

## HIGH TEMPERATURE ELECTRONICS: PROGRAMMING THE HT83C51 MICROCONTROLLER

AN-101

### Background

The HT83C51 was initially designed to have mask programmable memory because the Honeywell process did not have EEPROM available. When the programming code was verified by the user, it could be transferred to Honeywell. Honeywell would then use the top layer metal mask to “hard code” the part and create a “custom” microcontroller.



Honeywell can no longer support the mask programming of the controller so program code must be stored in external memory.

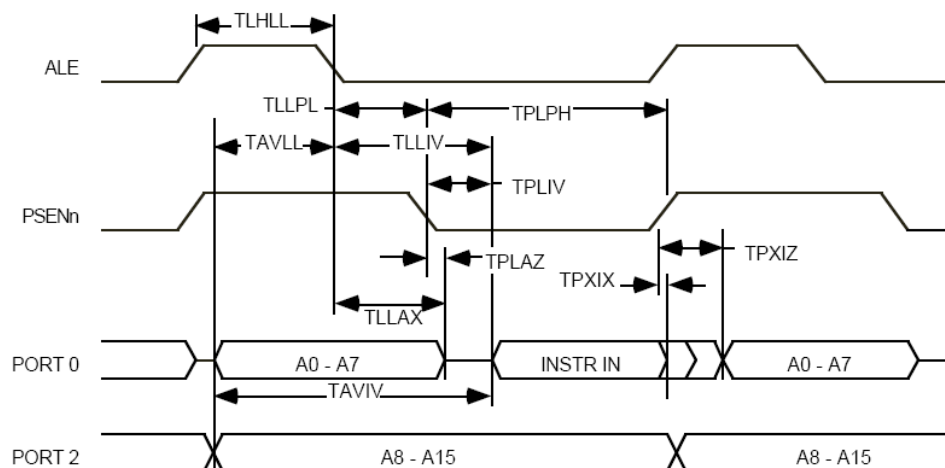
### Accessing Code Stored in External Memory

There are several items to be aware of when interfacing the HT83C51 and the external memory device.

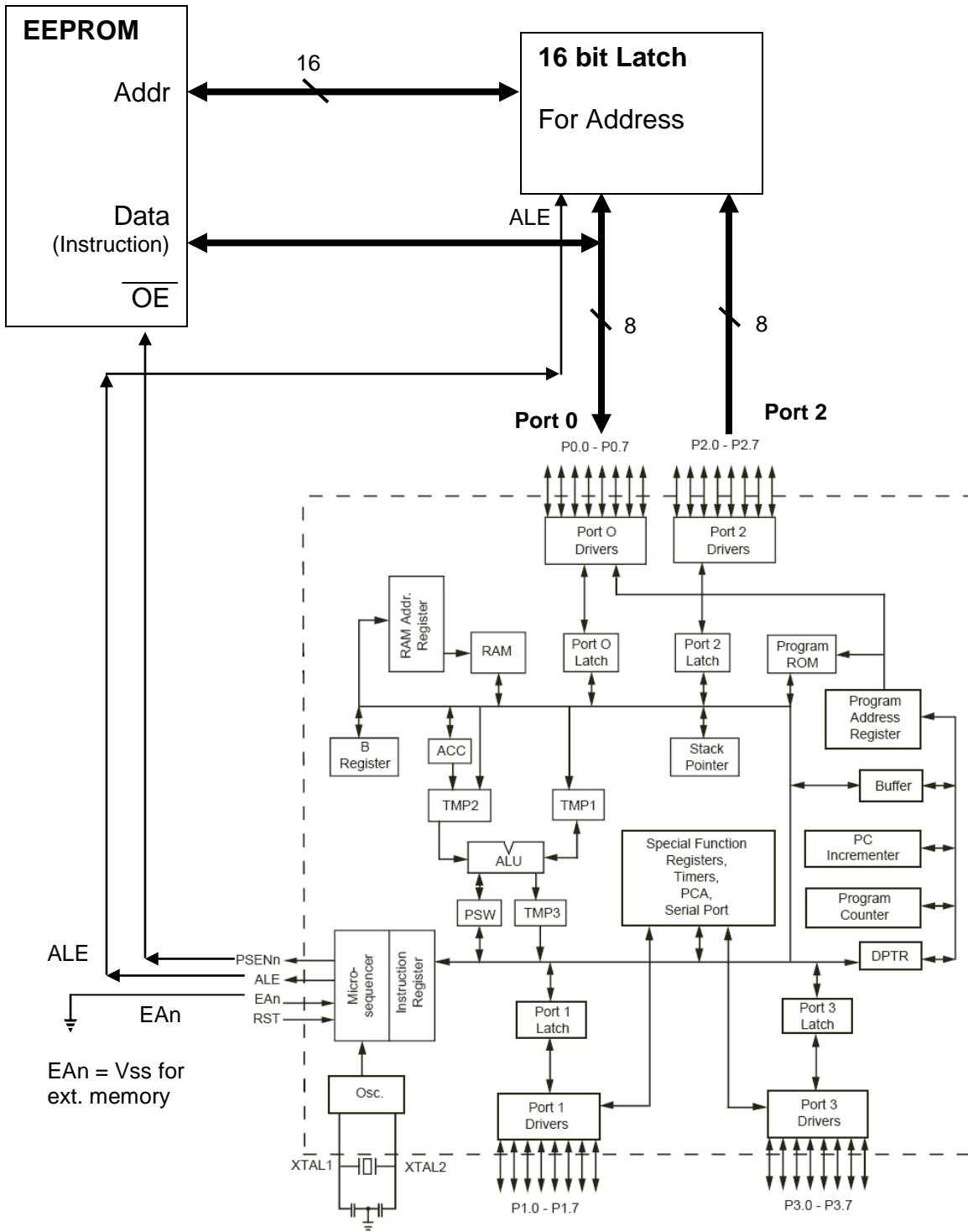
1. Ports 0 and 2 are used to output the address to the external memory.
  - The address is 2 bytes.
2. Port 0 is also used to receive the instruction from the ext. memory.
3. ALE, EAn and PSEn are control signals for the data transfer.
  - ALE: An output to the address latch.
  - EAn: An input must be low so the microcontroller knows to use ext. memory for the program code.
  - PSEn tells the external memory to output the data.

The processor will set up to read the external code. To read the code, the EAn signal must be set low. The processor will provide an address at Port 0 (lower byte of addr) and Port 2 (upper byte of addr). The data transfer will be initiated with a strobe on the ALE output pin to the latch followed by PSEn to the memory.

### EXTERNAL PROGRAM MEMORY READ CYCLE



**Block Diagram for External Memory Access**



**Find out more**

For more information on Honeywell's High Temperature Electronics visit us online at [www.ssec.honeywell.com/hightemp](http://www.ssec.honeywell.com/hightemp), or contact us at 800-323-8295 or 763-954-2474. Customer Service Email: [ssec.customer.service@honeywell.com](mailto:ssec.customer.service@honeywell.com).

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Form #900368  
 February 2008  
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