

PICSTART™ Design Contest Entry

Digital Compass

The PIC16C71 microcontroller makes possible a solid-state digital compass for personal/vehicular use. The compass has reset, reciprocal bearing, and offset bearing modes. The design minimizes device count and power. One PIC16C71, one 16x1 LCD display, one dual analog hall effect compass sensor, and six passive components are needed. The design is capable of displaying bearing to nearest ± 0.1 degree in real time. The code occupies 741 locations in program memory. Clock is provided by an 8 MHz ceramic resonator. Key

algorithms include: CORDIC algorithm for compass (V_x , V_y) to polar angle conversion, A/D sample averaging for noise reduction, LCD driver routine and scaling/binary to BCD. Prototype parts cost was less than \$60.

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