. Replace the 2764A CNF with a 2716 CNF.
33. Insert load block test (schematic located in back of manual) in ZIF socket.
34. Press program.
Check the following signals:
Pin 20 = 50 ms pulses CE
Pin 22 = +5V OE
Pin 23 = +25V Vpp
Pin 26 = +5V Vcc
35. Exchange the 2716 CNF with a 2732A CNF.
36. Shooter should still be in program mode.
If not, type F00, then program.
37. Check the following signals:
Pin 20 = 50ms pulses CE
Pin 22 = +21V Vpp
Pin 26 = +5V Vcc
38. Press reset.
39. Exchange the 2732A CNF with a 27512CNF.

40. Insert the address line tester (schematic in back of manual) into the Zif socket.
Press reset and observe the proper testing of the address line by observing the LEDs light synchronously in increasing order (address line counts up in binary)
41. Exchange the address line tester with the master EPROM.
42. Type "R" (load EPROM).
43. Press verify on the Shooter.
44. Observe proper verification (yellow to green).
45. Exchange master EPROM with blank EPROM M27C512.
Type "N" for a blank check.
Type "P" for programming chip.
Type "V" to verify the chip.
Type "C" to get the checksum which should be 6F91.
46. Exchange configurator for a 2732A and EPROM to M37332AFI (blank).
Blank check, program, verify and checksum should be BF97.
47. Exchange configurator for a 2716 and EPROM to AM2716-IDC (blank).
Blank check, program, verify and checksum should be CE79.
48. Type "U00" (Upload starting at address 00)
Observe on terminal that upload occurs.
49. Remove EPROM and CNF.
50. Press reset. to clear the RAM.
51. Remove power.
52. Remove bench regulator and interconnecting bench cables.
53. Replace the original regulator ensuring proper polarity.
54. Put your number and initials on the Q.C. sticker.
55. End of test.

Bill Of Material

Product Description PCB ASSY,512K PP4
Part Number 02-01100-C

item	qty	Part Description	cost	extended
02-01100-C	1.000	PCB ASSY,512K PP4	63.064	63.064
09-40001-5	3.000	NUT,HEX #4-40X1/4X3/16H STEEL	0.003	.009
10-40008-5	3.000	SCREW,MACH.4-40X5/16 PANP ZINC	0.006	.018
12-40000-5	2.000	WASHER,FLAT #4X1/4X.031 NYLON	0.004	.008
12-40001-5	2.000	WASHER,INTERNAL TOOTH #4 ZINC	0.004	.008
12-40010-5	2.000	WASHER,SHLDR #4X1/4X1/16 NYLON	0.026	.052
14-10225-5	2.000	CAP,CERAMIC 22PF 50V RADIAL	0.040	.08
14-11227-5	1.000	CAP,CERAMIC 220PF 100V RADIAL	0.040	.04
14-11475-5	1.000	CAP,CERAMIC 470PF 50V RADIAL	0.040	.04
14-22105-5	1.000	CAP,CERAMIC .001MF 50V (102)1000PF	0.040	.04
14-23107-5	2.000	CAP,CERAMIC .01MF 100V RADIAL	0.065	.13
15-22105-5	2.000	CAP,AXIAL-LYTIC 1000MF 50V	0.580	1.16
16-20015-5	1.000	CAP,RADIAL-LYTIC 1MF 50V	0.052	.052
16-20223-5	1.000	CAP,RADIAL-LYTIC 22MF 25V	0.065	.065
16-21013-5	1.000	CAP,RADIAL-LYTIC 100MF 25V	0.060	.06
16-21224-5	1.000	CAP,RADIAL-LYTIC 220MF 35V	0.100	.1
16-25475-5	1.000	CAP,RADIAL-LYTIC 4.7MF 50V	0.080	.08
18-20014-5	1.000	CAP,TANTALUM 1MF 35V	0.140	.14
18-24104-5	1.000	CAP,TANTALUM .1MF 35V	0.115	.115
19-24106-5	11.000	CAP,MYLAR .1MF 63V NOTE	0.067	.737
22-10105-5	1.000	RESISTOR,10 OHM 1/4 WATT	0.005	.005
22-10155-5	1.000	RESISTOR,15 OHM 1/4 WATT	0.005	.005
22-11155-5	5.000	RESISTOR,150 OHM 1/4 WATT	0.005	.025
22-11515-5	3.000	RESISTOR,510 OHM 1/4 WATT	0.011	.033
22-12225-5	4.000	RESISTOR,2.2K 1/4 WATT	0.011	.044
22-13105-5	4.000	RESISTOR,10K OHM 1/4 WATT	0.012	.048
22-13225-5	1.000	RESISTOR,22K OHM 1/4 WATT	0.005	.005
22-22225-5	2.000	RESISTOR,2.2K OHM 1/2 WATT	0.008	.016
23-81004-5	1.000	RESISTOR,WW 4 OHM 5 WATT	0.200	.2
23-81680-5	1.000	RESISTOR,WW 680 OHM 5 WATT	0.145	.145
26-31010-5	1.000	RES SIP,10K OHM 10 PIN BUS	0.140	.14
28-00020-5	2.000	DIODE,W02M BRIDGE RECT	0.250	.5
28-02091-5	1.000	DIODE,9.1V 5% ZENER	0.060	.06
28-02130-5	1.000	DIODE,ZENER 13.0V 5%	0.055	.055

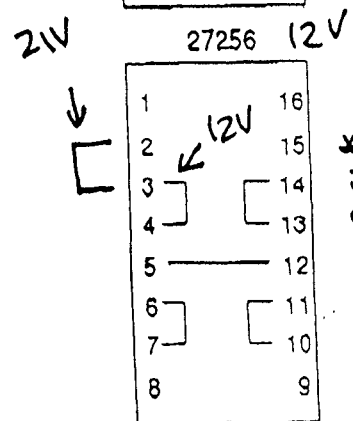
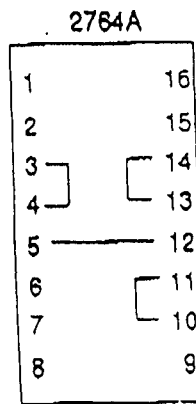
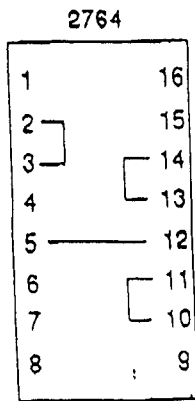
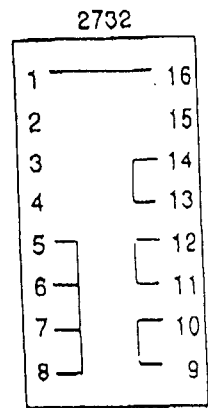
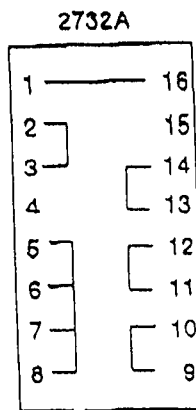
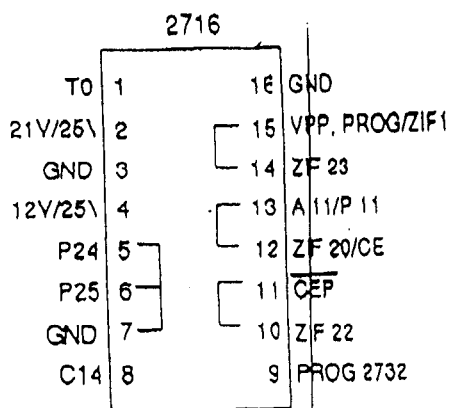
28-40010-5	6.000	DIODE,1 AMP 5 VOLT RECT 1N4001	0.017	.102
28-41480-5	12.000	DIODE,1N4148/914	0.013	.156
28-47420-5	2.000	DIODE,1N4742 12V ZENER	0.070	.14
28-58180-5	3.000	DIODE,SHOTTKY 1N5818	0.120	.36
29-00010-5	1.000	LED,GREEN ROUND LL4233	0.072	.072
29-00020-5	1.000	LED,RED ROUND LL4023	0.100	.1
29-00030-5	1.000	LED,YELLOW ROUND LL4253	0.125	.125
31-65340-5	4.000	TRANSISTOR,MPS6534 PNP	0.090	.36
35-74060-5	1.000	IC,7406 HEX INVRTR O.C. H.V.	0.350	.35
35-74070-5	1.000	IC,7407 BUFFER NATIONAL ONLY	0.400	.4
35-74374-5	2.000	IC,74LS374 OCTAL D F/F TRIS	0.375	.75
37-74139-5	1.000	IC,74LS139 EXP DECODER	0.315	.315
48-84266-5	2.000	IC,M884256-15 FUJITSU/HITACHI	4.950	.99
49-14880-5	1.000	IC,1488 QUAD LINE DRIVER	0.350	.35
49-14890-5	1.000	IC,1489 QUAD LINE RECEIVER	0.350	.35
49-87490-5	1.000	IC,8749 64 BYT RAM/2K BYT EPRM	5.500	5.5
51-03170-5	1.000	REGULATOR,LM317LZ 100MA TO92	0.390	.39
51-03402-5	1.000	REGULATOR,LM340T 5/7805T	0.820	.82
51-78120-5	1.000	REGULATOR,7812AC 12V FLAT PACK	0.350	.35
54-01100-D	1.000	PCB,512K PP4	11.630	11.63
56-20115-5	1.000	TRANSFORMER,110V 2009082 PP4	8.950	8.95
58-27410-5	1.000	HEAT SINK,2741AB WAKEFIELD CASE	0.182	.182
60-00005-5	1.000	DELAY,SY-5 5V	1.940	1.94
63-40000-5	1.000	INSULATOR,CHOTHERM CHOMERICS	0.059	.059
69-00125-5	1.000	JUMP,65474-002 BERG	0.070	.07
71-20400-5	1.000	CONNECTOR,520249-2 4 PIN M RA	0.440	.44
72-10100-5	1.000	HEADER,4 PIN .30 long	0.016	.048
73-11600-5	1.000	SOCKET,DIP SOLDER TAIL 16 PIN	0.130	.13
73-12800-5	2.000	SOCKET,DIP SOLDER TAIL 28 PIN	0.220	.44
73-14000-5	1.000	SOCKET,DIP SOLDER TAIL 40 PIN	0.450	.45
75-12803-5	1.000	SOCKET,ZIF 28/REORDER AS 75-12803-5	11.530	11.53
75-12803-5	1.000	SOCKET,ZIF 28/REORDER AS 75-12803-5	11.530	11.53
76-10400-5	1.000	SWITCH,DIP BD04-AV ARIES	0.520	.52
76-20100-5	3.000	SWITCH,MOMENTARY COBA300 ECG	0.480	1.44
78-80000-5	1.000	CRYSTAL,6.000000MHZ HC-18*	0.570	.57

Total Cost 126.128

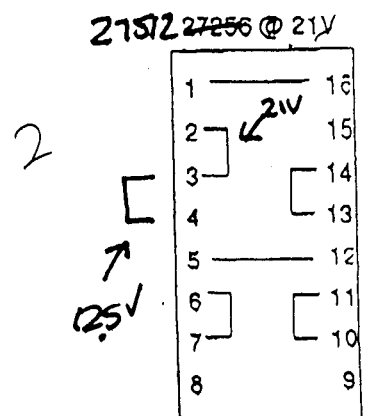
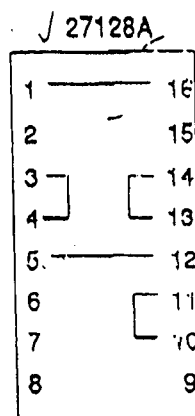
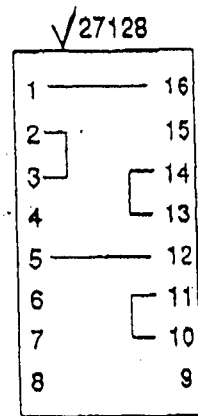
This section describes the following configurators used with the SHOOTER

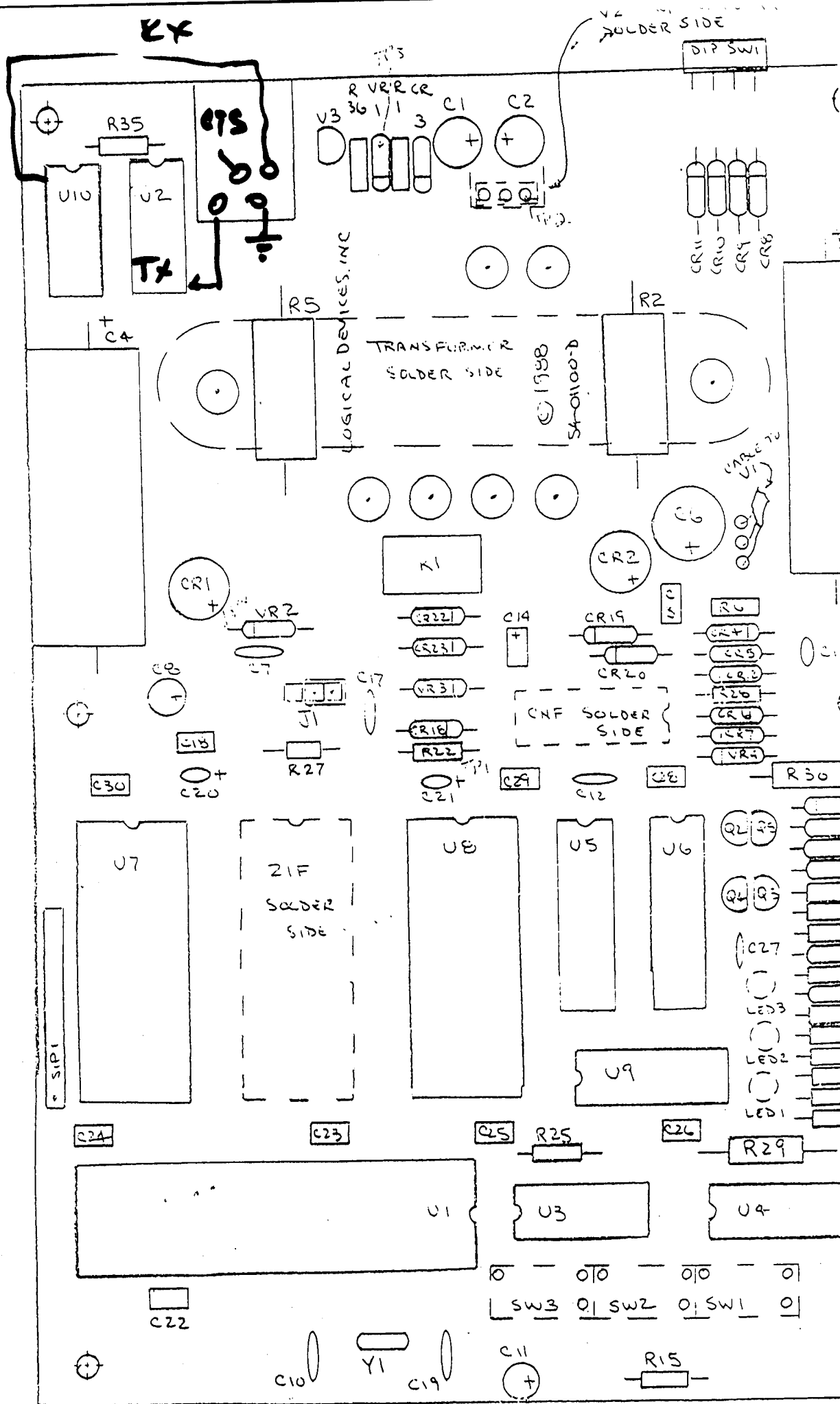
Standard Configurators

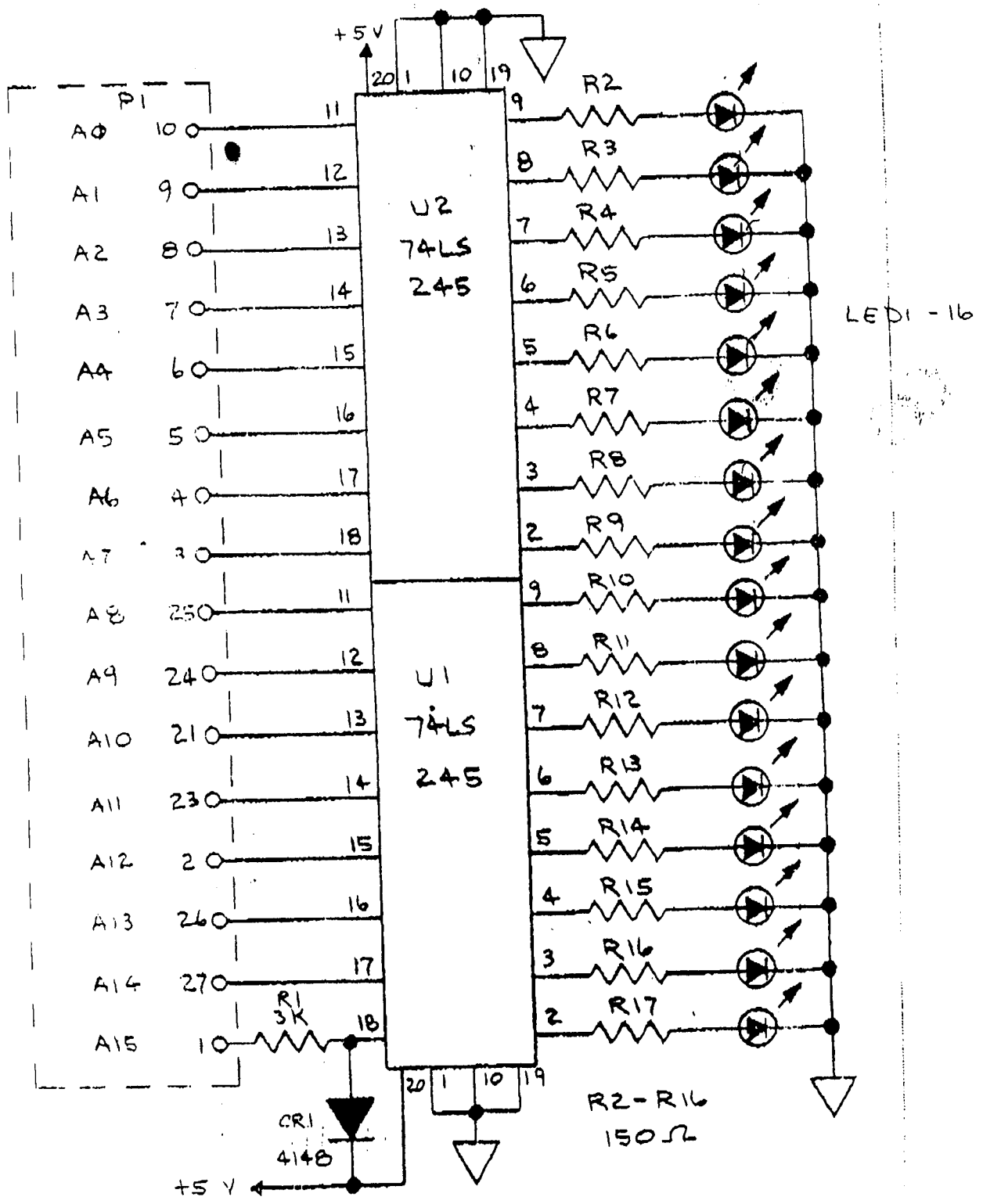
These configurators are supplied with the SHOOTER



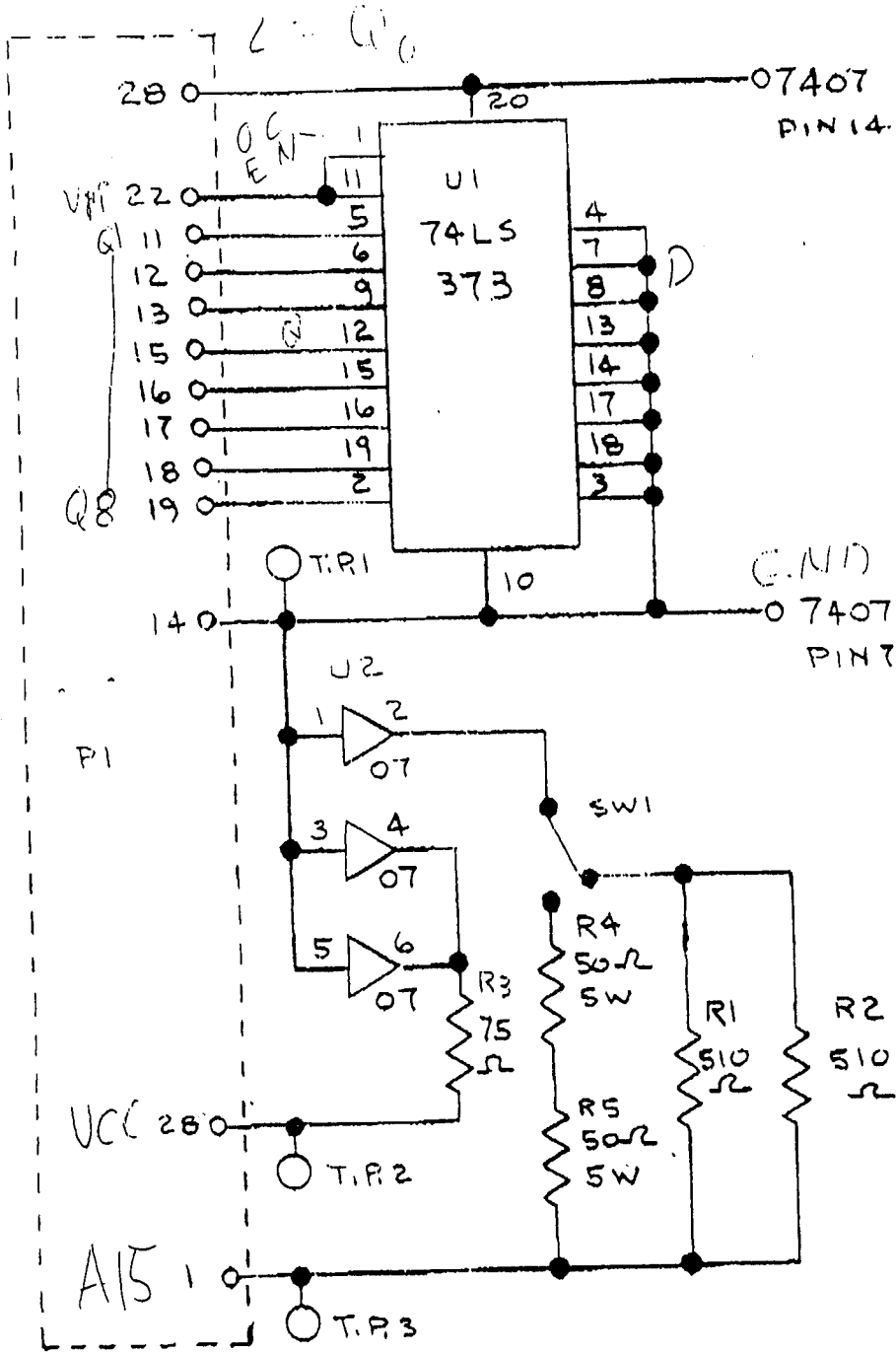
* NO Jumper on 3-4 25V



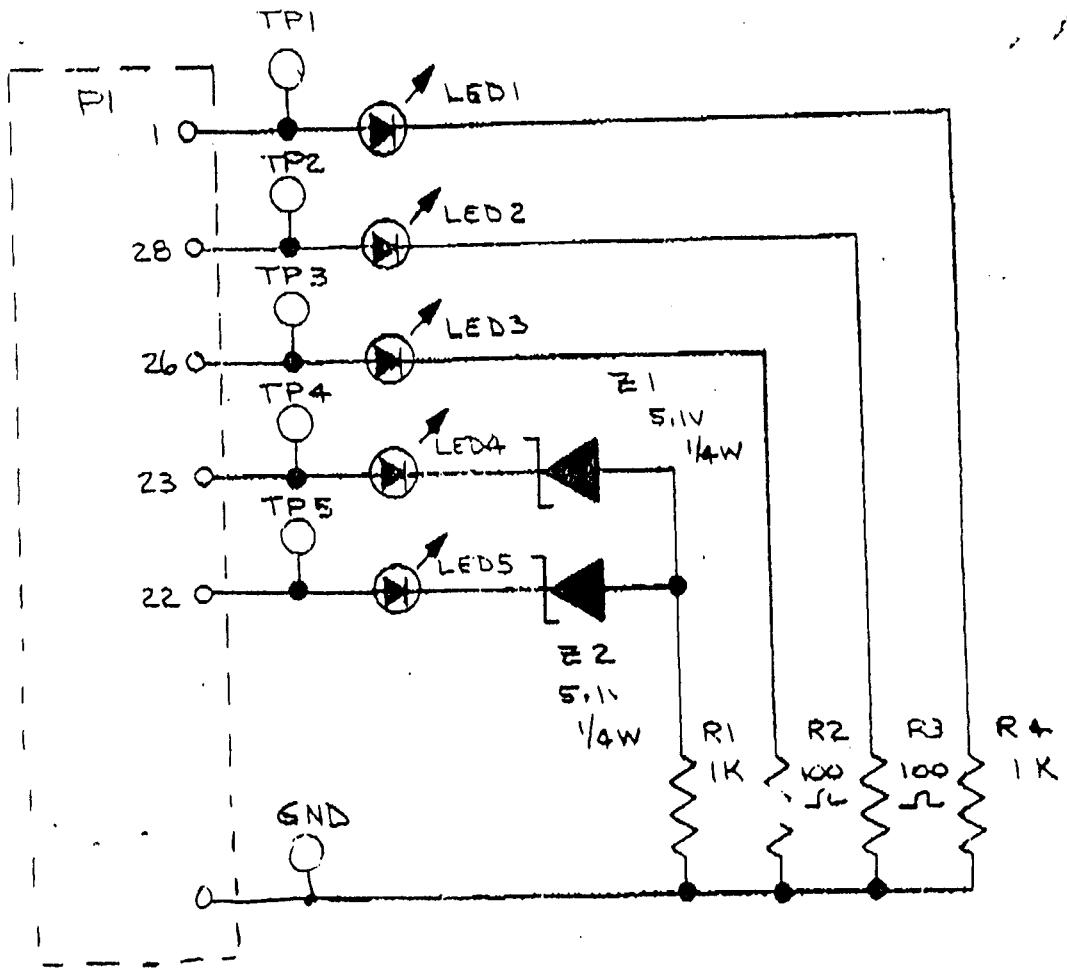




LOGICAL DEVICES, INC.
 ADDRESS LINE TESTER
 55-00004-5
 12/13/85 *all*



LOGICAL DEVICES, INC.
 64A SIMULATOR
 55-00002-5
 12/13/85 *all*



LOGICAL DEVICES, INC.
 LED LOAD BLOCK
 65-00003-S
 11/12/85

all

RS232 on DB9 (EIA/TIA 574)

Signal/pin primer

Pin No.	Name	Notes/Description
1	DCD	Data Carrier Detect
2	RD	Receive Data (a.k.a RxD, Rx)
3	TD	Transmit Data (a.k.a TxD, Tx)
4	DTR	Data Terminal Ready
5	SGND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

View - looking into male connector

contents

RS232 on RJ45 (RS-232D)

More properly EIA/TIA - 561. Use when connecting to or from a serial port with a 8 position Modular Jack (RJ45). If you are cross-connecting from a DB9 or a DB25 use the signal names to cross connect the appropriate connections.

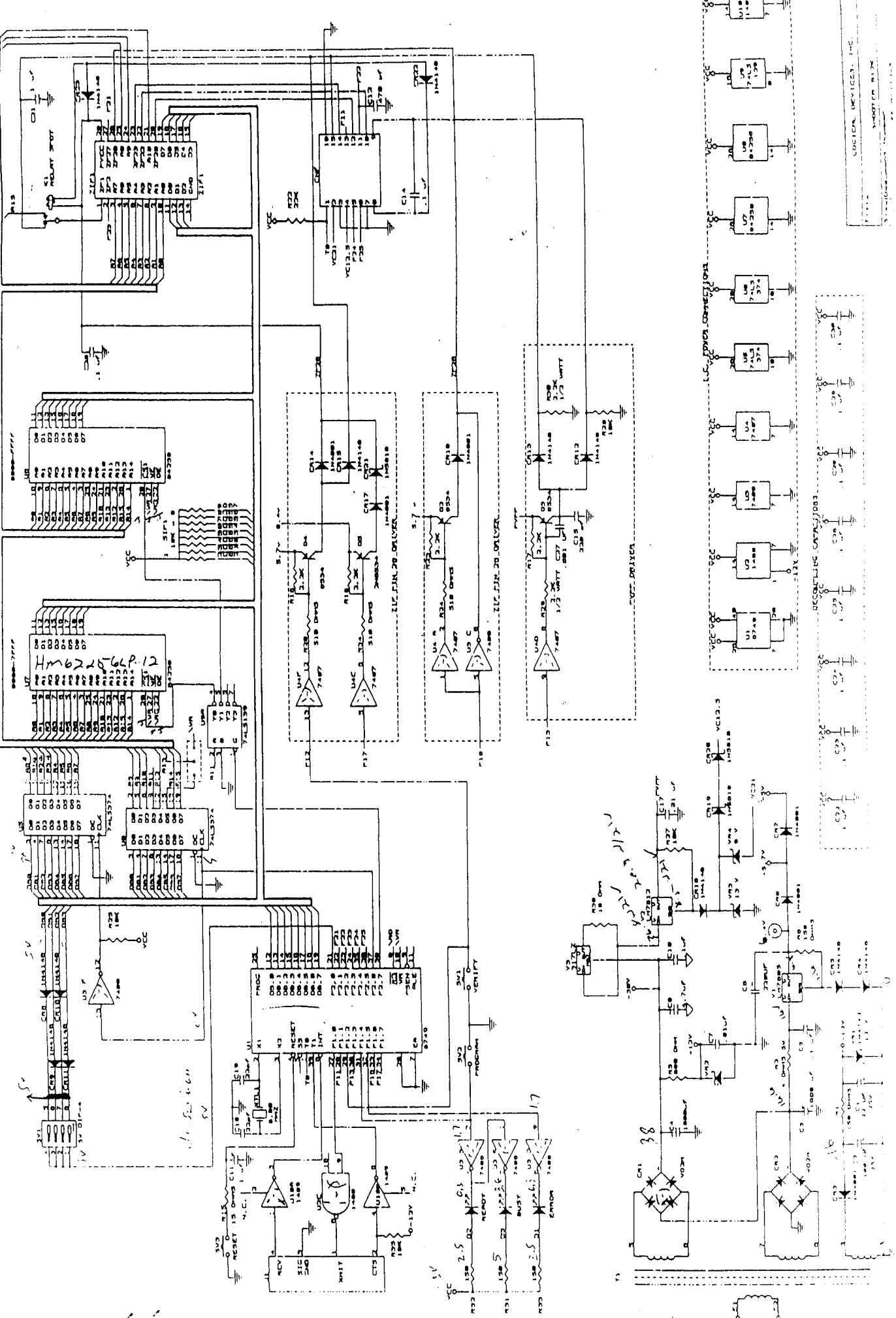
Signal/pin primer

Pin No.	Name	Notes/Description
1	DSR/RI	Data set Ready/ring indicator
2	DCD	Data Carrier Detect
3	DTR	Data Terminal Ready
4	SGND	Signal Ground

1	DATA	DATA
2	DATA	DATA
3	DATA	DATA
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22 x 8 120 W

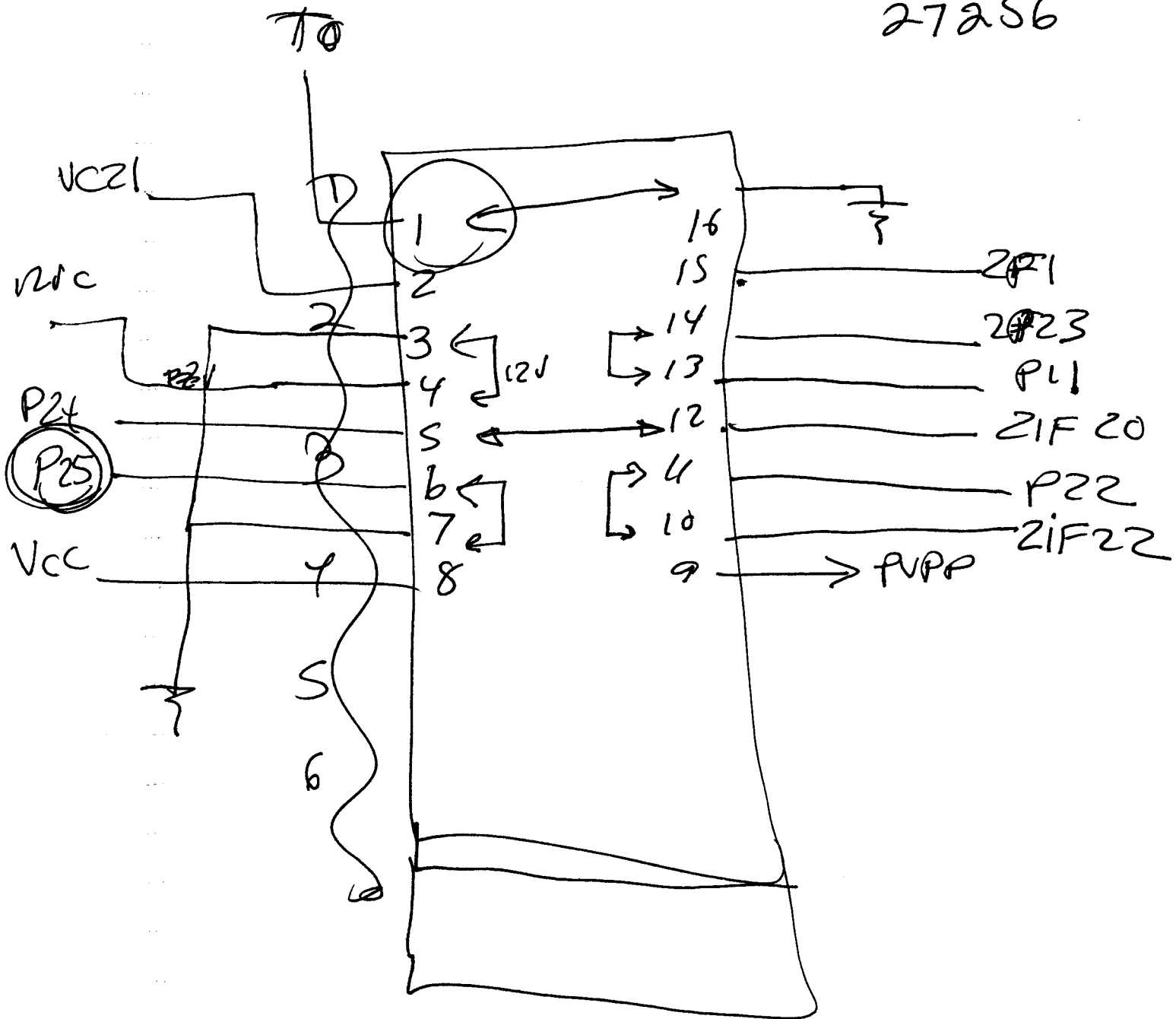
384C NOTES: -- 07-28
 384C (A) 31 -- 08-23
 SEE ECO-384C



LOGIC DEVICES, INC.
 38400000 017K

— * PSD 311015 J 200 —

2764
2712a
27256



CONFIGURATORS

This section describes the following configurators used with the SHOOTER

Standard Configurators

These configurators are supplied with the SHOOTER

