

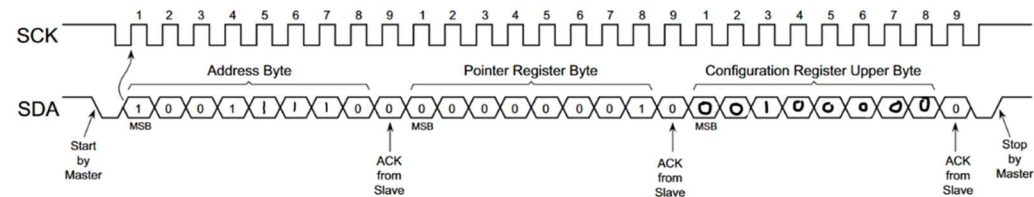
# Interface Control Document - AT30TSE75# Temperature Sensor (Content Exam Extra Credit)

10/17/2024 Reese Ford

## Specific Order of Signals

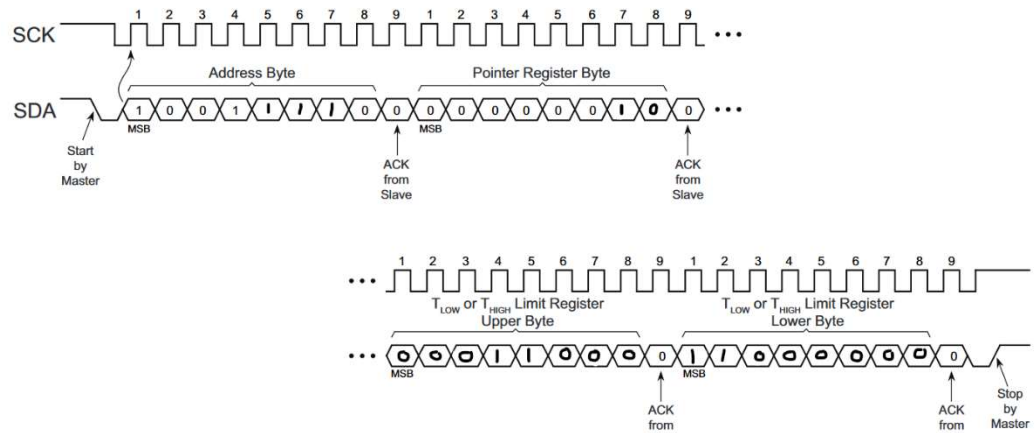
1. Set Pointer to Configuration Register AND Write to the Configuration Register, setting the Temperature Resolution to 10-bits

Figure 6-4. Write to Configuration Register



- a.
  - b. 10011110 00000001 00100000
2. Convert Temperature to 10-bit register value
    - a.  $R = 0.25$
    - b.  $B_{temp} = \frac{D_{tempC}}{R}$
    - c. Convert  $B_{temp}$  to binary
    - d.  $T_{LOW}$  or  $T_{HIGH} = B_{15}:B_6$
    - e.  $B_5:B_0 = 0$
  3. Set  $T_{LOW}$  to  $24.75^{\circ}\text{C}$  using Step 3

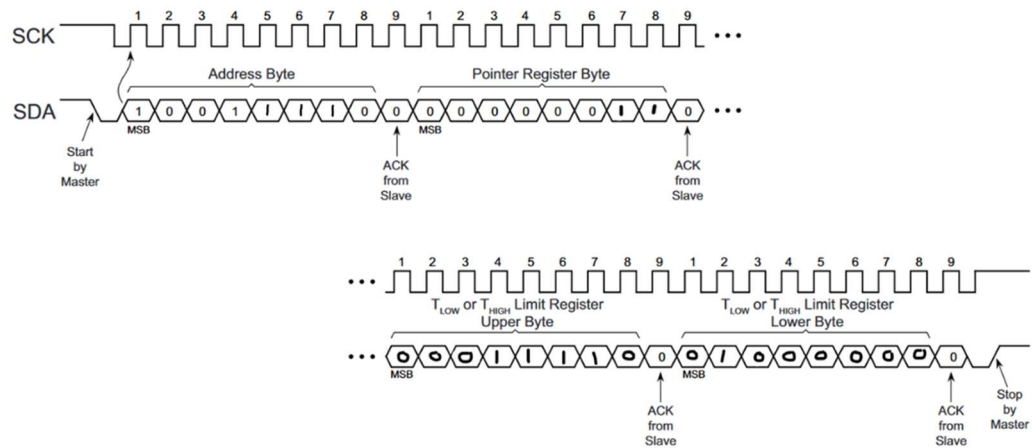
Figure 6-8. Write to  $T_{LOW}$  or  $T_{HIGH}$  Limit Register



- a.
- b. 10010000 00000010 00011000 11000000

4. Set  $T_{HIGH}$  to  $30.25^{\circ}\text{C}$  using Step 3

Figure 6-8. Write to  $T_{LOW}$  or  $T_{HIGH}$  Limit Register



- a.
- b. 10010000 00000011 00011110 01000000

## Question(s) from Problem

Pin EXT\_9 on the IO board is for the Temp Alarm Signal, so setting up an EIC interrupt for EXT2\_PIN\_9 will allow us to detect a temperature “fault”. If the pin goes high, that means the temperature has either exceeded the  $T_{HIGH}$  temp or fallen below the  $T_{LOW}$  temp. When the pin goes high, it will trigger an EIC interrupt.