# SYSTEM 80

Modifications to CPU Board for new EPROM with Keyboard and Video Patch Option.

This EPROM is inserted into position Z13 on the CPU Board via a 24 pin IC socket. Modifications have to be carried out to the PCB board to enable this option. These modifications are listed below.

1.
On the component side of the board, cut the track leading away from PIN 18 of Z13.

2.
Cut the track between PIN 5 of Z22 and PIN 12 of Z21. This track is centred beween the two IC's and is easiest cut in the centre.

These are the only mods. that are carried out on the top of the board. All other modifications are done on the underside.

3.
Cut track between PIN 21 of Z13 and the 4K7 resistor. Cut the track beween PIN 21 and 20

4.
With a short piece of wire. join PIN 21 of Z13 to the other end of this resistor.

5.
Join PIN 20 of Z13 to the end of this resistor that was previously cut from PIN 21.

6.
Join PIN 18 of Z13 to PIN 12
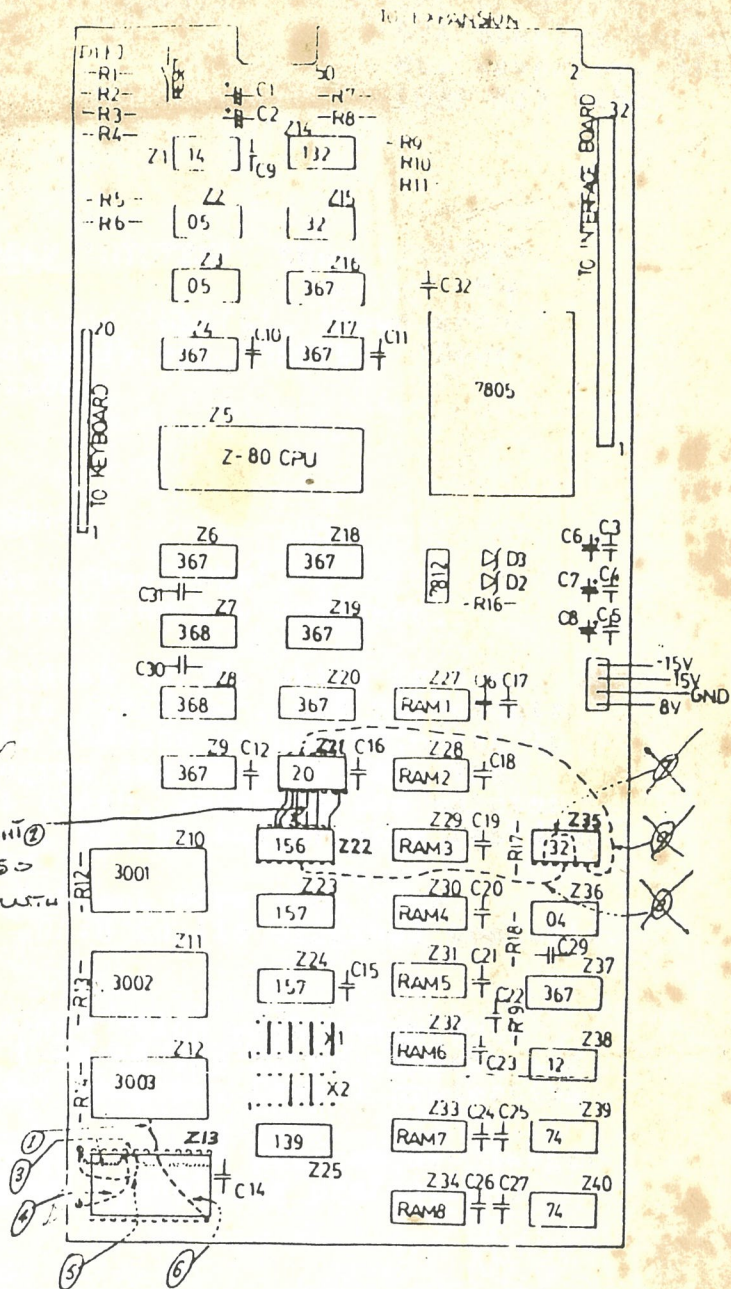
▲ *Fig. 5 CPU Board showing the modifications for the new EPROM. The dotted lines show the modifications on the underside of the board.*

NOTE: SYS 80 BLUE LABEL REV BD "D" MODS –

CUT FIRST TRACK AS SHOWN RUNNING BETWEEN PINS 2 AND 3 OF Z21, AND PINS 10 AND 11 OF Z22.

THIS IS ONLY MODIFICATION REQUIRED BESIDES REPLACING I.C.

SYSTEM 80 EPROM UTILITY.

Eprom is initialised by typing 'SYSTEM', then '/12288'.

Functions are accessed by hitting 'Shift', 'Down arrow', and appropriate key simultaneously,eg; 'Shift', 'Down arrow', 'B', for Basic Functions.

B - Basic Functions.
  (P) Protect basic program.
  (C) Cancel protect.
  (R) Restore basic program after 'NEW'.
  (D) Turn off Keyboard driver and key debounce.

(P) Obtains the address stored at 40F9H, which is the
    pointer to start of simple variables, and decrements
    this address by two. This address is now pointing to
    the end of any basic program residing in RAM. The
    address is now stored at 40A4H, which is the pointer
    to start of basic program, making any program residing
    in RAM transparent to ROM.
    Note: It is possible to Protect more than once.
(C) Restores the pointer at 40A4H to its original contents,
    42E9H.

(P) and (C) can be used in conjunction with renumberer
to merge basic programs,ie; Load in the first program and
protect it. Load in the second program. Cancel protection
and the two are merged.
Note: Ensure line numbers in the second program are larger
than those in the first, before cancelling protection.

C - System Tape Copier.
  (N) Rename.
  (L) Load.
  (V) Verify.
  (W) Write.

(N) Rename procedure. Load in a System program using (L),
then press (N) followed by a six letter name. Use (W) to
Write the program to tape. (V) is used to Verify memory
and tape.
Note: Pressing (W) after the leader has been written will
reset. To start cassette, press 1 for internal and 2 for
external deck.

D - Decimal or Hex conversion.

    (D) Converts decimal numbers to their hex equivalent.
        It requires that five characters be entered so
        that figures with less than five digits will
        require leading zeros. Backspacing is allowed
        until the last character is typed.

    (H) As above, but converts hex numbers to their
        decimal equivalent. It requires that four hex
        characters be entered.

E - Edit I/O Buffer.
    Used for editing a line of basic statements for
    immediate execution,(ie, without a line number).
    All edit commands, except 'A', work as normal.

G - xxxx.
    Goto Hex Address 'xxxx'. Control is transfered to
    the address on typing the last character.

L - Load System or Basic program.
    Selects between the two automatically. Basic programs
    are displayed on screen as they load. (Press 'Break'
    to stop basic program read).
    System tapes, the name, start, end, and entry addresses
    are displayed. Entry address is also displayed in
    decimal. If a 'Checksum error' occurs during read, the
    calculated checksum and the checksum byte read from
    tape will be displayed in the top right hand corner of
    screen.

S - ssss eeee xxxx nnnnnn.
    Write block of memory to tape starting at 'ssss'
    and ending at 'eeee' with an entry point of 'xxxx'
    and a name 'nnnnnn'. Saving starts on typing the
    sixth character of the name.
    If making backup copies of programs which occupy
    full memory, using Load and Save routines, do not
    return to basic, as the Stack used by Level II
    Basic will write over part of the code. In such
    cases, go straight from Load to Save by hitting
    'Shift', 'Down arrow', 'S', immediately after Load.

O - ssss.
    Observe block of memory starting at 'ssss'.
    Use of the following keys give these functions;
    'C' Changes display to ASCII or Hex.
    'Spacebar' Scrolls display one line at a time.
    'Up arrow' Increments display by one block.
    'Down arrow' Decrements display by one block.
    Holding either of the above two keys wil give fast
    forward or reverse memory scan, respectively.
    'M' - ssss eeee xxxx.
        Move a block of memory starting at location
        'ssss' and ending at 'eeee' to another place
        in memory beginning at 'xxxx'.
    'E' - xxxx.
        Edit memory at location 'xxxx'. The byte con-
        tained in this address will be displayed in
        brackets to verify that the correct address
        has been selected. Increments to next address
        automatically after each edit.
        (Assuming the right area of memory is currently
        being displayed, the adjustment will be shown
        on the screen). Press 'Break' to escape.
    'Z' - ssss eeee xx.
        Set each byte of memory starting at 'ssss' and
        ending at 'eeee' to byte 'xx'.
    Note: The backspace key can be used to delete any
        mistakes with the exception of typing the last
        character of any address. If a mistake is made
        in typing the last character of entered data,
        press 'Break'.

P - Send video memory to printer.
    Hold 'Break' to escape.

Q - Goto Decimal Address.
    (Similar to typing 'SYSTEM'). Type in '/', followed
    by a one to five digit decimal address and press
    'NEWLINE'.

R - Renumber Basic Program.
    Asks (1ST?) 'first new line number' and (INC?)
    'increment'.
    The new line numbers are displayed in the top right
    hand corner of screen as program renumbers.

Note: All of the above functions, except renumberer,
      can be escaped by pressing 'Break'.

Amendment: To recomence editing from the last address
press E then Spacebar. To tab forward one address press
Spacebar, to tab backwards press Clear.