8051 LCD interfacing

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→ 16×2 LCD
   ↓ 2 line
   16 characters/line

→ each character 5×7 pixel matrix

→ LCD : 2 registers

command ←──────┴──────→ Data

command
• predefined task

}: clear scrn
   Set cursor ---
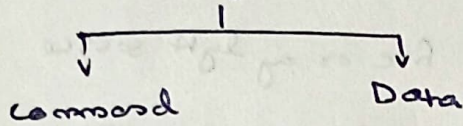
Data
• data to be displayed
• normally ASCII value

Data bus:
3 control lines: RS, R/W, E
8 data lines : D0-7

∴ 11 lines.

required commands

   0x 80 : force cursor to   of 1st line
   0xC0 : force cursor to beginny of 2nd line
   0x38 : 2 lines, 5×7 matrix chara.
8 bit mode
   0x 0e : display, cursor on

   0x06 : entry mode (increment cursor)

   0x01 : clear displays
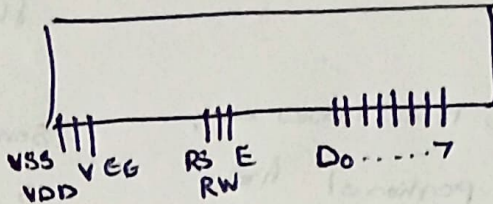
command lcd

   ~S = 0 : //command register
   ~cw = 0 : // write command
   en = 1 : ⎤
   delay(); ⎬ to send.
   en = 0 ; ⎦

VSS: ground
VDD: supply voltage
VEE: adjust contrast (using a potentiometer)

RS: register select →₀: command reg
                     ↳₁: data reg

R/W: ↱ 0: write
     ↳ 1: read

E : enable ; send data to pins
            cause high to low pulse

D0-7: 8 data pins.

code: RS mostly 0 as
              only one command
   =

send data

→ first write to data pins then send by
  -ve edge or enable.

   rs = 1 ; // data register
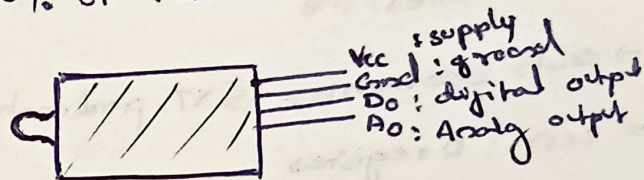   rw = 0 ; // write
   ⎡ en = 1 : ⎤
   ⎢ delay() : ⎥ to send
   ⎣ en = 0 ; ⎦

—

, Fire: destructive, tonic fumes eh;

, flame ⟷ visible portion of fire.

chara: → production of heat
→ emportion of gases
→ emansion of light (IR/UV)

flame detector
↓
Sensing using IR radiation from flames
→ 90% of flames total radiation → IR

Vcc : supply
Gnd : ground
Do : digital output
Ao : Analog output

→ detect fire or any light source

λ range 760nm to 1100 nm.

→ consist: IR sensor ⎤
↓ ⎬→ OP AMP
LED blink ⎦
↓
O/P
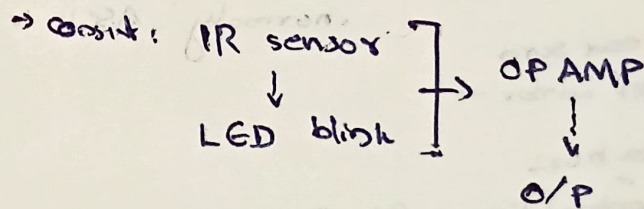
→ potentiometer : vary
sensitivity .