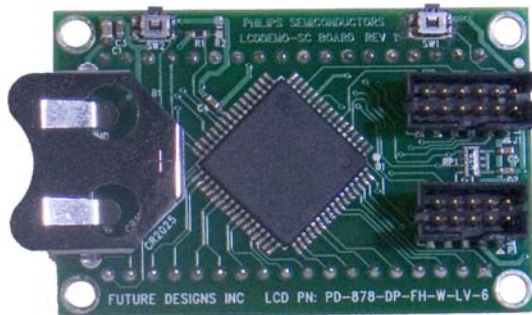
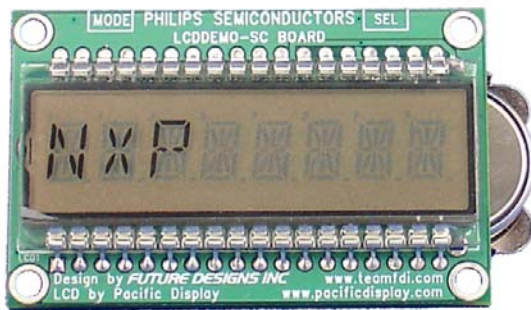


# LCD Demo-SC



## Highlights

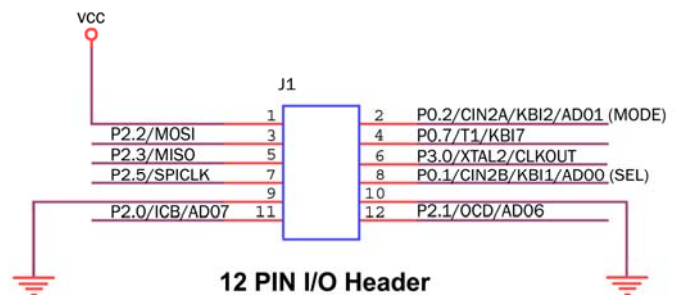
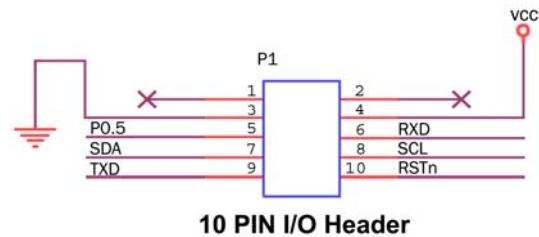
- Single chip solution for LCD User Interface
- Single Board Computer with multiple I/O options available via 12-pin header
- 8KB Internal Flash memory, 512 bytes RAM
- 8-character alphanumeric LCD
- Integrated I2C based LCD driver with 160 segment support
- Powered by a single 3V coin cell battery or external supply via header
- Two miniature push-buttons on-board for user control; additional User Interface via header
- Reprogrammable by the user via 10-pin ICP header

The LCD Demo-SC is a reference design for a low cost microcontroller and LCD solution using the NXP P89LPC9408 along with a couple of discrete external components. The Board is controlled by a simple two-button user interface (MODE and SELECT). The included CD contains example source code for several sample applications: an FM Radio display during a simulated channel scan, a 15 minute count down timer, and a repeating pattern of 4 text lines. The user can edit this code and download to the reprogrammable Flash microcontroller via a 10-pin ICP header on the board using any external ICP programmer. A small USB based ICP programmer that allows programming of the LPC9408 and many other NXP microcontrollers from any PC is available from Future Designs, Inc. Details can be found at [www.teamfdi.com/USB-ICP](http://www.teamfdi.com/USB-ICP). The LCD Demo-SC can function as a Single Board Computer since the powerful LPC9408 contains a full 8KB of Flash memory allowing ample room for development of User Applications and the 12-pin header can support multiple I/O options.

# Features

P89LPC9408 is a LQFP64 pin multi-chip module (MCM) made up of the following 2 NXP devices:

1. P89LPC938 8-bit, 2-clock, 80C51 MCU
  - 8 KB Flash, 256 bytes RAM
  - Internal RC Oscillator
  - UART, ADC, DAC
  - Two 16-bit timers & RTC
  - Keypad Interrupt
  - WDT with on chip 400kHz oscillator
2. PCF8576D LCD Controller
  - 400 kHz I2C-bus interface
  - 40 segment drives
  - Up to 160 elements with  $\frac{1}{4}$  multiplexing
  - No external components
  - Wide supply range 1.8 to 5.5V



LCD Demo-SC supports both the P89LPC9408 & P89LPC9401.

When used as a Single Board Computer the I/O headers provide access to:

- UART, I2C, SPI
- 4 A/D inputs
- Timer1 I/O and the Clock Output



Typical SBC Application for Keypad Tester

## Ordering Information

Part Number: LCD-DEMO-SC  
Suggested Resale Price: \$49.00 (USD)

Order online now at:

[www.digikey.com](http://www.digikey.com)

[www.mouser.com](http://www.mouser.com)

Warranty: 30-day money back guarantee  
Availability: Stock

Support Information:  
(256) 883-1240 Phone  
(256) 883-1241 FAX

E-mail: [support@teamfdi.com](mailto:support@teamfdi.com)  
[www.teamfdi.com](http://www.teamfdi.com)

### Contents

LCD Demo-SC Board:

- P89LPC9408 8KB Flash microcontroller
- Integrated 128-segment LCD Driver
- 8-character alphanumeric LCD
- 3V Coin Cell Battery

LCD Demo-SC CD:

- I2C bit-bang code for LCD Driver
- Demo application code
- Schematic
- In Circuit Programming (ICP) Documentation

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