THE MASTER CONTROLLER BOARD MANUAL

The SPACE-TIME PRODUCTIONS "MASTER CONTROLLER BOARD" is a powerful single board computer that can execute the 8080/8085 and Z-80 instruction sets.

The "MASTER CONTROLLER BOARD" (MCB) can be used in control and computing applications. The MCB is also useful as a microprocessor trainer in school environments.

FEATURES

Can be used in 5 volt only systems - Built in RS-232 port and connector - Any mix of EPROMs can be used on the board - All I/O ports are memory mapped AND I/O mapped, no special instructions or jumpers are required - Up to 72 parallel I/O lines - Bus expansion connector - Eight 16 bit counter timers

ASSEMBLY DIRECTIONS

WARNING

Use 60/40 or preferably 63/37 ROSIN CORE SOLDER ONLY !!!!! Use a soldering iron of 20 watts or less. High power soldering irons, soldering guns, or the wrong kind of solder will ruin your board. Do not use them.

REQUIRED TOOLS - Soldering iron, 20 watts or less - Diagonal cutters - Needle nose pliers - 63/37 ROSIN CORE SOLDER

OPTIONAL TOOLS - Lead bender - Magnifying glass - Inspection light

BEGIN ASSEMBLY

1) Check your board carefully for any manufacturing defects. Please return any defective board for prompt replacement.

2) Install resistors R1 - R10

3) Install diode D1. CHECK POLARITY

4) Install capacitor C2. CHECK POLARITY

5) Install reset switch S1.

6) Install 40 pin socket at IC-1 and IC-14.

7) Install a 24 pin socket at IC-21.

8) Install 20 pin sockets at IC-3, 4, and 5.

9) Install 18 pin sockets at IC-24, 25, 26, and 27.

10) Install 16 pin sockets at IC-6, 13, 31, and 33.

11) Install 14 pin sockets at IC-7, 8, 9, 10, 28, 29, 30, and 32.

12) Install .01 ufd disc capacitors at C3, C4, C13 thru 26, and C29 thru 32.

13) Install C-33.

14) Install C-34. CHECK POLARITY.

15) Install the 4 Mhz crystal at XTAL 1. PLACE A PIECE OF TAPE BENEATH THE CRYSTAL TO INSULATE IT FROM THE BOARD. A wire may be CAREFULLY soldered to the case and to ground.

16) Check the type of EPROM you are using and jumper the EPROM socket (IC-21) accordingly. Three jumpers are required for each EPROM.(For a 2716 pin 18 is jumpered to pin 20, pin 19 is connected to A-10, and pin 21 is connected to +5 volts). Check the EPROM connection drawing for the EPROM you are using.

17) Install a 26 pin header at J-7.

18) Install power connector at J-10.

19) Install a ground terminal in the hole near J-10.

This completes the assembly of your minimum kit; continue to the TESTING section. If you are assembling the SERIAL I/O KIT the following additional steps are required.

20) Install a 40 pin socket at IC-2.

21) Install a 24 pin socket at IC-18.

22) Install a 14 pin socket at IC-11 and IC-12.

23) Install .001 ufd capacitors at C5 thru C8.

24) Install 470 pfd capacitors at C9 thru C12.

25) Install DB-25 connector at J-1.

26) Install a 26 pin header at J-2.

27) Install a 20 pin header at J-4.

TESTING

To adequately test the MASTER CONTROLLER BOARD you will need a triggered oscilloscope with a minimum bandwidth of 10Mhz and a voltmeter (preferably digital).

Connect the board to a +5 volt supply. The voltage at the board should be between 4.80 and 5.20 volts.

If a 2708 EPROM is used ; +12 volt (11.5 to 12.5 volts) and a -5 volt (-4.80 to -5.20 volts) supplies must be provided.

If the AMD 9511 is used a +12 volt (11.5 to 12.5 volts) supply is required.

If the RS-232 port is used ; +12 volts (11.5 to 12.5 volts if the 2708 or the 9511 is used) and -12 volts must be supplied. The -12 volt supply need not be well regulated. -11 to -13 volts is sufficient. The +12 need not be well regulated if 5volt only EPROMs are used and the 9511 is not used.

1) Install the 7404 at IC-7 (do not use a 74LS04, it may not work.) Install the 7474 at IC-9.

2) Power up the board and check for a 2 Mhz clock at pin 5 of IC-9 and pin 8 of IC-7. Turn off the power.

3) If the 2 Mhz is present you may install the rest of the 14, 16, and 20 pin devices (TTL and R PAC).

4) Install the EPROM with the 8255 test program at IC-21, the 8255 at IC-14, and the Z-80 at IC-1.

5) Connect the switch and LED test port to J-7. Wire the tester as shown in the "8255 tester" diagram. A printed circuit version is available.

6) Turn on the power supplies. The LEDs should turn on and off with the activation of the switches. This confirms that the 8255 test port psogram is running correctly.

7) Turn off the power. Install IC-24, IC-25, IC-26 and IC-27 (2114s).

8) If you are using the SERIAL I/O KIT; now install IC-2, Z-80 SIO, IC-11 the 1488, and IC-12 the 1489.

Your MCB is now finished.