SBX2

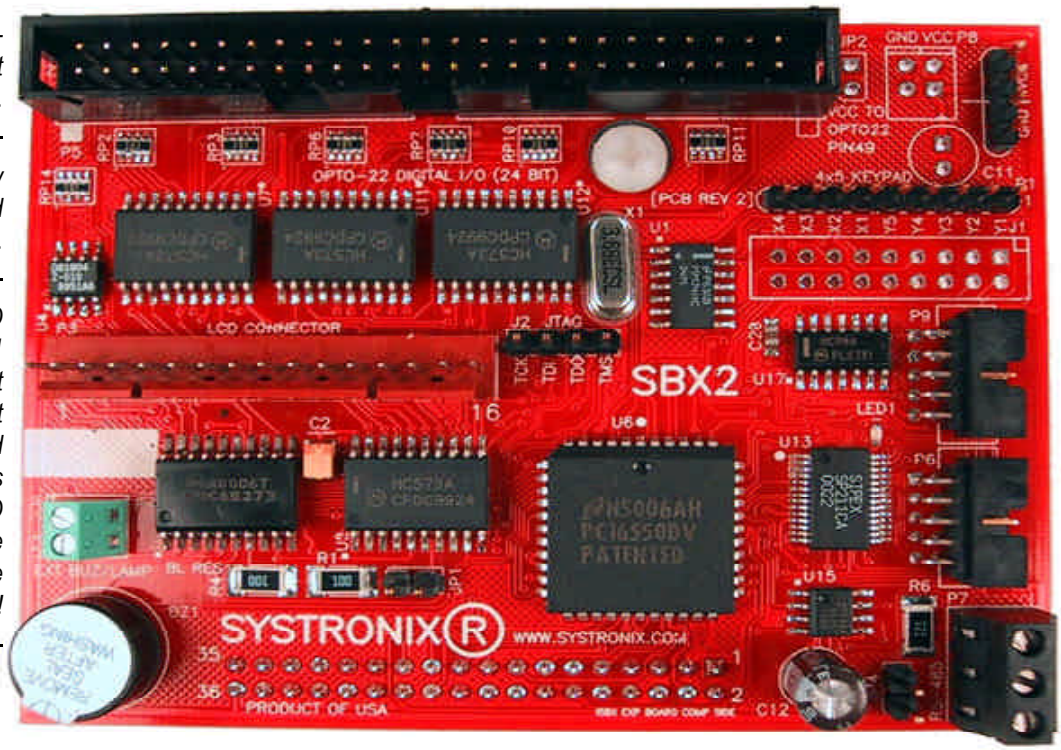
SYSTRONIX®

LCD, Keypad, Digital I/O & UART –

We combined the most-requested I/O onto one compact SBX-standard expansion card.

SBX2 plugs right on to many Systronix Development and OEM controller boards.

SBX2 adds a parallel LCD interface on the red 16x1 header(with digital contrast adjustment and backlight control), a 4x4 or 4x5 keypad decoder, a buzzer, and 24 bits of open-drain bidirectional I/O via the Opto-22 compatible 25x2 header, plus a hardware UART and IrDA support!



Matrix keypad, LCD interface, 24 high-current digital I/O lines, UART, and IrDA support on one compact SBX card.

$99 single piece, serial & IrDA adapters extra. Quantity discounts available.

Now you can add a user interface, 24 bits of high speed, open drain, bidirectional digital I/O, and a serial I/O port (RS232/485/IrDA) to any system with an industry standard 8-bit SBX connector.

Plugs right on to many Systronix development and OEM controller boards with ready-to-use I/O drivers and sample code.

Digital I/O uses a 25x2 header in the standard 'Opto-22' compatible pinout. The LCD connector is a standard 16x1 header which supports common character LCDs such as our 20x4 with LED backlight.

- Pesents only one CMOS load to the host board - important for high speed controllers.
- Bidirectional 8-bit parallel LCD interface, with digital backlight drive and contrast control.
- Matrix scanner and decoder for up to 4x5 keypads
- Piezo buzzer and status LED.
- 24-channel digital I/O, each bit independent, opto-22 connector format. Fast parallel access.
- hardware UART with RS232 DCE, RS232 DTE, RS485 or IrDA I/O
- Keypads and LCDs available off-the-shelf.
- Real technical support included
- Latest info: www.systronix.com, or email to sales@systronix.com

Most Popular I/O now on one plug-and-go SBX card

The most-requested expansion features for development and control systems are a simple user interface (keypad and LCD), more digital I/O, and another serial port. The industry standard 8-bit SBX "mezzannine bus" interface is an easy way add memory mapped I/O to your controller.

Only one buffered CMOS load on the host board

High-speed controllers can be very load sensitive. SBX2 uses a Xilinx CPLD to present only one CMOS load to the host board. This keeps high speed micros and TINI Java systems running at full speed. The LCD, keypad, and I/O are completely buffered from host data and control lines.

LCD Interface

SBX2 supports the common 8- or 4- bit parallel intelligent LCD interface with 8 bidirectional data bits, three strobes, LED backlight control and digital contrast adjustment. The LCD driver supports all the features of the parallel interface LCDs including complete bidirectional access (reading and writing). The interface is buffered so that you can use a long (within reason, of course) LCD cable if you wish, without affecting performance of the host data bus. The CPLD guarantess correct LCD interface timing using its own crystal, regardless of host controller speed.

Keypad Interface

SBX2 includes a keypad scanner and decoder to scan, debounce, and encode matrix keypads. SBX2 can generate an interrupt when a debounced key is available, or you can poll for a key.

Digital I/O

SBX2 provides 24 bits of digital I/O. Each bit has both an open-drain output driver and a buffered input receiver. The bits are grouped into three bytes each of input and output. The open-drain output can sink 150 mA continuous at 25 deg C. Each output has a 50V clamp votage and built-in thermally compensated current limiting. Inputs switch at 2.5V and include pulldowns.

Hardware UART

SBX2 includes a 16C550 hardware UART with its own crystal. Dongles

Buzzer and LED indicator

SBX2 has an efficent piezo buzzer with a built in oscillator, so it requires no processor resources to generate a continuous tone. By varying its 'on' time, it generates beeps, clicks and longer warning or alarm tones. A green LED provides visual feedback. Screw terminals support an additional external alarm indicator.

I/O Drivers and Sample Programs

SBX2 comes with I/O driver code and sample programs for 8051 assembly code and Java.

How do I order?

You can order SBX2 in our secure on-line store at www.systronix.com. Our web site will always have the newest information on released products.

Price (preliminary- subject to change):

SBX2 $99 (single), $89 (2-4), $83 (5-9), $77 (10+), contact us for higher quantities. Serial DCE and DTE adapters are about $6, IrDA adapters about $25. See the website store for special offers.

4x4 customizable membrane keypads from $34, 20x4 LCD with cable from $49. See our website for special bundled offers!

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TECHNICAL DETAILS

LCD 16x1 Molex latching header with 8 data bits, three strobes, contrast, power, ground,, and LED backlight VCC and ground. Contrast and backlight are digitally controlled.

Keypad 9x1 header with .025 inch square posts 0.100 inches on center. Supports up to 4 rows and 5 columns or vice versa. Space for cutting traces and rearranging the row and column order via solder or wire wrap.

Digital I/O Opto-22 I/O rack connector (25x2 polarized header). Pads for optional jumper and schottky diode to power I/O rack from SBX2. Outputs are open drain FETs with 5 ohm on resistance and 150 mA sink capability at 25 deg C. Inputs are CMOS with 10 Kohm input current limit and 10 Kohm pulldown resistors. Inputs switch at 2.5 volts and are protected against latchup to 200V. Outputs have a 200 nsec typical rise and fall time with a 100 mA 30 pF load. Outputs have built in 50 V clamps, this also clamps the maximum input of each bit.

Serial I/O (RS232/485/IrDA) 16C550 UART with 3.6864 MHz baud rate crystal. Screw terminals for RS485. 2mm 5x2 header for RS232 and IrDA. 2mm ribbon cable from SBX2 to compact Systronix dongles for wired DCE (DB9F), wired DTE (DB9M), and IrDA to 115 kbaud. Dongles can be located 12?? inches away from SBX2.

Buzzer piezo unit with built in 3100 kHz ± 800 Hz oscillator. 25 mA at 5 VDC, min SPL is 80 dB at 10 cm.

Signal Loading One CMOS load on SBX connector data, address and strobe lines.

SBX Connector 36-pin 8-bit SBX polarized header. Mating baseboard receptacle connectors are available from Systronix or connector vendors.

Access Timing Setup and hold time for digital output is 40 nsec min, with a 40 nsec min write pulse.

Size Single width SBX standard: 2.85 x 3.70 inches, with a single 0.156 inch diameter hole for the included 0.500 inch nylon standoff.

Power 5 VDC ± 10% from baseboard. Without LCD or digital I/O load, SBX1 consumes 100 mA @ 5V typical. Systronix 20x4 LCD consumes 1.5 mA without backlight, 125 mA with LED backlight. Buzzer: 25 mA when operating.

Environmental Commercial temperature 0 to 70 deg C. Open drain output drivers -40 to +125 deg C.

Support & Warranty Friendly technical support. One year warranty against defects, and fast turn-around on repairs.

All systems include:

- Printed technical reference & quick reference card (also available from our web site).
- Nylon standoff and two 6-32 x 1/4 nylon mounting screws.
- Sample programs in 8051 assembly code and Java

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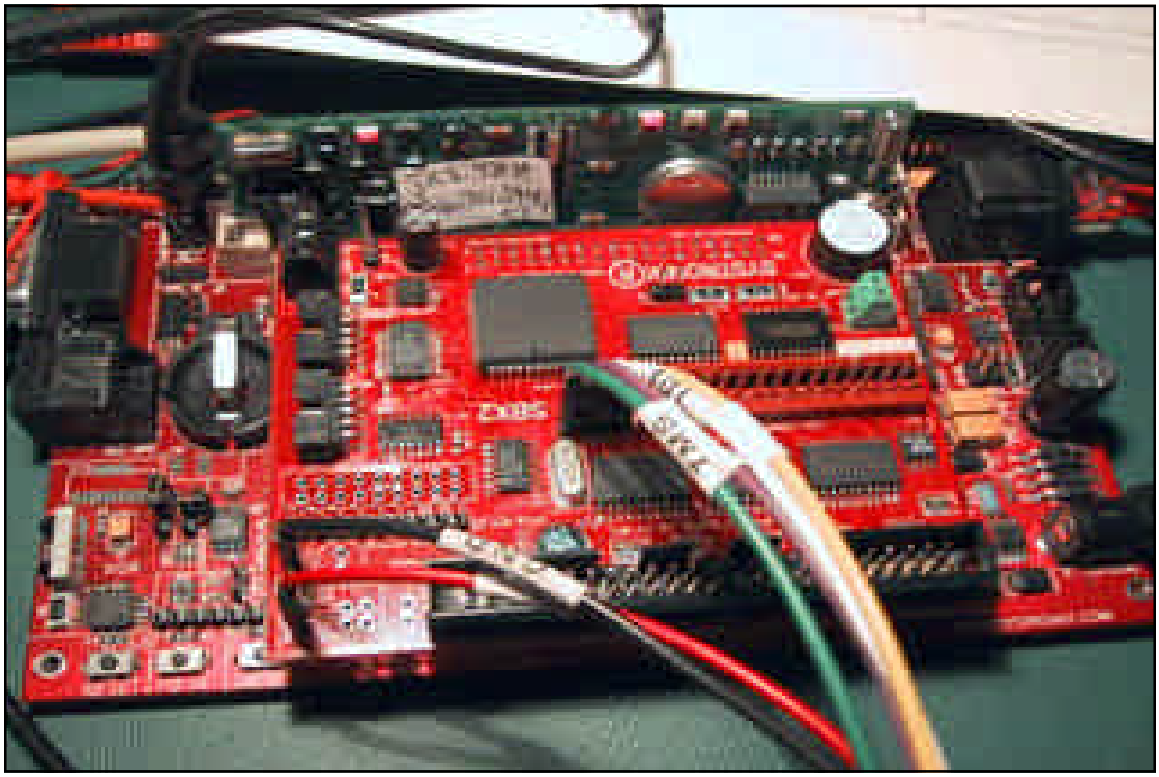
Timing diagram goes here.

SBX2 mounted to STEP.IR. The green SIMM module is a Dallas TINI Java controller.

Total thickness of the two-board combination, including host board rubber feet and back side components, is about 1.5 inches, (not including 25x2 and keypad cables). Board to board spacing is 0.500 inches.



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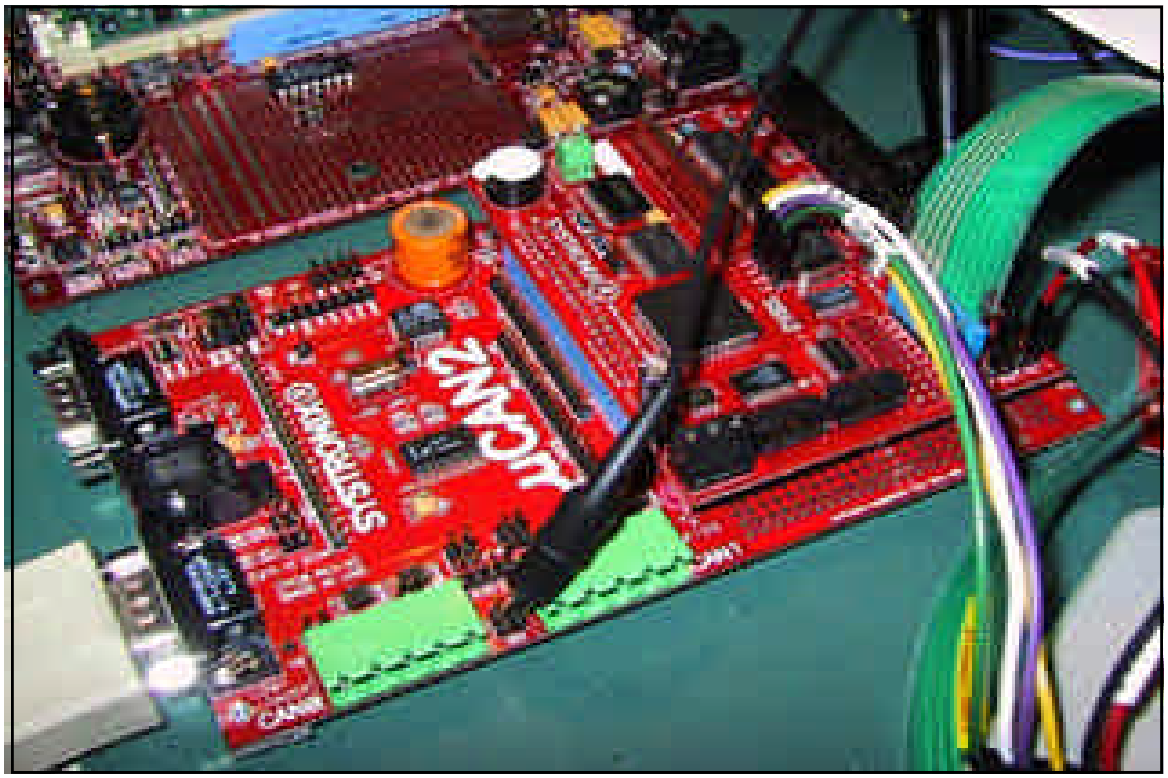
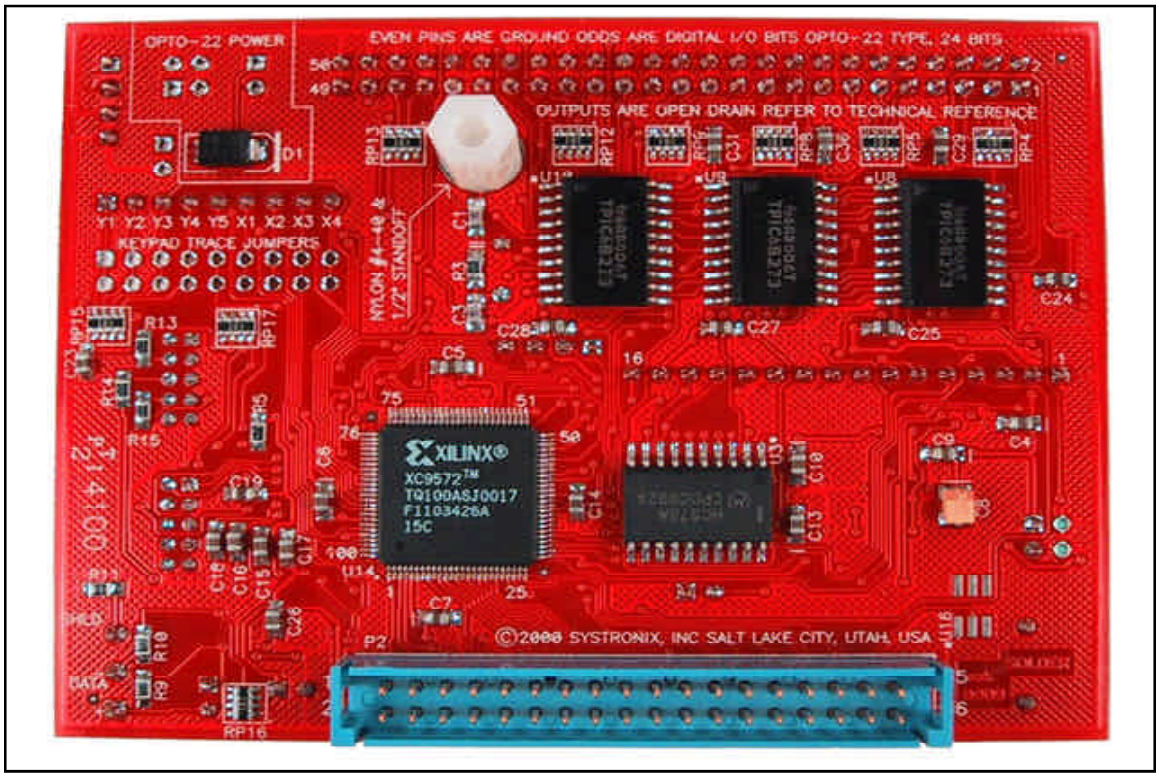
mCAN2 shown with SBX2 I/O expansion board. Flying leads are JTAG programming cables and an oscilliscope probe.



SBX2 bottom view showing the Xilinx CPLD, SBX connector and nylon mounting standoff.



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