



MuIn - Multi Interface Board

990.005

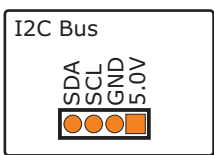
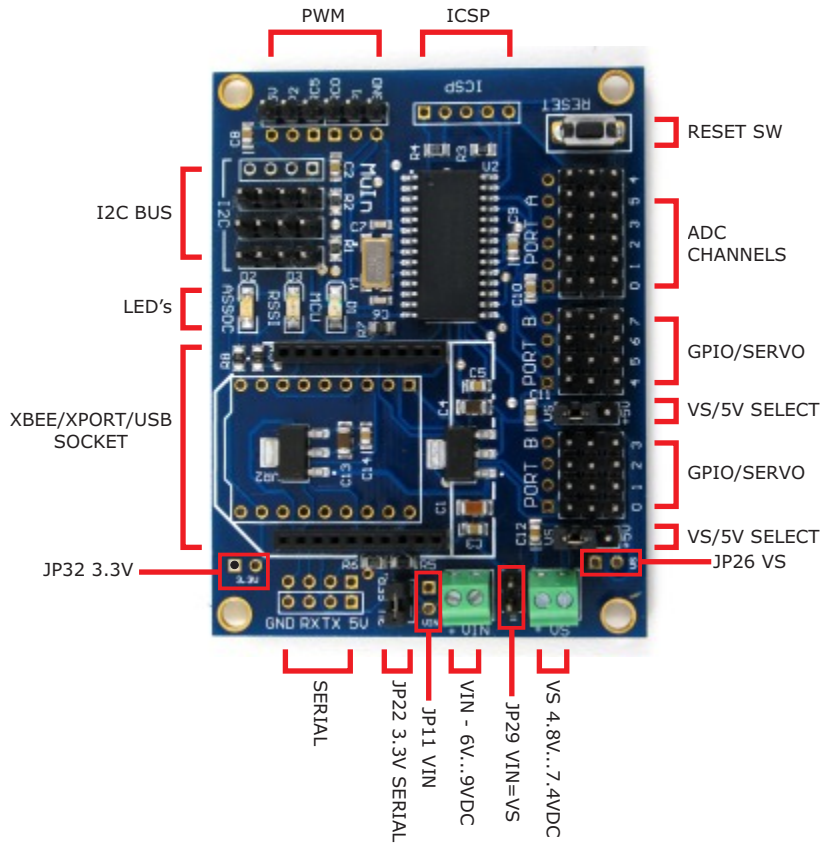
V1.4



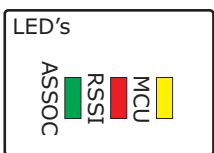
USER MANUAL V1.0

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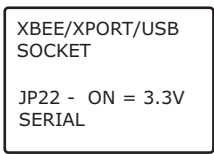
CAUTION! Never reverse the power source or connect/disconnect any device while the board is powered ON.
 Carefully read this quick start guide before powering the board!
 The on board regulators can provide up to 220mA however depending on the powering voltage and the power consumption the power regulators can overheat! The higher the power voltage, the higher the heat!
 Connect only one logic power source at a time (USB or VIN or VS=VIN)!



The Board comes with 3 headers, you can solder the 4th connector, provided in the bag, or you can leave the pads for connection to future piggy boards. The Muln Board has two 1.5K resistors to pull up the SCL and SDA lines therefore you can connect any I2C device directly. **Be careful, only one device, in the I2C bus, can have the pull up resistors!**
 The I2C connector also provide 5.0V to power external low power devices. Be careful to not exceed the total power available from the on board regulator.
 You can also power your I2C devices from an external power source, in this case, connect only GND, SCL and SDA.

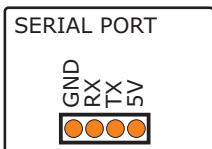


The ASSOC and RSSI LED's are connected to the Associated and RSSI port of the XBee, you can change the function of these LED in the XBee EEprom. The MCU LED is connected to RA4 of the PIC. With the standard firmware it blinks 10 times when the board is powered up or after resetting.

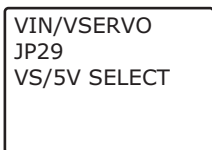


This socket is compatible with the XBee and XBeePro Series1 and 2 from Maxstream. With our adapter 990.007 you can use the Lantronix XPort Ethernet to Serial Device. **Both the devices request a 3.3V serial level, you must short JP22.**

There is also a USB socket for our 990.004 USB to Serial Module. You can solder the USB Board to the Muln or you can solder the header you found in the bag to be able to easily remove the USB module. **You must remove the jumper on JP22 and disconnect the power from the VIN connector since the 990.004 will power the whole board with the USB power. Do not power R/C servos or other high power devices using the USB Power!**



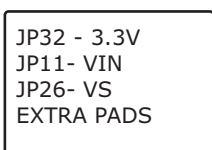
ATTN 5.0V serial port is available, to exchange data with any TTL device. **You must remove JP22 and any device from the XBee or USB socket, to use this port.**
 A 5.0V pin is useful to power the Muln or to power external devices if you are powering the Muln with an external power source. **Remember to disconnect any external power source if you are powering the board from this connector.**



You can apply your power source to VIN header, a 700mA power is required for normal operations, if you have to drive any servos from the same power source, a battery is recommended with a power of 1600mA or more.
 For better performances and reliability a separate servo power source is recommended. Connect a 1600mA (or higher) battery to VS header and short the VS/5V jumpers to VS. If you have only one battery, connect it to the VS header and short JP29.

Notice: if you are using a power source like the USB Module, do not short JP29 when a battery is connected to VS.

Notice: R/C servos are motors. When a motor starts it requires a lot of energy, usually 3 or more times his nominal power. A standard servo can request 600mA or more



Some extra power connectors are provided to easily connect the Muln to a piggy back board. Even the Ports and other connector have extra pads. You can build your add-on board and connect it to the back of the Muln easily.

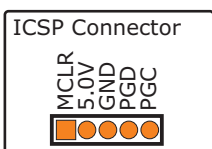


Port B can be used to drive 4 or 8 R/C servos or as digital ports. With simple serial commands you can set the port and write the setting to the internal PIC EEPROM. You can also use our GUI to setup the board.

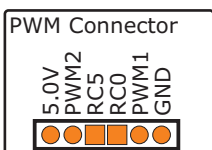


Port A has five 10bit ADC Channels: 0, 1, 2, 3 and 5. You can connect any analog device to this port, it is useful for analog sensor, potentiometers, temperature sensors, etc

Notice: The analog signal must be in the range of 0V to 5V, higher voltage will damage the PIC.



With a ICSP programmer you can easily program the PIC18F2520 from the ICSP connector. Read your programmer manual for more information on In Circuit Serial Programming.



With the PWM Connector you can drive two H-Bridge, you have RC0 and RC5 to drive the Enable pin and choose the motors direction. This output is also useful to drive many devices requiring a PWM signal. The frequency can be chosen from 3 values: 2.44KHz, 9.77KHz and 39.4KHz

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