PCB 111000: The_programmer_PCB

The programmer_PCB is almost identical to the project_PCB however the Atmega 328 is loaded with "4_ATMEGA_Programmer_V1.08_T.hex". The Atmega 168 is replaced with a dil socket (dual in line). Watch crystals are connected between pins 9 and 10 of both ICs rather than just the Atmega 328. The vertical push button switch is not loaded nor are the three switched used to provide user input.

This pcb can used to:

1 Calibrate an Atmega 168 using:

"11_Auto_cal_168_V1_5.hex" and

"13_Manual_cal_168_V2_5.hex".

2 Prepare the Atmega 168 for use in a project pcb by:

Programming its flash with "6_ATMEGA_Programmer_V2.29A.hex"

and its EEPROM with "Atmega programmer EEPROM strings .txt"

3 Calibrate an Atmega 328 using:

"12_Auto_cal_328_V1.hex" and

"14_Manual_cal_328_V2.hex"

4 Prepare the Atmega 328 for use in a project pcb or another programmer pcb by:

Programming its flash with "5_ATMEGA_Programmer_V1.08_Q.hex"

and its EEPROM with "Atmega programmer EEPROM strings .txt"

Note:

1 hex files are stored in folder "5_Hex_file_bkps" and txt files are stored in folder "6_Text_files".

2 Switch the DPDT to the LHS to run the calibration programs and to the RHS to run the programmer.

3 Two versions of the programmer are available:

4_ATMEGA_Programmer_V1.08_T and 5_ATMEGA_Programmer_V1.08_Q.

These generate user prompts "T T T ….." and "Q Q Q ….." .

A programmer loaded with "4_ATMEGA_Programmer_V1.08_T" should replicate itself with one running "5_ATMEGA_Programmer_V1.08_Q" and visa-versa to avoid bus contention issues.

4 It is recommended that the programmer pcb is only used to program the Atmega 168 before it is loaded into a project pcb however it can be use to program the Atmega 328 instead.

PCB 111000: The_programmer_PCB

Programmer_V1.08 used to program an Atmega 168 (DPDT switched to the RHS)

The user responds by echoing the user prompt.
The message “ATMEGA168 detected. Press P, R or H.” appears on the PC screen.
The user presses P (responses R and H are discontinued) and receives the message
“Press -P- to send a program file or -E- to send a text file.”
Flash is programmed by pressing P and sending the files when requested
At the prompt “Intger(0-FF)?” press 0.
The programmer then verifies that the size of the .hex file is the same as the size of the file residing in the flash memory.

The following diagnostic information is also printed.
The programmer version i.e. SW v1.08.
The configuration bytes applied to the target.
The programmer calibration factor. (if this is repeated the programmer has been calibrated otherwise the default cal value is used).
The hex files sizes all of which should be identical.

The user prompt now reappears. If the user presses E at the “Press -P- to send a program file or -E- to send a text file.” prompt the following message appears:
“Press -W- to write to the EEPROM, -R- to read from it”.
For a new target IC the users presses W and sends the text file. This will need sending twice after which the users makes a random key press (AK?). The text file is then echoed to the screen with strings occupying locations from 0 to 0x1F6. (Note: locations 0x1F7 to 0x1FF are reserved for system use).

V1.08 used to program an Atmega 328

Programming an Atmega 328 follows almost identical lines however the EEPROM is programmed at locations 0x200 and above.