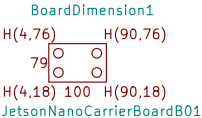


# PCB Config

## Board Parameter

M3 Mounting Hole with Via      Board Size: 100 mm x 79 mm



## Manufacturering Config

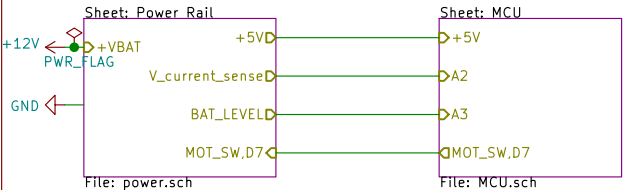
Base Material: FR4  
Board Layer: 2  
Board Thickness: 1.6 mm  
PCB Color: Black would be great  
Silkscreen: White  
Surface Finish: Lead Free HASL-RoHS  
Outer Copper Weight: 1oz

## Stencil Config

Framework: No  
Customized size: 150 mm x 110 mm  
Stencil Side: Top  
Stencil Qty: 1  
Electropolishing: No  
Fiducials: No Fiducial

# Board Detail

## Structure



## Power Supply

### Battery

Tpye: LiFePO4 battery, 12A 10Ah  
Supply Voltage Range: 14.4 V to 11 V  
C-Rate: 20

### +5V DCDC

Tpye: Buck  
Supply Voltage Range: 3.5 V to 36 V  
Output Voltage: 5 V +- 2%  
Output Current: 8A

## I/O

### +12V Rail

Battery Input  
Jetson Xavier NX  
Motor Driver

### +5V Rail

Network Switch  
Jetson Nano

### ADC

Battery Level  
Sys Current Monitor

### Interfaces

### Switch

Motor Supply EN

I2C  
SPI  
UART  
SBUS Connector  
Servo Connector  
Motor Connector  
IMU Footprint

NDHU ISP Lab

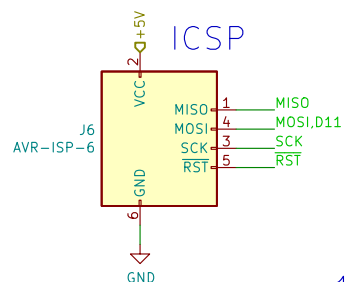
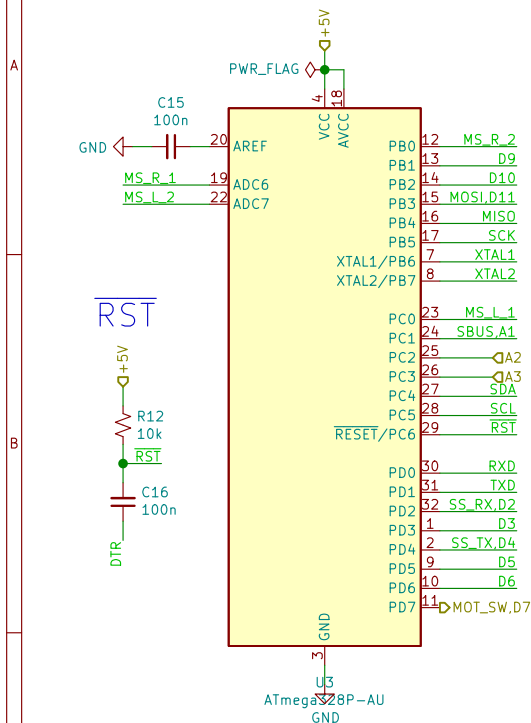
Sheet: /  
File: agricultural\_car.sch

Title: ISP Agricultural Car

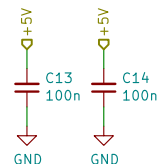
Size: A4      Date: 2021-07-27  
KiCad E.D.A.      kicad (5.1.10)-1

Rev: C  
Id: 1/3

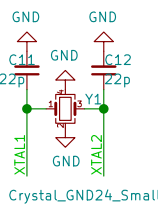
## Atmega328P Minimum System



Close to pin 3, 4  
& pin 5, 6

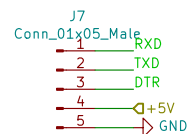


16MHz Crystal



CrystaL\_GND24\_Small

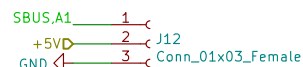
## UART



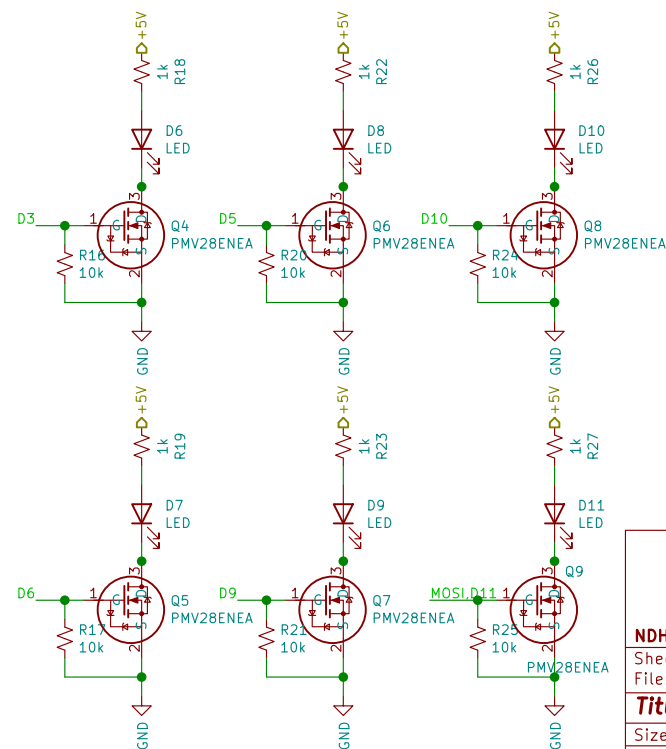
## MOTOR SIGNALS



## SBUS



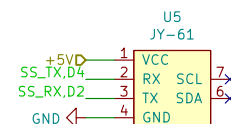
## IO Status Indicator & Servo Connector



## I2C – Jetson Nano



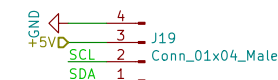
## IMU



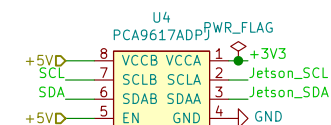
I2C – OLED



## I2C – Backup

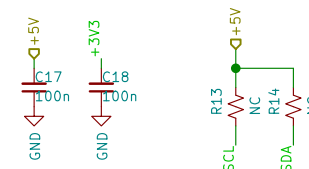


## I2C Level Shifter



Close to pin VCCA,  
VCCB, respectively

### External Pull-up Resistor



NDHU ISP Lab

Sheet: /MCU/  
File: MCU.sch

**Title: ISP Agricultural Car**

Size: A4	Date: 2021-07-27
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Rev: C

Id: 2/3

## Power Supply Related

+12V power in



To Jetson Xavier NX



To motor driver



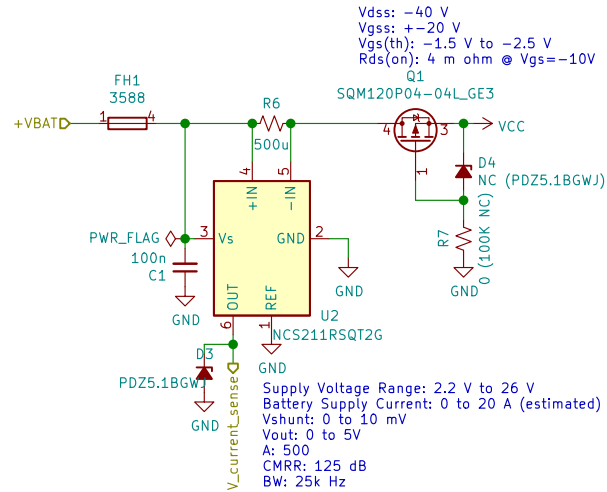
## To Jetson Nano



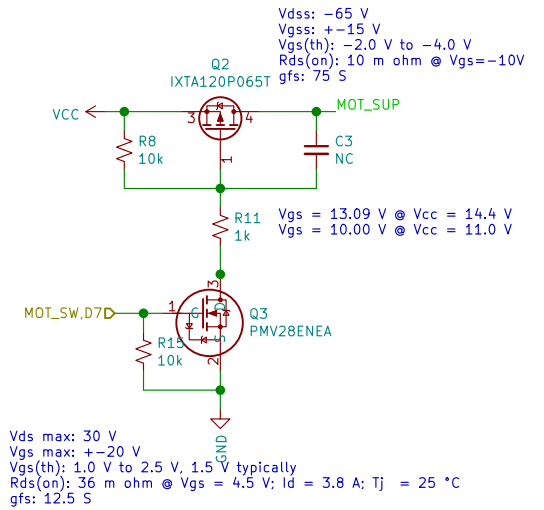
## To Switch



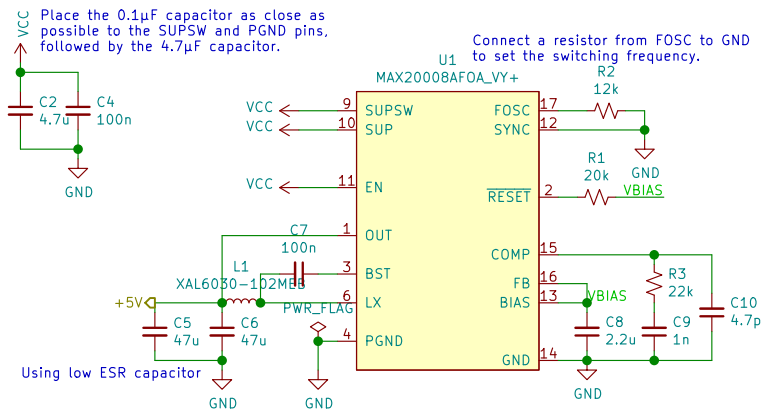
## Fuse, Current Sensing & Reverse Polarity Protection



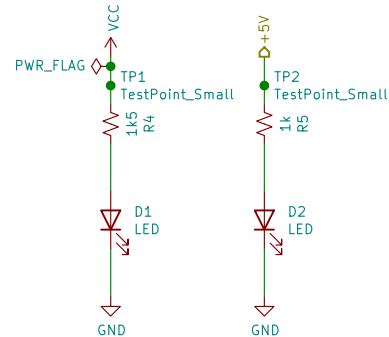
## Load Switch for Motor Supply



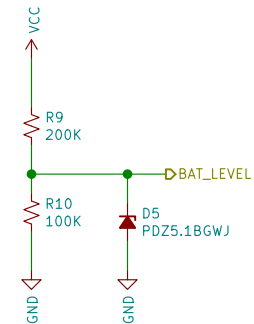
## +5V DCDC



## Power LED



## Battery Level measurement



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Sheet: /Power Rail/

File: power.sch

**Title: ISP Agricultural Car**

Size: A4	Date: 2021-07-27
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Rev: C

Id: 3/3