



MSP430 Tank

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OVERALL STATUS

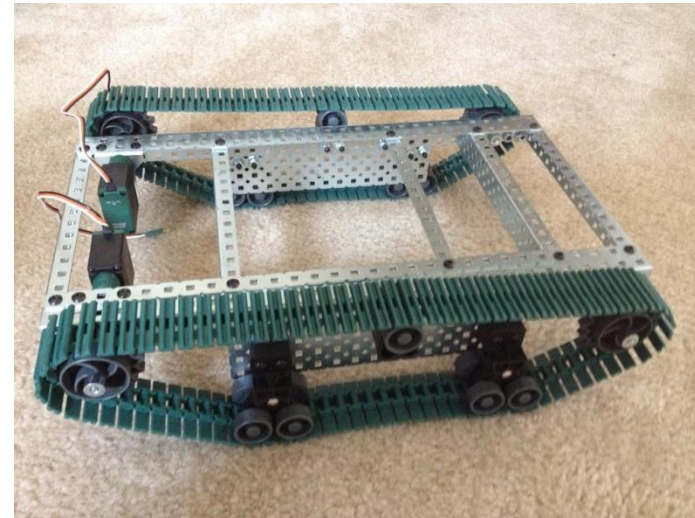
- Tank Chassis : Completed
- RF Controller: Tested
- Power circuit: Circuit to be finalized.
- Solenoid: Acquired and tested
- Drive motors and turret motor: Assembled and tested.

Components

- Five main components to interface with MSP430
 - Tank Chassis
 - RF controller
 - Dual motor drive system
 - Turret motor/servo
 - Firing mechanism

Tank Chassis

- **Status: Assembled**
- **Hardware interface**
 - Vex metal frame
 - Support frame
 - Drive train - tank treads
- **Software Interface**
 - No MSP430 interface
 - Ground Plane
- **Challenges have been resolved**
 - Turret and gun can be mounted on the chassis.



RF Controller

Vex RF Receiver / Decoder

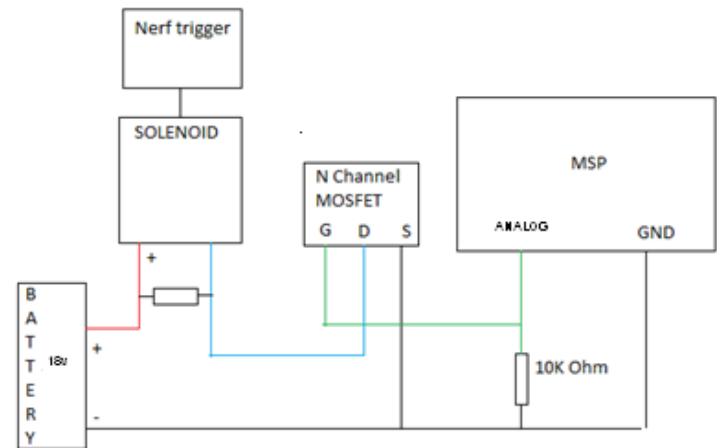
- **Status: Acquired and Tested.**
- **Hardware interface**
 - 4 Pin RJ-10 to breakout cable to breadboard.
 - 5V, GND, PPM Signal, NC
 - Will use MSP430 Pin 4: TA0.I for PPM input
 - Pull up resistor for PPM output
 - RF Antenna
 - Logic level Converter to step down 5v output for PPM(Acquired and Tested)
- **Software Interface**
 - PPM Signal will be connected to Timer_A0 capture channel I
 - Capture channel will measure time between PPM pulses to determine control settings
 - Requires TA0.I interrupt vector
- **Challenges are resolved**
 - Level shifter is used for power conversion.
- **Vex 6 Channel RF Transmitter**
 - **Status: Acquired and Tested.**
 - RF Antenna, independent battery
 - No direct interface to MSP430



Firing Mechanism

Components

- **Solenoid : Acquired and Tested**
- **Accompanying circuit**
 - N channel MOSFET
 - 10K ohm resistor
 - Diode rectifier
 - Two 9V batteries are used in series for power.
- **Addressing from software**
 - High /low pin output
- **Challenges have been resolved**
 - Connecting Solenoid to Trigger is resolved.



Current Status

Overall Progress

- All parts acquired trigger, solenoid and level select and tested.
- Coding is nearly completed.
- Assembling of parts is almost done except for turret and solenoid.
- Power circuit to be finalized and mounted on breadboard

Task Division

- Circuits:
 - Krishnaveni ,Dheeraj and Byron.
- Coding
 - Matt and Andrew
- Integration
 - By all