



Summary

The following software allows the use of Set and Clear bits with an unidirectional latch.

standard SET.BITS and CLEAR.BITS involves a READ/MODIFY/WRITE. Since the unidirectional latch cannot be read, the value of the latch needs to be kept elsewhere so that it can be read and modified. This code uses a variable to represent the latch (like a shadow). Every time the latch is changed, this variable must also be changed. Therefore, C! and C@ should not be used with the latch, instead use C!.PALF and C@.PALF.

Description

This app note allows the use of SET.BITS and CLEAR.BITS with an unidirectional latch using the protopal pin F as a chip select for the latch. The

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F4    CONSTANT    PAL. F           \ page for PAL pin F
INTEGER: PAL. F. OUTPUT           \ shadow memory for PAL F
: C!.PALF ( byte to send to latch -- )
      DUP                \ sends a byte to output latch & shadow memory
      0 PAL. F C!        \ duplicate byte for latch & shadow memory
      TO PAL. F. OUTPUT  \ writes byte to the port
                          \ writes byte to shadow memory
;
: C@.PALF ( -- latch value )      \ reads the shadow memory
  PAL. F                          \ puts value in shadow memory on stack
;
: SET. BITS. PAL ( mask -- )      \ sets bits on latch using a mask
  PAL. F. OUTPUT OR              \ sets bits
  C!.PALF                         \ sends byte to latch & shadow memory
;
: CLEAR. BITS. PAL ( mask -- )    \ clears bits on latch using a mask
  FF XOR                          \ complement mask using XOR
  PAL. F. OUTPUT AND              \ AND's mask with latch value
  C!.PALF                         \ sends byte to latch & shadow memory
;
: INIT. PAL. F ( -- )             \ user initialization PAL latch
  0 C!.PALF                       \ initializes latch to 0
;
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