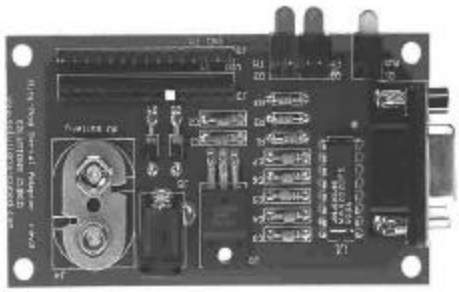

Serial Interface Board

RS-232 to TTL converter
*Interfaces to all Mini Mods
*Convenient female and male header for development
*Wall or battery powered

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Serial Interface Board

Serial Interface Board

RS-232 to TTL Serial Conversion Board

FEATURES

- Two way communication
- Communication activity LEDs
- Female and male headers allow for easy access to communication lines
- Battery, AC, or system powered

DESCRIPTION

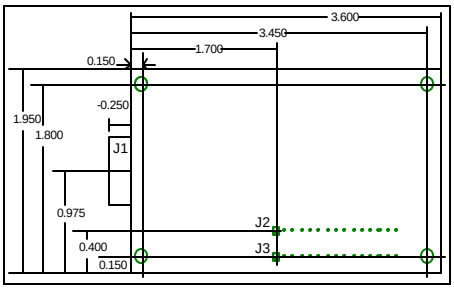
The Serial Interface Board (SIB) is an easy-to-use RS-232 communications conversion platform. The SIB converts TTL-level true-polarity serial data to RS-232 compliant serial data. This proves extremely useful when interfacing standard electronics to a serial port on a computer.

The SIB converts the TX and RX lines of the standard RS-232 port. All other RS-232 lines are left unconnected. Access to the serial lines is provided with both female and male headers for easy access and prototyping.

The SIB can be powered by either a 9 volt battery or a 9 volt wall plug. On-board circuitry allows both the battery and the wall plug to be connected to the SIB without damage. In addition, the SIB can be powered directly from a +5V system bus.

While it is specifically designed to interface to the Solutions Cubed line of Mini Mods in a user-friendly manner, the SIB can accommodate any electronic system that needs to have TTL level serial communication converted to and from RS-232 levels.

PIN CONFIGURATION AND MECHANICAL SPECS



VDD	+5V out for use by user for prototyping. Sources no more than 50mA. Alternatively +5V in to power SIB.
GND	GND for RS-232 as well as SIB and prototyping
TM	To the computer. This is a TTL level signal with true data format. Can be considered the translated RX line.
FM	From the computer. This is a TTL level signal with true data format. Can be considered the translated TX line.

OPERATION

The SIB is a simple level translator for two RS-232 lines only: RX and TX. None of the flow control lines (such as CTS, RTS, etc.) are supported by the SIB. As such, there can be no hardware handshaking between devices using the SIB for level conversion.

The SIB itself is a “dumb” device. It performs no error checking, data parsing, or flow control. It simply takes RS-232 inverted data and converts it to TTL true data (and vice versa). All data control must be performed by the RS-232 device (typically a computer) and/or the TTL device (such as a Basic Stamp or a Mini Mod).

Power

The SIB must be externally powered. It cannot be powered by the RS-232 port. Power can be supplied in one of three ways: A 9V battery can be plugged into the 9V battery snap; a 9V wall cube can be plugged into J5; VDD can be externally plugged into system power.

The 9V battery and the wall cube can be plugged into the SIB simultaneously with no fear of damage. In this case, the VDD pin on J2 and J3 will be able to source +5V to external circuitry at 50mA maximum.

If a wall cube is used to power the SIB, it must have the following characteristics: 110, 60Hz AC input; 9V @ 200mA DC output; a 2.1mm female cord plug; center positive; (CUI Stack Part Number: DPD090020 or equivalent). As intimated above, the wall cube must be able to mate with the J5 header, which is center positive and accepts a 2.1mm plug.

If VDD pin is attached directly to a system power bus, ensure that the power is +5V and can source at least 100mA. If it cannot, the SIB may not function correctly. In addition, if this power option is used, do not have a wall plug or a 9V battery plugged in. Doing so could cause damage to the SIB board.

LEDs

There are three LEDs on the SIB. The green LED (D1) indicates that the SIB is powered. If a power source is attached to the SIB and the green LED is not on, there is a problem with the power supply bus (dead battery, wrong polarity of the wall cube, etc.).

The FM LED (D3) flashes whenever there is communication from the host (such as a computer) to whatever device is attached to J2/J3 (such as a Solutions Cubed MEMKey).

The TM LED (D2) flashes whenever there is communication to the host from whatever device is attached to the SIB.

Connections

On the SIB. the TTL signals are accessed at the 15 pin headers. The female header and the male header simply mirror each other straight across.

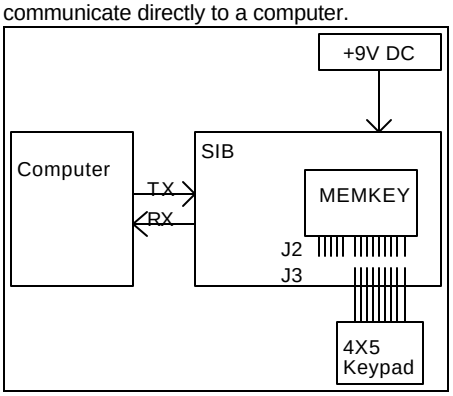
The female DB-9 (J1) on the SIB has the following pin out:

SIB DB-9 Pin	Function
2	RX
3	TX
5	Ground
All others	No connection

The RX and TX designations are from the perspective of a computer. As such, the “TM” position (pin 3, if VDD is 1) is the TTL translation of the “RX” RS-232 data; and the “FM” position (pin 4, if VDD is 1) is the TTL translation of the “TX” RS-232 data. This DB-9 pin-out should allow a standard male to female DB-9 to DB-9 cable to connect the SIB and a computer without the use of a null-modem.

Note the pin-out on the 15 pin headers (J2 & J3) allows for any of the Solutions Cubed’s Mini Mods to be plugged directly into the female header. The remainder of the pins on the headers allow various functions of the Mini Mods to be accessed easily in a prototype environment.

The figure below shows how the SIB might be hooked up to allow a Solutions Cubed MEMKey to communicate directly to a computer.



Using this configuration, the MEMKey is attached to the SIB using J2, the female connector. The SIB supplies +5V to the MEMKey. The SIB is powered from an external +9V wall cube. A keypad is attached to the MEMKey using the male J3 connector. The MEMKey can now decode key presses from the 4X5 keypad and report them directly to a host computer.

As can be seen from the above diagram, it is very simple to attach a TTL-level device to a computer using the serial interface board.

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