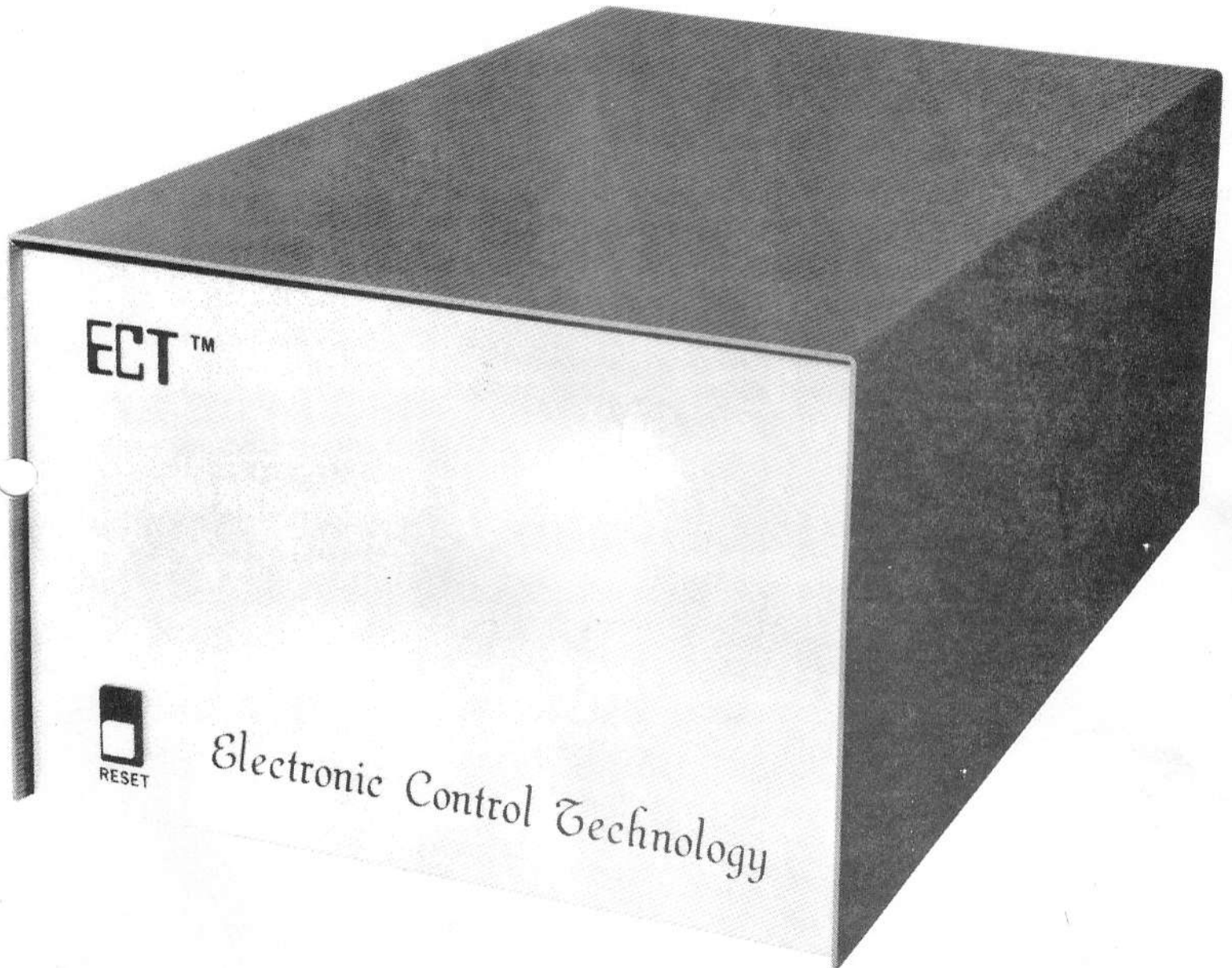


TT-10



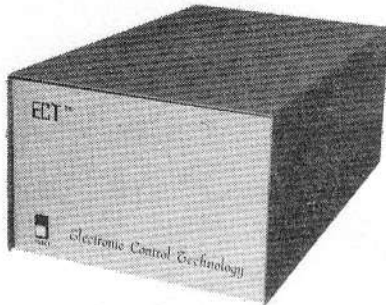
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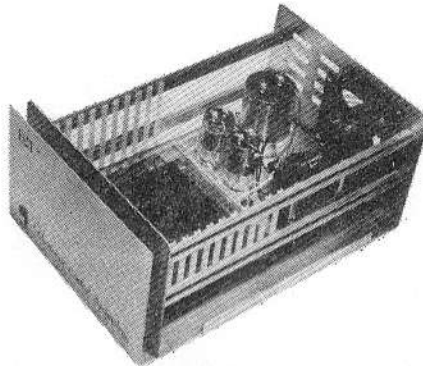
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TABLE TOP MAINFRAMES, MICROCOMPUTERS & SYSTEMS



TT-10

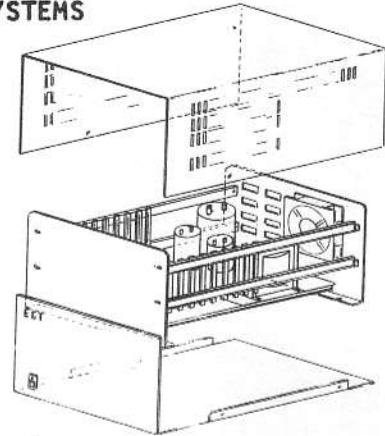


TT-8080

TT-Z80

TT-8080-S

TT-Z80-S



ELECTRONIC CONTROL TECHNOLOGY's 10 slot Table Top Mainframes are of sturdy construction (similar to ECT's industrial ECT-100 19" rack mount Card Cages). The TT-10 Table Top Mainframe consists of an industrial quality Card Cage; the MB-10, an S-100 bus Mother Board with bus termination and ground plane; a full set of 10 connectors and guides; a 15A at 8V, 1.5A at +16V and 1.5A at -16V Power Supply which mounts inside the Card Cage; a front/bottom plate with a reset switch and power indicator LED; a whisper fan and a vented textured blue cover.

The Table Top Microcomputers (TT-) consist of the TT-10 Mainframe and a CPU board (8080 or Z80) with 'JUMP' on Reset which does not require front panel controls except for a Reset pushbutton.

The Table Top Systems (TT- -S) consist of the Microcomputer with the addition of the 16K RAM board and an I/O board with a ROM monitor. Just add a CRT or other terminal for a functional Microcomputer System.

SPECIFICATIONS

CPU's: 8080 CPU or Z80 CPU

UNREGULATED POWER SUPPLIES: +8 V at 15 A, +16 V at 1.5 A & -16 V at 1.5 A

INPUT POWER: 115 V (with taps for 105 V & 125 V) 60 Hz (220 V 50 Hz available on special order)

175 Watts maximum (50 Watts for a typical system)

BUS STRUCTURE: S-100 / ECT-100 / ALTAIR / IMSAI

MOTHER BOARD: 10 slots with resistive bus termination MB-10

BUS CONNECTORS: 100 pin (dual 50) on .125 spacing (all ten provided)

CONTROLS: Power switch (on back), Reset pushbutton and power indicator (front)

COOLING FAN: 52 cfm whisper quiet

ENCLOSURE: Custom 3/32" aluminum with extruded channel rails

Clear satin finish front, gold iridited cage and blue textured cover.

WEIGHT: 25 to 35 lbs.

SIZE: 8.75" H x 12.75" W x 19.25" D

Specifications subject to change without notice. 8/77 Rev 5/78

ELECTRONIC CONTROL TECHNOLOGY 763 Ramsey Ave. Hillside, NJ 07205 (201)686-8080

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P.O. BOX 6
UNION, NEW JERSEY 07083
(201) 686-8080

ASSEMBLY OF THE MB-10, MB-20 & MB-21 MOTHER BOARDS

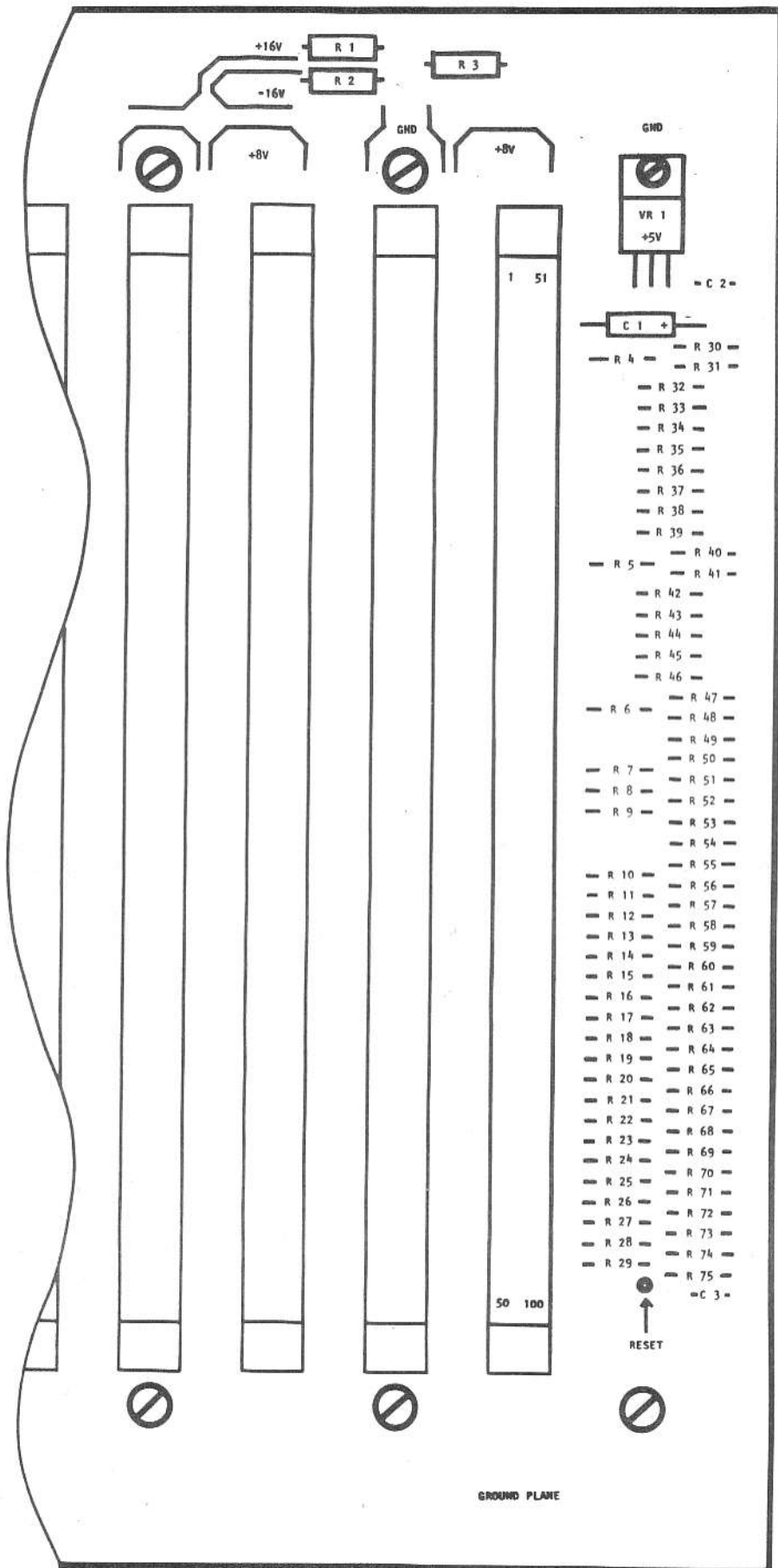
The MB-20 Mother Board has space for 20 connectors (100PC E&I), the MB-10 for 10 and the MB-21 for 21, on 3/4 inch centers with 100 pins in two rows of 50 on .125" spacing between pins and .25" spacing between rows. Space for bus termination resistors is provided for selected bus lines to reduce reflections and noise. A ground plane covers most of the component side of the Mother Board. A pad is provided in the termination resistor area at the lower edge of the board for connection of a normally open push button switch for reset. Lines 3, 24-26, 35, 36, 38-43, 49, 68, 72, 76-78 & 88-95 (Data, Clock & C/C lines) are resistive terminated (330 Ohms to +5V and 470 Ohms to ground) and lines 4-11, 18-23, 54, 70, 71 & 73-75 (CPU Card inputs) have 330 Ohm pull-up's.

NOTE: Refer to diagram. It is easiest to start assembly with the lowest height parts first, then work up.

1. Mount 46 resistors R30-75 1/4 Watt 330 Ohms and connect from each selected bus to the regulated +5V (the land from the output of the regulator near the right edge of the Mother Board).
2. Mount 26 resistors R4-29 1/4 Watt 470 Ohms and connect each selected bus to ground.
3. Mount the three bleeder resistors R1-3 on the Mother Board at the top edge near the regulator. The two resistors for the +16V and -16V are 1K 1/2 Watt R1,2. The resistor for the +8V is 470 Ohms 1/2 Watt R3.
4. Mount two disc capacitors .1 MFD C2,3 , one at each end of the +5V land for the bus termination resistors. The 5V regulator VR 1 mounts directly to the Mother Board at the extreme right mounting hole at the top of the Mother Board; do not tighten the screw yet, it goes through the Mother Board mounting bar of the Card Cage. A tantalum capacitor 6.8 MFD C1 connects right below the regulator between the input and ground, note polarity.
5. Mount and solder in the connectors (100PC E&I).

NOTE: If you are considering wave soldering, contact the factory first. Wave soldering is an art, one must achieve the proper time-temperature-height relationship. Care must be taken to prevent heat or solder from reaching & distorting the ground areas which are used to mount the Mother Board to the Card Cage. Care must also be taken to prevent the board from warping. The user bears sole responsibility for the results of wave soldering.

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PARTS LIST

- C 1 6.8 MFD 35 V
- C 2,3 .1 MFD 10 V
- R 1,2 1 K 1/2 W
- R 3 470 1/2 W
- R 4-29 470 1/4 W
- R 30-75 330 1/4 W
- VR 1 340T-5/7805

OPTIONAL

- 100PC E61
- EDGE CONNECTORS

MOTHER BOARDS

- MB-10
- MB-20
- MB-21

REV 0 6/77 DPD

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ECT-100 BUS DEFINITIONS

PIN #	SYMBOL	FUNCTION
1	+8V	Unregulated +8 Volts, regulated to +5V by on-card regulators
2	+16V	Unregulated +16 Volts
3	XRDY	EXTERNAL READY. CPU input pulled low by front panel to cause CPU to enter a wait state
4	VI-0	VECTORED INTERRUPT Line #0
5	VI-1	VECTORED INTERRUPT Line #1
6	VI-2	VECTORED INTERRUPT Line #2
7	VI-3	VECTORED INTERRUPT Line #3
8	VI-4	VECTORED INTERRUPT Line #4
9	VI-5	VECTORED INTERRUPT Line #5
10	VI-6	VECTORED INTERRUPT Line #6
11	VI-7	VECTORED INTERRUPT Line #7
12	*	XRDY2 or \overline{NMI}
13	*	
14	*	RDSBL/L
15	*	
16	*	
17	*	
18	\overline{STAT} \overline{DSBL}	STATUS DISABLE when pulled low by an open collector, tri-states the CPU's 8 status bus drivers
19	$\overline{C/C}$ \overline{DSBL}	COMMAND/CONTROL DISABLE when pulled low by an open collector, tri-states the CPU's 6 Command/Control bus drivers
20	UNPROT	UNPROTECT. Input to the memory protect flip-flop on the memory board which is addressed
21	SS	SINGLE STEP. Indicates that the Microcomputer is in the process of performing a single step
22	\overline{ADDR} \overline{DSBL}	ADDRESS DISABLE when pulled low by an open collector, tri-states the CPU's 16 address bus drivers
23	\overline{DO} \overline{DSBL}	DATA OUT DISABLE when pulled low by an open collector, tri-states the CPU's data output bus drivers
24	$\phi 2$	PHASE 2 CLOCK from CPU
25	$\phi 1$	PHASE 1 CLOCK from CPU

* PINS IN CONFLICT: USED FOR DIFFERENT PURPOSES BY DIFFERENT MANUFACTURERS

Electronic Control Technology

ECT-100 BUS DEFINITIONS

<u>PIN #</u>	<u>SYMBOL</u>	<u>FUNCTION</u>
26	P HLDA	HOLD ACKNOWLEDGE CPU's response to a HOLD request, that it has completed its use of the bus for the current machine cycle and the bus may be disabled for other use
27	P WAIT	WAIT CPU control signal which acknowledges a low signal on the READY line and that the CPU will wait in clock increments until READY is high
28	P INTE	INTERRUPT ENABLE CPU control signal which indicates the condition of its internal interrupt accept/inhibit flip-flop which may be changed by the EI & DI instructions
29	A-5	ADDRESS Line #5
30	A-4	ADDRESS Line #4
31	A-3	ADDRESS Line #3
32	A-15	ADDRESS Line #15 (MSB)
33	A-12	ADDRESS Line #12
34	A-9	ADDRESS Line #9
35	DO-1	DATA OUT Line #1
36	DO-0	DATA OUT Line #0 (LSB)
37	A-10	ADDRESS Line #10
38	DO-4	DATA OUT Line #4
39	DO-5	DATA OUT Line #5
40	DO-6	DATA OUT Line #6
41	DI-2	DATA IN Line #2
42	DI-3	DATA IN Line #3
43	DI-7	DATA IN Line #7 (MSB)
44	S M1	MACHINE CYCLE 1 Status signal which indicates that the CPU is in the fetch cycle for the first byte of an instruction
45	S OUT	OUTPUT Status signal which indicates that the address bus contains the address of an output device and the data bus will contain the output data when P WR is active
46	S INP	INPUT Status signal which indicates that the address bus contains the address of an input device & the input data should be placed on the data bus when P DBIN is active
47	S MEMR	MEMORY READ Status signal which indicates that the data bus will be used to read memory data
48	S HLTA	HALT ACKNOWLEDGE Status signal which acknowledges a HALT instruction
49	<u>CLOCK</u>	2 MHz CLOCK signal, inverted output of the #2 CLOCK
50	GND	GROUND circuit common

* PINS IN CONFLICT: USED FOR DIFFERENT PURPOSES BY DIFFERENT MANUFACTURERS

Electronic Control Technology

ECT-100 BUS DEFINITIONS

PIN #	SYMBOL	FUNCTION
51	+8V	Unregulated +8 Volts, regulated to +5V by on-card regulators
52	-16V	Unregulated -16 Volts
53	<u>DI DSBL</u>	DATA INPUT DISABLE when pulled low tri-states the DATA INPUT bus drivers to the CPU (normally for front panel control & sense switch use)
54	<u>EXT CLR</u>	EXTERNAL CLEAR Clear signal for I/O devices (front panel switch closure to ground)
55	*	RTC or C GND
56	*	<u>STSTB</u>
57	*	DIG1
58	*	FRDY
59	*	CMW
60	*	A16 or MBS
61	*	A17
62	*	A18
63	*	A19
64	*	RDSBL/H
65	*	<u>MREQ</u>
66	*	<u>RFSH</u>
67	*	<u>PHANTOM</u>
68	M WRITE	MEMORY WRITE a derived signal of \overline{PWR} & S OUT which indicates that the data present on the DATA OUT bus is to be written into the memory location currently on the ADDRESS bus
69	\overline{PS}	PROTECT STATUS the status of the memory protect flip-flop on the memory board currently addressed
70	PROT	PROTECT Input to the memory protect flip-flop on the memory board which is addressed
71	RUN	RUN Signal from the front panel Run/Stop flip-flop
72	P RDY	PROCESSOR READY CPU input pulled low by memory or I/O which causes the CPU to enter a wait state
73	$\overline{P INT}$	INTERRUPT REQUEST CPU input which recognizes an Interrupt Request when the Interrupts are enabled and the CPU is not in the HOLD state
74	$\overline{P HOLD}$	HOLD CPU input, request to enter a HOLD state, allows external device to control the buses when the CPU has completed its current use of the buses
75	$\overline{P RESET}$	RESET a logic zero clears the CPU's program counter and the instruction register

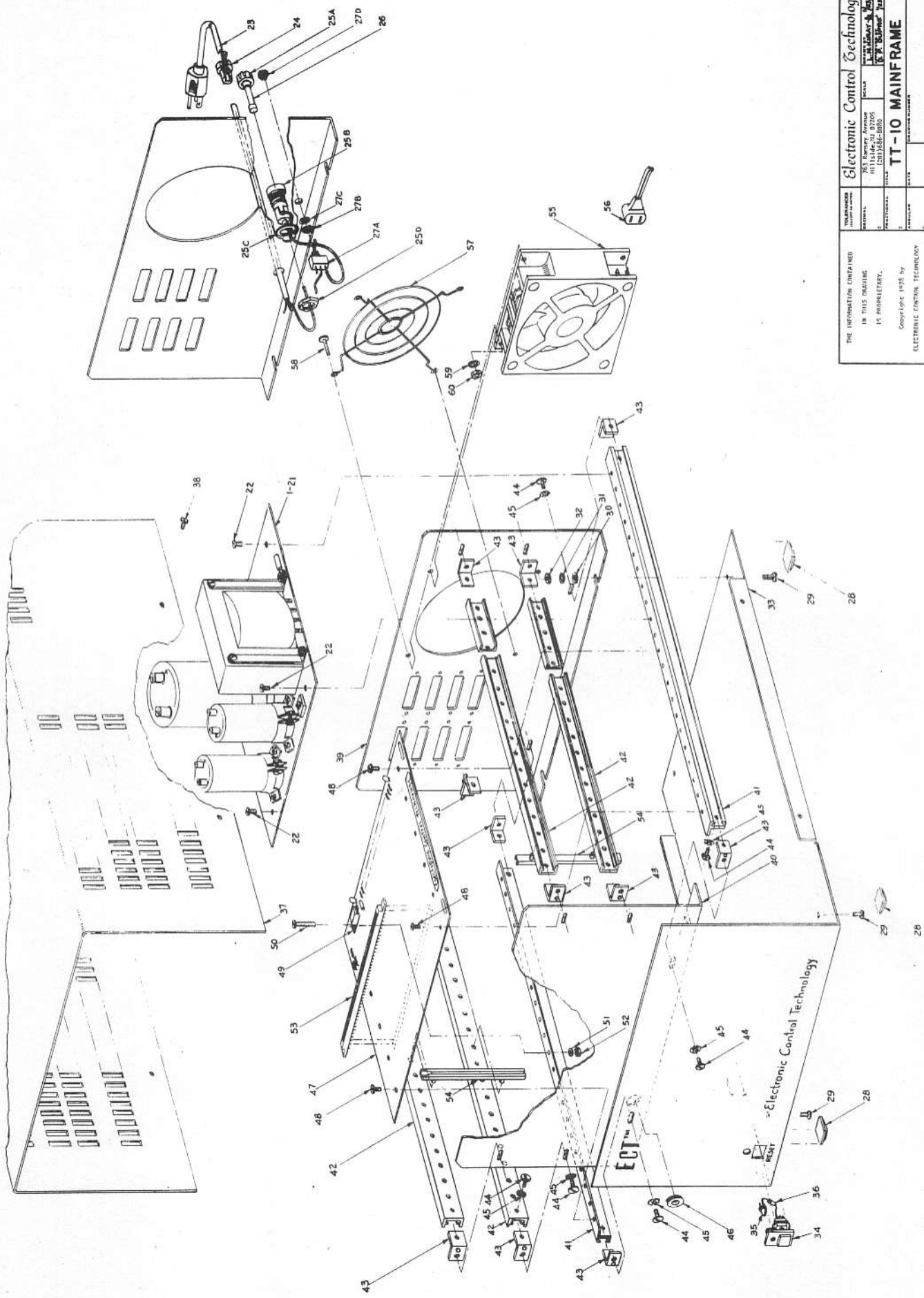
* PINS IN CONFLICT: USED FOR DIFFERENT PURPOSES BY DIFFERENT MANUFACTURERS

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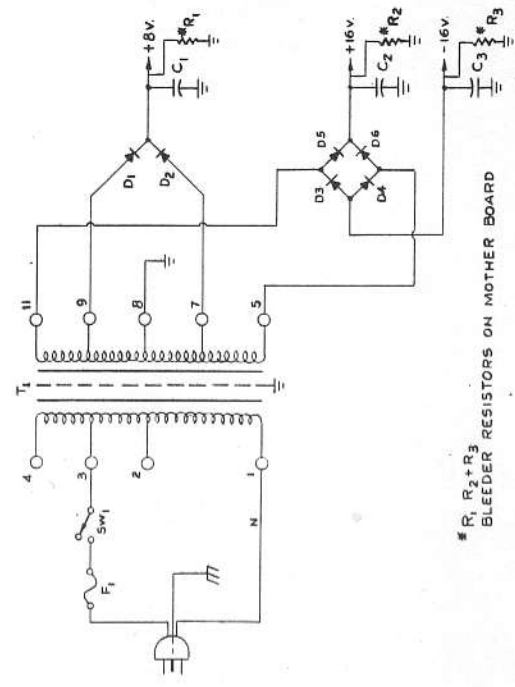
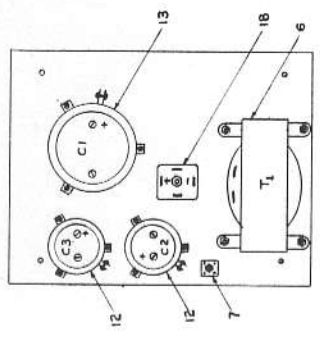
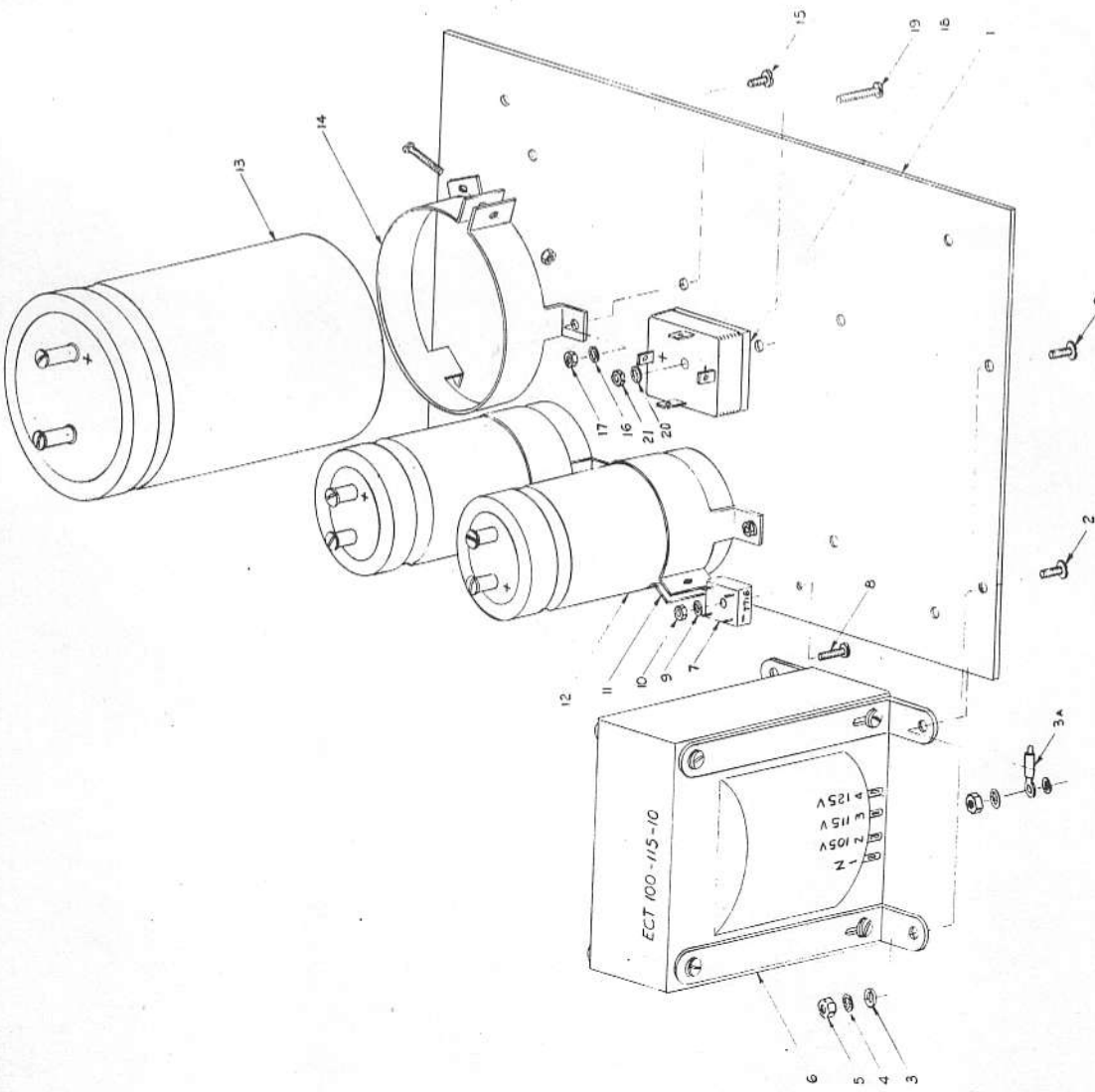
ECT-100 BUS DEFINITIONS

<u>PIN #</u>	<u>SYMBOL</u>	<u>FUNCTION</u>
76	P SYNC	SYNC CPU control signal to indicate the beginning of each machine cycle
77	$\overline{P\ WR}$	WRITE CPU control signal which indicates that data on the DATA OUT bus is stable for a memory write or I/O output
78	P DBIN	DATA BUS IN CPU control signal which indicates that the CPU's data bus is in the input mode
79	A-0	ADDRESS Line #0
80	A-1	ADDRESS Line #1
81	A-2	ADDRESS Line #2
82	A-6	ADDRESS Line #6
83	A-7	ADDRESS Line #7
84	A-8	ADDRESS Line #8
85	A-13	ADDRESS Line #13
86	A-14	ADDRESS Line #14
87	A-11	ADDRESS Line #11
88	D0-2	DATA OUT Line #2
89	D0-3	DATA OUT Line #3
90	D0-7	DATA OUT Line #7
91	D1-4	DATA IN Line #4
92	D1-5	DATA IN Line #5
93	D1-6	DATA IN Line #6
94	D1-1	DATA IN Line #1
95	D1-0	DATA IN Line #0
96	S INTA	INTERRUPT ACKNOWLEDGE CPU status signal which acknowledges an INTERRUPT request
97	$\overline{S\ WO}$	WRITE OUT Status signal which indicates that the operation in the current machine cycle will be a WRITE memory or output function
98	S STACK	STACK CPU status signal which indicates that the address bus holds the pushdown Stack address from the Stack Pointer
99	\overline{POC}	POWER-ON CLEAR
100	GND	GROUND circuit common

* PINS IN CONFLICT: USED FOR DIFFERENT PURPOSES BY DIFFERENT MANUFACTURERS



Electronic Control Technology 255 BATTERY ROAD HILLSDALE, NJ 07035 (609) 586-8800		DATE: _____ DRAWN BY: _____ CHECKED BY: _____ TITLE: TT-10 MAINFRAME PROJECT: _____
THE INFORMATION CONTAINED IN THIS DRAWING IS PROPRIETARY. Copyright 1975 by ELECTRONIC CONTROL TECHNOLOGY	INSTRUCTIONS	



R₁, R₂ + R₃
BLEEDER RESISTORS ON MOTHER BOARD

THE INFORMATION CONTAINED IN THIS DRAWING IS PROPRIETARY. Copyright 1978 by ELECTRONIC CONTROL TECHNOLOGY		Electronic Control Technology 785 Temporary Avenue HILLSDALE, N.J. 07205 (201) 261-0988 TT-10 POWER SUPPLY	
TITLE TT-10 POWER SUPPLY	DRAWN BY DATE	CHECKED BY DATE	APPROVED BY DATE

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TT-10 POWER SUPPLY

ASSEMBLY INSTRUCTIONS

- () Check all parts against the parts list.
- () Read the instructions entirely before starting assembly.

NOTE: Terminals 7, 8 and 9 and the heavy gauge wire being soldered require use of a soldering gun of about 140 watts for good connections. Use a soldering iron of about 40 watts for all other solder connections.

NOTE: Numbers in parenthesis refer to the exploded view drawing.

- () Start by soldering wires to the transformer (6) before mounting it.
- () Connect a 9 inch #14 black wire to terminal 8 of the transformer.
- () Also on terminal 8 connect a 6½ inch #14 black wire.
- () Connect a 5 inch #14 black wire to terminal 7.
- () Connect a 5 inch #14 black wire to terminal 9.
- () Connect a 5½ inch #16 white wire to terminal 5.
- () Connect a 4½ inch #16 white wire to terminal 11.
- () Mount the transformer (6) to the plate (1), orienting terminals 5-11 toward the center of the plate, using 4 sets of 8-32 x 3/8 screws, flatwashers, lockwashers and nuts (2-5).
- () Mount the larger bridge rectifier (18) to the plate, orienting the plus terminal toward the location for the large filter capacitor (13), using heat sinking compound and a set of 8-32 x 3/4 screw, lockwasher and nut (19-21).
- () Connect the #14 black wire from terminal 7 to one of the two AC input lugs (no markings) on the bridge rectifier (18).
- () Connect the #14 black wire from terminal 9 to the other AC input of the bridge rectifier.
- () Connect a #14 red 5½ inch wire to the plus terminal of the bridge.
Note: The minus terminal of the bridge is not used.

ELECTRONIC CONTROL TECHNOLOGY

TT-10 POWER SUPPLY ASSEMBLY

- () Cut the leads of the smaller bridge rectifier to about 1/4 inch long. Mount the smaller bridge rectifier (7) using heat sinking compound and a set of 4-40 x 1/2 inch screw, internal lockwasher & nut (8-10).
- () Connect the #16 white wire from terminal 5 of the transformer to one of the AC input leads (no markings) of the small bridge rectifier (7).
- () Connect the #16 white wire from terminal 11 to the other AC input of the bridge.
- () Solder a 4 inch #16 orange wire to the plus lead of the small bridge. The plus lead has a plus sign on the side preceding the part number.
- () Solder a 7 inch #16 blue wire to the minus lead of the small bridge. The minus lead has a minus sign on the side preceding the date code.
- () Mount the large capacitor (13) C1 using clamp (14) and 6-32 x 1/4 screws, internal lockwashers and nuts (15-17). Note the locations of the screw terminals of the capacitors in the exploded view.

NOTE: Crimp lugs are supplied for wire connections to screw terminals. If a crimp tool is not available, solder the wires to the crimp lugs. In the following steps where a connection is made to a screw terminal, crimp or solder a lug to the wire.

- () Connect the 9 inch #14 black wire from terminal 8 of the transformer to the minus terminal of C1.
- () Connect the red lead from the plus of the larger bridge (18) to the plus terminal of C1.
- () Mount capacitors (12) C2 and C3 with clamps (11) and 6-32 x 1/4 screws, internal lockwashers and nuts (15-17). Note the position of the screw terminals.
- () Connect the 6½ inch #14 black lead from terminal 8 of the transformer to the minus of C2 and a 2 inch #14 black wire from the minus of C2 to the plus of C3. Note: Circuit ground is the plus side of C3.
- () Connect the 4 inch #16 orange wire from the plus lead of the small bridge to the plus terminal of C2.
- () Connect the 7 inch #16 blue wire from the minus lead of the small bridge to the minus terminal of C3.
- () Solder 4 leads to the MB-10 Mother Board in the areas provided:
11 inch #14 black solder side between "REV- " and "©"
17 inch #14 red solder side next to "+8V"
11½ inch #16 orange component side above "+16V"
11 inch #16 blue solder side next to "-16V"

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TT-10 CARD CAGE

ASSEMBLY INSTRUCTIONS

Rear End Plate

- () Remove 12½" of the gray outer insulation from the AC line cord (23).
- () Squeeze the strain relief (24) onto the line cord (23) about one inch onto the outer insulation.
- () From the back of the rear end plate (39) insert the line cord (23) through the hole located directly below the 'I/O' connector cutouts.
- () While squeezing the strain relief (24) tightly, snap it into the hole to secure the line cord in place.
- () Install the fuse holder (25B) with the rubber washer (25C) through the middle hole of the three holes in the end plate (39) and secure on the inside with nut (25D). Orient the fuse holder so that the solder tab is away from the line cord.
- () Install the power switch (27A) in the small hole with nut (27B) and lockwasher (27C) on the inside and nut (27D) on the outside. Orient the switch for up/down - ON/OFF operation.
- () Wire the line cord in series with the fuse holder and power switch as per the following 3 steps. Read them before continuing with the assembly. Twist the leads together. Cut the lead only as long as necessary so that it can be used for the interconnections and still reach the transformer.
- () Cut the black lead of the line cord to connect to the center solder lug of the fuse holder and solder it.
- () Use a short piece of the black lead which was cut off to connect the side solder lug of the fuse holder to the bottom lug of the ON/OFF switch. Loop this short piece around the white and green leads to hold the wires in place, before connecting it to the ON/OFF switch.
- () Connect the rest of the black lead to the center terminal of the power ON/OFF switch. Twist the three leads together. The black lead should be only about one inch shorter than the other two. These leads will be attached to the transformer in a step which follows.
- () Mount the whisper fan (55) inside and the finger guard (57) outside with four 6-32 x 3/4" screws (58), lockwashers (59) and 6-32 nuts (60). Orient the fan for air flow into the enclosure with the power connection at the bottom - see the exploded view.

ELECTRONIC CONTROL TECHNOLOGY

TT-10 CARD CAGE ASSEMBLY

- () Cut the fan line cord (56) to $8\frac{1}{2}$ inches long from the connector. Plug the connector onto the contact pins on the fan housing.
- () Card guide channel assembly: Fasten one angle bracket (43) to each end of four extruded card guide channels (42) using a screw (44) and lockwasher (45). The shorter end of the angle bracket slides into the channel with the longer end extending rearward from the front flat surface.
- () Card guide assembly: Install ten card guides (54) on a pair of card guide channels (42) starting from one end for ten positions. Assemble the second card guide assembly similar to the first such that the guides pair with those installed on the first when facing each other. See the exploded view.
- () Mother Board mounting bar assembly: Fasten one angle bracket (43) to each end of the two Mother Board mounting bars (41) with a screw (44) and lockwasher (45). The shorter end of the angle bracket slides into the channel of the mounting bar with the longer end extending forward in the same direction as the front surface mounting holes.
- () Mother Board with Power Supply assembly: Mount the completely assembled Mother Board (47) and the assembled Power Supply (1-21) to the two L-shaped mounting bars (41) using 11 8-32 x $\frac{1}{4}$ " screws (48) on the Mother Board and 4 screws (22) on the Power Supply into the tapped holes on the front surface of the mounting bars, except the one which goes through the regulator (49). Orient the mounting bars so that the channels face the outer edge of the Mother Board, making certain that only ground areas on the Mother Board (47) make contact with the mounting bars (41). The termination end (49) of the Mother Board (47) mounts closest to the Power Supply (1-21). Mount the voltage regulator (49) using a 4-40 x $\frac{1}{2}$ " screw (50), lockwasher (51) and nut (52), through the mounting hole in the regulator land area.
- () Wire the Mother Board to the Power Supply: Use the crimp lugs where there are screw connections. The 11 inch # 14 black wire from the ground of the Mother Board on the solder side between "REV- " and "Ⓢ" connects to capacitor C2 (12) the minus terminal. The 15 inch # 14 red wire from the solder side of the Mother Board next to "+8V" connects to the plus terminal of capacitor C1 (13). The $11\frac{1}{2}$ inch # 16 orange wire from the component side of the Mother Board above "+16V" connects to capacitor C2 (12) the plus terminal. The 10 inch #16 blue wire from the solder side of the Mother Board next to "-16V" connects to capacitor C3 (12) the minus terminal.

ELECTRONIC CONTROL TECHNOLOGY

TT-10 CARD CAGE ASSEMBLY

- () With the 8 screws for the card guide assemblies loose, slide the card guide assemblies out to their maximum distance from each other. Insert two S-100 Bus plug-in boards into the Mother Board, one at each end, making sure that they are centralized and square in the connectors. Slide the card guide assemblies up snugly against the two plug-in boards making sure that the plug-in boards are in the slots of the card guides and then tighten the 8 screws. Remove the two plug-in boards.
- () If you have not already done so, check the Mother Board electrically for opens or shorts. Check for continuity from end to end of the Mother Board for each bus land. Check each individual bus for shorts to each of its 5 nearest neighbors. Also check for shorts from each bus to ground and for shorts between the power supply busses. Correct any faults.
- () Double check the wiring of the Power Supply for proper polarity of the capacitors and for proper connections of the Power Supply to the Mother Board. Do not proceed until this is correct.

WARNING: Application of voltage of incorrect polarity to the capacitors or components on the Mother Board could cause them to explode causing injury.

- () When all of the previous steps are right then test the Power Supply. Do not have any plug-in boards installed yet. Throw the power switch on the rear end plate down to the 'OFF' position. Install the 1½A slow blow fuse into the fuse holder. Plug the unit in and throw 'ON' the power switch. Measure the voltages on the capacitors testing for polarity. Capacitor C1 should be about 10V in this unloaded condition. Capacitor C2 should be about 19V and capacitor C3 should also be about 19V but negative with respect to circuit common - that is the plus side of the capacitor should be connected to circuit common.
- () Check the voltages at the Mother Board with reference to pins 50 and 100 which are circuit common. Pins 1 and 51 should be the '+8V' Bus. Pin 2 should be the '+16V' Bus and pin 52 should be the '-16V' Bus. The resistors for the Bus termination should have +5V from the regulator. Be careful not to short the power supplies while testing them. Turn off the power and unplug the unit.

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TT-10 ENCLOSURE

ASSEMBLY INSTRUCTIONS

- () Separate the 4 rubber feet (28) from each other and one at a time remove the paper backing and press onto the bottom plate (33). Locate them in line with the holes for the 4 screws (29) midway between the hole and the side edge of the plate. Once located press firmly in place.
- () Insert the 'RESET' switch (34) into the cutout of the front panel (33) from the front. It should snap into place.
- () Install the LED (35) into the 'RESET' switch housing (34) from the rear. Keep the longer lead at the top.
- () Cut one end of the 330 Ohm 1/4 W resistor to about 1/4 inch long. Solder it to the cathode (shorter lead) of the LED.
- () Connect the free end of the resistor to the top lug of the switch and trim the excess lead length.
- () Solder a piece of wire 12 inches long to pins 50 and 100 of the front most connector on the solder side of the Mother Board (47). Feed this wire through the grommet (46) in the front end plate (40).
- () Solder a wire 15 inches long to the 'RESET' solder pad on the solder side of the Mother Board below R29. Feed this wire through the grommet (46).
- () Solder a piece of wire 15 inches long to the +5V Bus land being fed by the voltage regulator (49) at resistors R30 and R31 near the plus lead of capacitor C1 on the solder side of the Mother Board. Feed this lead also through the grommet (46).
- () With the Card Cage sitting up on its side and the bottom plate (33) flat down next to the Card Cage such that the leads coming through the grommet are near the 'RESET' switch, connect the leads as follows:
- () The lead from the 'RESET' solder pad connects to the center lug of the 'RESET' switch (34).
- () The lead from pins 50 and 100 circuit common connects to the junction of the upper lug of the switch (34) and the resistor (36).
- () The lead from the +5V from the termination connects to the longer lead of the LED (35).

ELECTRONIC CONTROL TECHNOLOGY

TT-10 CARD CAGE ASSEMBLY

() Mount the rear end plate (39) with the fan (55) and power cord (23) to the mounting bars (41) with the Mother Board (47) and Power Supply assembly (1-21), using two screws (44) and lockwashers (45). Before tightening the screws slide the screws in the slotted cutouts for equal clearance.

() Connect the power cord and the fan line cord to the transformer. Keep the three leads of the power cord twisted together. Connect the white lead and one of the fan line cord leads to terminal #1 of the transformer (Neutral). Connect the black lead and the other fan line cord lead to terminal #3 the 115V tap.

NOTE: If the line voltage being used is high or low use the appropriate tap on the transformer for the black power cord lead and leave the fan line cord on the 115V tap.

NOTE: If you have the 220V transformer use the appropriate voltage tap for the power cord (208V (2), 220V (3) or 240V (4)) and connect the fan to the tap marked F (115V) - use this connection to power the fan ONLY - do not use it to power the computer from 115V.

() The green lead of the power cord connects to the mounting screw of the transformer with a crimp lug (3A).

WARNING: For your safety and that of anyone else using this instrument, electrically test the continuity of this lead from the ground pin of the plug to the metal chassis - and always use a grounded outlet.

() Attach the card guide assemblies (42, 43 & 54) to the rear end plate (39). The guides (54) belong at the opposite end by the Mother Board (47). Use 4 screws (44) and lockwashers (45) but do not tighten them yet.

() Insert the rubber grommet (46) into the opening in the front end plate (40).

() Attach the front end plate (40) to the mounting bars (41) and the card guide assemblies (42, 43 & 54) using 6 screws (44) and lockwashers (45). Do not tighten the 4 screws for the card guide assemblies yet. Before tightening the screws for the mounting bars slide the screws in the slotted cutouts for equal clearance and then tighten these two screws only.

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TT-10 ENCLOSURE ASSEMBLY

- () Mount the Card Cage to the bottom plate (33) using 4 screws (29), flat washers (30), lockwashers (31) and nuts (32). Before tightening adjust the Card Cage so that its edges are even with the edges of the bottom plate (33).
- () Test the 'RESET' switch and the LED for proper operation. Plug the unit in and turn 'ON' the power - the LED should light to indicate that power is 'ON'. Put a meter on pin 75 the 'RESET' line. It should sit at about +5V until the 'RESET' switch is pressed, at which time it should go to 0V. It should return to +5V when released. Turn 'OFF' the power and unplug the unit.
- () This concludes the assembly of the Mainframe. Now build up the system to your needs by plugging-in the appropriate S-100 Bus cards - CPU, Memory, I/O, etc. (only while power is 'OFF') and installing connectors on the rear end plate in the cutouts for DB-25 type connectors.
- () When your system is functional, install the cover (37) with 4 8-32 x 1/4" screws (38) keeping the vent holes near the front by the plug-in circuit boards.

Electronic Control Technology

P.O. BOX 6
UNION, NEW JERSEY 07083
(201) 686-8080

WARRANTY

ELECTRONIC CONTROL TECHNOLOGY, hereinafter referred to as ECT, in an effort to assure its customers that it is providing them with quality products, components and workmanship, hereby warrants its products as follows:

All products both in kit form and assembled units and all components sold by ECT are purchased through factory distribution and any part which fails because of defects in workmanship or material will be replaced at no charge for a period of three (3) months following the date of purchase. The defective part must be returned postpaid to ECT within the warranty period.

Any fully assembled kit, which fails to perform satisfactorily, may be returned to ECT within the warranty period, and if in the judgement of ECT it has been assembled with care and has not been subjected to electrical or mechanical abuse, it will be restored to proper operating condition and returned, regardless of the cause of malfunction, with a minimal charge to cover shipping and handling.

Any unit purchased as a kit and returned to ECT and which in the judgement of ECT is not covered by this warranty will be repaired and returned at a cost commensurate with the work required. In no case will this charge exceed twenty dollars (\$20.00) without prior notification to and approval by the owner.

Any product purchased as an assembled unit is guaranteed against defects in materials and workmanship and is further guaranteed for a period of three (3) months to meet the specifications in effect at the time of manufacture. All warranted factory assembled units returned to ECT postpaid will be repaired and returned without charge.

This warranty is made in lieu of all other warranties expressed or implied and is limited in any case to repair or replacement of the ECT product involved.

Electronic Control Technology
763 RAMSEY AVE.
HILLSIDE, NEW JERSEY 07205