ROVER BOARDS

Two stackable boards

1 board contains motor drivers, servo drivers and auxiliary Pics the other board contains most sensors, the main processor and radio module.

MOTOR DRIVER BOARD

Drivers for main motors (left and right). Each has two logic signals. Activate one to go forward and the other to go backwards. Do not try to go forward and backward at the same time. Pulse the line to control speed.

Circuit to route back emf of motors to processor board to enable motor speed measurement.

PIC24HJ12GP201 16 bit processor (connected via I2C to main processor)
This is used to control 2 RC servos. The power to the RC servos can also be switched.
The processor is also connected to an IR LED.
Unused pins are brought to pads

PIC16F1825 8 bit processor (connected via I2C to main processor)
This can be used to control an auxillary motor and detect a switch.
This can be used to generate an analog voltage (via pulses and a filter).
This can be used to measure an analog voltage.
Unused pins are brought to pads

SENSOR/PROCESSOR/RADIO BOARD

PIC32MX340F256H processor
WIFI radio module connected via SPI
3 axis Acceleration sensor connected via I2C
3 axis magnetic field sensor connected via I2C
3 axis Gyro sensor connected via I2C
2 light sensors read via the A/D in the processor
Interface to a thermistor and and external photodiode read via the A/D in the processor
Buffers to connect to quadrature encoders on ROVER
Header to connect to external line following sensor read via the A/D in the processor
Connector to back emf circuit on motor board read via the A/D in the processor
A red and green LED.
2 switches
An IR remote control style sensor.
An analog output derived from a filtered PWM.