Systronix HSM/550 Quick Reference

The most commonly used jumpers and I/O connections are shown here. For all I/O details, please refer to the HSM/550 Technical Refernece in printed or PDF file form. The latest version is available at www.systronix.com

ROM Select

default: enable external EPROM (the HSM/550 loader)

Clock & Calendar Interrupt

Connects DS87C550 INT1 to either INTA or INTB of the DS1284.

Default: present, but uninstalled.

Status LEDs

Green for RUN, red for LOAD.

Interrupt/Pushbutton jumpers

Jumpers here tie the high and low level pushbuttons to DS87C550 interrupts.

Default: present but not installed.

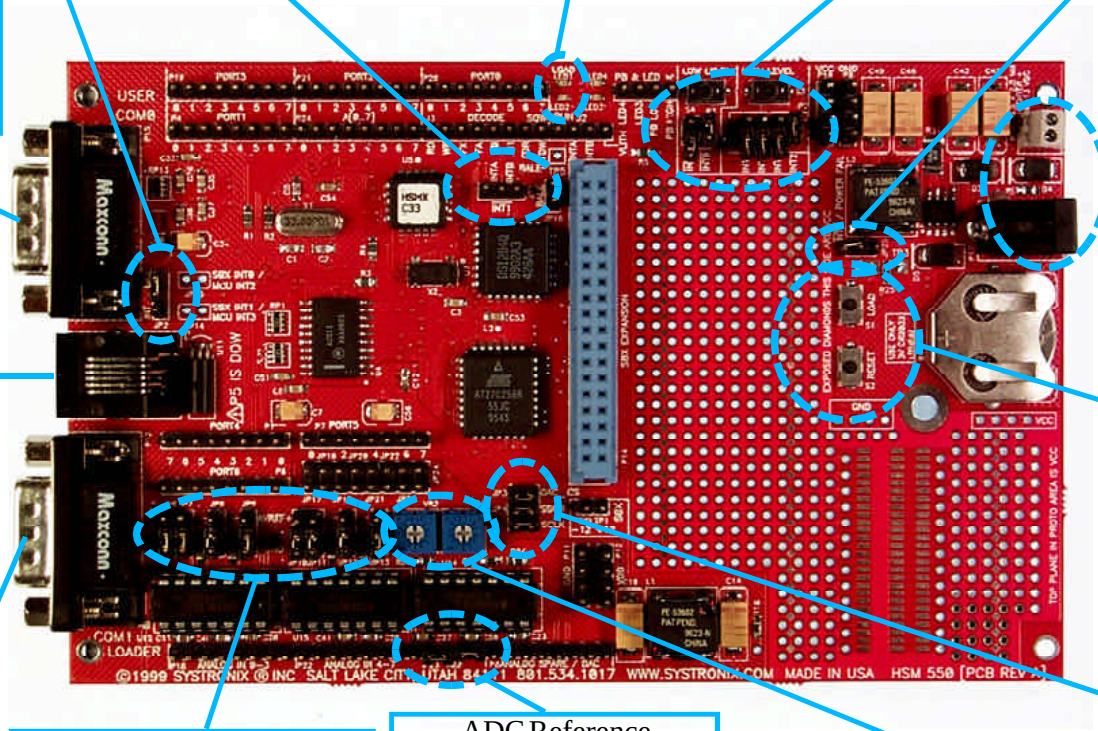
Power Fail Interrupt

Ties HSM/550 PFW interrupt to DS87C550 INT0.

Default: present but not installed

HSM/550 COM0

RS232, available for your use. Not used by HSM/550 loader. This is the default UART common to most all 8051s.



Power Input

6-13 VDC, 5.5x2.5mm jack (center positive) or screw terminals (positive closest to power jack).

DOW

Dallas One-Wire network, communicates with certain iButton and/or MicroLan devices

Load & Reset/Run

Pushbuttons. HSM/550 always starts up in RUN mode.

HSM/550 COM1

RS232, used for program loading and/or your application. You must send HSM/550 a carriage return in LOAD mode to activate the HSM/550 loader.

DAC Strobe Jumpers

DAC strobes can be cut free on the bottom of the board and re-enabled by installing jumpers here.

Analog Input Range

8 jumpers, one per input channel

default: 0 to 4.096 volts

ADC Reference

Enables the ADC to use the same precision 2.048V reference used by the DAC. Default: 2.048V ref enabled

Op-amp Gain Adjust

Adjust gain of the two "user" opamps. Gain is 1-11, clockwise increases.

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Quick Reference Notes

Prototype LEDs are located adjacent to the status LEDs. Drive them by connecting to their pins on the header P5 located between the LEDs and the Low and High level pushbuttons.

Driving Interrupts with Pushbuttons: refer to the technical reference for full details. But keep in mind that you can't have interrupts tied to controller pins and also drive them with the pushbuttons. For example, don't tie INT1 to one of the clock chip's outputs and also to a pushbutton unless you're certain that it creates no conflict. Some interrupts are open-drain, so tieing them to the LOW pushbutton will not create a conflict but tieing them to the HIGH pushbutton would. In a similar vein, if you tie multiple interrupts to the pushbutton header, then those interrupts will also be tied to each other and unable to operate independently. So if you are having interrupt problems, check the signal's voltage levels with a logic probe or oscilloscope and check all the jumpers that connect to the problem interrupt.

Autobauding Loader/Demonstrator: The new autobauding loader communicates on the HSM/550 COM1 (near the bottom edge of the board). It requires a carriage return (hexadecimal 0D, usually the 'enter' key) to synchronize to your host computer's baud rate. Some systems (a terminal program we found written in Java, for example) may send a linefeed (hexadecimal 0A) - this will not work. Not all baud rates are possible with all crystals. Start with 19200 or 9600 baud.

Controller Crystals

The design of HSM/550 supports operation at crystals through 33 MHz, the top speed of the DS87C550. However, the fastest readily available low-power SRAM is 55 nsec. Worst-case 33 MHz code fetches require faster SRAM or a slightly slower crystal. Therefore we ship HSM/550 with both 22.1184 and 33.0000 MHz crystals.

Loading on the P0 (AD0-7) port has a significant effect on data and code memory access speeds. The more devices present on AD0-7, the more capacitance the controller and output devices (SRAM, EPROM and memory-mapped registers) must charge. Typical I/O devices add 4-8 pF per I/O connection. The Systronix SBX1 card adds 9 such loads to AD0-7, about 50 pF additional load capacitance.

With a lightly loaded AD0-7, it is possible to operate HSM/550 at 33 MHz. With a heavy load you must use the included 22.1184 MHz crystal. A heavy load would be use of an SBX card without an AD0-7 buffer, and/or numerous devices in the prototype area. Bear in mind that this loading affects every access of both code and data on AD0-7. Adding stretch cycles cannot solve the problem because they affect data cycles only.

New I/O Drivers & Examples: www.systronix.com

The latest I/O drivers and sample programs are available on our web site at www.systronix.com.

Spare and Optional Parts

• SBX connectors and prototyping boards are available from Systronix and other vendors.

• Crystals, processors, and other components are available from Systronix.

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