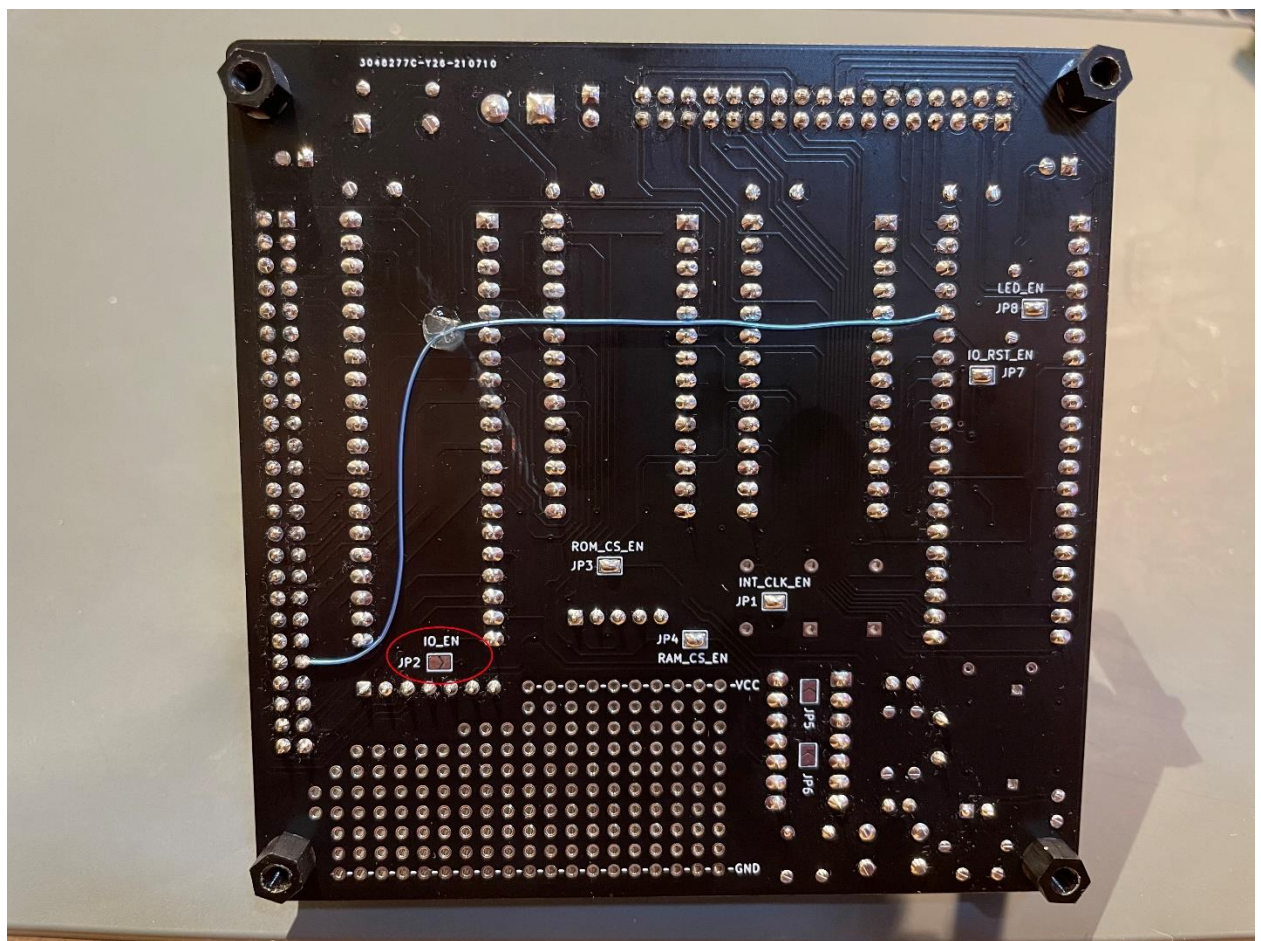MGH80 pcb v1.4b or lower, compatibility with serial expansion card modifications

Here are all the information you need to use your MGH80-Serial expansion board (prototype).

I will publish all the information as soon as I have the new PCB version ready and tested, for now attached is just the schematic diagram version 1.1 (your PCB is 1.0 but has been modified to function as 1.1).

To successfully use this expansion board you will need to:

1. Add the provided 50pin female header to your MGH80 (J1).
2. Replace the 4MHz quartz with the provided 7.3728MHz one.
3. Remove the IO_EN solder blob on MGH80 to disable the simple onboard "IO decoder" (see the red circle in the picture below).
4. If your MGH80 is using any PPI chip other than the CP82C55 (for example the TOSHIBA TMP8255AP-2, you will have to modify the MGH PCB to "inject" the new "/IO_WR" signal by cutting the track going to pin 36 of the 8255(WR) and routing pin 41 (USER3) from J1 to pin 36 on the 8255 as pictured.

Re-route pin 41 (USER3) from J1 to pin 36 on 8255

MGH80 pcb v1.4b or lower, compatibility with serial expansion card modifications
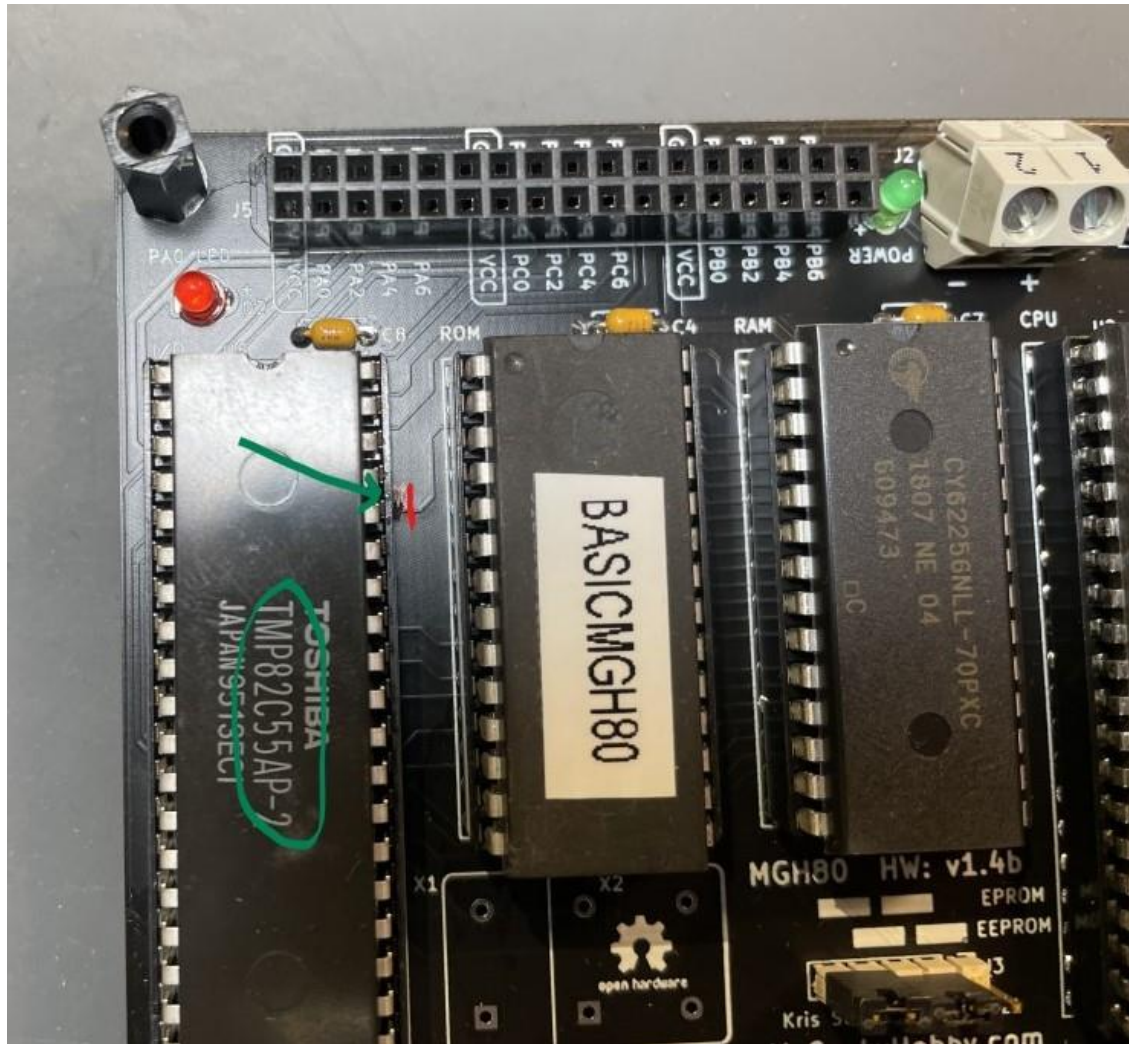
Cut the /WR signal going to the 8255

5. In terms of firmware you can use the provided EPROM and load "SCMonitor-v100-R3-RC2014-32k-ROM.hex", for your convenience I already programmed the EPROM, but note you are not paying for the firmware as it is free of charge. This firmware has not been written by me, but is open source and available on the internet. I've reached out to the author to get an official permission to distribute the code with my board.

6. A few words on power: the serial expansion board comes with a USB-TTL adapter that can provide power to both the serial adapter and MGH80. There is also a power switch on-board, you should turn it into the ON position, if you want the USB port to be the source of power. Otherwise you can keep it in the OFF position. Note, even in the OFF position the small red LED on the serial adapter will be lit up.

Document version 1.2
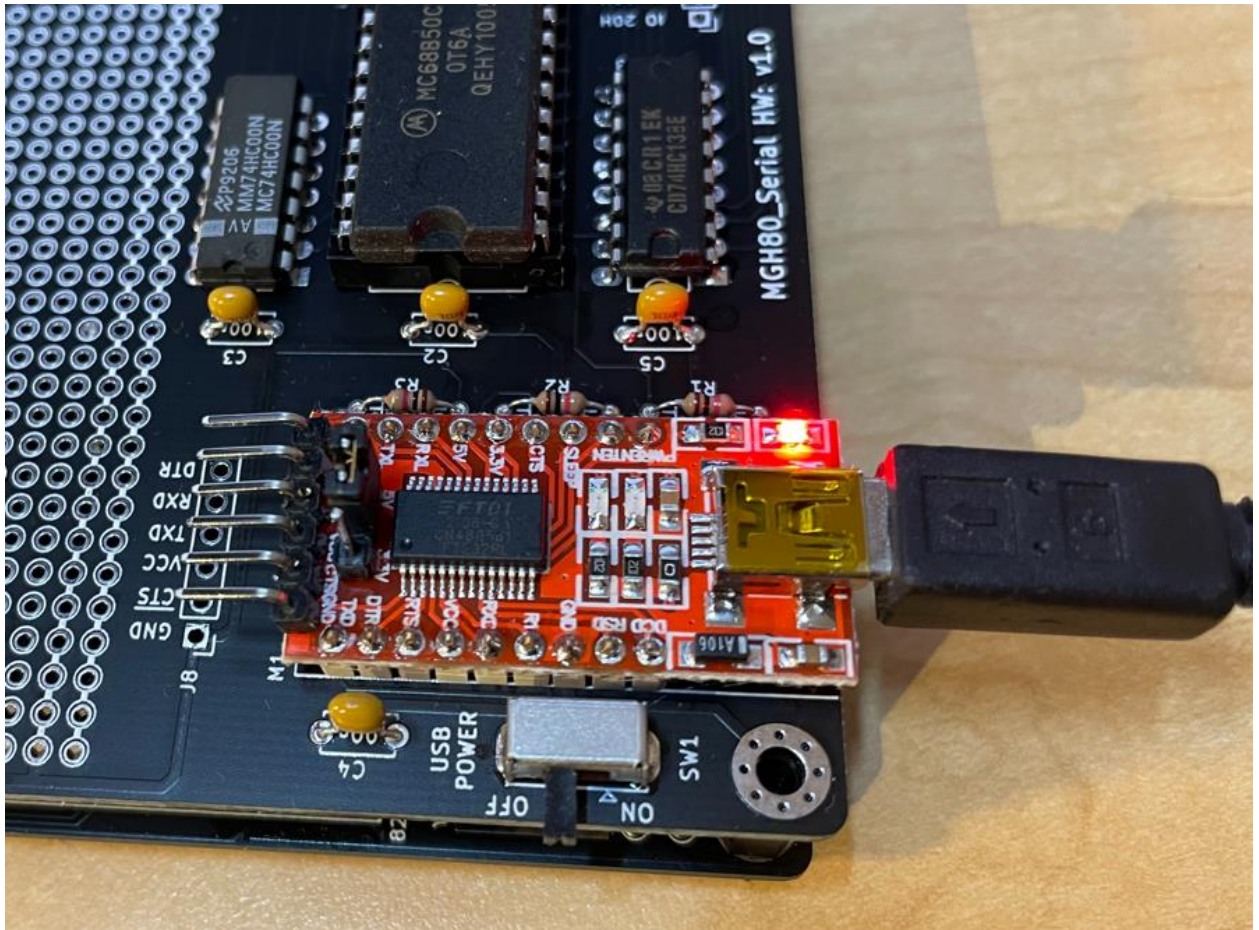
7. Establishing connection: you will need a serial terminal (screen or putty), set the speed to 115200. The board will initially boot to the SCM "monitor", you can do some low level commands there (for example to set all lines of port A of the 8255 to logic "1" you would send the following commands:

```
Small Computer Monitor - RC2014
*o 3 80
*o 0 ff
*o 0 0
*
```

"o 3 80" command translates to set I/O port 03h to 80h (that is the address of control byte that sets all ports of the 8255 as outputs, "o 0 ff" changes the lines of Port A to "1" and "o 0 0" changes the level back to "0" on all outputs of port A.

8. Here is how you start BASIC, from the "monitor" start by typing "BASIC", when it asks "Memory top?" just hit enter. The small example basic program shows how to control the ports of the 8255 (note basic is not using hex by default, so parameters are provided in decimal).

MGH80 pcb v1.4b or lower, compatibility with serial expansion card modifications

```
Small Computer Monitor - RC2014
*
*BASIC

Memory top?
Z80 BASIC Ver 4.7b
Copyright (C) 1978 by Microsoft
31427 Bytes free
Ok


10 OUT 3,128
20 OUT 0,255
RUN
Ok
```

Have fun and report any issues / successes on groups.io ☺ This way everyone is "learning".